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PSYCHOLOGY AND SOCIAL IMPACT ASSESSMENT

University of Hawaii

Ph.D. 1983

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PSYCHOLOGY AND SOCIAL IMPACT ASSESSMENT

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE
UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT
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IN PSYCHOLOGY
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By

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Acknowledgements are clearly and gratefully due...

To Tony, who insisted
(even when I resisted)

and

To Mary Alice, who persisted
(when I'd have cheerfully desisted).

(It's a wonder this thing has ever existed.)

ABSTRACT

Social impact assessment (SIA) in its narrowest sense involves the social parts of environmental impact statements--i.e., predicting the social consequences of site-specific transformations of the physical environment and/or the community socioeconomic fabric. In its broader sense, SIA can encompass processes such as citizen participation and mediation in policy decisions about proposed projects, programs, or policies.

Psychologists to date have been little involved with SIA. Therefore, this dissertation has two purposes: to provide psychologists with an overview of SIA, and to point out ways that psychological knowledge can provide SIA with an individual-level "human bottom line."

There are numerous fields of psychological inquiry with potential relevance to SIA--stress, subjective wellbeing, environmental cognition, etc. Psychologists have also researched consequences of social forces which frequently characterize projects addressed by SIA--e.g., economic change or increased population density.

At the same time, psychological research usually has focused only on micro-social situations (or, less often, on broad cultural shifts). Some changes in basic philosophy and methodology are needed for most psychological research to be truly relevant to SIA. At an action level, community psychology seems particularly suited for tackling the sort of community transitions which often concern SIA practitioners.

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I. INTRODUCTION

Social impact assessment (SIA) is a form of applied social science which seeks to predict or estimate the human impact of proposed new public works projects, major private business developments, or government programs. The establishment of a new industry in a sleepy rural area, the construction of a large public housing project in the heart of a metropolis, initiation of a new system for delivering public mental health services--all might be examples of proposals which could merit study through SIA.

In theory, the purpose of SIA is to provide the decision maker and the public with information about the probable social consequences of a proposed project--to be weighed along with information about economic and environmental impacts--so that an intelligent decision can be made about whether to approve the project and/or about how it could be modified to minimize undesired side effects and maximize desired ones. In practice, SIA is often neglected or given only cursory attention.

Both in theory and in practice, SIA is still in its infancy. SIA's very often are performed by planning or engineering consultants with little social science background, or by social scientists operating as subcontractors with very limited resources. They are usually carried out as one small part of a larger environmental impact statement (EIS) prepared to meet the requirements of the United States' National Environmental Policy Act (NEPA) or a similar governmental regulation. The SIA may consist of a lengthy appendix to the EIS, or, more

frequently, a page or two of general statements about employment opportunities and "lifestyle" considerations.

Although most Western countries today have passed legislation requiring environmental impact assessments for major governmental and/or private-sector actions likely to alter the physical surroundings, the (sporadic) inclusion of a socioeconomic or strictly social component is primarily a North American phenomenon. The concept originated in the United States and subsequently crossed the border into Canada, where it has been enriched, hotly debated, and perhaps subtly altered to fit that country's more iconoclastic and rural-oriented national identity (Boothroyd, 1981). Most of the literature--both academic and practitioner-oriented--currently comes from Canada and the United States.

OVERVIEW OF SIA VS. "SOCIAL SCIENCE"

What is social impact assessment? What is it actually all about?

While answers to these questions and definitions of SIA are as plentiful as the number of articles and books which have been written on the topic, some of the most thoughtful comments on this matter have come from Charles P. Wolf. As will be later explicated, Wolf has played a central role in the development of SIA in the United States and has sometimes been described as the "father of SIA." (Wolf prefers to consider himself the "finder" of SIA--Wolf, 1977, p. 3.)

It is at least arguable that "social impact assessment" is what social science is all about and always has been. As social scientists, we are concerned with analyzing the

conditions, causes, and consequences of social phenomena and social life. (Wolf, 1974b, p. 2)

Wolf notes that SIA can be defined as formal compliance with NEPA or related laws which mandate consideration of social consequences of governmental decisions. But at a higher level, he wrote in the mid-1970's, SIA represented a new national concern with the human consequences of planning:

Above all, what SIA symbolizes is the assumption of social responsibility on the part of public authorities and its imposition on private interests. What is being requested--indeed, demanded--is nothing less than the use of social forecasts as a planning base. (Wolf, 1974b, p. 4)

The latter statement is perhaps too sweeping, since SIA at present is usually tied to specific project proposals for specific sites. Additionally, of course, his comments describe a national political philosophy which, if it every really existed, is now in some eclipse. In a later discussion, he is more precise:

Social impact assessment is a newly emerging field of interdisciplinary knowledge and application. Its aim is to predict and evaluate the social effects of a policy, program, or project while still in the planning state--before those effects have occurred. Unlike the more familiar "evaluation research, which gauges the effectiveness of programs already in operation, the task for SIA is anticipatory research. (Wolf, 1980a, p. 27)

However, Wolf also notes that in practice "social" impacts are too often defined in residual terms--whatever is left over and unconsidered in EIS analyses after all other sections have been prepared by environmental scientists and economists. Thus, SIA's are frequently expected

to contain (or even to consist entirely of) subjects which psychologists might regard as the domain of public health specialists, demographers, or planners rather than as the domain of psychology, sociology, or anthropology. For example, analyses of projected population growth, demands for public services, and induced changes in land use often constitute the bulk of SIA's as they are presently prepared for environmental impact statements. Even the distribution of employment or income costs and benefits among different sub-populations--a topic clearly suited to the expertise of economists--is often relegated to noneconomic SIA analysts, who might more reasonably be expected to consider the implications rather than the calculations of such distributive issues.

It was earlier stated that SIA is a form of applied social science. This is true to the extent that SIA relies on social science for its content and methodologies. However, because SIA in most instances is linked to the EIS process, it is in many ways more of a planning (or even a political) process rather than a social science activity per se. The parameters of EIS's are, in practice, the parameters of SIA as an applied activity.

Among these parameters are several which distinguish SIA from more typical social science research activities. These may be summarized in the statement that EIS's and their social components usually involve (1) the prediction of likely impacts from (2) a specific proposed project on (3) a specific geographical area and/or socioeconomic community, all in the form of (4) a document usually commissioned by the project proponent.

Predictive emphasis: SIA deals with the future, not with analysis of the past or present. While prediction is a penultimate goal of all science (falling just shy of the ultimate and most ambitious goal-- control), there are many who believe that it is too daring a task for the social sciences at present, particularly since the preceding steps of description and understanding have yet to be mastered in most social science realms. Much of the SIA literature to be discussed in this dissertation touches upon this controversy, and many scholars and practitioners urge more emphasis on "process" aspects such as citizen involvement and less emphasis on predictions and similar paper "products."

However, the EIS framework intrinsically mandates forecasts, or at least the best available estimates of future outcomes. While the author of this dissertation believes that "process" components of SIA's may actually have the most real-world value and be most achievable in the near-term future, the principal focus of this dissertation will nevertheless be primarily on predictive SIA. That is because EIS's as currently written (including their SIA components) are usually oriented to predictive statements and because prediction represents the true link between the social sciences and impact statements. Social scientists' conclusions about historical data are of no value to the decision-making EIS process unless these conclusions can be generalized to future situations.

Specificity of Change Agent and Locale: Because SIA's/EIS's involve a specific project, the SIA practitioner must attend to all

facets and aspects of this project, examining their separate and interactive consequences; SIA is not interested in the effects of one variable "holding all others constant." SIA also diverges from normal social science activity in its attention not to general human patterns, but to the idiosyncratic conditions of a particular affected community.

In regard to the latter two points, it should be noted that NEPA actually calls for assessment of some types of federal programs (not just individual projects) which may affect a variety of sites, but these EIS's tend to be vague and general documents which are usually supplemented by site-specific EIS's. SIA may be contrasted to the field of "technology assessment" (TA), which is concerned in large part with broad social and economic ramifications of technological innovations at the national or general societal level. Predicting the overall human impact of putting video-display computer terminals in most American homes would be a job for TA; predicting the impact of a new computer manufacturing plant on the residents of Poughkeepsie, N.Y. would be a job for SIA. Some scholars see TA as a branch of SIA, but in this dissertation they will be viewed as two separate branches of the same "impact assessment" tree.

Client/Market Considerations: There is nothing to prevent academic social scientists (or anyone else) from carrying out shoestring social impact assessments on their own, nor is there anything to prevent rich philanthropists from providing more adequate funds to estimate social impacts from a proposed project in which such philanthropists have no

interest. There have been occasional instances when local decision makers have requested SIA's outside the legal EIS structure, simply because they desired the information to aid in decision making (McCoy, 1975). But in the usual SIA case, the preparer is a consultant paid by a client who is proposing the project (or, less often, the preparer is a government employee who regularly assembles social impact statements for his or her agency).

This results in some very apparent differences between the value orientations usually encountered in a pure research setting and those encountered in EIS/SIA situations, as will be discussed later in the dissertation. Concomitantly, it means that SIA often is a market activity, and that its nature is determined by economic forces as well as by the legal strictures of NEPA or other regulations. The present dissertation is heavily influenced by this fact. The potential contributions of social impact assessment in general, and psychological SIA in particular, cannot be realistically evaluated without consideration of the needs of (and constraints upon) both client and government decision maker...who may in some cases be identical.

However, traditional academically-oriented social science researchers have their own reasons for being interested in SIA. Although the practical market for SIA is still largely restricted to satisfaction of EIS regulatory requirements, the concept has generated enormous theoretical interest (and some real-life participation) by many types of social scientists. A substantial scholarly literature has evolved

regarding the potential role and contributions of SIA, both within and without the current EIS framework. SIA represents a major challenge to the social science "pure" research profession: does social science have value or not? can it lead to useful real-world action, or is it simple "ivory tower" wheel spinning? And there may also be a concern with preventing abuse of social science, its principles and its image, by ensuring that SIA'S are conducted with proper recognition of (if not necessarily in total conformance with) the standards of social science.

Thus, in different ways, SIA is of strong interest to a number of different types of participants and observers:

- o policy analysts--the decision makers and staffers who must take action based upon the SIA's and other EIS sections;
- o clients--the government agencies or private interests whose proposed actions may be affected (perhaps approved or disapproved) as a result of public and decision-maker reaction to SIA's;
- o practitioners--the individuals whose jobs or professional consulting occupation (full- or part-time) it is to prepare SIA's;
- o academic social science researchers--people who are interested in furthering the efficacy of SIA's and/or the scientific quality therein.

This dissertation will be primarily concerned with the latter two groups, although the effects and needs of the former two groups must always be reckoned with.

PSYCHOLOGY AND SIA: NEED FOR, AND PURPOSES OF, THIS DISSERTATION

Need

By the very nature of the focus of SIA, one would expect a good deal of participation by psychologists, particularly social, community, and/or environmental psychologists:

Here, in the area of social psychological issues, lies, it seems to me, the heart of what social impact assessment is attempting to elaborate: subjective quality of life concerns, the sense of aesthetics and environmental attraction, the sense of personal identity, of community cohesion, of distributive justice, value and attitude changes, alteration of interaction networks, the environmental effects on social interaction (e.g., the effect of aversive noise levels in decreasing altruistic behavior) and proxemic behavior... (Harter, 1978, p. 2)

Ironically, though, psychologists have been among the least active of social science disciplines in carrying out SIA investigations or in contributing to academic literature on the topic. There are reasons for this, as will be discussed later. A number of barriers and limits to substantial psychological involvement in SIA will be reviewed.

Nevertheless, despite all the problems and all the qualifications which must honestly be raised, SIA can greatly benefit from more input from psychologists.

Social impact assessment as an intellectual field has been dominated by sociologists. Some of these sociologists follow the tradition of Emile Durkheim in believing that the whole is greater than the sum of the parts and that the sole focus of SIA therefore properly should be

on the overall community as a sort of super-organism in its own right, with no need to make reference to the individual. However, some of the most influential sociological contributors to SIA do not agree. Kurt Finsterbusch--one of the most distinguished and certainly one of the most prolific of SIA authorities (Finsterbusch, 1975, 1976a, 1976b, 1977a, 1977b, 1977c, 1978, 1982a, 1982b, 1982c; Finsterbusch & Motz, 1980; Finsterbusch & Wolf, 1977)--has been particularly influential in stressing the need for SIA to examine impacts on the individual, in addition to impacts on the community, subgroups, and organizational structures:

Social impact assessments estimate the social consequences of an action on individuals, groups, organizations, communities, and other social units. They assess both positive and negative social impacts, but generally the SIA looks at negative social impacts of actions that are proposed for their positive economic impacts. Since SIAs mainly estimate adverse impacts on individuals and groups of individuals they should be based on an understanding of how individuals experience adversity. SIAs, however, tend to be deficient in this respect... (Finsterbusch, 1982b, p. 71)

Finsterbusch goes on to begin the task of redressing this deficiency, focusing on stress and life satisfaction theories. This dissertation will be concerned in part with significantly expanding and adding to the initial concepts suggested by Finsterbusch (which will be more fully discussed in Chapter V). It is the hope of the author that more psychological input to SIA will help ensure that social impact assessments attend to both the benefits and the problems accruing to the individual--who may or may not even register in post-impact aggregate community statistics, since people may disappear from their original

communities in the course of major environmental and socio-economic transitions. Psychologists can assist SIA both in practice and through basic research, since there is a great need for valid research evidence and theory to aid in prediction of impacts. In fact, given some of the practical difficulties in the conduct of social impact assessment which will be reviewed in this dissertation, the psychologist may have a more important contribution to make as a pure researcher than as an SIA practitioner.

If SIA can benefit from psychology, psychology can also benefit from involvement with SIA. Psychologists represent a group of people with a great range of values and interests. Some find great meaning in laboratory-based pure research. Others, however, find more satisfaction in acting directly upon the world. For many, this means clinical practice. But there are also many who feel a desire to interact at a level greater than that of single troubled individuals. Psychological sub-disciplines such as community psychology, environmental psychology, and (at intermittent periods) social psychology have attracted such persons in large numbers. However, these fields have generally failed to forge links to the social policy- and decision-making process. If a psychologist feels his or her studies have implications for the everyday business of running the world, there is no effective forum for injecting those concepts into the body politic. Few mayors, state senators, or federal Cabinet officials read psychological research journals.

Along with fields such as technology assessment and risk assessment, SIA is part of a fledgling movement to supplement the "policy

sciences" with direct social science content. It is a daring move, because the risks of failure are real. But psychology will surely be the poorer for not participating in the experiment.

Purposes and Organization

This dissertation is being written with two major purposes (or sets of purposes) in mind. Chapters are organized into two parts--named, in straightforward fashion, "Part One" and "Part Two"--with each part dedicated to one of these general purposes.

The chapters in Part One will be an overview of SIA to date, to serve as an introduction of the field to psychologists. It is hoped this dissertation may stimulate some greater interest in SIA by at least some psychologists--but, if this proves to be the case, newcomers to the area should be well apprised of the history, the opportunities, and the pitfalls which have developed on both the academic and practical sides of SIA.

The second purpose of the dissertation is to provide some insights into the potential (a) utility of, (b) feasibility of, (c) opportunities for, and (d) methodological approaches which could facilitate increased participation by psychologists in both the academic and practical aspects of SIA. The objective is thus a preliminary exploration of the psychological areas considered most likely to be fruitful topics for inclusion in SIA's, with some recommended methodologies. This is a limited objective, falling short of a how-to-do-it cookbook, and the

reasons for the limitations will be documented. The chapters of Part Two are aimed at this goal.

Both foregoing descriptions of the purposes of this dissertation have suggested there are important limits to the potential contributions of psychologists to SIA. It is perhaps apparent by this point that this dissertation is not intended to be the sort of totally unambivalent clarion call which one anthropologist sounded for members of his own discipline to become more involved in SIA consulting work on a full-time basis:

To become fully recognized contributors we have little choice but to persuade the managers of consulting firms to hire anthropologists because it is private firms, rather than university based researchers, that can most rapidly and successfully respond to requests for proposals from government agencies. (West, 1975, pp. 435-436).

To an extent, the foregoing words represent solid and realistic advice, for either anthropologists or psychologists. These sentiments do, however, suggest a sort of blind faith in the ultimate wisdom of one's own discipline and perhaps the need to remake the EIS/SIA process in the image of that particular discipline. An interdisciplinary battle among psychologists, anthropologists, sociologists, economists, and planners as to which group should dominate SIA consultancies would ultimately benefit nobody.¹

On the positive side, the dissertation will point out certain areas where psychologists are most likely to make a valuable contribution to SIA. As indicated by some of the earlier discussion, psychologists can

make professional contributions to SIA in one or more of three roles: (1) predictive practitioner; (2) supporting academic research for predictive practitioner; and (3) nonpredictive active involvement of various types.

1. The predictive practitioner role: This is the role of producing the psychological portions of actual social impact assessments for specific projects. At least theoretically, this might be done as a full-time consulting occupation. But because of the various constraints on social science and psychological involvement in SIA, it is most likely to be carried out on an occasional subcontracting basis (perhaps even a sub-sub-subcontracting basis, if the prime contractor for an EIS is the typical planning and engineering firm which then subcontracts with a purely "social" consultant, who then may--if any funds remain--subcontract with psychologists for specific pieces of information).

2. The supporting academic research role: When the practitioner finds the existing literature and/or assessment methodologies to be inadequate (and this is frequently the case), the research community may assist the larger process by devoting attention to these unanswered questions. At the present time, there is an overwhelming need for applied social research on which firmer predictive SIA statements can be based.

3. Nonpredictive active involvement roles: Predictive SIA is one aspect of a larger decision-making process, and there are some models of

SIA which emphasize more action-oriented and less prediction-oriented roles for practitioners--e.g., facilitation of communication among project proponents, decision makers, and the general public. This type of nonpredictive activity could be a service offered by a professional consultant, as could social impact management, mediation, etc. As previously noted, such "process" models of SIA will not represent the primary focus of this dissertation, but they are far too significant to be overlooked entirely.

Potential contributions in all three of the foregoing roles will be analyzed in this dissertation, albeit with somewhat more emphasis on the first two.

FINAL COMMENTS

It was previously mentioned that SIA represents a challenge for social scientists in general. That challenge may be felt particularly keenly by psychologists. In the past 20 years, several new psychological subdisciplines--most especially community psychology and environmental psychology--have manifested an apparent desire by psychologists to apply their laboratory skills and knowledge to real-world situations. Social impact assessment constitutes a new type of opportunity to achieve both the applied status and the ecological perspective to which members of these subdisciplines (along with many social psychologists) have often aspired.

At the same time, SIA may represent such an opportunity only if psychologists are willing to loosen some of the customary bonds upon

their self-definition of the overall discipline. Two such changes are particularly important:

1. A widening of focus to "macro-social" situations and change:

In an attempt to establish solid scientific principles, psychologists in the past few decades have conducted most of their research on human behavior in the context of what might be called "micro-social situations." That is, both experimental and naturalistic observations have been conducted in carefully limited social and physical settings: small groups in enclosed rooms; a few people on a street corner; two individuals on a telephone. The most ambitious studies of individual behavior may involve work, family, or "social support network" settings.

Except, perhaps, for a small group of cross-cultural psychologists and those environmental psychologists struggling to develop the still somewhat arcane concept of "behavior settings," there has been little psychological research on general human orientation to the total physical and socioeconomic environments. Some ecological models and theories do suggest the need to chart the individual's total environment, but even here the overall environment is seen as static. This total environmental context is usually regarded as a given, the background or field in which human organisms display the psychological behavior of primary interest to psychologists.

However, SIA often is about change in the total "background" environment, and the possible consequences for communities, groups, and individuals. As input to SIA, research findings from "micro-social

situations" may be regarded with justifiable skepticism. Ecological approaches offer more hope, but the element of change is still usually absent.

2. A broadening of research purpose from the establishment of scientific law: Laboratory or other micro-social settings are appropriate for psychological research intended to contribute to the slow accretion of irrefutable and universal truths about human behavior. This is a noble goal (although there are certainly some who believe it futile), and there is no intent here to suggest that it be abandoned.

However, it must be suggested that the long-term goal of seeking psychological laws--the formulae of social physics--can be supplemented by short-term goals of partial knowledge. For the pursuit of ultimate knowledge (and/or comprehensive theories of human behavior), it is necessary to study, for example, the reactions of individuals to a particular class of environmental changes--perhaps a sudden influx of newcomer population--over a great variety of time and situations. Such a change would be studied in large cities and small, in the 20th century and the 2nd, in the United States and in Tonga. The seeker after publications oriented toward ultimate scientific truth disdains replication studies; rather, the buzz words for acceptance in scholarly journals go together to constitute some such sentence as "However, this phenomenon heretofore has never before been examined among a population of suburban Indians in South Africa, and the findings to be presented here suggest important revisions must be made in prevailing theories."

SIA requires knowledge that is admittedly time-bound and culture-bound. It needs a literature comprised of replicative studies in similar sorts of conditions--the conditions most likely to prevail in practice. For example, the SIA practitioner is most likely today to be called upon to study the situation of an influx of newcomers in cases involving construction and operation of major new industries and/or energy developments in small rural communities. The typical responses in such limited conditions (along with useful pointers as to the variables which can modify undesired outcomes) represent the basic need.

Thus, the challenges to psychological scholars posed by SIA are fortunately somewhat balancing. There is a need to think in terms of total "macro-social" situations, but there is also a practical need to develop, not grand theory, but empirical evidence of typical outcomes in the macro-situations of most practical interest in a given period of history (and, perhaps, region of the country). To be integrated into the practice of social impact assessment in a useful way, psychology must develop branches and perspectives which can accept the value of historical as well as experimental knowledge.

PART ONE:
AN INTRODUCTION TO SOCIAL IMPACT ASSESSMENT

Before discussing opportunities for psychological input to SIA, it is necessary to understand what SIA is and how it has worked in theory and in practice. That is the intent of the next three chapters, which comprise Part One of this dissertation. Chapter II will explore the historical, legal, and scholarly contexts in which SIA operates. Chapter III will discuss the practical purposes and general methodologies available for carrying out an SIA, and Chapter IV will consider and analyze various criticisms of SIA and the constraints placed on SIA practitioners.

II. SIA IN CONTEXT

Social impact assessment and SIA-related research take place in a complex economic, political, governmental, and academic context. Three aspects of that overall context will be discussed in this chapter:

(1) the historical and legal background of SIA (including the legal EIS framework); (2) post-facto social impact case studies; (3) scholarly perspectives on SIA.

(Another type of context is psychological in nature--the varying motives of clients, decision makers, and practitioners. That topic will be reserved for the next chapter.)

HISTORICAL AND LEGAL BACKGROUND OF SIA

Social impact assessment can be viewed as the offspring of two intellectual currents of the 1960's--environmentalism and the social indicators movement--which in turn were born of American value conflicts in that period of time.² Environmental legislation provided the impetus for SIA, while social indicators have provided at least some of the tools and conceptual approaches.

Social Indicators and "Quality of Life"

Although the federal government first explored social reporting under President Herbert Hoover, it was the Lyndon Johnson Administration which encouraged legislation for national environmental protection and which popularized the idea of seeking "quality of life" in spheres other than the fiscal alone:

The period of his [Johnson's] presidency was one of increasing discontent in the United States, yet the Gross National Product, the standard social indicator for government policy, was generally growing. There seems to have been a general recognition, extending into the upper levels of government, that economic statistics alone were no longer providing sufficient instruments for governing. (Nader & Beckerman, 1978, p. 11)

In consequence, both the federal government and social scientists throughout the United States grew increasingly interested in supplemental indicators of societal wellbeing. The original thrust of the American social indicators movement involved promulgation of a national "social report" or "social account" (Duncan, 1969a; Bauer, 1966; Bell, 1969; United States Department of Health, Education and Welfare, 1969), perhaps even a single index comprised of the sum of various separate indicators to produce a social "score" analogous to the Gross National Product. This concept retained some impetus during the presidencies of Richard Nixon and Gerald Ford, when the U.S. government compiled and published omnibus collections of diverse social statistics from secondary sources (United States Office of Management and Budget, 1973, 1976). Various international organizations such as the United Nations Educational, Scientific and Cultural Organization (Fanchette, 1974) and the Organisation for Economic Cooperation (Strumpel, 1972) held conferences on the uses of social indicators.

In a similar time frame, there developed in both the American public and in the scholarly community a growing interest in futures research, sparked in part by a growing popular apprehension over the unintended consequences of various technological developments (Wolf, 1977) and in part by the popular success of books such as Toffler's

Future shock (1970), Bell's The coming of post-industrial society (1973), and Meadows, Meadows, Randers, & Behrens' The limits to growth (1974). Social scientists--and particularly sociologists and political scientists--began to apply traditional economic and demographic forecasting methodologies to the emerging sets of social indicators, creating fields such as technological forecasting (Lanford, 1972) and social forecasting (Duncan, 1969b; Henshel, 1982). The marriage of the social indicators/social forecasting movement with environmentalism led to social impact assessment (perhaps a little indirectly, as is the usual case with marriage and subsequent offspring).

Although direct governmental involvement in the social indicators movement began to dwindle in the mid-1970's for various political reasons (De Neufville, 1975), grants from both governmental and foundation sources permitted several national surveys to explore the meaning and determinants of "quality of life" (or, alternatively, "wellbeing") (Andrews & Withey, 1976; Campbell, Converse, & Rodgers, 1976).

However, in very recent years the social indicators literature per se has contained less in the way of national perspective or proposed institutionalized social reporting. Government support for the field has dwindled to virtually zero under the Reagan Administration. In the academic arena, there is still evidence of scholarly interest in the concept of "social accounting" (Juster & Land, 1981), but most scholarly articles in the principal journal of the field, Social Indicators Research, have switched focus from possible national "social reports" to more focused research issues such as the utility of specific indicators

(P. L. Knox, 1980), "quality-of-life" components in particular neighborhoods (Russ-Eft, 1979), approaches to social indicators in foreign countries (Young, Edmonston, & Andes, 1983) or the applicability of empirical indicators to academic theories in specific disciplines (Tropman, 1976).

Environmentalism and NEPA

If the social indicators movement has somewhat retired from public life, SIA's other "parent," environmentalism, remains strongly rooted in public law, if not necessarily in political and governmental favor. The primary environmental legislation for the United States is the National Environmental Policy Act (NEPA) of 1969, which has inspired similar laws or programs in Canada and other industrialized Western nations.

NEPA has two parts, one setting forth a "national environmental policy" and the other establishing the Council on Environmental Quality (CEQ) to carry out various activities related to this policy. By far the most influential part of this policy for SIA--perhaps the major reason for its existence today--is Section 102(2)(C), which directs all Federal agencies to:

Include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on--

- (i) The environmental impact of the proposed action,
- (ii) Any adverse environmental effects which cannot be avoided should the proposal be implemented,

- (iii) Alternatives to the proposed action,
- (iv) The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
- (v) Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. (Public Law 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Public Law 94-52, July 3, 1975, and Public Law 94-83, August 9, 1975)

In these words were created the federal mandate for environmental impact statements (EIS's), which in practice have been most often prepared for proposed physical projects (e.g., highways) or resource development (e.g., coal mining or mineral extraction) on federal lands or with the use of federal funding. The usual EIS procedure involves:

- (1) Preparation of an "environmental assessment," which is a brief analysis to determine the need for a full-fledged EIS. If, under criteria set forth by the Council on Environmental Quality, it is determined that an EIS is not necessary, an explanatory "Finding of No Significant Impact" is published. Otherwise, the EIS process continues.
- (2) Notification of affected agencies, organizations, and publics through publication of a "Notice of Intent" in the Federal Register and through direct contact. This is intended to encourage suggestions from potentially affected parties on what the EIS should cover, as well as to give them the opportunity to put their names on the list of those to whom the draft environmental impact statement will be circulated.

- (3) Preparation of a draft environmental impact statement, which is circulated to the designated parties for review and comment.
- (4) Preparation of the final environmental impact statement, which includes revisions resulting from those reviewers' comments believed appropriate and justified. Additionally, all written comments and responses must be attached.

Federal EIS's under NEPA are intended to be, among other things, "disclosure documents"--disclosing likely impacts to all interested parties--and there is no particular agency which either approves the EIS document on a routine administrative basis or which passes judgment on the project being assessed (although all final EIS's must be "accepted" by the preparing agency itself and then filed with the Environmental Protection Agency). Even if the EIS discloses the likelihood of substantial negative impacts, there is no law or mechanism forbidding the implementation of the project; there is simply the increased political difficulty associated with the action after disclosure of likely negative impacts.³ Thus, even though the EIS is required under NEPA to be a sort of "product" (i.e., a document predicting impacts), its true utility often comes through its "process" role as a source of information for potentially affected parties, including decision makers themselves.

(NOTE: Throughout this dissertation, the term "decision maker" will necessarily be used in a rather vague way. Because the

governmental decision making process--whether at the federal, state, or local level--is usually a complex one, it is rare that a single individual or legislative body has sole authority to say "yes" or "no" to a proposed project. Rather, a number of governmental decision makers usually are involved. These could include representatives of the government agency championing the proposed project, as well as representatives of other agencies. However, the definition of "decision maker" would vary from one situation to another.)

Under NEPA, citizens or affected parties gained the right to file lawsuits challenging the adequacy of EIS documents. In addition to governmental laws and regulations, a substantial body of case law from judicial decisions now governs EIS preparation. It has been through such lawsuits that more information has been required for inclusion in EIS's; hence, impact statements have grown tremendously, sometimes to unmanageable lengths. (Revised federal guidelines now require that EIS's under NEPA have a 350-page limit, but several volumes of appendices still are often attached.)

One consequence of this legal process has been the occasional integration into EIS's of a "social" section, which is sometimes combined with, and sometimes separate from, an "economic" section. "It seems fair to say that without NEPA, SIA would not have emerged at this time, at least in this form," Wolf (1977, p. 9) has opined, adding that some do believe that social impact assessment represents a misapplication and overextension of NEPA's statutory authority. While the original

wording of NEPA (and most state environmental laws modeled on NEPA) was somewhat ambiguous regarding attention to social or economic "environments," a series of court decisions made clear, by the mid- to late 1970's, that social factors must be addressed in EIS's when there is prima facie evidence that social impact from a proposed project may be substantial. (See Francis, 1974; Atherton, 1977; and Soderstrom, 1981 for reviews of early cases, though case law has continued to accumulate since. Liroff, 1980, reviews judicial decisions about EIS methodology in general, whether socioeconomic or physical in substantive content. Black, 1981, presents an excellent concise overview of EIS law at both federal and local government levels.)

Court decisions requiring what, in effect, are social impact assessments have come to be anticipated under certain circumstances, so that social considerations may be automatically included in EIS's when there is any likelihood that a project opponent can file a lawsuit on the grounds that the EIS failed to consider certain obviously significant social impacts. Thus, although the vulnerability of EIS/SIA's to court challenge may put some troublesome constraints on the further development of social impact assessment (as will be discussed later), this vulnerability has also produced at least an occasional market for SIA.

Because NEPA and the EIS framework underlie much of SIA in practice, it may also be of import to those potentially interested in SIA activities to know something of the development of, and changes to, the overall EIS system in the 1970's.

In the very early 1970's, EIS's often were prepared in a hurried manner by staff members of the agencies proposing the project. The preparers were usually not particularly expert in the fields which they were addressing, and their documents were very brief, sketchy, and general in nature. Furthermore, they often read less like "disclosure documents" and more like "justification documents"--i.e., statements written by project advocates rather than by objective analysts.

However, as previously noted, citizen and/or environmentalist group lawsuits challenging the adequacy of EIS's began to fill the court calendars, and agency practices began to change. Consulting companies specializing in environmental planning were often contracted to prepare the EIS's--although many government agencies eventually hired full-time staff for the sole purpose of EIS preparation, contracting only very large EIS's or particular sections to consultants. More and more frequently, EIS's were written in anticipation of legal challenges. This meant they were somewhat defensive in tone and also very lengthy, since the preparers were determined to cover every conceivable subject. As more expert input entered the EIS process, the documents became increasingly unintelligible to the public they were intended to inform, as well as requiring increasing amounts of time and money to prepare.

While case law is important in preparation of NEPA EIS's, the official guidelines are those set forth in the Council of Environmental Quality (CEQ) regulations. The initial CEQ regulations governing NEPA EIS's were produced in 1973.

Emphasis was placed on impacts on the natural environment, but certain social and economic factors which should be investigated were mentioned. The interpretation of references to the "human environmental" in NEPA, by CEQ, stressed those social aspects which could be measured quantitatively. Consequently, the social components of most [early] EISs contained discussions of such impacts as demographic changes, effects on employment opportunities, and the local financial implications of proposed projects. Impacts on such features as community cohesion, social relationships, and culture were considered rarely. "Cultural" features investigated were limited usually to archaeological sites and historical features such as battle grounds. (Clark, Bisset, & Wathern, 1980, p. 192)

Shortly after President Jimmy Carter took office in 1977, he issued Executive Order 11991, which mandated the CEQ to revise its previous regulations to all federal agencies for procedural implementation of NEPA. The executive order required that these revised regulations

...be designed to make the environmental impact statement process more useful to decisionmakers [sic] and the public; and to reduce paperwork and the accumulation of extraneous background data, in order to emphasize the need to focus on real environmental issues and alternatives. They will require impact statements to be concise, clear, and to the point, and supported by evidence that agencies have made the necessary analyses. (Executive Order 11991, reprinted by United States Council on Environmental Quality, 1979, p. 43)

Subsequent regulations developed by the CEQ were first printed in November 1978 and became effective for most agencies on July 30, 1979. These regulations operationalized the presidential directive to be "concise, clear, and to the point" by placing emphasis on a summary section of the EIS, instituting a "plain-English" requirement, and limiting text to 150 pages--or, "for proposals of unusual scope and complexity," 300 pages. (However, appendices are still permitted, so that voluminous EIS's today are hardly a thing of the past.) The regulations

also direct individual federal agencies to set time limits appropriate to their own typical departmental circumstances.

While emphasizing the need for scientific and technical accuracy, the CEQ regulations emphasize even more that the EIS is primarily for decision-making rather than for scholarly purposes, as is made clear in several opening paragraphs of the "Purpose" section:

(b) NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA. Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail.

(c) Ultimately, of course, it is not better documents but better decisions that count. NEPA's purpose is not to generate paperwork--even excellent paperwork--but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment... (United States Council on Environmental Quality, 1979, p. 2)

These paragraphs incorporate several other themes that are given repeated and/or more specific emphasis throughout the regulations. For example, the CEQ regulations contain much more emphasis on citizen or public input than was contained in the original NEPA language, which seemed more oriented to ensuring adequate communication among the various federal agencies themselves. This emphasis on public involvement is both a reflection of, and a stimulus to, a growing trend towards viewing the value of the EIS relatively more in "process" rather than purely in "product" terms.

One of the most significant provisions in the CEQ regulations involves the requirement that a "scoping process" initiate the EIS planning procedures, immediately following publication of the "Notice of Intent." This is the step in which an early determination is made as to which issues will be considered significant and given extensive consideration in the EIS. Issues not considered significant are to be given only passing (if any) mention, and issues thoroughly covered in any related environmental assessments are to be covered merely through reference to that other review. In an attempt to eliminate the guessing game of deciding which topics might be fodder for potential opponents' legal claims that the EIS has omitted some crucial consideration, the regulations explicitly direct agencies to include "those who might not be in accord with the action on environmental grounds" (op. cit, p. 459) to be invited to participate in scoping, along with affected governmental agencies and project proponents.

The regulations do not explicitly require that any one portion of the EIS must be dedicated to analyzing "social" impacts. In fact, the CEQ's definition of "human environment" (a term used in the earlier-quoted section of NEPA giving rise to the EIS process but, interestingly, not otherwise used in the CEQ regulations) explicitly states that "economic or social effects are not intended by themselves to require preparation of an environmental impact statement...[unless] social and natural or physical environmental effects are interrelated..." (op. cit., p. 29).

On the other hand, the regulations quote sections of NEPA which require "the integrated use of the natural and social sciences and the

environmental design arts in planning and in decisionmaking which may have an impact on man's environment" and which also require "that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations" (op. cit., p. 25-26, emphasis added). In NEPA, it is a little unclear whether these passages are specifically intended to apply to the EIS procedure, but the CEQ regulations make the connection explicit. Furthermore, the regulations define "impacts" or "effects" as including those which are "ecological...aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative" (op. cit., p. 28).

On balance, the 1979 CEQ regulations appear to encourage but not mandate inclusion of social considerations in EIS's. If social concerns emerge as important during scoping, the regulations suggest they should be addressed in the EIS. The CEQ may act to clarify the situation in the future, since that body is continuing to explore ways to improve the EIS process (Ozawa, 1982).

However, federal rules governing EIS's under NEPA do not end with the CEQ regulations, because each major federal agency prepares its own, more detailed regulations to ensure a uniform (within that agency) approach to EIS preparation within the CEQ parameters. These departmental regulations, which tend to be procedural in emphasis, are usually supplemented with manuals and guidelines which are more content-oriented and which have sometimes been prepared by academicians under contract to the agencies. Such guidelines are more transient in nature (often being

updated or replaced every few years, and sometimes being written only for certain geographical regions rather than for the agency's entire national operations), and a review of these would be far too involved and lengthy a matter for this dissertation. However, it might briefly be mentioned that certain agencies--e.g., the U.S. Forest Service, the Federal Highway Administration, and the Water Resources Council (which coordinates planning methods for several different agencies involved in water resource development)--have consistently been more likely to mandate attention to various types of social concerns in EIS preparation.

Environmental Impact Procedures in Other Countries

In the wake of NEPA, the concept of governmentally-required environmental impact assessment has become a global one, practiced throughout the industrialized world and even in such non-Western nations as Saudi Arabia (West, 1981) and the People's Republic of China (Journal of Environmental Management, 1982). However, most foreign countries approach environmental impact assessment as an administrative rather than a legal requirement, resulting in less formalized EIS's (if any): "Very few [countries] actually followed the advice of those who urged them to replicate the main features of NEPA itself" (Wandesforde-Smith, 1980, p. 53).

Developing countries are also interested in the concept of impact assessment, although there is great controversy and debate among them about how to do it without seriously hampering the economic development which is still regarded in most parts of the Third World as the primary

consideration. In 1977, the United Nations Environment Programme initiated development of environmental assessment guidelines for developing countries. Several international workshops in various regions of the world have since been held on the subsequent draft version, at which there has been increasing discussion about the need to incorporate social and economic, as well as purely physical, impacts in the assessment process:

There has been general agreement at all the regional workshops conducted so far on the importance of incorporating in the assessment socio-economic aspects as well as those of the physical environment. It is interesting that during the lifetime of the project for producing these guidelines the emphasis has changed. In the early days of 1978 there were doubts about the wisdom of their inclusion. Nowadays, however, the emphasis is very much on their inclusion, even though realism may suggest that in many cases countries will find it difficult to incorporate socio-economic effects in the short term. (Waller, 1982, p. 49)

To the extent that European or other foreign countries have initiated environmental review mechanisms, most are closer to the Canadian Environmental Assessment and Review Process (EARP) than to NEPA. Public concern with the environment was possibly even more acute in Canada than in the United States during the late 1960's and early 1970's, due to plans for mineral and energy resource development in the vast northern Canadian wilderness. EARP--formally established in April 1974--is not a law, but a program developed by the Cabinet of the national government. Like NEPA, it applies only to major actions under contemplation by the federal government. The Canadian equivalent of the EIS is designed by specially-appointed Panels:

The EARP operates outside direct political control and is under the direction of a senior administrator from Environment and Fisheries Canada, the central government department with responsibility for the environment... Environmental Assessment Panels are appointed for the appraisal of major development proposals. A separate Panel is appointed for each proposal and different members are selected for each Panel. Individual members of a Panel are selected on the basis of their particular expertise... The function of a Panel is to define the scope of an appraisal, to review the results of an assessment, and to make a recommendation to the appropriate Minister on whether the project under consideration should be implemented. (Clark, Bisset, & Wathern, 1980, p. 366)

Among the many ways that EARP differs from NEPA, there is less initial public input and little equivalent to the CEQ guidelines which bring some degree of standardization to the United States EIS process. In Canada, the lack of a freedom-of-information act has resulted in a greater tendency toward secrecy. Even social consultants are often constrained from visiting affected communities in the early stages of the assessment in order to preserve "confidentiality" (DiSanto, Frideres, & Goldberg, 1979). Public disenchantment with EARP has also developed because of the variable practices and scopes (including greatly different rulings on the need for socio-economic impact analyses) for each project which have come with the wide discretion given Panels in the design of environmental impact assessments (Rees, 1980).

However, both environmental and social impact assessment have continued to make great strides in Canada due to local legislation, corporate recognition of private-sector benefits which can accrue through such analysis, and the development of a growing body of scholarly and professional literature (Tester & Mykes, 1981). Although assessments

conducted under EARP have been largely confined to the physical environment, private-sector interest in SIA in Canada has far exceeded that shown in the United States, where few companies have initiated such processes except in response to governmental laws and regulations:

The [Canadian] interest in SIA in the private sector is growing rapidly. Interestingly enough, in the Calgary based oil industry, it appears to be Petro Canada which is leading the way in exploring the relevance of SIA to corporate planning. The Alberta Oil Sands Environmental Research Program (AOSERP) has included in its mandate a concern for "human systems" and social impacts. (Tester, 1980, p. 9)

While Canadian contributions to SIA have been (and appear to be increasingly) important, this dissertation will focus primarily on SIA through the EIS procedures which exist in the United States. Nevertheless, the Canadian influence is pervasive and will be referenced from time to time as may be appropriate.

Other U.S. Legislative Mandates for EIS Preparation

While it is certainly the most important from the historical viewpoint, NEPA is by no means the only legislation which today mandates preparation of EIS's. There are several other federal laws dealing with environmental assessment and planning, and there are numerous "little NEPA's" which have been enacted at the state or local governmental levels.

Many of the other federal laws mandating environmental reviews (e.g., the National Historic Preservation Act of 1966 or the Endangered Species Act of 1973) need not be discussed here, because the 1979

CEQ regulations require that these reviews be integrated with the NEPA EIS process. However, although it too is now often integrated with NEPA activities, particular mention should perhaps be made of the River and Harbor and Flood Control Act of 1970, which mandates extensive analysis of the physical, economic, and social effects of proposed water resource development projects before their implementation.

This law, and the original "Principles and Standards" adopted by the Water Resources Council (1973), clearly specify the need to examine social as well as other types of "environmental" consequences. In line with the national "social account" concept popular in the late 1960's and early 1970's, the Water Resources Council specified that one section of each project review was to consist of a "Social Well-Being Account," in addition to "accounts" dealing with national economic development, regional development, and environmental quality. The Social-Well Being Account consisted of five classes of effects: (1) effects on real income; (2) effects on security of life, health, and safety; (3) educational, cultural, and recreational opportunities; (4) effects on emergency preparedness; and (5) other effects.

The Water Resources Council stated that the catch-all "other effects" category was added in explicit recognition of the shifting and project-specific nature of social impacts. The general nature of this category was a stimulus to government agencies to develop specific methodological approaches, and many departments contracted with outside parties for this purpose. Among the more interested agencies were various branches of the Department of the Interior (Fitzsimmons, Stuart,

& Wolff, 1977; Technical Committee of the Water Resources Research Centers of the Thirteen Western States, 1974) and the Environmental Protection Agency (Bascom, Cooper, Howell, Makrides, & Rabe, 1975; Fitzpatrick, Willson, Erickson, Fax, & Wood, 1977; Honey & Hogg, 1978).

However, the agency most affected by the Water Resource Council's directives has been the U.S. Army Corps of Engineers, which, through its Institute for Water Resources in Virginia, pioneered much of the applied social impact assessment methodology and planning approaches which were developed in the United States during the 1970's. The Institute for Water Resources contracted with scholars and/or professional consultants for development of conceptual and methodological SIA frameworks (c.f., Baur, 1973; Vlachos, Buckley, Filstead, Jacobs, Maruyama, Peterson, & Willeke, 1975; Guseman & Dietrich, 1978; Love, 1978; Canter, 1979), as well as handbooks on social information data sources (Flynn & Schmidt, 1977), forecasting techniques (Mitchell, Dodge, Kruzic, Miller, Schwarts, & Suta, 1977), public participation (Ragan, 1975), and even proper approaches for contracting for social impact assessment (Willeke & Willeke, 1976).

Although some of the resulting products of these contracts urged incorporation of qualitative social research and emphasis on perceptions, the Corps of Engineers (with a tradition strong both on the "engineering mentality" and on economic cost-benefit accounting) remained uncomfortable with such "soft" and subjective approaches. It has been noted that most of the five classes in the 1973 Social Well-Being Account already suggested measurement through objective rather

than subjective indicators (Andrews, Hardin, & Madsen, 1981). However, the "hard" quantitative orientation of most Army Corps professionals indisputably has been a factor in the Corps' reluctance to use qualitative or even quantified perceptual research techniques. Dr. Jerry Delli Priscoli, social scientist assigned to the Institute for Water Resources, in a recent overview of the IWR's contributions to social impact assessment, stressed both the Corps' eagerness to quantify all social phenomena (e.g., converting psychological trauma to dollar value) and its distrust of perceptual approaches such as survey research:

Questionnaires are the most frequently over-used social science technique. Questionnaire data can provide a comparative, static picture. Frequently, data from questionnaires and other sources are of nominal or ordinal level. This may be uncomfortable to the engineer, who often deals with interval level statistics such as regression analysis [sic]. The social scientist brings to the engineer less familiar statistics, such as contingency table inferences more appropriate to social values data. (Delli Priscoli, 1982, p. 28)

Not surprisingly, many in the Army Corps were unhappy with the 1973 Principles and Standards, feeling they unnecessarily extended NEPA requirements and thereby simply provided environmental extremists with more grounds for legal challenges. The Principles and Standards were amended in 1978 and the Social Well-Being account redefined, but the catch-all "other" effects was retained at that time. However, in 1980 there was a more far-reaching overhaul of the Principles and Standards, and the Social Well-Being account was supplanted by the "Other Social Effects" (OSE) account, which was defined as consisting of these classes of effects: displacement (per se, not effects of displacement); long-term productivity (of land and resources); energy requirements and

energy conservation; life, health, and safety (with no contextual language suggesting focus on mental health); and "urban and community impacts." The latter class is further broken down into income distribution; employment distribution; population distribution and composition; fiscal condition of state and local governments; and--the only remaining general social term in the OSE account--"the quality of community life." The 1980 revisions stipulate that all effects must be reported on a clear-cut positive/negative or beneficial/adverse basis. Furthermore, the new standards state:

Effects that cannot be satisfactorily quantified or described with available methods, data, and information or that will not have a material bearing on the decisionmaking process may be excluded from the OSE account. (United States Water Resources Council, 1980, p. 64397)

These changes hardly terminate the valuable role which the Army Corps of Engineers and other federal water development agencies have played in American SIA development. However, they do indicate that this role will increasingly deal with the "hard" aspects of SIA and that psychological input will be given consideration only to the extent that it can be expressed in the currency of economics, demographics, human lives saved or lost, etc.

The other type or level of environmental legislation mandating review of environmental effects is the "little NEPA"--state, county, or municipality-level ordinances requiring EIS's for projects or activities not covered by the federal-level NEPA. Technically, the term "little NEPA" would apply only to laws following the general NEPA format;

however, a number of states have administrative regulations requiring EIS's and some states have NEPA-like legislation which apply only to selected types of projects or programs. The number of states which have such laws has been counted differently, probably due to the range of State legal actions which have been taken (Yost, 1973) and ensuing possible disagreement over what does or does not fall in the "little NEPA" category. A few years after the passage of the National Environmental Policy Act, Burchell & Listokin (1975) counted 31 states or territories with some sort of EIS requirement. However, New Mexico repealed its law after objections by private corporations and some state agencies who "argued that the provisions were ill conceived...an expensive waste of resources and that results were meaningless" (Clark, Bisset, & Wathern, 1980, p. 286). By Burchell & Listokin's count, this would have left 30, but Black (1981) counts only 26:

[In addition to the Commonwealth of Puerto Rico, t]he fourteen states with "little NEPAs" still in force are California, Connecticut, Hawaii, Indiana, Maryland, Massachusetts, Minnesota, Montana, New York, North Carolina, South Dakota, Virginia, Washington, and Wisconsin. Arizona, Michigan, Nebraska, New Jersey, Texas, and Utah are the states with administrative NEPAs; Delaware, Georgia, Mississippi, Nevada, and North Dakota have NEPA-like legislation that applies to certain specific types of actions, which varies with the state. (Black, 1981, pp 23-24)

In Canada, several provinces (e.g., Ontario and Alberta) have passed legislative frameworks for EIS's, although most provinces followed the national EARP example by instituting administrative procedures (Clark, Bisset, & Wather, 1980). Both in Canada and the United States, some populous city and/or county governments have also adopted

EIS-type requirements. The City Council of the City and County of Honolulu is presently considering an ordinance to institute a "social impact management system," which would be the first local-level inclusion of the "management" concept in this country. Including such municipal actions, the number of "little NEPA's" operative in North America today is very difficult to state precisely. However, it is very possible that local-level EIS's, rather than federal ones, constitute the bulk of environmental assessment documents produced in North America today.

The content and requirements of these "little NEPA's," of course, vary widely from place to place. Some of them make more specific reference to social and/or economic concerns than was the case for the original NEPA (c.f., Ulasewicz, 1982, for the example of New York State's environmental assessment law). Some of the local laws also designate some particular agency or official as holding the responsibility for accepting or not accepting an EIS (i.e., judging its adequacy in the sense of completeness), which is not the situation under NEPA (Black, 1981). There is also a tendency for these local laws, or their implementing rules and regulations, to emphasize the public participation and decision-making orientation more explicitly than the original NEPA.

For example, in the state of Hawaii, at least three different laws or ordinances require EIS's. In 1974, the State Legislature adopted what is now Chapter 343 of the Hawaii Revised Statutes to require EIS's (and also Chapter 344 to establish a State Environmental Policy). The

same year, the County of Hawaii passed its own environmental ordinance requiring EIS's for all large developments such as resorts or industrial projects. And the following year, the Legislature directed all of the state's counties to establish a special Shoreline Management Area (SMA) consisting of coastal areas at least 100 yards inland from the shoreline, and to require a Chapter 343 EIS for major developments in that area.

In Chapter 343, the definition of "environmental impact statement" specifies inclusion of social impact information and secondary consequences of direct economic impacts:

"Environmental impact statement" or "statement" means an informational document...which discloses the environmental effects of a proposed action, effects of a proposed action on the economic and social welfare of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects. (Sec. 343-2(9), as amended, Hawaii Revised Statutes, 1980 Supplement)

This law also established an "Environmental Quality Commission" to produce specific regulations for EIS's and to pass judgment on the adequacy of EIS's according to these regulations. This is a significant difference from NEPA, where the federal agency which prepares the EIS is the only "accepting" body, unless the EIS is challenged in court. The regulations developed by Hawaii's Environmental Quality Commission require that the proposed project be described in terms of its "technical, economic, social, and environmental characteristics." There is also a strong mandate to move down the causal chain of project consequences to explore indirect or "secondary" effects:

Such secondary effects may be equally important as, or more important than, primary effects, and shall be thoroughly discussed to fully describe the probable impact of the proposed action on the environment. (Hawaii State Environmental Quality Commission, 1975, p. 15)

Another important difference between Hawaii's "little NEPA" and the original, national one is that the Hawaii law requires EIS's for certain private activities, not just governmental ones. Furthermore, the responsibility (including financial responsibility) for preparing such private-sector EIS's lies with the project proponent. As a consequence, a number of Hawaii planning firms do a healthy business in EIS preparation, and one or two companies do nothing else. Private proposals requiring EIS's, in addition to projects falling within the Shoreline Management Area, are those involving: (1) any Waikiki activity; (2) any activity in the State Conservation district (which comprises 60 percent of the state's total land area); (3) any historic site; and (4) any privately-initiated amendment to state or county general plans.

To increase the probability of public involvement in the EIS process, Chapter 343 requires the Environmental Quality Commission to publish a bulletin reporting on publications of preliminary environmental assessments and containing preparation notices for complete EIS's.

The EIS/SIA Political and Legal Framework in the 1980's

In the United States, the political atmosphere of the 1980's is extremely different from that of the late 1960's, when NEPA was

conceived, or the early 1970's, when local governments were first adapting the EIS system to local issues. Interestingly, though, there has been little consideration of these changes in that portion of the environmental planning literature oriented toward scholars and practitioners of SIA.

However, those articles which do raise the point consistently sound a note of concern over the future, not just of SIA, but of the entire EIS process. Kash (1982) states that federal funding for all impact assessments is declining, due in part to the active opposition of the Reagan Administration toward virtually all forms of regulatory impediments to economic development. Kash believes both local and national governments have become disenchanted with EIS procedures for several reasons. First, he notes that project opponents have exploited those passages in EIS's which admit uncertainty over particular impacts (a situation very common in social portions of the EIS) to force postponement of the project until such uncertainty can be cleared up. Second, and even more importantly, he believes that much impact assessment research is based on a misconception about the federal decision-making system--i.e., that the document is written for a single decision maker or group of decision makers who will pass judgment on the project:

It is my tentative conclusion, then, that the major problem with impact assessment has been a view of the policy system which is simply inaccurate. The assumption is that there is some place, or some individual, or some set of arrangements, which allows comprehensive public policy judgments to be made made--in sume, that there are discrete users for comprehensive assessments. In practice, impact assessments tend to have been used in fragmented pieces and are perceived as having contributed to a regulatory complex that has become an impediment to development. (Kash, 1982, p. 14)

A similar but slightly different viewpoint is that local government reviewers of federal NEPA EIS's have abused the system by nitpicking methodological criticisms of quite adequate EIS's, partly out of over-zealousness and partly out of political motives:

The environmental assessment process is under attack from some quarters, and justifiably so. The integrity of the process has been compromised by political manipulation, trivial criticisms of methodology, and a loss of perspective on what constitutes adequacy. We practitioners in this field have an obligation to reverse these trends and restore the credibility that has been lost. (Lewis, 1982, p. 74)

Other observers recognize problems with the system but are considerably more optimistic about solving them. Canter (1982) believes that many EIS's produced before the 1979 CEQ regulations gave environmental impact assessment a poor reputation because they were scientifically inadequate. He feels this problem is now being improved because of the new CEQ stress on scientific approaches and techniques, and he further believes that increasing public participation in the process will aid the scientific quality of EIS's.

Delli Priscoli is particularly cheerful about the Army Corps of Engineers' abilities to improve the general political atmosphere regarding social impact assessment, which he admits has not been good:

Frequently, social impact work, which has flourished under the National Environmental Policy Act, inherited an image of negative assessment, project delay, or bearer of bad news. Those days are passing. Social science disciplines help managers to understand their external environments, to cope with internal resource constraints, and to manage uncertainty. (Delli Priscoli, 1982, p. 20)

These concerns about the efficacy of EIS and SIA, while important, are also the subject of much internal debate among practitioners and scholars. As such, they will be aired more fully in Chapters III and IV of this dissertation. Their current significance for the future of legally-mandated assessment is uncertain. Although the Reagan Administration has reduced funding for impact assessment, the Administration has not yet mounted any legislative attack (as through introduction of a bill to eliminate or vitiate NEPA) or internal administrative attack (as through a new executive order requiring the CEQ to draw up less stringent regulations for implementing NEPA) on the basic national structure for impact assessment.

However, 1983 may have witnessed a very important judicial limitation on socioeconomic components of EIS's, at least at the national level.

On April 19, 1983, the United States Supreme Court issued its ruling in the case of Metropolitan Edison Company et. al. v. People Against Nuclear Energy (or "PANE"). This case grew directly out of the celebrated Three Mile Island nuclear power plant shutdown. When Metropolitan Edison, the plant owner, petitioned the Nuclear Regulatory Commission (NRC) to re-open the plant after repairs were made, the NRC had to make certain decisions about what criteria would be used in its deliberations. PANE contended that the perceived risk of further nuclear accidents would cause "severe psychological distress" to residents of the area⁴ and that NEPA required the NRC to address this impact in its deliberations. The NRC, however, decided not to consider

psychological stress or community wellbeing in its deliberations. PANE went to court on the issue, with Metropolitan intervening on the side of the NRC. The U.S. Court of Appeals agreed with PANE that NEPA required consideration of "potential psychological health effects," whereupon Metropolitan and the NRC appealed to the Supreme Court.

The Supreme Court unanimously reversed the lower court ruling and said that NEPA does not require consideration of psychological impact from perceived nuclear risk. The decision was based in part on the distinction between psychological effects from an action itself and effects from perceived risk of some further occurrence. Because of its obvious implications for the potential role of psychology in SIA, this decision will be further addressed in the Chapter V discussion on limits and constraints to psychological input to SIA.

However, some of the principles which the Court used in its decision also have implications for the broader activity of social impact assessment in general. Specifically, the Court took a "strict constructionist" view of NEPA in deciding that the law was concerned only with the physical environment and that secondary effects of a nonphysical nature fall within NEPA's domain only if there is an immediate link with physical impacts. In delivering the unanimous opinion, Justice Rehnquist stated in his summary:

Section 102(C) of NEPA...does not require the agency to assess every impact or effect of its proposed action, but only the impact or effect on the environment. The statute's context shows that Congress was talking about the physical environment. Although NEPA states its goals in sweeping terms of human health and welfare, these goals are ends that

Congress has chosen to pursue by means of protecting the physical environment.

...The terms "environmental effects" and "environmental impact" in [the EIS sections of NEPA] should be read to include a requirement of a reasonably close causal relationship between a change in the physical environment and the effect at issue.

...Regardless of the gravity of the harm alleged by PANE, if a harm does not have a sufficiently close connection to the physical environment, NEPA does not apply. (United States Law Week, 1983, pp. 4371-4372, original emphasis)

A major question for the future of social impact assessment under NEPA is what constitutes a "reasonably close causal relationship" or a "sufficiently close connection" to the physical impacts or characteristics. This is determined in part by case law, and the foregoing decision stakes out a boundary that may be more restrictive than many SIA scholars or practitioners would like. The decision may also encourage agencies to stay fairly far within that boundary, since judicial action at the highest level seems to be turning toward a restrictive rather than an increasingly liberal interpretation of NEPA's intent.

The Supreme Court decision is probably a blow to SIA in the United States, but it will not be a death blow unless it leads to tighter CEQ regulations and/or legislative actions of the same nature. (It could, of course, conceivably have the effect of encouraging Congressional action specifically to include socioeconomic impacts in NEPA, although the Presidential response to any such bill would probably be a veto.)

The ongoing practice of SIA is assured to a limited extent by the existing CEQ and agency regulations and to a much greater extent by

those "little NEPA's" which specify consideration of socioeconomic impacts at the local level. Particularly at the local level, where elected officials and other decision makers are most sensitive to public opinion, the political process alone will ensure continued attention to social concerns if social concerns represent significant issues for any given project.

There are two other factors which provide continued inertia to SIA. One is the increasing vitality of SIA in Canada. Despite some public frustration over the government's failure to produce clear-cut guidelines for EIS preparation under EARP (Rees, 1980) and despite the fact that social impact assessment has even less of a national legal mandate in the Canadian federal law than in NEPA, SIA has drawn more support there from private industry and local government planners (Tester, 1980), who have found the process ultimately beneficial to their own respective objectives (c.f., Kasinska, 1981; Vincent, 1981; Friedlander & Fraser, 1981). The second factor is the emergence of a scholarly literature on SIA. The academic community has developed an interest in SIA qua SIA. This interest would no doubt wither if the widespread practice (or promise of practice) evaporates, but until and unless that happens, the academic literature will help to keep the topic intellectually alive despite partial reverses in the political realm.

Because this dissertation itself is primarily in the academic tradition, attention will be paid in the remainder of the work to scholarly theories and concepts which do not always fit in with the real-life practice of SIA. However, there will also be an attempt to keep the

practitioner's concerns in mind. An example is provided in the next section, which is a brief look at social impact case study literature, to which both planners and academicians have contributed.

CASE STUDIES: THE EVOLUTION OF SOCIAL IMPACT ANALYSES

Reverting to the earlier-used metaphor of the family, the "older brother" to SIA, born of the same parents (social indicators and environmental impact assessment), is the growing public attention to, and social science literature on, social impact case studies--that is, after-the-fact reports on the actual social impacts of new projects and programs. Evidence that certain types of physical and economic developments produce unintended and often undesirable social side effects has naturally both fostered thought about the prediction and management of such impacts, and has also nurtured the fledgling predictive SIA activity by providing empirical precedents.

While some commentators include case studies of past social impacts under the "social impact assessment" rubric, in this dissertation "SIA" will stand only for social impact assessment (involving forecasts of future impacts), while the term "social impact analysis" will be reserved for case studies of past (or ongoing current) impacts.

In the past decade, reports on specific or general social impacts may be found for a wide variety of change agents--for example, creation of new towns (Kelly, 1975; Klein, 1978), rural development and displacement (Napier & Wright, 1974; Napier & Moody, 1977), foreign investment

in American real estate (Gaffney, 1977), natural disasters and social crises (Quarantelli & Dynes, 1977), and urban design factors such as open space (James & Brogan, 1974) or high-rise development (San Francisco Planning and Urban Renewal Association, 1975).

However, substantial bodies of literature and, to a certain extent, research traditions have primarily evolved in four areas: tourism, highway construction, water resource management, and energy development. The latter three have been the topic of much government-funded activity, while the first has been more of a concern for academically-minded social scientists.

Tourism

One of the larger bodies of social impact case study literatures has grown out of the study of tourism development and its effects. This was the subject of great number of critical analyses and articles in the past decade, primarily by economists (e.g., Bryden, 1973; Diamond, 1977), anthropologists (Smith, 1977), and sociologists (Cohen, 1972, 1979; Greenblat & Gagnon, 1983).

Although many of the case studies refer to or assume major psychological impacts on residents from the "invasion" of their communities by hordes of tourists or from the commercialization of local culture, only a few articles report attempts to measure either stress (Guntern, 1978), resident perceptions of social impact (Pizam, 1978; English Tourist Board, 1978), subjective wellbeing (England, Gibbons, & Johnson, 1980),

or even resident attitudes toward tourism and tourists (British Tourist Authority, 1975; Thomason, Crompton, & Kamp, 1979). (For a theoretical analysis of tourist-resident interaction in a social psychological mode, see Farrell, 1980.) Nevertheless, tourism has frequently been condemned for alleged degrading effects on resident and tourist alike (Turner & Ash, 1975; Bugnicourt, 1977a, 1977b). And international development organizations such as the World Bank or the United Nations Educational, Scientific, and Cultural Organization (UNESCO) have sponsored a number of conferences and literature reviews to examine the evidence for the assertion that tourism's negative social consequences may outweigh the (purported) positive economic benefits (UNESCO, 1976; United Nations Economic Commission for Europe, 1976; de Kadt, 1979; Noronha, 1977/1979). By 1977, one bibliography on the effects of international tourism (Dilsaver, 1977) contained some 400 references, and the list has grown steadily since.

Despite the abundance of social impact case study literature on tourism, this topic area has not affected the field of predictive SIA to the same extent as several other subjects to be discussed shortly. That is, the study of past tourism effects has generated little concerted effort to produce a methodology for predicting future impacts, nor has the literature resulted in a consistent picture of tourism consequences in various times and places.

There are several reasons why this might be. First, the tourism case study literature sprawls across many disciplines and many continents, and the wide variety of real or perceived impacts does not permit

any simple consensus about which specific types of impacts) are the most important for consideration in an SIA. Second, and perhaps more importantly, relatively few tourism projects have been developed in North America under conditions requiring preparation of an EIS. (Exceptions would be ski resorts on land administered by the National Forest Service, or land use changes for new resorts in states such as Hawaii, where local laws require preparation of an EIS.) In other words, while the literature suggests that tourism's social impacts may be substantial, the practical market for developing a predictive methodology for tourism SIA's is still limited.

Highway Construction

The United States government has sponsored and published much of the case study research--and many literature reviews, as well--regarding social impacts of transportation projects. The national freeway construction program of the 1950's and 1960's had profound social and economic effects on many communities, which were either shriveled by bypasses or swollen by the new corridors, and freeway construction in cities often seriously interfered with residential activities and social interaction in the neighborhoods which were bisected by the new roads. Transportation planners began experimenting with social indicators as tools to help prevent such problems in the process of road alignment planning. Numerous case studies reporting on the efficacy of such tools and observed later impacts began appearing in trade and professional journals such as the Highway Research Record (c.f., McLean & Adkins,

1971) and Traffic Quarterly (c.f., Stein, 1975). Using both consultants and in-house staff, federal highway agencies have published a number of literature reviews since the mid-1960's (Horwood, Zellner & Ludwig, 1965; Llewellyn et. al., 1973; U.S. Department of Transportation, 1976). Very often, such government publications do not have wide circulation in the academic community or even among state and metropolitan decision makers. However, several of the federal consultants or other researchers have also published for audiences of academicians or local planning consultants (c.f., Llewellyn, 1974; Schott, 1977; Finsterbusch, 1978, 1980).

Such literature has had two important benefits--indeed, necessary preconditions--for predictive assessment of social impacts from future highway construction. First, it has generated a reasonable degree of consensus as to the major impact categories of concern: population and economic impacts; immediate physical displacement from right-of-way acquisition; indirect displacement due to disruptive "proximity effects," such as noise, which may eventually drive away nearby residents or businesses; less dramatic proximity effects, such as annoyances during the construction phase, which affect quality of life without resulting in relocations; accessibility issues--improvements regarding access to distant places vs. obstructions in immediate communities; possible segmentation of geographical neighborhoods; induced land use changes; aesthetic impacts; and consequences for special classes of persons whose transportation needs differ from those of the general population (such as the handicapped, the elderly, children, the poor or others

without access to a car). Perhaps only in the transportation area is there such relative consensus on "important" social impact categories.

Second, this narrowing down of potential concerns has allowed initial development of (more or less) standardized impact assessment methodologies. Again, federal consultants and agencies have produced most of the literature (Marshall Kaplan, Gans and Kahn, 1972; Llewellyn, Goodman & Hare, 1976; Planning Environment International, n.d., ca. 1976). Although much of this work consists of somewhat dubious attempts to produce composite indices of "community cohesion" or "pedestrian dependency," at the very least it provides a few tools and a fair amount of inspiration for those who face the task of making forecasts.

From a psychologist's viewpoint, the transportation impact case study literature may appear to contain relatively little about psychological impacts. But compared to other topic areas, transportation case studies involve a veritable cornucopia of information about psychological consequences. Again, this must be taken as a relative statement, since brief literature reviews on the subject cover only a small and scattered group of studies, and they often report conflicting conclusions from these studies (see Drucker, Charles, & Reeves, 1974; Shields, 1975, U.S. Department of Transportation, 1976; Finsterbusch, 1980). The contradictory content may be due to the fact that much of the research has been carried out by government agencies which are alleged by some (e.g., Llewellyn, 1974) to have a bias against finding serious problems, while academicians in their studies often seem disposed to reveal that dramatic traumas have been inflicted. Thus, the case study literature

contains much contradictory "evidence" about psychological impacts of noise, proximity to highways or rail systems, or severance of neighborhoods by new transportation systems.

However, the literature reviews referenced above do suggest a few generally consistent findings in regard to psychological effects of displacement and relocation. First, the greatest shocks often come prior to relocation, when the possibility or certainty of a forced move is first encountered. Second, surveys of relocatees have generally found that people are more satisfied with their new homes than with their old ones (since government assistance often permits acquisition of better lodging) but are less satisfied with their new neighborhoods than with the old. Third, the poor and/or the elderly have greater adjustment problems than do others--an important point, since the poor in particular are the most likely types of persons to be dislocated due to a new highway routing.

Water-Related Development

Another major area of government interest in social impact case studies and consequent SIA techniques has involved water--either wastewater treatment (Bascom, Cooper, Howell, Makrides, & Rabe, 1975), development of new water resources (Hitchcock, 1977), or engineering management of rivers, streams, and dams (Shields, 1974; Motz, 1977).

Because the types of projects considered here are more diverse, a greater range of impact categories has been considered in consultant

and scholarly analyses. Consequently, it is not possible briefly to summarize the usual findings or even the usual types of variables which have been explored. However, displacement (Druckett, Charles, & Reeves, 1974) and population growth (Fitzpatrick, Willson, Erickson, Fax, & Wood, 1977) are often prime concerns. In cases where dams or other redirection of large bodies of water may be required, the social impacts may be of the most sweeping nature: the physical obliteration of entire small communities and their attempted relocation elsewhere. Finsterbusch (1980) attempted to survey the available case study literature on community relocation, but his research turned up only four documented cases. Nevertheless, his tentative conclusions have some clear relevance to community and social psychology:

...two features of the relocation program emerge as critically important in these cases. First, the quality of the community leadership affects both the economic and social outcomes of relocation. Good leaders generate economic resources and effect savings by anticipatory actions. They also facilitate community cohesion and morale. The second important feature of the relocation process is its schedule. Long delays cause frustration, especially when the relocated community has to wait a long time for roads and an infrastructure. (Finsterbusch, 1980, p. 136)

In addition to NEPA requirements, various federal agencies involved in water resources development must meet the planning criteria of the U.S. Water Resources Council, which requires assessment of likely social and economic outcomes in a process outside the EIS format. As previously noted, this double socio-economic assessment obligation has produced a spate of consultant contracts and subsequent government publications on SIA methods, information sources, and general theory. A

great many of these have been generated by the U.S. Army Corps of Engineers and/or its Institute for Water Resources. In addition to some of the earlier-noted methodological approaches for estimating future impacts (e.g., Vlachos et. al., 1975; Flynn & Schmidt, 1977; Guseman & Dietrich, 1978), there have also been several case studies of past project impacts, including one on community relocation (Adler & Jansen, 1978) and an overview of 38 other post-facto studies (Hitchcock, 1977).

Energy and "Boomtowns"

Government-sponsored social impact research and associated SIA literature possibly equals or exceeds in volume the literature which has been produced by academicians. Although many government consultants have been university professors, the information flow between academia and government appears generally to have been one-way; academic research is cited in the government literature far more frequently than is government-contract literature cited in academic journals or books on SIA.

However, the reverse may be true in regard to the last major subject mention listed earlier--i.e., energy development. Most U.S. government studies or government-sponsored EIS's for energy development have tended to stress regional and community economic benefits, while academicians (and, to an extent, local governments) have produced the majority of reports focusing on unintended and generally undesirable social side effects.

This is particularly true in regard to small communities where there is a sudden population explosion during the construction and/or operational phases of either resource extraction (e.g., coal mining) or energy conversion (e.g., hydroelectric energy production) facilities. Literature reviews by Little (1977), Albrecht (1978), Cortese & Jones (1979), Murdock & Leistritz (1979), and Finsterbusch (1980) all cite an abundance of case studies indicating that western energy-development "boomtowns" in particular have often experienced severe fiscal strains at the local level; housing shortages; unexpected demands on social services; conflicts between newcomers and oldtimers; shifts in social organization and power; and increases in crime, mental illness, and other indicators of social or individual pathology. Some similar consequences have been reported for development of nuclear power plants in small eastern communities (Van Zele, 1978; Cumberland, 1978) and for other rural "boomtown" situations in Latin America (Geisler, Green, Usner, & West, 1982), Europe (Summers & Selvik, 1979, 1982), and New Zealand (Fookes, 1980, 1981).

In the late 1970's and early 1980's, the U.S. federal government significantly increased its attention to these matters through steps such as commissioning major analyses of the problem (Denver Research Institute and Resource Planning Associates, 1979); hiring consultants to recommend social impact management systems (Olsen, Curry, Greene, Melber, & Merwin, 1978; U.S. Energy Research and Development Administration 1978; Kent, Greiwe, Freeman, & Ryan, 1979) and conflict mediation programs (Moore, 1981); and instituting collaborative efforts with

affected state governments to analyze and predict social impacts (Mountain West Research, 1981). The latter program involves a six-state "Social Effects" research project sponsored by the Bureau of Land Management (BLM) to (1) determine the specific types of social effects which must be addressed questions that must be answered to allow BLM to assess significant social effects; (3) design and conduct research to answer those questions; and, (4) as the final product of the multi-year project, develop a guide for social assessment and a "typology of communities" for use by BLM staff (Branch, 1981).

Futhermore, in the mid-1970's the U.S. Congress funded the Coastal Energy Impact Program (CEIP), which provides planning and research grants to states bordering an ocean or the Great Lakes. The genesis of the CEIP lay in the desire to provide impact aid to communities affected by drilling on the outer continental shelf, which has impacted coastal communities fully as dramatically as have energy projects impacted landlocked areas (Kruse, Hitchins, & Baring-Gould, 1979). The "aid," however, comes not in services but in funds for planning studies. Although the major focus of the CEIP is on physical protection of these aquatic resources, the legislation also encourages analysis of social and economic impacts. This has resulted in a large number of local studies in the past few years, and some of these have dealt with social psychological issues such as community perceptions (see Matteson and Rae Associates, 1981, for a Hawaii example). CEIP appropriations must be renewed by Congress on an annual basis, and there has been great uncertainty each year whether the political dynamics of that body will result

in continuation of the program. However, as of this writing, it still survives.

The energy/boomtown case study literature and attendant popular media accounts have been instrumental in developing a market for SIA, because they have encouraged EIS preparers to consider a much wider range of social phenomena in the assessment process. Therefore, a recent controversy over the validity of boomtown case study literature has strong implications for predictive SIA.

In 1982, Wilkinson and his colleagues published two versions of a paper challenging the concept that rapid population growth in western boomtowns actually has had any proven association whatsoever with social or psychological disruption (Reynolds, Wilkinson, Thompson, & Ostresh, 1982; Wilkinson, Thompson, Reynolds, & Ostresh, 1982a). The authors focus primarily on the research scholarship in several influential papers (many of them unpublished) which present case study data on matters such as stress, crime, and newcomer-oldtimer conflicts (Kohrs, 1974; Gilmore & Duff, 1975; Gilmore, 1976; Little, 1977; Lantz & McKeown, 1977; and Weisz, 1979). Authors of these papers are accused by Wilkinson et. al. of portraying energy development in an unremittingly negative light, based on "undocumented assertions, questionable interpretations of evidence, and superficial analyses" (Wilkinson et. al., 1982a, p. 275). Evidence about mental health and crime impacts comes in for particularly close scrutiny, as Wilkinson et. al. allege that data have been presented with no documentation; that the meaning derived from these numbers is inaccurate and misleading; and that no

consideration is given to standard alternative explanations of variations over time in mental health or crime data (e.g., changes in agency reporting procedures and/or in citizen willingness to contact agencies).

Sharp words are also directed at social scientists who have published literature reviews without evaluating the validity of the original figures. Wilkinson et. al. assert that both the original writers and those who have been influential in disseminating the boomtown stereotype to a wider scholarly circle base their conclusions more on an "anti-growth bias" than on either "substantiated social theory" or hard data (Reynolds et. al., 1982, p. 52). For the most part, the authors say they do not necessarily contend that social disruption has not occurred (although they point to some evidence in that direction), but that the effects have not been proven and that it is time to explore disruption hypotheses in a more even-handed and scientific manner.

One of these articles (Wilkinson et. al., 1982a) was published in the summer issue of the 1982 Pacific sociological review, which also gave rejoinder opportunities to the social science scholars accused of circulating the unsubstantiated boomtown stereotypes (Albrecht, 1982; Finsterbusch, 1982c; Freudenburg, 1982; Gale, 1982; Gold, 1982; Murdock & Leistritz, 1982). After these came a counter-reply from Wilkinson et. al. (1982b). The tone of this debate can surely be characterized as the most acerbic, bitter, and, at times, highly personal one in the annals of social impact literature. With the partial exception of Finsterbusch's, the responses were generally fierce counter-attacks. Wilkinson et. al. were accused of shoddy scholarship themselves; of

taking important quotations out of context; of ignoring the documentation and/or attention to possible reporting effects which they claimed was lacking in the original articles; of paying no attention to similar and perhaps better proven social disruption data bases from areas outside the Rocky Mountain or Southwest states (e.g., Dixon's 1978 review of construction impacts in Alaska); of shrugging off ethnographic evidence in favor of a limited and overly technical quantitative approach; and of writing primarily to serve the interests of developers with whom several of them were professionally involved as paid consultants. These criticisms were usually doled out in careful and detailed manner, although the underlying spirit was manifested in the emotional retort of Herbert Gold:

As your article now stands, it is at best a source of sociological mischievousness and at worst a highly misleading report on the work of some first-rate SIA researchers. At worst, it also provides a lot of grist for the public relations mills of the unprogressive, unenlightened, and rapacious natural resource development firms of the world that rely on PR bullshit to try to persuade the uninformed, the unsophisticated, and the gullible that their industrial trespasses create no social problems, because they are really making positive and commendatory contributions to the quality of life of the lucky small-town recipients of the manifold blessings of their incursions. (Gold, 1982, p. 356)

Kurt Finsterbusch made by far the mildest and most diplomatic reply to Wilkinson et. al. He complimented them for "debunking" the boomtown stereotype, although Finsterbusch then carefully reviewed the case study evidence and concluded that it justified some general conclusions about the usual social impacts of boomtown development, adding "The patterns identified are not without exceptions and are milder than those

portrayed in the stereotype" (Finsterbusch, 1982c, p. 318). Finsterbusch the same year arranged for the publication of the other version of the Wilkinson et. al. paper (Reynolds et. al., 1982) in a special SIA issue of the Impact Assessment Bulletin which he edited. In that issue, he termed the boomtown critique "a bombshell" and stated, "The debate on the effects of boomtowns has begun and the field of SIA will become more scientific because of it" (Finsterbusch, 1982a, p. 8).

The latter statement recalls a major point advanced by Wilkinson et. al. and somewhat overlooked in the ensuing debate over the validity of existing case study literature. That involved the need for more rigorous scientific testing of general boomtown effects, as compared to case study documentation of specific examples of impacts. In some ways, the controversy over the validity of case study reports is beside the point. Case studies are valuable for generating hypotheses, but more rigorous techniques are needed for hypothesis testing and (even more importantly) for identifying mediating variables which can be used to mitigate or manage the outcomes. This will be discussed further in Chapter VII, which will include consideration of potential contributions which pure research scholars can make to applied SIA.

SCHOLARLY PERSPECTIVES ON SIA

Professional and Academic Structures

The practice of social impact assessment usually involves specific projects and specific communities. The study of social impact

assessment is more likely to focus on theory and general methodological treatises. The latter requires the existence of the former, although the reverse is not necessarily true. Many practitioners, as will be further noted in Chapter IV, are not specialists in SIA but rather address social considerations (often in vague and inconclusive fashion) in the process of completing socioeconomic portions of EIS's.

Of those who might consider themselves SIA specialists, it is difficult at this time to say how many are frequent practitioners of the craft. Certainly the available literature on the topic comes primarily from academic sources, although some academicians have served as part-time SIA consultants and a few have become full-time professionals in the field. However, the existing professional organizations and structures pertinent to SIA are heavily infiltrated by academicians--and primarily by sociologists.

Although scholars of many disciplines have contributed to the growing body of SIA literature, in many ways social impact assessment remains a subdiscipline of sociology rather than a field or discipline in its own right. The two most prolific scholarly writers on SIA, C. P. Wolf and Kurt Finsterbusch, are both sociologists. These two men have either written or edited most of the early book-length publications on SIA--see Wolf (1974a), Finsterbusch & Wolf (1977), Finsterbusch (1980), and Finsterbusch & Motz (1980). Wolf and Finsterbusch are currently collaborating with Kurt Llewellyn to edit a new SIA anthology. Other SIA books authored or edited by sociologists include more recent works by Bowles (1981), Soderstrom (1981), Tester & Mykes (1981), and

Leistritz & Murdock (1981). (While Murdock is a sociologist, Leistritz is an economist, and their collaboration on various books and articles has produced much of the embarrassingly limited literature on SIA in the larger framework of socioeconomic impact assessment.) Sociologists have also written books on retrospective social impact case studies (Dixon, 1979; Murdock & Leistritz, 1979; Moen, Boulding, Lillydahl, & Palm, 1981) and on SIA itself "as a social phenomenon" (Torgerson, 1980).

There is some indication that sociological SIA has tended to function as a closed system. For example, McEvoy & Dietz (1977) edited a book on socio-cultural aspects of EIS's directed more toward planners and EIS practitioners than sociologists. Also, a number of methodological "handbooks" and more comprehensive treatments on the entire EIS procedure now feature sections on social and/or socioeconomic impact assessment. While some (e.g., DeSouza, 1979) still confine discussion of "social" topics to population, employment, housing, and government services, others (e.g., Jain & Hutchings, 1978; Erickson, 1979; Rau, 1980) contain much more thorough treatments of social impacts. Finally, Porter, Rossini, Carpenter, & Roper (1980) have produced an extensive analysis of methods common to both environmental impact and technology assessment, including exploration of social and psychological impacts. All of the foregoing have been rarely referenced in the "mainstream" sociological writings on SIA.

C. P. Wolf edits the field's principal newsletter (there is yet no full-fledged journal devoted to SIA), entitled Social Impact Assessment.

Although technically just a "newsletter," Social Impact Assessment has published a number of important theoretical and methodological articles. This newsletter grew out of an earlier circular called Environmental Sociology. ("Environmental sociology" is the branch of sociology which has been most involved with SIA, and teaching aid materials prepared by the American Sociological Association Section on Environmental Sociology include several course descriptions on or relevant to SIA--see Tremblay, 1981.) Until the establishment in 1981 of the International Association for Impact Assessment (concerned with technology assessment as well as SIA), the only professional association dedicated to exploring social portions of EIS's was a 1973 AD Hoc Committee on Environmental Sociology created by the American Sociological Association. The International Association for Impact Assessment now publishes the Impact Assessment Bulletin, focusing on technology assessment, social or socioeconomic assessment, and environmental impact assessment. Various environmental assessment or environmental management journals also sometimes publish works on SIA; the Environmental Impact Assessment Review is perhaps the most frequent examiner of SIA issues.

Certain recent efforts to develop a professional superstructure for SIA have led to more emphasis on practitioner concerns and more links with planners, economists, and other nonsociological contributors to SIA. This is partly a reflection of increasing input from Canada, where SIA has often played a larger part in environmental assessments and hence has stimulated more discussion among planners and technicians. The First International Conference on Social Impact Assessment was held

in Vancouver in the fall of 1982, and discussions focused heavily on the practical concerns of practitioners as opposed to the abstract theoretical issues sometimes posed by sociological commentators (Melser, 1983).

The previously mentioned International Association for Impact Assessment represents an attempt at formation of an umbrella organization integrating the common concerns of, and fostering interchange among, the various disciplines concerned with applied forecasting: environmental assessment, technology assessment, social impact assessment, computerized modeling efforts to predict local fiscal impacts, etc. The journal of the IAIA, Impact Assessment Bulletin, encourages contributions by practitioners, and the first IAIA president, Joseph Coates, an important figure in the development of technology assessment, is the head of a Washington D.C. consulting agency.

Sociological SIA professionals have also taken steps to become more involved in practice as well as theory. C. P. Wolf and Peter Melser recently formed a "Social Impact Assessment Center" in New York City, intended to provide a support network for social impact consultants. In the western United States, Charles Cortese has established a "Center for Community Change" which provides a reference library and consulting service for both scholars and consultants specializing in the study of western energy boomtowns.

Bodies of Theory Underlying SIA

The dominance of sociologists in academic SIA has had several consequences. Perhaps most important for this dissertation as a whole,

there has been far more concentration on social impacts at the community level than at the individual level. The potential for expanding SIA to include more focus on the individual is a prime purpose of this study.

However, the most important consequence for purposes of this particular section is that bodies of theory underlying SIA (to the extent that they have existed) have been, to date, primarily sociological in origin and nature.

Actually, there has been extremely little discussion of SIA's theoretical underpinnings until very recently. In the 1970's and early 1980's, a number of conceptual models were advanced, indicating project characteristics as input variables, community structure as throughputs, and social well-being indicators as outputs (c.f., Olsen & Merwin, 1977; Finsterbusch, 1977b; Branch & Thompson, 1981). In a practical sense, these had the potential for great utility for the SIA practitioner to aid in conceptualizing cause-effect relationships, but they lacked the intellectual depth and richness of true theory.

Also, as will be detailed in the next few chapters, there was some lively debate over methodological approaches to SIA in the 1970's, and some of this controversy certainly had theoretical implications. However, the implications were rarely explored, and most references to theory were simply general observations that somebody someday really should relate SIA to important bodies of social science theory--e.g., Wolf's (1977, p. 18) observation that "Social change theory in general and modernization theory in particular seem especially well suited to

forming a theoretical basis for SIA." However, there were very few who attempted to follow up on these concepts, either for predictive SIA or for social impact analysis case studies, and by 1982 it could still be observed, with general accuracy:

In large part, the social impact literature is atheoretical. In fact, one is hard-pressed to find any studies that employ theory or that attempt to test systematically any theoretical tradition that might be applicable... (Albrecht, 1982, pp. 299-300)

Nevertheless, the last few years have seen the first significant stirrings of attention to theory. These have come in three forms: (1) the comments of Andrews and colleagues (Andrews, Hardin, & Madsen, 1981) regarding theoretical implications of methodological differences in social indicator research; (2) several analyses by Steven Murdock of implicit theoretical orientations in SIA work, with particular emphasis on the ecological framework (Murdock, 1979; Leistritz & Murdock, 1981); and, (3) in the debate over the validity of the "boomtown" social impact case study literature, a subcontroversy as to whether sociologists studying boomtowns have been (consciously or not) applying valid theory or have simply been swayed by an "anti-growth" ideological bias.

Theoretical Implications of Methodological Disputes: Although it consists of only a few paragraphs in a broader article on issues and problems in SIA, the discussion by Andrews et. al. (1981) on the intellectual history underlying two different methodological approaches is a stimulating one. The particular methodological controversy in question involves the debate over whether SIA is best served by use of objective

social indicators ("hard" data such as census figures), subjective indicators ("soft" data such as attitude survey results), or both. (Andrews et. al. argue for both.) The authors point out linkages between each of the two approaches and the major theoreticians of classical sociology:

The classical structural analysis of social processes are represented in the works of Emile Durkheim and Karl Marx. Durkheim's emphasis on the study of "social facts" points to the priority of structural management over the dynamics of social-psychological factors in analyzing group or societal phenomena. His basic contention that the "whole is greater than the sum of its parts" indicates a derogation of aggregating individual factors. In conjunction with Durkheim's approach, Marx postulated "dialectical materialism" as the underlying social process. His contention that the material factors of social life imperatively mandate social arrangements resulted in the conclusion that a society's superstructure (i.e., cognitive and affective states) was largely a reflection of its substructure (i.e., economic factors of production).

These theoretical orientations are in direct opposition to the subjective emphasis of certain writings of Max Weber. His use of Verstehen, or empathetic understanding, as a major research tool, and his analysis of modern capitalism in terms of subjective, ethical alterations point to the importance of studying psychological and social-psychological factors and their relationships to objective societal conditions. (Andrews et. al., 1981, p. 80)

The foregoing paragraphs also serve the purpose of informing psychologists of some basic reasons why various sociologists might resist or welcome their entry into the field of SIA.

Murdock's Analysis of Implicit Theoretical Bases for SIA: Leis-tritz & Murdock (1981) note that, although few SIA scholars or practitioners have explicitly stated their underlying theoretical premises, it is possible to deduce four major conceptual approaches which can affect

interpretation of social impact assessment or analysis data: (1) the symbolic interactionist perspective; (2) the conflict perspective; (3) the functionalist perspective; and (4) the human ecological perspective.

The symbolic interactionist perspective "emphasizes the analysis of the actual processes of interaction, of how persons come to understand and to perceive themselves and others, and how interaction patterns become regularized around activities to form different types of groups" (loc. cit., p. 159). This is the stuff of social psychology, and Leis-tritz & Murdock note that it is "perhaps the most individualistic perspective used in assessment activities" (p. 159). The symbolic interactionist is interested in outcomes for the individual and in the perceptions of individuals (since it is the symbolic perception of reality by individuals which is felt to determine social organization). Implicit in this approach is a strong need for participant observation or other ethnographic approaches to grasp the values and perceptions of key groups (Gold, 1974, 1977).

The conflict perspective is in the tradition of Marxist sociology (although not necessarily Marxist politics) and emphasizes competition for limited resources by various interest groups, particularly different social classes. There is a strong concern with distributive issues--not just what the impacts are, but even more significantly who reaps the benefits or bears the costs--and with which groups are likely to form coalitions to oppose or support the project.

In the functionalist perspective, there is particular interest in impacts on key social organizations which consciously, or sometimes unconsciously (Merton, 1957), perform necessary human functions. Modernization and/or urbanization literature is often in this tradition, exploring the latent functions of social institutions which face change:

In [the theory's] most elaborated form (Parsons, 1951), society is seen as a system in which such basic elements as culture, individual personalities, and societal factors interactively determine the nature of the social system. These factors seek to perform such functions as adaptation (to the physical and other dimensions of the environment), goal attainment (the meeting of basic social and individual goals), integration (the maintenance of patterns of key interdependencies), and latent pattern maintenance (the maintenance of total societal patterns). Processes of interaction and social structures and institutions are examined in terms of their roles in maintaining such functions. (Leistritz & Murdock, 1981, p. 160)

Finally, the human ecological perspective is a cross-disciplinary approach ultimately rooted in 19th-century evolutionary concepts as applied in this century to social systems by Hawley (1944, 1950), Duncan (1959, 1964), and Micklin (1973). Some of the work of Durkheim (1933) is also considered an early version of the ecological perspective, which stresses the communal (not individual) adaptation of society to the physical environment and the great flexibility of humankind in making such adaptations. At any given time or place, people are considered to live in "ecosystems" characterized by the four POET variables (population, organization, environment, and technology). In this conception, there is a high degree of group interdependency, which produces particular types of social interactions and organizations. The concepts underlying human ecology theory are so broad in nature that it has been suggested

they constitute a new paradigm for the social sciences as a whole (Dunlap, 1980).

The human ecological perspective has inspired one of the few social impact assessments to feature an explicit theoretical base--Honey & Hogg's (1978) anthropologically-oriented work for the Environmental Protection Agency on a water resources project in Oregon. It also inspired Murdock (1979) to produce what is quite possibly the only article to date which attempts to generate a theoretical outline for social impact assessment based on a carefully articulated ecological approach. (Bonnicksen & Lee's 1982 treatment of "biosocial systems analysis" might also qualify, although it could be considered more of a model than a theory.) Murdock suggests the human ecological approach is particularly appropriate when communities face a shift in their primary economic sustenance base. He notes that various case studies have indicated great variations in impacts from similar projects in different communities and that benefits in cases of economic shifts tend to accrue to those associated with the project rather than to the wider community; to newcomers rather than longtime residents; and to state or regional levels rather than to local levels. These and other findings, he believes, can be explained in terms of four general ecological premises or concepts:

1. That in all social organizations differentiation occurs, and this differentiation produces patterns of dominance related to the key function, with those most closely related to that function having the greatest control of events and resources within the organization (Hawley, 1950, 1967).

2. That levels of adaptation within population are not uniform, but vary with the characteristics of subgroups (Hawley, 1950).

3. That patterns of dominance show an ascending pattern by geographical areas such that larger areas tend to show dominance over smaller component areas (states over counties, counties over cities, and so on) and that each level has a specified service hierarchy that it can support (Duncan and Reiss, 1956; Duncan et. al., 1960; Hawley, 1971).

4. That the effects and processes of a given type vary at least in part because of differences in environmental contexts (Duncan, 1964). (Murdock, 1979, p. 555)

Ironically, one of the few other theoretically-oriented articles in the SIA literature involves an explicit rejection of the "social systems approach" (a term which could subsume both the ecological and the structural-functionalist perspectives). DiSanto, Frideres, Fleising, & Goldenberg (1981) argue that individuals "are excluded when this wholistic [sic] perspective is used. Yet, land negotiations, for example, are precisely on an individual level" (p. 26). They feel that emphasis on social systems results in subsequent overemphasis on maintenance of the existing system, which is inappropriate since human systems are constantly in flux. (The idea that SIA too often blindly champions the preservation of status quo social systems in small communities is in line with the views of those who criticize "boomtown" sociologists, as will shortly be discussed.)

DiSanto et. al. call for the primacy of the symbolic interactionist perspective in SIA. However, their point does not involve the need to predict impacts on the sort of social psychological variables which that perspective involves. Rather, their emphasis is on "building a common definition of the situation" (p. 34) among community, government, and other project proponents in order to minimize disruptive conflict.

This foreshadows an important issue which will be more fully explored in the next several chapters--there is a growing school of thought in SIA which is more concerned with the process of social input to decision making than with the product of a report delineating predicted impacts. Since symbolic interactionism deals with the perception of "social reality" by various key actors, it may be viewed as the broad theoretical underpinning for much of this "process" approach to SIA.

Strangely, in their observations on implicit use of theory and classic sociological concepts in social impact literature, both Murdock and DiSanto et. al. omitted one of the most fundamental concepts in sociology and one of the most apparent implicit theoretical underpinnings of much social impact literature. This is Ferdinand Toennies' classical dichotomy between gemeinschaft (the tightly-interwoven and interdependent social structure and value orientation thought to exist in rural communities) and gesellschaft, the more impersonal, market-oriented structure and value orientation thought to emerge in more urban locales). In the course of a gemeinschaft-to-gesellschaft transition, there would be a loosening of family and community ties, reciprocity norms, and general identification of self with others, along with an increase in independence, demands for monetary reimbursement for any assistance rendered, and perhaps a general sense of alienation and anomie. This is the topic of the third and final source of commentary on theory in the SIA literature to date.

Boomtown Analyses: Social Theory or Personal Bias?

One major thread in sociological SIA, heavily influenced both by the boomtown case study literature and by the work of community sociologist Roland Warren (1978), has been emphasis on negative aspects of change due to perceived interference with valued small-town gemeinschaft and informal social networks (c.f., Watkins, 1977; Bowles, 1979; Cortese, 1980; Canan & Hennesy, 1983).

In the discussion earlier in this chapter on the boomtown case study literature, it was noted that there has recently been a sharp controversy over the validity of the idea that boomtowns have suffered a great deal of social disruption. Wilkinson et. al. (1982a, 1982b) suggest that these images are "implicitly" derived from the theories of Toennies and Durkheim regarding social values and structures in small rural communities, and Reynolds et. al. (1982) also challenge the concept that an influx of outsiders into boomtowns disrupts social norms and shared expectations of appropriate behavior. They note that, long before the energy boomtown situation developed, western communities were characterized by a spirit of rugged independence, social conflict among various groups, and high rates of crime, suicide, and divorce:

Against this background, use of the concept of anomie to describe a recently-induced condition is questionable. The changes occurring in response to energy development might better be seen as extensions of previous trends than as sudden disjunctions from established patterns.

Use of the concept of anomie to describe changes in the communities also ignores the fact that many aspects of normative order in modern society are organized on an extra-local basis (Warren, 1978). Therefore, changes in a given community might have little disruptive effect on norms, expectations,

and commitments which regulate interpersonal transactions.
(Reynolds et. al., 1982, p. 49)

The authors also questioned the sociological implication that small rural communities would be healthier, noting national statistics give a mixed picture about rural-urban differences in mental health, crime, divorce, etc. They review ample evidence that gemeinschaft-type social characteristics such as strong informal neighborly ties exist in large industrialized cities, while market-place gesellschaft mentality can be encountered in many a small town. And they wonder whether a gemein-schaft-style social structure has ever completely characterized actual western communities--or, for that matter, given modern America's high mobility and national communication linkages, whether any community in the country today can be considered an example of pure gemeinschaft:

The history of the western states suggests that characteristics of the classical rural type have not been prominent in the communities which are now experiencing growth. Rather, these communities for the most part have been small urban centers with social organization different more in scale than in essential qualities from that in larger centers. People have moved into and out of these communities frequently, and while in them, their lives have been oriented to the larger society.
(Reynolds et. al., 1982, p. 51)

Because of these divergencies from the idealized rural communities alleged to be painted in the boomtown SIA literature, the authors conclude, "it appears that SIA has been heavily influenced by an anti-growth bias rather than substantiated social theory" (loc. cit., p. 52).

Replies to these criticisms feature a number of points. Freudenburg (1982) believes Wilkinson et. al. exaggerate the rosy romanticism

with which the pre-boomtown "gemeinschaft" communities allegedly were viewed. He quotes several excerpts from the literature which illustrates an unwillingness to accept the gemeinschaft approach without criticism:

It is clear that a number of researchers have used classical theorists as sources of sensitizing constructs, but this fact alone would scarcely seem to warrant the Wilkinson et. al. critique--particularly given the obvious connection between boomtown statistics and the kinds of changes Durkheim, for example, might have predicted. Moreover, an examination of the literature reveals that sociologists who have noted the relevance of the Gemeinschaft-Gesellschaft continuum (e.g., Cortese and Jones, 1977; Moen et. al., 1981) have generally done so in a way that is reasonable and balanced. The classical theorists are used as points of reference, not objects of worship; they are treated with respect, but they have also been rejected explicitly in several papers. (Freudenburg, 1982, p. 330, original emphasis)

Albrecht (1982) notes that some of the impacted western communities contain large numbers of Mormons, American Indians, and Mexican-Americans, whose societies more closely approximate the hypothetical true gemeinschaft type. And he suggests that comparisons of boomtowns with other rural areas undergoing industrialization should be made with caution because of the unique and incredible rates of population growth--e.g., the Alaska village which suddenly had as many children in the elementary schools alone as it had people in the entire town two years previously.

But Albrecht's main theoretical point--and the one with the most relevance to the wider field of predictive SIA--concerns Wilkinson et. al.'s argument that gemeinschaft-type social organization has also been found in many large, industrialized cities. Albrecht points out that

most studies with this finding have been conducted after the process of social accommodation to an industrialized lifestyle is complete:

...perhaps the problem is that we are dealing with two different issues. In terms of the classic characteristics of gesellschaft, urbanized and industrialized areas may not be particularly different from more rural communities once they have become stabilized. That is, individual residents feel a certain degree of attachment to the community; they maintain significant informal and primary ties with kind and friends, and so on. At the same time, communities or areas of communities characterized by the rapid social change that accompanies urbanization and industrialization experience at least a temporary breakdown in many of the traditional social support mechanisms that contribute to such things as community stability, individual identification with the community, and quality of life...

What this suggests is that the implicit theoretical orientations that Wilkinson et. al. believe guides much of the research on energy-impacted communities does provide some interesting research hypotheses that can be tested. This tradition, therefore, should not be rejected outright. (Albrecht, 1982, pp. 301-302)

Albrecht's distinction here is a critical one for the potential application of all types of social science theory, including psychological theory, to SIA. Most such theories are concerned with human relationships and human behavior in what are more or less enduring social situations. SIA seeks to predict adjustment problems (both short-term and long-term) or opportunities for social benefit as a result of change. What may appear at first glance to be highly relevant bodies of research and theoretical literature could be fatally misapplied if used for SIA.

Related Social Science Activities

One of the most important scholarly contexts in which SIA operates is the entire body of social science knowledge and activities. To compare and contrast SIA with other such activities not only facilitates understanding of how SIA functions as a professional and/or scholarly activity, but also assists in an understanding of what SIA is and what it is not.

Of course, such a comparison-and-contrast procedure could easily consume a dissertation by itself, and therefore it seems more appropriate to present an overview in summary table form. Table 1 provides such a perspective on the relationship between SIA and key social science activities. Although virtually every body of literature or applied technique might have some actual or hypothetical linkage with SIA, 20 fields (12 bodies of literature and eight applied techniques and activities) were selected for the brief summary of "Comparisons and Linkages" presented in Table 1.

In most of Table 1, SIA is discussed as it tends to function in practice at the present time rather than as it might practice in theory or in the future. For example, a strong working distinction is drawn between SIA and TA (technology assessment) although the conceptual distinction between the two activities is minor. And SIA has, in practice, functioned quite independently of TA (Wolf, 1977). SIA's are usually carried out within the environmental impact statement framework of NEPA,

while TA's are often funded by research grants from the national government and/or are much more amenable to academic "armchair" forecasting or computerized analysis of broad national data. As will be further discussed in Chapter IV, there have been calls for SIA to move closer to TA in its focus (Morrison, 1983) or vice-versa (Hoos, 1979), and occasional recent studies do seem to overlap both fields (e.g., Bronfman, Carnes, & Glass, 1980); however, this is still definitely the exception to the general rule. The recent creation of the International Association for Impact Assessment may help create stronger linkages between TA and SIA practitioners.

In line with earlier discussions, Table 1 several times refers to SIA as a procedure focused more at rural than at urban settings. This reflects the influence of the "boomtown" case study literature (c.f., Gilmore, 1978; Albrecht, 1978; Murdock & Leistritz, 1979) and perhaps also the personal values and/or theoretical groundings of the sociologists who have dominated SIA and who have been strongly concerned with preserving the small-town gemeinschaft (e.g., Gold, 1977; Cortese, 1980):

An effective long-term SIA must uncover the hidden, informal structures that underlie the formal structures in small communities. I say small communities because the current available SIA methodologies (and models) do not address themselves to large populations. (Robinson, 1980, p. 18)

Certainly there is nothing which excludes urban communities from SIA, and a few writers (Christensen, 1976; Francis, 1975) have attempted to

point the way. Perhaps community and environmental psychologists can serve a particularly useful function in helping SIA to deal more readily with urban contexts.

Similarly, it is implicit in Table 1 comments that, with a few exceptions, SIA has not yet evolved procedures for coping with those situations where impacts may actually be most extreme--that is, project which have the potential for causing major shifts in cultural values and structures among Indians, established immigrant cultures, or native populations of American-held territories in the Caribbean or Pacific. This is also a matter for further discussion in Chapter IV.

Finally, Table 1 refers to SIA as an activity relating to physical projects at specific sites. Actually, NEPA also requires EIS's (and hence SIA's) for new programs and policies affecting a wide variety of locales and situations. However, such EIS's are generally very vague in their social sections, and often are followed up by site-specific EIS's and SIA's when the program is implemented in a given location. As a consequence, the academic and professional literature on SIA tends to revolve around site-specific projects. It should be noted, though that some SIA theoreticians have attempted to blaze methodological trails toward social assessments for human services planning (Grigsby & Hruby, 1978), health care programs (Mitchell & Mitchell, 1979), regional land use planning (Cramer, Dietz, & Johnston, 1980), and even for "policy" at the abstract level (Finsterbusch, 1977b; Finsterbusch & Motz, 1980; Wolf, 1980a).

Table 1

Comparisons and Linkages Between SIA and Other Topics

Topic	Comparisons with SIA	Linkages with SIA
<u>I. BODIES OF LITERATURE</u>		
Social Impact Analysis (vs. Social Impact Assessment, or SIA)	Social impact analysis involves case studies of actual present or past impacts from a change; SIA involves predicting future impacts from one or more proposed changes.	Such case studies are essential in guiding SIA design--especially choice of variables for impact measurement, identification of exogenous forces for change, and ideas for mitigation measures
Social Conflict	Deals with overt friction between groups of people. Literature tends to focus on persisting conditions rather than change as cause of conflict, and to focus on urban ethnic conflict (Clarke, 1976) vs. SIA emphasis to date on rural conflict between oldtimers and newcomers.	May help to contribute better theoretical base for predicting impacts on community cohesion, especially as SIA develops capability to pay more attention to urban contexts.
Social Change	Focus is on <u>action to create change</u> , usually in urban contexts. Tendency to see change as desirable and to pay only passing attention, if any, to undesirable side effects (c.f., Warren, 1977, p. 60). This contrasts with a basic rationale of SIA--anticipating probable negative side effects.	One thread common to social change literature and some SIA approaches involves community organization and political action. Therefore, social change literature may suggest some community-managed measures for reducing negative impacts or enhancing positive ones.

Table 1. (Continued) Comparisons and Linkages Between SIA and Other Topics

Topic	Comparisons with SIA	Linkages with SIA
Community Studies	Classical sociological community studies involved lengthy, in-depth study of communities for pure research purposes (e.g., Lynd & Lynd, 1937), vs. SIA's applied nature and usual short-term time frame.	SIA practitioners may be able to utilize a number of ethnographic and/or quantitative techniques developed in this literature for measuring "intangibles," such as community attachment (c.f., Rossi, 1972).
Life Changes	A growing body of literature relates "stressful life events" to increased rates of psychological disorder (Holmes & Masuda, 1974); Wildman & Johnson, 1977), and some studies have examined positive as well as negative effects of desired change (Zautra & Simons, 1979). But major focus has been on <u>personal events</u> (e.g., death of a spouse) rather than SIA's usual focus on community-wide change from transformation of social or physical environment.	This literature can be used as a springboard for studies of effects from larger social change. The most promising threads involve psychological effects of unemployment or economic cycles (Komarovsky, 1973; Dooley & Catalano, 1979), and studies on factors affecting coping ability or vulnerability to stress (Pearlin & Schooler, 1978; Kessler, 1979). Such potential linkages will be discussed further in later chapters.
Modernization/Westernization	Original focus was on facilitating "development" of "backward" peoples. Perhaps best psychological example is McClelland's (1961) work on developing need for achievement. Other writers (e.g., Marsella, 1977) share typical SIA concern with unintended negative consequences of rapid change.	Despite calls for more cultural content in SIA (Boggs, 1978; Wolf, 1978), most SIA's under NEPA focus on subcultural shifts in mainstream American society. But modernization literature is clearly relevant when major cultural shifts are inherent in a project being analyzed in an SIA.

Table 1. (Continued) Comparisons and Linkages Between SIA and Other Topics

Topic	Comparisons with SIA	Linkages with SIA
Urbanization	Urbanization studies primarily, although not exclusively, are concerned with effects of migration to cities (rural depopulation) and human adjustment in large cities. Psychologists have tended to study alienation, anomies or general stress from high-density or large-population settings (Basavanna, 1978; Milgram, 1970; Griffit, 1977; Sadalla, 1978). SIA in practice has been more likely to focus on rapid population growth in rural areas.	Urbanization literature should help SIA to address social changes in urban areas. For rural areas, crowding literature may be relevant when housing shortages are forecast in rural "boomtowns," but effects attributed to large population or neighborhood density must be re-examined to see if they apply to small-town areas. Also, SIA needs information on consequences of rural <u>community change</u> , not just individual adaptation to cities or effects of persisting urban conditions.
Rural Studies	Primarily sociological and economic development literature. Historical emphasis has been on need for development and problems of depopulation and decay resulting from technology and urbanization (c.f., Cottrell, 1951). Recent literature has begun to explore unanticipated consequences of rural development and repopulation (Hobbs, 1980; Price & Clay, 1980).	Selected studies may be considered as part of the social impact analysis historical case study literature.
Environmental Studies	Environmental <u>psychology</u> has had overlap with urbanization literature; also includes impacts of urban design (O'Donnell, 1980), noise, and aesthetics (Craig & Zube, 1976).	As with urbanization, this has direct relevance to SIA's where physical environment to be transformed. However, more studies of change and adaption would be of value to SIA.

Table 1. (Continued) Comparisons and Linkages Between SIA and Other Topics

Topic	Comparisons with SIA	Linkages with SIA
Social Ecology (Human/Cultural Ecology)	Broad theories of man-environment relationships as a <u>system or unit of analysis</u> are found in all social science disciplines. Lewin (1936) was a pioneer in psychology; Barker (1968) developed the "behavior setting" concepts. Ecological models are often used by community psychologists and stress researchers (Mann, 1978); Feldman & Orford, 1980).	Ecological concepts can provide a theory or framework for organizing some SIA studies. For example, Honey & Hogg's (1978) anthropological SIA research strategy is based on the "cultural ecology" theories of Rappaport (1971).
88 Social Networks	In community psychology, study of social networks has focused specifically on <u>support</u> networks and their role in regard to ameliorating stressful life events and illness (Lin et. al., 1979), encouraging help-seeking (Gourash, 1978), and mental health therapy (Turkat, 1979, 1980).	Possibly more useful for action than research: Turkat's work on "devised" networks can be adapted for preventive as well as post-change therapy. Networks can be used to facilitate human service programs in a social change context (Sarason et. al., 1977), and to help guide urban design and planning (Meehan, 1978).
Social Indicators	<u>Methodological</u> aspects of social indicators research have provided the methodology of SIA to date. <u>Substantive</u> research into "quality of life" (Andrews & Withey, 1976; Campbell, Converse & Rodgers, 1976) has strong implications for SIA at psychological level.	The utility of "quality of life" research for SIA would be enhanced by more studies of (1) determinants of change, and (2) comparative studies of differences among social groups (especially groups likely to be brought into contact/conflict by projects requiring EIS's and SIA's).

Table 1. (Continued) Comparisons and Linkages Between SIA and Other Topics

Topic	Comparisons with SIA	Linkages with SIA
<u>II. APPLIED TECHNIQUES AND ACTIVITIES</u>		
Social Forecasting	Social forecasting is a broad field which might be said to subsume SIA and other futurological activities. However, the term is more commonly used to refer to broad scenario-construction for general purposes of seeing wide areas of opportunities or problems; SIA is more specific in identifying site and change agents.	The methodology of social forecasting (Harrison, 1976; Mitchell et. al., 1977) essentially contains the repertory of prediction tools for "scientific" SIA. (An alternative approach would be a more holistic, perhaps journalistic approach: an in-depth look at the specific situation and apparent logical outcomes.)
Needs Assessment	Needs assessment is concerned with identifying resident desires or needs to reach certain social goals. SIA might examine probable impacts on needs or desires; hence, needs assessment could be a component of SIA.	The work of Murrell (1977; Murrell & Schulte, 1980) in using community satisfaction surveys is one example of a technique that can be adapted to SIA. Research on the nature of <u>need</u> (vs. desire or satisfaction) becomes more important if there is support for the idea that social impact assessment should analyze impacts on preconditions for high quality of life rather than simple expressed satisfaction (McCall, 1975; Tester, 1980).

Table 1. (Continued) Comparisons and Linkages Between SIA and Other Topics

Topic	Comparisons with SIA	Linkages with SIA
Technology Assessment (TA)	TA involves forecasting <u>nationwide</u> social implications of technological innovations. While TA might also be considered an extension of SIA, the practice of SIA in an EIS framework usually involves a <u>specific region or community</u> and a <u>project proposal</u> that may or may not feature new technology.	SIA and TA have common historic and conceptual roots. Forecasting tools and approaches are similar at the macro-level (Kaspar, 1972). The two fields overlap in studies of impacts of changing technology on specific communities--e.g., Krebs' (1975) comparison of social effects from strip vs. underground coal mining.
Cultural Resource Management	"Cultural resources" usually refers to physical artifacts of the area's historical and cultural heritage. Despite calls for broadening the field to protect "living culture" (Harding, 1978), those most active tend to be archaeologists and historians (Dickens & Hill, 1978), rather than the sociologists who dominate SIA at present.	NEPA's sole concrete reference to sociocultural concerns regards preservation of "historical and archaeological sites." But given SIA's lack of a strong cultural component to date (see discussion under "Modernization"), there have been few linkages between assessment or management of tangible "cultural" and of intangible "social" resources.
Social Impact Management	"Management" refers to an overall system for early detection of unintended project consequences and for appropriate <u>action to meet those consequences once the project has been implemented.</u> SIA in narrow sense is concerned only with <u>predictions made before</u> implementation.	Social impact management may represent the future of expert-based SIA. However, so long as NEPA and the EIS framework shape the market demand for SIA, the predictive report rather than action plans for monitoring and mitigation will probably remain the central focus of SIA.

Table 1. (Continued) Comparisons and Linkages Between SIA and Other Topics

Topic	Comparisons with SIA	Linkages with SIA
Cost-Benefit Analysis	This is a mathematical technique for determining whether a proposed project's monetary benefits outweigh its monetary costs. To some, SIA is a logical extension of this general approach to <u>social</u> costs and benefits, but lack of a common unit of measurement precludes a simple "bottom-line" conclusion about cost-benefit ratios.	Use of a cost-benefit approach to SIA by exploring dollar value of social disbenefits (Bryden, 1973) or asking residents if they would sacrifice projected income gains to keep current lifestyles (Bottomley, Hartnet, & Evans, 1976) or assigning dollar values to social costs (Mack, 1977) have all been suggested or utilized, but do not represent current mainstream of SIA.
Evaluation Research	Evaluation research is primarily concerned with past and present effectiveness of an intervention in attaining a desired goal (Struening & Guttentag, 1975; Posavac & Carey, 1980). SIA is primarily concerned with prospects of future unintended consequences of interventions.	SIA might be considered a <u>priori</u> program evaluation, and any monitoring could be a regular form of ER. SIA shares basic methodological concerns of separating effects of key change factor from exogenous factors (Cook & Campbell, 1975; Meidinger & Schnaiberg, 1980).
Environmental/Economic Impact Assessment	Distinctions between these fields and SIA simply involve domain of impact--physical or economic vs. "social" (to extent that such distinctions are made). A practical difference is that SIA practitioners have less consensus on appropriate variables or units of measurement.	Under NEPA, EIS's have usually focused primarily on physical, secondarily on economic, and only tertiarily on social impacts. SIA practitioners often depend on knowledge of physical and economic impacts for input to forecasts.

III. PURPOSES AND METHODS FOR SIA'S

If SIA were a clearly-defined discipline of its own, it might be appropriate to delve immediately into a discussion of available methodologies. But because the "discipline" is both eclectic and still in the process of formation, the procedures for carrying out SIA's are often affected by the underlying reasons and motives of clients and practitioners. So consideration of the how's of SIA will be preceded by some discussion of the various why's.

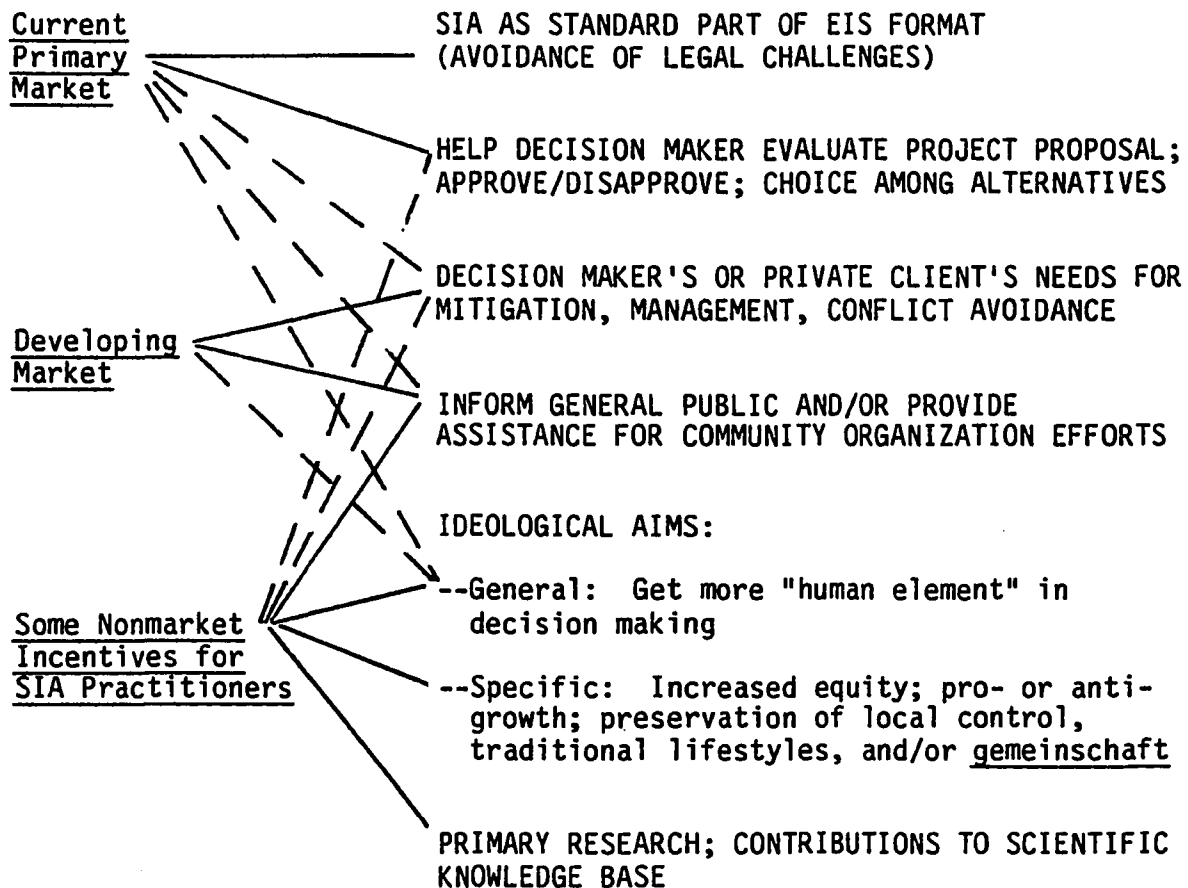
DIFFERENT REASONS FOR CONDUCTING SIA'S

The general, theoretical reason for doing social impact assessments--as for the broader environmental or economic assessments--would be to provide decision makers and/or the public with information needed to make better decisions about a proposed project. But in practice, specific reasons may vary with the actors involved. There are many such actors--the SIA practitioner, assessors of other types of impacts, various community groups, EIS reviewers, public or corporate decision makers, and private-sector clients or other interested parties who are not in a decision-making role.

For simplicity's sake, consider the primary motives of only two of the major actors: the SIA preparer and the client. Figure 1 lists six general purposes for which SIA's might be entered into by practitioners or desired by clients and/or decision makers. One of these purposes--"Ideological Aims"--is divided into two components because of differential implications for decision makers and practitioners. This list of

MARKET STATUS

MOTIVES/NEEDS OF CLIENTS, SIA PRACTITIONERS



Straight lines represent suggested major linkages; broken lines indicate weaker linkage.

Figure 1. Six Possible Purposes for SIA and Their Marketabilities

purposes or motives is intended to be illustrative but not exhaustive. A number of additional motives could be involved. For example, practitioners might be affected in some part by financial motives, ego involvement, or (in the case of academicians) the pedagogic opportunity to train or employ graduate students (Matzke, 1977). These serve to reinforce an important point to be made by Figure 1: Clients and SIA practitioners are quite often impelled by differing and occasionally conflicting motives.

Legal Requirements and Potential Challenges

From the client's viewpoint, perhaps the most compelling reason for subsidizing an SIA is simply that the environment impact statement is a legal requirement. The courts have ruled that social considerations must be covered in EIS's when such social effects are clearly germane to the project (Catalano, Simmons, & Stokol, 1975; Black, 1981). Also, EIS's may be challenged in court by parties who believe that some part of the EIS--such as the social portion--is inadequate. Thus, a major ancillary motive is avoidance of court challenges. A court challenge can, at the very least, delay implementation of a major public works project for years, and even the prospect of litigation may set in motion various forces which can effectively kill the project (c.f., Francis, 1975). Environmentalist forces in particular have not been loathe to use the legal weapons provided by the EIS system to fight projects which they oppose: "Subsequent court action brought under the provisions of

NEPA has been the single most effective litigation tool to stop or delay development harmful to the environment" (Francis, 1974, p. 49).

In marketplace terms, fulfillment of EIS requirements (in a situation where there is obvious community concern over potential social effects) is probably the major client motive for commissioning a strong SIA component. And so this becomes the major business consideration for the professional consultant who is selling the SIA as a product. However, the opportunity to make a sale comes only after the consultant is attracted to the field in the first place. While economic motives are a part of almost any individual's career choice to some extent, some of the other motives listed in Figure 1 may be of more overall import to the SIA practitioner.

Input to Decision Makers

The second reason listed in Figure 1--providing information so decision makers can make good decisions of whether to approve or modify a proposal--is the standard rationale for SIA (or, for that matter, EIS's in general). It is one which can motivate some practitioners, those who believe in the need for an informed decision-making process. And, of course, from the perspective of the decision maker (who, in many cases under NEPA, is also the client), this type of motivation is considered the proper one, in contrast to the previous idea of a "justification document" which simply fulfills requirements for carrying out a decision which has already been made--or even, for that matter, in contrast to

the original conception of the EIS as a "disclosure document" which simply informed the public about the anticipated impacts of a project which could proceed even despite negative EIS findings:

An environmental impact statement is more than a disclosure document. It shall be used by Federal officials in conjunction with other relevant materials to plan actions and make decisions. (United States Council on Environmental Quality, 1979, p. 9)

Obviously, a client seriously interested in information for decision making will demand a very different type of product. Often, of course, the consultant will receive a surface mandate for a serious analysis useful to a decision maker, but with attendant subtle signals that the only true motivation is for a justification document. (The field of technology assessment is also plagued with double signals from clients--see Bozeman & Rossini, 1979).

An SIA or EIS written principally to satisfy legal requirements is a document written simultaneously for the courts and for the client's interest, raising obvious problems both of ethics and of the consultant's ability to carry out apparently contradictory tasks. It is written to fend off opponents of a project and hence must be at once ultimately favorable to the project (or at least neutral) and at the same time apparently objective, exhaustive, and scientifically defensible in court. An SIA actually intended for the decision maker, by contrast, is one which must be useful to an intelligent but very busy layman. It is presumably more truthfully objective in content, more

concise in style, and more general in its wording. And the criteria for evaluating such SIA's have less to do with legal and scientific unsailability than with their utility to decision makers:

As viewed from the standpoint of considering forecasts as decision information, a forecast was useful if it led to a good decision at the time, even if events did not turn out to agree with the forecast. (Martino, 1973, p. 27)

Inevitably, there is disagreement as to whether SIA's or EIS's usually do serve the purpose of helping decision makers. For example, Friesema & Culhane (1976) believe that SIA portions of EIS's at that time were gross failures as "science" but definite successes in augmenting public accountability and leading to better decisions. On the other hand, Bardach & Pugliaresi (1977) argue that EIS's vulnerability to court review had transformed them into such unwieldy, obfuscatory tomes that their utility to decision makers had become nil.⁵

Mitigation, Management, Conflict Avoidance

While the National Environmental Policy Act requires that EIS's contain a section on suggested "mitigation" of impacts, there is no requirement that the mitigations actually be carried out. So the third possible SIA purpose listed in Figure 1--impact avoidance or management--often is not a major consideration for decision makers and other SIA clients today.

There are exceptions. For state and federal highway agencies, the primary reason for conducting social analysis is to avoid routings which

cut through geographically- and socially-identified neighborhoods (U.S. Department of Transportation, 1976; Llewellyn, Goodman, & Hare, 1976). Minimization of community conflict and other negative social impacts is a dominant theme in the literature on siting of nuclear power plants (Muntzing, 1976; Stoloff & Kemmerer, 1978; White, 1982). These are situations in which there is some degree of flexibility as to location of a project. However, many significant impact agents--particularly mineral and energy resource development industries--have a more restricted range of options as to where they should operate in order to minimize social or environment effects. That is, project sites are largely dictated by the physical resources being tapped or developed.

Figure 1 reflects a suspicion that the prospects for establishing comprehensive mitigation or social impact management systems are currently of secondary interest to many SIA consultants, especially those from academia. Consultants from private firms or think tanks, however, have expressed more interest in these topics, perhaps reflecting private operations' greater sensitivity to potential or developing markets. For example, a report from a Battelle Human Affairs Research Center team (Olsen, Curry, Green, Melber, & Merwin, 1978) defines SIA's very purpose in management terms:

...the purpose of social impact assessment is to enable policy makers to anticipate and plan for potential impacts before they occur, and then act to prevent or mitigate undesired impacts. As a result of such management efforts, some predicted impacts never actually occur. (p. 2)

By contrast, the emphasis in the SIA writings of university-based sociologists to date has been on the last three goals shown in Figure 1,

i.e., SIA as a research opportunity, ideological aims, and/or furthering community political action through informing the public of probable impacts.

Aiding Public Involvement

Citizen participation in the EIS process is mandated by the National Environmental Policy Act, and citizen input may come in several different stages of the process. Immediately following the required public announcement that an EIS will be prepared for a proposed project, citizens may write the government expressing their ideas about what potential impacts should be analyzed. Public hearings are often held before or during EIS preparation, and of course sample surveys may be conducted as a part of the EIS/SIA research (although this is not an automatic or required step and is actually not often done). Finally, a draft EIS is circulated for governmental and public review before a final EIS can be adopted, and the final EIS must append written comments and include some response to each (either a defense against critical comments or an acknowledgement and subsequent revision of the EIS text).

A number of SIA writers (e.g., Francis, 1975; Armour, Bowron, Miller, & Miloff, 1977; Boothroyd, 1978; Bowles, 1981) take the position that SIA should primarily concentrate on community awareness and that the assessment process should be one of constant interaction between the assessor and "the community." Such writers too often avoid the ticklish question of who "the community" is--elected officials? activist groups?

randomly selected survey respondents? all of the foregoing, even if there is little "community" of opinion among them? The issue is an important one, in light of the frequently asserted position that a "silent majority" of citizens does not participate in community organizations or come to public meetings, and that the "silent majority" usually thinks differently than the "vocal minority."

There are sharp differences in the SIA literature as to how or whether community groups should participate in defining and evaluating impacts. Runyan (1977) emphasizes "community-managed" impact assessment, in which the technically trained assessor's role is simply to help groups define impacts through standard approaches for eliciting views in structured contexts (e.g., Delbecq techniques, dialectical scanning, or impact simulation games). He sees predictive accuracy as an issue secondary to good decision making, which he feels is helped by public involvement more than by social scientists' crystal balls. Bowles (1981) feels that predictive accuracy in SIA is a goal unlikely to be achieved and that SIA should be a "clinical" act of assisting the community:

The problem of reflexivity ["self-altering predictions"], together with the practical necessity of involving community members in processes of decision making, probably poses insurmountable obstacles to any grand scheme to test a comprehensive social impact assessment model...

The application of SIA procedures to a given community is perhaps best considered as analogous to clinical practice rather than as a distinct exercise in empirical research. In an SIA, as in clinical practice, a great deal of empirical information is collected about the particular case, this information is interpreted in terms of general conceptual frameworks, and some actions are based on the resulting observations. The prime objective, however, is not verification of empirical propositions, but positive adaptation of the

individual (in the case of clinical practice) or the community (in the case of SIA). (Bowles, 1981, pp. 34-35)

By contrast, Wolf (1977, p. 19) believes that SIA professionals should assume analytic rather than advocacy roles: "There are plenty of partisans about; informing the debate seems more urgent than inflaming it." Wolf calls for predictive "assessment" of social impacts by experts, followed by a stage of "evaluation" with the public (see Figure 2 on page 113). Peterson & Gemell (1977) want an explicit citizen participation role written into standard SIA guidelines, but they also believe the actual EIS should simply present "facts" and leave evaluation to a heightened political process rather than attempting to include the public's evaluative response in the EIS or SIA document itself. (This dispute is part of a larger one on the very nature of, and proper goals for, SIA; that dispute will shortly be addressed in greater detail.)

Thus, from the viewpoint of some practitioners (though not from the viewpoint of the law or perhaps of many decision makers), there is an overlap between the fourth and fifth purposes shown in Figure 1--informing the public and pursuing specific ideological goals related to preserving or enhancing local lifestyles and/or political control.

Ideological Motives

Other, more specific ideological goals or conflicts may underlie SIA, and there is evidence that social scientists may be less concerned

about keeping their personal values out of impact assessment work than out of more scholarly research publications (Matzke, 1977). Cortese (1980) objects to "mitigation" and "management" emphases in SIA because he feels they imply a philosophy that growth is good if only the side effects can be handled. As noted in the previous chapter, Cortese and many other sociological students of SIA have been accused of an "anti-growth bias" because of supposedly romanticized concerns about impacts of major population growth on small-town gemeinschaft. And while the opposite bias has only rarely surfaced in the sociological academic SIA literature, there are certainly both consultants and scholars who are motivated by the desire to aid economic development and growth.

Another specific type of ideological motive would involve opinions on the need to introduce a particular dimension or topic into the public decision-making process, especially one which, the consultant may feel, has not been receiving adequate attention. For example, a belief that "equity" and "distributional justice" should be a central focus of SIA is another recurrent theme in the literature (c.f., Vlachos, Buckley, Filstead, Jacobs, Maruyama, & Willeke, 1975; Burdge & Johnson, 1977; Griffith, 1978b) and was perhaps most succinctly expressed by Peele (1974, p. 117): "'Who pays the costs and who gets the benefits' is the crucial social analysis question."

Contributions to Science

The final "nonmarket incentive" listed in Figure 1 for some types of SIA practitioners (especially part-time consultants from academia) is

the opportunity to conduct primary research and contribute to the knowledge base. Some observers see this as the primary purpose for social scientists' involvement in SIA (Catalano, Simons, & Stokol, 1975; Matzke 1977). For example, Piccagli & Thompson (1978, pp. 492-493) urge abandonment of "a priori, largely conjectural" predictive SIA's in favor of a decision-making system focused on developing research findings about controversial new activities. They recommend the slow, cautious development of some sites while carrying out "comparative diachronic" monitoring procedures (in effect, pre-test post-test measures) to determine the impacts of the project in the test areas before allowing wider technological developments of the same sort elsewhere. Soderstrom (1981) sees such experimental or quasi-experimental efforts as the true justification for social scientific involvement in the field. Thus, post-SIA research--monitoring and evaluation--is an implicit and crucial aspect of this endeavor.

In essence, this is a call for using data from post-implementation monitoring activities as "natural experiments" of the kind which Donald Campbell (1969; Cook & Campbell, 1979) has urged social scientists to study. Meidinger & Schnaiberg (1980) point out that Campbell's ideas were influential in crystallizing the field of evaluation research, but that program evaluators have often been unable to pinpoint true cause-effect relationships between interventions and later events or conditions because of (1) exogenous influences, (2) changes in reporting procedures, and (3) political or bureaucratic pressures to corrupt data

kept for evaluation purposes. In the case of economic developments, they argue, there would be even greater pressure to corrupt data and/or ignore results.

Although there is a good deal of merit to Meidinger & Schnaiberg's points, it should also be noted that SIA as a predictive activity cannot develop without generating a literature of case studies about the various consequences of socio-economic changes in various types of communities. Because of the great variety of confounding variables and interactions in real-life settings, such case study literature based on project monitoring will never allow future SIA preparers to state with the certainty of physical law what will happen if a proposed project is approved. But it would permit some intelligent estimates of what could happen if the project proceeds under different types of likely circumstances. Such information is vital both to decision makers for guiding policy deliberations and to social scientists for generating testable hypotheses and theories. Thus, the purpose of using SIA as an entry point for later follow-up studies is hardly trivial despite lack of interest by marketplace clients:

...the costs [of systematic longitudinal monitoring of project impacts] would run very high, the research results would take years to compile, and exogenous factors might vitiate the findings; yet, without longitudinal data, estimates of long-range impacts and synergistic effects will probably continue to be pure speculation. (Llewellyn, 1974, p. 104)

METHODOLOGICAL ISSUES: (1) PHILOSOPHICAL CONCERNS

The true challenge for SIA is to evolve a set of reliable specific methodologies. This is a vast topic for discussion, and one which can be only briefly summarized in this chapter. Needless to say, a significant proportion of the overall SIA literature is dedicated to methodological concerns. Some of the more extensive papers are those by Wolf (1974b), Miller (1977), and Olsen, Curry, Green, Melber, & Merwin (1978); leading books in the field include the works of Finsterbusch & Wolf (1977), Finsterbusch (1980), Leistritz & Murdock (1981) and Soderstrom (1981). Canter (1977) provides an overview of a great variety of methodological approaches for identifying, predicting, and evaluating all types of impacts--social, physical, and economic--in EIS preparation. Porter, Rossini, Carpenter, & Roper (1980) have prepared one of the most comprehensive reviews of methodologies used in social impact assessment, environmental impact assessment, and technology assessment.

The remainder of this chapter is devoted to three areas of methodological concerns. In this section, there will be an exploration of several important philosophical concerns. In the next section, the basic decision points for design of a predictive SIA will be considered. And in the final section of the chapter, attention will be paid to both general and specific tools for forecasting and social analysis.

Three philosophical points to be covered in the present section of the chapter relate both to the why and to the how of SIA: (1) general

frameworks and rationale; (2) types of social data and variables studied, and (3) etiological considerations. All of these concern values and assumptions which the SIA practitioner is likely to have to come to terms with even before beginning the design phase for any particular study.

General Frameworks and Rationale for SIA

The previous discussion on different reasons for doing SIA suggests at least three audiences for an SIA: the courts (and, by extension, the academic community of "hard" scientists who might be called upon as expert counter-witnesses); the decision makers; and the public. (When distinct from decision makers, clients may represent a fourth audience; however, although clients' interests may shape the tone and nature of an impact assessment, an EIS/SIA is primarily written for other audiences.) Although the language of NEPA and similar legislation suggests every EIS should address all three of these audiences, this is not possible in practice. To the extent that one audience is kept primarily in mind during EIS and SIA preparation, a different framework and approach will tend to emerge as compared to the situation in which another audience is emphasized. In fact, the very word "audience" may be misleading, since it tends to imply that the product would be similar and only the style of communication would differ. The truth is that a value decision about whose interests should be served may affect the very nature of the product--whether it is even a convention EIS or whether it is something closer to an intelligence advisory or set of action recommendations.

Very broadly speaking, two general types of framework have emerged in the published SIA literature. Following Frank J. Tester (1981), it should quickly be noted that these are more or less the end points of a continuum, and many practitioners or theoreticians might advocate an approach somewhere between these two extremes. One approach, to be termed the "linear model" in this dissertation, evolved out of the original conception of the EIS as a disclosure document. It stresses SIA as a predictive science; the underlying values are those of science, especially those scientific standards which could be challenged in a court of law; and its ultimate purpose is publication of a valid written product which can be useful to the decision maker and the general public.

The second general framework, which will be dubbed the "feedback" model here, is dedicated to SIA as an imperfect but useful tool for facilitating both decision making and communication with the public. Its focus is on process rather than product, and its value system ranks real-world policy outcomes as of more import than scientific validity. There is a clear relationship here with the previously mentioned conception of "clinical" SIA (Bowles, 1981). However, "feedback" or process-oriented SIA could be devoted primarily either to aiding the public or to aiding the decision maker. As it happens, the most clearly specified models are those which primarily aid the decision maker (possibly because that is where the funding usually is available). Some literature does exist on impact assessment procedures to be carried out by

residents themselves (Heder & Francis, 1977; Runyan, 1977). And the approaches based on identifying and resolving community issues (Dale & Kennedy, 1981; Preister & Kent, 1981) have the clear potential for aiding both community and change proponent, although the latter usually has priority since the rationale for these approaches is the minimization of community opposition. However, the choice of the label "feedback model" reflects the current reality that the most systematic of these approaches involves feedback of impact information to the decision maker and/or project proponent. (At the same time, much of the logic of these "feedback" processes could also be applied by those who feel a primary responsibility to the impacted public.)

Frank Tester has written that the implicit debate between advocates of these two general SIA frameworks amounts to one of the most serious philosophical schisms among SIA theorists and practitioners, because it goes to the heart of defining what the true ideological goals of SIA really are:

...it is upon operationalizing the goals for SIA that fundamental disagreements about its basic "posture" arise. At the extremes, SIA may be regarded as intended to bring about fundamental social change by creating an active informed public through the processes involved in conducting assessment and by demonstrating the social costs, benefits and consequences of certain types of decisions. An implicit bias and specific vision of the future can be associated with this view. SIA is seen primarily as social phenomenon, oriented toward social change and as questioning the fundamental direction of the ship.

The alternative view of SIA places it, with other tools of the policy sciences, in a process which is bringing about incremental changes and which is concerned with "fine tuning" current trends in decision making through improving the techniques and technology by which we assess social impacts. An

implicit bias and specific vision of the future can be associated with this view. SIA is seen primarily as social science orientated toward meeting the needs of disjointed incrementalism in policy formulation. (Tester, 1980, p. 5--original emphasis)

Tester, whose interpretation of what is here called the "feedback model" (he does not attempt to label the approach himself) places somewhat more emphasis on serving the community than the decision maker, makes the further comparison between the two approaches shown in Table 2. The polarization of SIA around these two general positions is attested to by Peter Melser's (1983) division of a "state-of-the-art" analysis into two separate perspectives: the state of the art from the "science" perspective and the state of the art from the "process" perspective. (See Chapter IV for further discussion.)

Both approaches will now be further discussed and illustrated, and then a position will be taken for purposes of this dissertation.

The "Linear" Model: To establish SIA as a truly predictive science would require stipulation of standardized impact assessment areas and methodologies, and, as will shortly become apparent, this has not been done. However, a general planning framework setting forth certain steps for SIA tended to dominate the literature of the 1970's and still shapes the mainstream of predictive SIA efforts in the 1980's. This evolved from a seven-step impact assessment process developed by the United States Army Corps of Engineers (1972) for meeting Section 122 requirements of the River and Harbor and Flood Control Act of 1970 (Public Law

Table 2

Tester's Comparison of "Linear" and "Feedback" (or "Process") SIA Models

	<u>"Linear"</u>	<u>"Feedback"/"Process"</u>
Perception of the Democratic Tradition	<p>centralized</p> <p>recognition of the majority</p> <p>elitist</p> <p>management by a strong central bureaucracy</p>	<p>decentralized</p> <p>recognition of a cultural mosaic</p> <p>shared power</p> <p>management at a local level</p>
Resolution of Issues Related to Context	<p>context is that of the majority as perceived by the researcher/manager as a member of the majority</p> <p>detached and objective observer</p>	<p>context is that of the minority or member of the mosaic in question as perceived by the minority and as conveyed by</p> <p>the participant observer</p>
Methodological Approach	<p>sociological/economic</p> <p>objective</p> <p>detached observer</p> <p>mathematical</p> <p>objectification of experiential reality</p> <p>SIA as <u>science</u></p> <p>structural/functional</p>	<p>subjective</p> <p>participant observer</p> <p>attention to qualitative factors</p> <p>participatory</p> <p>SIA as <u>art</u></p> <p>anthropological/existential/gestalt</p>

Table 2. (Continued) Tester's Comparison of "Linear" and "Feedback" (or "Process") SIA Models

	<u>"Linear"</u>	<u>"Feedback"/"Process"</u>
Perception of Social Impact Assessment	SIA as social science research resulting in a specific product containing data for	SIA primarily as a process and only secondarily producing a product, and as social

Source: Tester, 1980, p. 5 (however, Tester does not assign names or labels to the two different SIA approaches)

91-611), which mandates a full accounting for indirect consequences of projects involving the nation's water resources.

Figure 2 identifies the various stages of the framework. It should be noted that the Corps has since slightly modified the initial stages (Finsterbusch, 1982a), but Figure 2 effectively summarizes the major steps usually discussed.⁶

This framework, somewhat modified with the passage of time, became familiar to private-sector and academic practitioners of SIA through publication in the Social impact assessment newsletter (Connor, 1977) and through its use in organizing papers anthologized in the early text Methodology of social impact assessment (Finsterbusch & Wolf, 1977). As a result of the new guidelines for EIS's issued by the Council on Environmental Quality in 1978 (which were in turn, it may be recalled, based on a presidential Executive Order of 1977 mandating EIS's to be shorter, clearer, and more free of "extraneous background data"),⁷ a pre-assessment "scoping" stage to pinpoint crucial issues for study has been added to the framework in the past few years. This is why Figure 2 sets forth eight rather than seven steps.

This initial "Scoping" step is largely for the purpose of identifying important potential impacts so that time and paperwork is not wasted on trivial subjects. The social scientist may reasonably inquire how "important" impact areas can be identified prior to the impact study. Part of the answer lies in the fact that many EIS's under NEPA are preceded by a rough "environmental assessment" which contributes to

<u>NAME OF STEP</u>	<u>DESCRIPTION OF ACTIVITIES</u>
1. Scoping	Establish parameters and procedures for impact assessment, clarifying what needs to be studied in depth and what can be lightly touched upon or dismissed.
2. Profiling	Present data showing the present levels or conditions of the affected community on the variables and indicators selected for attention in the "Scoping" step.
3. Projection-- <u>Without</u> Project	For time frames determined in "Scoping" step, estimate future levels or conditions for variables and indicators if the project <u>does not</u> occur.
4. Projection-- <u>With</u> Project	For same time frames, estimate future levels or conditions for variables or indicators if the project <u>does</u> occur.
5. Assessment	Make a value-free factual summary of the differences predicted for the community's future between the "with-project" and the "without-project" conditions.
6. Evaluation	If evaluative criteria were not specified in the "Scoping" step, do so now. If alternative forms of the project have been studies, apply criteria and select best alternative.
7. Mitigation	Review unavoidable adverse impacts and identify possible measures to alleviate impacts; compare alternative mitigation proposals and select most effective possibilities for recommendation.
8. Monitoring	Measure actual vs. predicted impacts; feed back information to public and policy makers for appropriate action.

Figure 2. "Linear" Model for Social Impact Assessment Framework

such identification, and another part of the answer lies in the fact that the literature on physical environmental impacts often allows good rule-of-thumb estimates about which physical consequences are most salient under given conditions. But foreknowledge of probable magnitude of social and psychological factors is not so well-advanced, and so "scoping" remains something of a conundrum in SIA.

One of the most important points about Figure 2 relates to the third step--projecting future conditions without the project. This projected (or "predicted" or "forecasted") future, not present conditions, is the reference point for assessing or evaluating future impacts with the project. Thus, the process calls for at least two attempts to foresee the future, and it thereby necessitates a careful consideration of all other forces for social change ("exogenous factors") at work in the community.

Perhaps needless to say, the most crucial question about SIA methodology is: exactly how does one go about predicting the future under these varying conditions? Consideration of this questions will be deferred for a short while, but it may quickly be said at this point that (1) a variety of methods exist on paper, and (2) a variety of criticisms have been leveled at the utility and validity of all of them.

Figure 2 makes a distinction between the "Assessment" and "Evaluation" stages, although NEPA makes no such requirement. However, the importance of citizen participation is a prevailing value in the SIA

literature, even for those who have faith in SIA as a form of predictive science. The influential C. P. Wolf looks to the "Evaluation" stage as the appropriate time to provide citizen input in what is otherwise a scientific process. He identifies projection and assessment as the expert's responsibility and evaluation as the citizens' role (although in reality evaluation is most often the right and responsibility of the government decision maker).

The approach of Figure 2 has here been labeled the "linear model" to indicate the straightforward nature and engineering heritage of this general framework. It is also "linear" in the sense that there are no iterative procedures to be made based on responses of either decision makers or citizens to the initial set of impacts or impact forecasts. (Citizens or affected agencies do have the chance to comment upon a "Draft EIS" prior to completion of the "Final EIS," but in practice the sorts of adjustments which occur between the "Draft" and "Final" stages tend to be of the fine-tuning variety.)

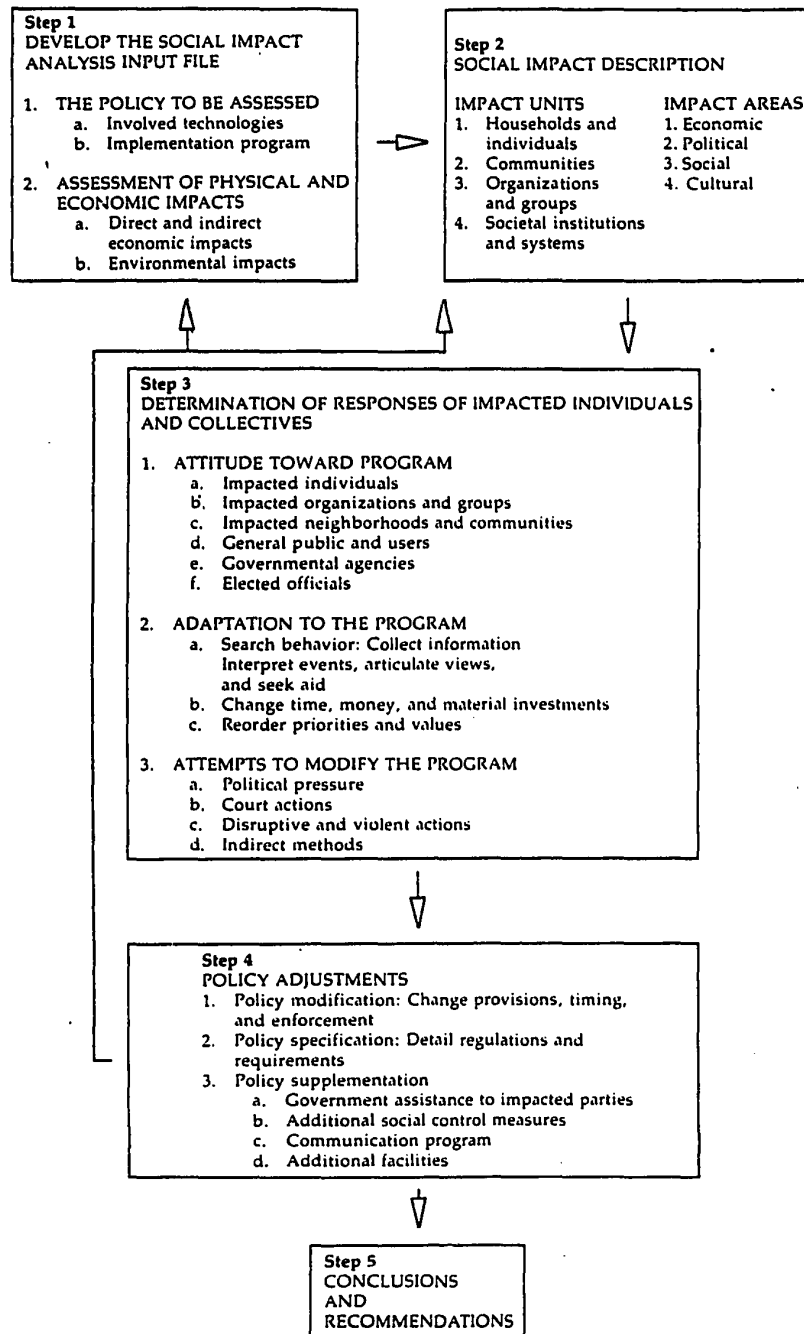
The "Feedback" Model: Although he has been instrumental in promulgating the linear model of SIA, Wolf (1974b) has also pointed out that prediction of later impacts is often hampered by residents' adaptive responses to initial impacts. Thus, a model based less on simple cause-effect assumptions and more on open, dynamic systems principles is indicated.

Building on the earlier work of Finsterbusch (1975), Finsterbusch & Motz (1980) have developed what might be regarded as a "feedback

model" for framing SIA work. This is reproduced in Figure 3. Their prescription places heavy emphasis on the political step of determining resident response toward the proposed project or program and feeding back information about this response to policy makers. If this feedback produces revisions in the proposed program or project characteristics, more impact assessment is required, followed by more exploration of resident response, implying the potential for even further iterations. Finsterbusch & Motz are frank in emphasizing the political nature and the political value of this approach:

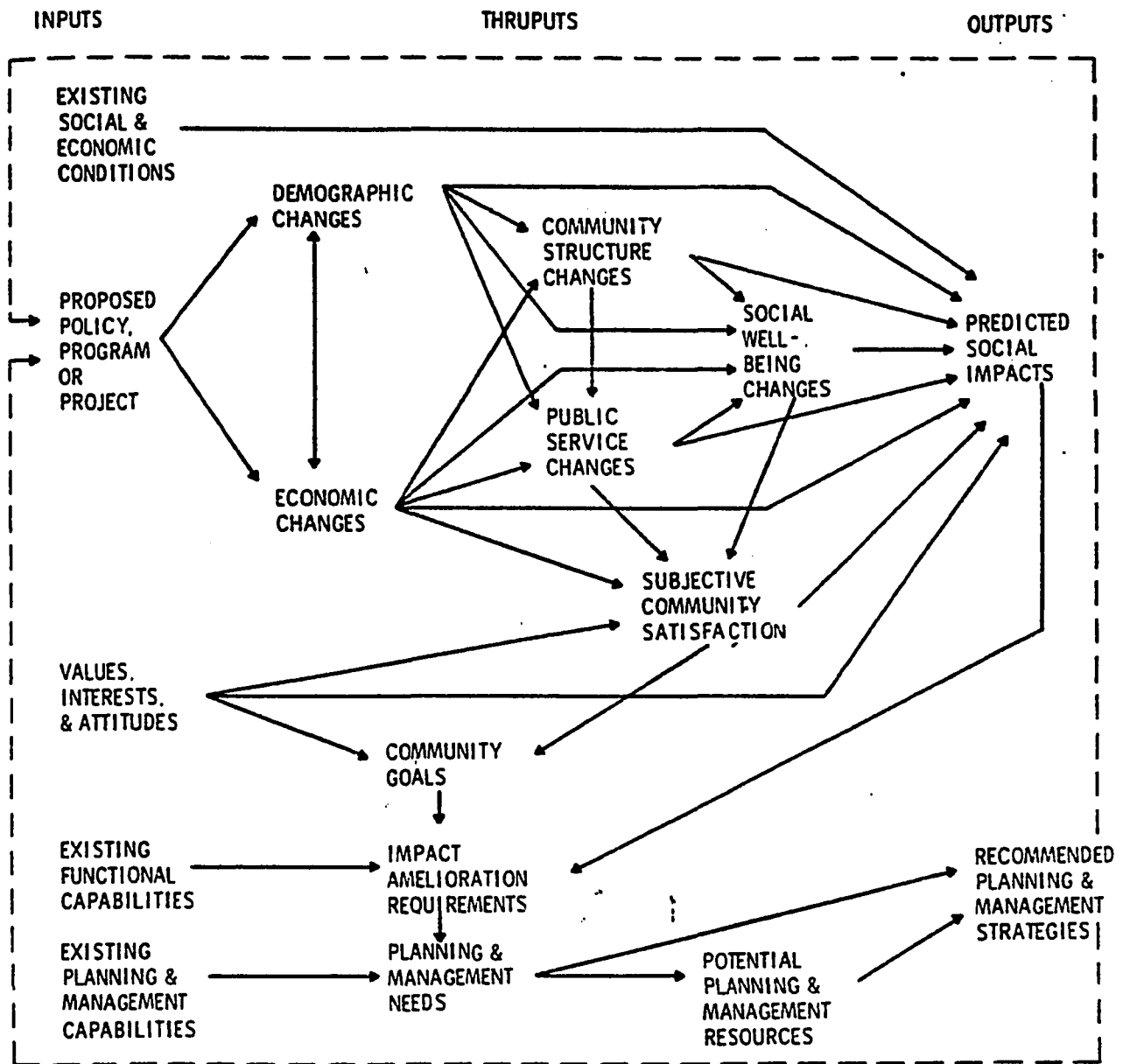
Decision makers are especially interested in being warned of actions that affected parties may take to stop or modify the policy. The social impact assessment provides such warnings when such actions can be fairly reliably estimated. (p. 111)

Olsen et. al. (1978) are among those who have pointed out that "feedback" effects occur in another way--that is, in the adaptation of a community to impacts, whether such adaptation takes place in response to knowledge acquired during the EIS/SIA preparation process or simply in response to the initial occurrence of primary impacts after project implementation. These authors have devised a general framework, reproduced in Figure 4, which incorporates both the process-oriented feedback affecting the nature of the policy or project and also the product-oriented feedback affecting the nature of the impact being predicted. That is, their framework indicates that the project's design characteristics could be affected by the SIA process, and also that the nature of the predicted impacts could be affected by the community's initial adaptive responses.



Source: Finsterbusch & Motz (1980, p. 84)

Figure 3. "Feedback" Model for Social Impact Assessment Framework



Source: Olsen, Curry, Greene, Melber, & Merwin (1978, p. 5)

Figure 4. Combined Feedback and Impact Prediction Model

While this model probably best reflects the complexity of real life, it is also exceedingly difficult to implement as a practical procedure, and it makes questionable assumptions about the ability of planners or social scientists to predict the nature of cause-effect relationships shown in the model. In recent years, senior author Marvin E. Olsen himself has come to doubt the efficacy of this approach and now feels it may be more important for social scientists to provide piecemeal assistance to citizen groups who are supporting or opposing proposed projects in the political arena (personal communication).

As previously noted, the other variant on the "feedback" model is input to citizens rather than (or, sometimes, in addition) to decision makers. This may sometimes involve the preliminary step of making estimates or forecasts about the future (Bowles, 1981), but at other times the thrust is more purely political. The idea that SIA is a technocratic concept better replaced by straightforward political action is more or less implied by Griffith's (1981) call for social impact analysts to abandon the "normal science" model in favor of a more phenomenological approach, and in Preister & Kent's (1981) method of approaching social impacts through community dialogue based on prevailing public concerns and issues.

And it is certainly worthy of note that socio-cultural factors probably had their most significant impact on national decision making in North America as a result of Canada's "Berger Inquiry" (Berger, 1977; Rees, 1978), named after the Inquiry's chairman, former Canadian Chief

Justice T. R. Berger. The Berger Inquiry did not involve the preparation of scientifically accurate, predictive "impact statements," but rather an extensive series of public hearings on residents' concerns regarding proposed natural gas pipeline routes through environmentally and culturally sensitive parts of northern Canada. The pipeline companies had spent \$50 million on preparation and planning for the massive 2,600-mile undertaking, and Berger persuaded the Canadian government to contribute \$1.5 million to enable the 30,000 affected area residents to conduct research and represent themselves at the hearings. Speaking for themselves and in their own tongues, various native Indian, Eskimo, and Meti (mixedblood) groups and individuals explained their apprehensions about the proposed project's effects on their peoples and relationships with the land. Although lacking the benefit of learned interpretation by social scientists, the combined weight of testimony in this strictly political "impact assessment" procedure helped to modify and partially eliminate a project supported by very powerful economic interests:

Among other things, the Berger Inquiry recommended a ten-year delay in pipeline construction. Immediate construction would not bring orderly and beneficial development but rather abrupt, massive and overwhelming change, destroying the way of life and very possibly the lives of the native peoples of the region. Berger believed there was no chance that these severe impacts could be mitigated in the time available. Native residents themselves believed that they would be forced to the margins of their own communities, with no hope of resisting the tide. The ten-year interregnum would allow land claims to be settled. Land, Berger found, was the element that held culture, traditions and present and future sources of livelihood together. The ten-year delay would also allow the management of renewable resources to be strengthened so that new development could diversify rather than displace the existing economic base.

Berger argued that the judgments involved in development were not just scientific, technical and economic, but also were social and ethnical in character. Development cannot be removed from its context in the social and political life of communities and the shaping of human society. Berger argued that since the Industrial Revolution western society has believed in the creation of wealth through technological development, and this model of development has been dispersed throughout the world... Berger sees the necessity of a new philosophy to sustain us in the post-industrial era. It is a mistake, he believes, to think of the choice as one of "growth" or "no growth." Rather, the issue is one of the rational application of industry and technology. (Melser, 1983, p. 6)

Still, it can be asked whether this case was not the exception rather than the rule for impact assessment via public hearing. The Berger Commission expended far more time and money on its traveling series of hearings than is the norm for government agencies, primarily because of the unique values and personality of the chairman. The commendable practice of alternating modes of public input--both very formal and very informal--is not one that most agencies or legislative bodies will find practical or even legally possible except in highly unusual circumstances such as this one was. Furthermore, in this case the news media played a key role in aligning national sentiment with project opponents, and it is hardly certain that minority groups will always enjoy such success in political arenas.

Position on the Models: The present dissertation is based on the assumption that there is not necessarily an incompatibility between political action (or feedback to political decision makers) and efforts to predict social impacts through examination of data, examples, or

theory. In practice, of course, the partisan nature of a political effort may fly in the face of an "objective" inquiry by social scientists. But there is room in the decision-making process for both political and scientific activities.

At the same time, it seems appropriate to place a primary (although not exclusive) emphasis on the sort of predictive SIA which is called for in the "linear" model. That is because (1) this form of social impact assessment has the most relevance to psychology as a social science, and (2) it is currently the activity most supported by the market because of NEPA and other EIS-type legislation. The latter reason may be changing. In the 1970's, the United States Federal Highway Administration--after developing some curious "objective" social impact indicators to be described shortly--began shifting its social emphasis toward citizen input rather than predictive impact statements (Dale & Kennedy, 1981). Also, as mentioned earlier in this chapter, the developing private-sector market will probably care more about feedback and social impact management approaches than social forecasts. However, this potential is still in the process of being realized, and the greater relevance of predictive activities to psychology as a social science discipline is still a fact. Therefore, this dissertation will feature more discussion of predictive or "linear" SIA models than of "feedback" or other process-oriented models. Additionally, the activities of mitigation and monitoring--while a part of the Army Corps' model reproduced in Figure 2--will generally be omitted from discussions of

predictive activity and treated elsewhere; this is because of their intrinsically nonpredictive nature. Thus, the principal focus of the rest of the dissertation will be on predictive aspects of the "linear" SIA model.

Types of Social Data and Variables Studied

Another basic philosophical issue in SIA, partly carried over from the social indicators literature, has to do with which types of social variables should be studied--and, consequently, which types of methodology may appropriately be utilized. There are three major dimensions of controversy: (1) primary vs. secondary data; (2) subjective vs. objective data; and (3) qualitative vs. quantitative data.

1. Primary vs. Secondary Data: Primary data are figures or information generated by the researchers themselves, while secondary data are already existing. Social science researchers devote much of their education to learning techniques for primary data generation and analysis, and so they are often professionally disposed toward primary data (except in the case of literature reviews, which might be said to constitute "a scholarly form of holistic secondary data analysis").

However, the planners who often head up EIS teams, the clients who commission the studies, and some of the decision makers who utilize the studies often are more predisposed toward secondary data sources. One of the most important reasons is money: it is simply much cheaper to

consult census figures--even if they are eight years out of date--than to commission a survey to derive more contemporary data. At the other extreme, some planners and/or economists who are willing to spend large amounts of money on computerized "impact assessment models" (Aidala, 1977; Murdock & Leistritz, 1980; Bonnicksen & Lee, 1981) are interested only in secondary data because these are (1) quantitative, and (2) longitudinal. On the latter point, secondary data sources are indisputably superior to most primary data if they are part of a time-series of regularly collected information, such as census figures, because only such repeated measurements lend themselves to trend extrapolation methods of estimating future situations (both with and without the proposed project). Finally, secondary data are generally of the "hard" (objective and quantitative) nature valued by many planners who feel that "soft" (subjective or qualitative) considerations are appropriate to the political process but not to technical input from staff assistants or scientific consultants.

Predictably, such views have been vigorously resisted by those social scientists who have become involved in SIA. The rationale for generating new data or data sources is a simple one: existing data often are not relevant to the important social issues generated by the proposed action.

To do otherwise [than to generate appropriate primary data] would result in the substitution of data availability for evaluation criteria as the primary analytical framework within which impact analysis is conducted. (Cook & Scioli, 1973, p. 337)

...there is a tendency to let the data source be the guide to the conceptualization of social factors, rather than the other way around. The result can be expressed as, "I've got a secondary data source of objective data, now what does it measure?" instead of asking, "What do I want to measure and what data are more appropriate?" (Andrews, Hardin, & Madsen, 1981, p. 72)

Census data say nothing about feelings of alienation, community attachment, quality of life, etc. As will be illustrated toward the end of this chapter, some government agencies have attempted to wring such meaning out of census statistics, with sublimely ridiculous results. For the most part, though, it must be recognized that available data are not necessarily pertinent data.

For SIA's which are part of federal EIS's under NEPA, Section 1502.22 of the Council on Environmental Quality's 1978 guidelines offers some generally reasonable principles about whether to obtain primary data:

When an agency is evaluating significant adverse effects on the human environment in an environmental impact statement and there are gaps in relevant information or scientific uncertainty, the agency shall always make clear that such information is lacking or that uncertainty exists.

(a) If the information relevant to adverse impacts is essential to a reasoned choice among alternatives and is not known and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.

(b) If (1) the information relevant to adverse impacts is essential to a reasoned choice among alternatives and is not known and the overall costs of obtaining it are exorbitant or (2) the information relevant to adverse impacts is important to the decision and the means to obtain it are not known (e.g., the means for obtaining it are beyond the state of the art) the agency shall weight the need for the action against the risk and severity of possible adverse impacts were the action

to proceed in the face of uncertainty. If the agency proceeds, it shall include a worst case analysis and an indication of the probability or improbability of its occurrence. (United State Council on Environmental Quality, 1979, pp. 14-15)

Straightforward as these principles may appear, there will certainly still be differences of opinion over what constitutes an "exorbitant" cost for generating primary data, and individual judgment (and budgets) will always come into play. The professional SIA practitioner will probably have to develop a philosophy based on experience as to which circumstances truly demand primary data collection (and to what extent).

2. Qualitative vs. Quantitative Data: Section 102(2)(B) of NEPA specifically mandates the federal government to "insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations." The 1978 CEQ guidelines made clear that this mandate was relevant to the EIS mechanism set forth in Section 102(2)(C) of NEPA. Those strongly disposed toward quantification in all analyses have sometimes read Section 102(2)(B) to suggest that "consideration" of a presently (at the time of NEPA's passage, 1969) unquantified amenity or value is not "adequate" unless the variable can be quantified at the time the EIS is prepared. However, case law has not supported this view:

Although some courts believe quantification should be attempted to the extent possible, the prevailing judicial view is that quantification is not a prerequisite to adequate

consideration of hitherto unquantified environmental values. Moreover, when calculations underlying attempted quantification are in dispute, the full range of conflicting opinion should be revealed in the EIS. (Liroff, 1980, pp. 14-15)

Despite the apparent clear green light for qualitative analysis in EIS's and SIA's, the inclusion of qualitative data and methods is one of the more controversial questions in the field, with a wide range of opinions and positions. One observer recently asserted that opinions on the matter in the SIA community encompass the following gamut:

1. There is only counting.
2. Everything that is important can be counted.
3. If we deal with the countables the uncountables will take care of themselves.
4. We should count both the countables and the uncountables.
5. Counting is useful but much that is important cannot be counted.
6. Those things that are important cannot be counted.
7. What is counting? (Bowles, 1983, p. 12)

Some fairly prominent figures in SIA (e.g., Flynn, 1976) have gone so far as to urge restriction of the field to employment and population projections unless and until SIA finds standard and reliable ways to quantify concepts such as "community cohesion." (It may be noted, however, that Flynn herself eventually proposed other SIA paradigms which implicitly involved qualitative analysis--see Flynn & Flynn, 1982.) The reasons for this may involve the frequent association between qualitative approaches and the sort of "subjective" data which, it will soon

be noted, is particularly bothersome to a great many researchers and decision makers. But a key reason clearly involves the ideological belief that quantitative analyses lend respect and credibility to the field of SIA while qualitative analyses do not:

Even the best of theoretical and logical conclusions will be discarded [by decision makers] as unworkable opinions unless they are documented and justified by tangible or quantitative fact that can be understood by the layman. (Schott, 1977, p. 237)

While virtually nobody in SIA would go to the opposite extreme of banning quantitative data, there are a number of holistic, ethnography-oriented researchers (e.g., Baur, 1973; Dunning, 1974; Vlachos, Buckley, Filstead, Jacobs, Maruyama, Peterson, & Willeke, 1975; Vlachos, 1982) who are equally dogged in asserting that participant observation and other qualitative forms of ethnography are vital for understanding the true meaning of social patterns. One of the most articulate of these has been Raymond Gold (1977, 1978, 1982), who argues that "a numerical depiction may not be faithful to the social scene or event being studied, while a narrative one is" (1978, p. 111). Gold's point is perhaps best served by reproducing one of his anecdotal "boomtown" examples:

For example, the established residents in Forsyth, Montana tend to avoid most of the local bars now because there has been some violence and other unpleasantness and tenseness in these establishments since certain groups of Colstrip construction workers began frequenting these bars... Little is learned about social impact when it is found that, as a matter of fact, only a small number of construction workers (they are mostly men in one building trade whose members are trying to maintain their national reputation as "good drinkers" and "barroom brawlers") rather than construction workers in

general is "really" responsible for the alleged violence and other unpleasantness. Counting such externals as the number of construction workers who fight and cast insults loudly in bars, the frequency with which they so behave, and the like perhaps means something to the researcher who does the counting; and he may report that the great majority of construction workers are really fine fellows and that only a small number are the "real troublemakers." This kind of reporting is what [Max] Weber wanted social scientists to play down because it does not address the critical question of what the situation means to those concerned. It is an actual social fact that the locals define the tavern situation in Forsyth as having been made unwelcome by Colstrip's construction workers... (Gold, 1978, footnote 5, p. 115)

Still, it may be noted that Gold himself seemed unconcerned with the social reality of those construction workers who would like to dispell the stereotype that "all construction workers are trouble makers." The quantitative analyses mentioned would have been of service to them.

3. Objective vs. Subjective Data: As will be discussed in more detail in Chapter V, the social indicators movement has long been split over the issue of the desirability of using "subjective" data (self-report information from surveys on attitudes, values, quality of life, etc.) to supplement "objective" social indicators. Proponents of subjective indicators--like the advocates of qualitative ethnographic methodologies--rarely seek to eliminate the use of objective indicators, but proponents of objective indicators sometimes urge the abandonment of all subjective data (Drewnoski, 1977) despite empirical evidence of little or no correlation between objective and subjective measures of quality of life (Schneider, 1976).

In the field of SIA, the agency which has been one of the most influential in the development of the field, the United States Army Corps of Engineers, has also been one of the most distrustful of any use of subjective data, preferring to find ways to convert psychological variables to dollars or other units more amenable to traditional cost-benefit ratio techniques (Delli Priscoli, 1982--this will be further discussed toward the end of this chapter). The Corps' negation of subjective data is so firm that one of its important criteria for evaluating indicator methodologies is whether the approach is sufficiently "objective" (Canter, 1977). This distrust lingers despite recognition that opinions and perceptions are sometimes more important than "objective" measures--e.g., the perception of equitable distribution of costs and benefits, not objective indicators of equal opportunity, is what leads to community controversy and opposition to proposals by the Corps (Daneke & Delli Priscoli, 1979).

Andrews, Hardin, & Madsen (1981) note that the Army Corps and other government agencies nevertheless have sometimes been inclined to read subjective meaning into objective indicators: "This has methodological implications in that to analyze the objective conditions would result in erroneous conclusions, since public perception would be left out of the process" (p. 73). Andrews et. al. suggest that major reasons for the preference for objective data lie in the fact that secondary data sources usually tend to be of an objective nature:

One [reason] is that "hard" data is [sic] easily enumerated and measured. Second, objective data sources, such as the census, keep standardized records nationally, and do this over time, making standardized comparisons readily available. A third reason is that the person or agency doing the evaluation does not have time to be in the business of gathering primary data, which is time consuming, expensive, and requires specialized expertise. Often a social impact assessment is constrained by a short deadline, which can make it difficult to gather and evaluate primary data. (Andrews et. al., 1981, p. 72)

Andrews et. al. also note that social impact data can be abstract or concrete in terms of the construct being measured and direct or higher-order indirect (i.e., much further along the assumed causal chain). Not specifically mentioned by them--and rarely brought up in the SIA literature--is the further distinction of whether the final data form is based primarily on the researcher's professional judgment or on systematic rules for counting or categorizing that would always produce near-perfect interobserver reliabilities. (A third possibility would involve data based on the judgment of "experts" other than the researcher--e.g., key informant data or input from panels of experts). "Judgmental" data based on the researcher's opinion is something different from "subjective" data, which is a term used to denote the perceptions of affected community members.

The demand for "hard" data in SIA could mean, in the strictest sense, objective and quantitative information about concrete, direct impacts gathered according to systematic rules which leave little room for the researcher's opinion. However, this suggests that the idea of "hard" data is itself an abstraction, and that variations in some

aspects would not necessarily result in a sense that anything which does not meet each requirement is hopelessly "soft." Many psychologists will be concerned with gathering subjective information about indirect (possibly abstract) psychological impacts. If attention is paid to maintaining "hardness" in methodology and data types along the other dimensions--quantitative thrust, systematic rules, gathering information on at least some concrete concerns (e.g., attitudes toward the proposal) to balance more abstract concerns (e.g., anomie)--the "soft" aspects may be less distrusted.

Etiological Considerations

There are a number of philosophical issues or problems involving cause-effect definitions or assumptions in the methodological literature on SIA. The validity of causal attribution and estimation is generally problematic in SIA. Wolf (1974b) points out that the methodological focus of SIA is akin to a controlled-experiment to determine causality, but the context is of a predictive or future-oriented nature rather than the past- or present-oriented analysis of experimental analysis.

Boothroyd (1978) brings up two important aspects of causality which can influence planning for, and interpretation of, SIA forecasts. First, he notes that the relationship between a proposed development and an identified impact could be independently assessed for necessity (is the development necessary for the impact to occur?) and for sufficiency (is the development sufficient for the impact to occur, or is the impact

contingent on other effects as well and hence more likely to be subject to mitigation?). Answers of "yes" or "no" to each of these two questions could be combined four different ways (necessary-sufficient; unnecessary-sufficient; necessary-insufficient; unnecessary-insufficient), each with very different implications for an SIA.

Boothroyd's second point has to do with the extent to which the analyst decides to trace the causal chain in order to predict second-, third, or fourth-order impacts. This has important implications for the role of psychology in SIA, since psychological impacts would generally be considered "higher-order" impacts, and so this entire question will be discussed further later. However, it will be noted for the present that consideration of higher-order impacts may require utilization of a variety of forecasting techniques--e.g., straightforward quantitative analyses to derive population and housing projections, but more qualitative approaches to determine general second-order impacts on community cohesion, family life, etc. A problem facing the SIA practitioner is how far to go along this causal chain before abandoning any attempts at analysis. Boothroyd suggests tracing effects "until a link is reached which communicates the social consequences to the reader in an empathic way"--that is, presumably, until some sense of joy or pathos is evoked. A clear problem here is in deciding what the reader will "empathize" with. This issue is closely linked with the basic SIA design question of which variables ("impact categories") to include in the study.

On a definitional note, Miller (1977) makes a useful distinction among predictions (which he defines as unsubstantiated assertions that something will happen), projections (trend extrapolations with no cause-effect analyses), conjectures (if-then propositions in which "then" is inferred from implications inherent in the "if" situation), and forecasts:

As prediction is the simplest but least useful form of futures estimate, so the forecast is the most difficult and most useful form. The forecast delimits its topic with the greatest possible precision, explores a range of potential futures outcomes in the least ambiguous terms possible, specifies and analyzes the salient cause-effect relationships in the greatest feasible detail, fixes potential scheduling of future situations and events as closely as possible and details the estimated probabilities of every potential future with the greatest attainable precision. Judged by these stern criteria many futures estimates submitted as forecasts are in fact something less--predictions, projections, or conjectures. (Miller, 1977, p. 203)

As valuable as these semantic distinctions and definitions may be, they are not yet in widespread use. Since other analysts still tend to use all four terms synonymously, this will also be done in the present dissertation.

METHODOLOGICAL ISSUES: (2) SIA STUDY DESIGNS

A variety of decisions must be made about the SIA framework before any attempts at predictive assessments are made. First, of course, is the choice between what have been designated here as "linear" and as "feedback" models (and perhaps a philosophical stand or commitment on

some of the other issues just described). For purposes of this discussion, it is assumed that a predictive SIA mode will be adopted, which usually although not necessarily implies the "linear" model.

The second step--and the one of concern in this section--involves design of the study, which must be accomplished before any attempt at forecasting or predicting is undertaken. In this regard, SIA has parallels to typical social science research projects, in which a period of conceptual thinking and detailed research planning is always needed before any actual data collection or analysis can begin.

Some of the most important design issues include: (1) selection of levels (or "units") of analysis; (2) selection of geographical boundaries for the study area; (3) designation of "publics" (identifiable groups of stakeholders or potentially impacted residents to be studied as social units); (4) selection of impact categories (the concepts or variables to be studied); (5) choice of operationalized indicators of the selected impact categories; (6) specification of impact dimensions of interest; (7) selection of time frames or horizons for the study; and (8) selection of means for assessing and evaluating the differential results for alternative courses of action.

Levels of Analysis

Sociological discussions of SIA often note that impacts can be assessed at the individual, family, organizational, and community levels. "Community," however, can itself be operationalized at a variety of levels--neighborhood, town, general metropolitan area, county, state, or (rarely) nation. The usual practice is to encourage consideration of all levels, albeit with somewhat more emphasis on the community as a whole (Finsterbusch, 1977a; Fitzsimmons, Stuart, & Wolff, 1977).

Geographers or environmental psychologists might also point out that the "behavior setting" (or other ecological conceptualizations of man-environment interaction) is a possible impact level (Heller & Monahan, 1977). Anthropologists assessing cultural impacts of tourism often look not only at humans and their social patterns, but also at changes in artistic products and activities (McKean, 1973; Greenwood, 1977).

Strangely, most discussions of the appropriate levels of analysis fail to note that SIA in practice--at least to the extent that is practiced by sociologists rather than by planners--usually focuses on differentially impacted groups (e.g., different social classes, ethnic groups, newcomers vs. oldtimers, displacees, etc.) as the standard unit of analysis. In practice, even the "individual" level of measurement involves aggregating information gathered from individuals, as in a survey, and making general statements about the average or modal char-

acteristics of individuals in a particular group. (The exception, of course, would be those cases where a small number of identifiable individuals are differentially impacted--e.g., people who would be displaced or relocated). When SIA's focus primarily on differentially impacted groups, the issue of choosing units of measurement becomes virtually synonymous with another issue shortly to be discussed, that of identifying the "publics" whose interests will be affected.

However, SIA in practice sometimes is also heavily constrained by small budgets, by client or head consultant preference for "hard numbers," and (since the foregoing two factors result in a demand for secondary data sources) by limits on the availability of data. Particularly if produced by planners or economists, SIA's can have a strong demographic thrust and consequent reliance on census data. This encourages choice of a level of analysis identical to some level of aggregation used by the U.S. Census Bureau--state, Standard Metropolitan Statistical Area, county, Census Designated Places (which can include unincorporated towns), or census tracts. Usually the census tract constitutes the lowest level of available published data, leading to criticism in cases where the impacted population is a smaller group or community located in one portion of that tract (McIrvin, 1977; Dietz, 1977). However, state or county planning agencies usually have access to unpublished data on levels below the census tract (block groups or blocks in urban areas, enumeration districts in rural areas). A more important concern about census data is that it can be dangerously outdated during the second half of any decade.

Another problem associated with choice of a single higher level of analysis has to do with "ecological correlations"--fallacious inferences from aggregate data to particular individuals or groups therein. For example, the overall community per capita income might be accurately projected to rise as a result of a proposed project, but this does not mean present residents' incomes will increase. (Conversely, boomtowns may feature crowding, inflated housing prices, and general lack of social cohesion, but some pre-impact residents may be untouched by this because they have made a killing on their real estate and business interests, thereafter retiring to Florida.)

At the same time, usefulness in terms of trend and comparative analysis for various localities' policy purposes becomes more possible [with use of standardized, higher-level census data]. Any choice of unit of observation, therefore, has its advantages and disadvantages. (Eberts, 1979, p. 162)

It should be noted that census data are not the only important form of secondary data, although they do have the advantage of standardization from one geographical area to another and (with some exceptions) from one decennial period to another. There are also state, county, and local records which contain much important social data (e.g., crime, mental health, family formation and cohesion, property values); private agency records; past special planning studies for relevant local issues; archival information (newspaper reports, public hearing transcripts, etc.); and past local or national attitudinal survey reports (including a very few longitudinal series, which will be further discussed in Part Two). Some of the most comprehensive discussions of data sources may be

found in Flynn & Schmidt (1977), Burdge & Johnson (1977), and Clubb & Traugott (1979).

Selection of Geographical Boundaries for Impact Assessment

In the early days of EIS preparation, the documents tended to discuss socioeconomic impacts either on the specific project site alone (which meant no discussion at all in the cases of many rural projects such as energy developments) or for the entire area which would receive positive economic benefits such as employment or energy supplementation (which meant sweeping and superficial comments at the state, regional, or national levels).

However, by the mid-1970's, citizen groups had effectively used legal and political challenges to demand a principal socioeconomic focus on specific, smaller communities or neighborhoods nearby the project site or sites. Many SIA theorists at that time (e.g., Watkins, 1977) lent scholarly support for the concept that it is the proximal but off-site community which is most socially and economically "impacted" and which is therefore the appropriate geographical assessment area.

Today, socioeconomic or social sections of EIS's are much more likely to consider only nearby residents. This approach, too, has its problems. For one thing, it usually results in much more emphasis on negative social impacts on the concentrated few, often without the balancing consideration of positive benefits for the dispersed many.

Where absentee beneficiaries were once the major concern of economic EIS sections, they are now often neglected entirely by more purely "social" assessments.

It is possible that the social pendulum has already swung as far as it will go in the direction of protecting impacted communities, since voices are now being raised about the need to create political constituencies to fight for the offshore drilling and nuclear plant developments which, presumably, will benefit the allegedly disenfranchised silent majority (Chickering, 1981). Philosophical discussions on the question are abundant in the SIA literature, but there has been strangely little discussion on how to assess impacts on absentee beneficiary publics and/or how to weight such impacts against localized consequences in decision making.

Even in the matter of defining the precise local community to be impacted, there may be problems knowing where to draw the boundaries. At what distance from the potential project sites are residents no longer affected and/or no longer members of the "affected community?" Geographical distance may in reality be only one variable--perhaps not even the most important--which defines the communities of interest, but how do other variables interact with geography in the process of community definition?

James Kent and associates (Kent, Greiwe, Freeman, & Ryan, 1979; Greiwe, 1980; Preister & Kent, 1981), in social impact consulting work for the United States Forest Service, have promoted the concept of the "human resource unit" (HRU) as the appropriate geographical area and unit of analysis for rural social impact work. Deriving from the general principles of human ecology, the HRU is characterized by common social and economic practices among residents carrying out activities suited to the topographic features of a geographical area. Geographical boundaries which tend to encompass these activities and prevent everyday social and economic intercourse (e.g., rivers, the transition of forest to prairies, or freeways in metropolitan areas) are seen as probable HRU boundaries. This concept does not include a technology for objective determination of HRU boundaries; rather, the social analyst is encouraged to use professional judgment to make a preliminary estimate and then verify this description with area residents, who are considered to be the best judges of the matter. Because HRU's are routinely expected not to match common jurisdictional or census tract lines, the problem of data availability may be a frequent concern with implementing this concept.

Selection of "Publics"

It may be apparent that design decisions about level of measurement, geographical boundaries of impact areas, and affected individuals or social groups ("publics") can be tightly interwoven. For some SIA's, the data availability factor may collapse all three decisions into one, as in the case where the level of analysis, the geographical boundaries, and the definition of "affected public" are all supplied by the concept of "residents living within City X" or "the people of County Y."

However, even within an overall level of measurement or geographical area, individuals or subcommunities may be segmented into differentially-impacted "publics" by such characteristics as are relevant to the particular situation--e.g., ethnicity, income level, age, longtime residents vs. newcomers, distance from project site, etc. Although the identification of publics is often discussed in connection with the "Evaluation" stage of a predictive SIA (Willeke, 1977), there are implications for other pre-study design decisions such as selection of impact categories and appropriate forecasting techniques. For example, is it appropriate or even possible to present data describing current situations for each public for a particular social variable of interest? to make differential forecasts by public?

While the general consensus in the literature seems to be that identification of affected publics must be a highly idiosyncratic step unique to the particular situation of any given project, there has been

some discussion of general principles that might be applied. Baur (1973) suggests that populations be divided into three categories: (1) the "totally affected" who live on or very close to the project site; (2) the "partially affected," who feel impacts in some limited aspect of their lives (e.g., urban dwellers whose occasional wilderness recreation outings will be affected by some rural project); and (3) the "diffusely affected," who praise or object to certain types of project in general, as a matter of philosophy, rather than being particularly concerned with the project at hand. (Baur recommends excluding the latter group entirely and according attention to the second group in proportion to the intensity with which they are affected.)

Boothroyd (1978) suggests that categories of impacted populations be based on theoretical considerations. He notes that divisions could be made based on "preferred lifestyles," or on whether populations will be impacted positively or negatively (although this raises the problem of a priori judgments if publics are to be identified for analysis before the SIA is carried out), or on "resource constraints"--i.e., variables over which individuals have no control, such as age or disabilities.

Boothroyd also points out another dimension which may be important in the design of SIA's and consequent methodologies. This has to do with the degree of directness with which persons may be impacted: (1) impacted persons who could be individually identified (e.g., displacees); (2) persons who can be identified as part of a specific

community but not as individuals (e.g., the aged in a community);
(3) persons who can be identified only conceptually and/or statistically
(e.g., those affected by housing shortages).

Another aspect of the selection of publics has to do with the question of whether absentee beneficiaries of a project (e.g., consumers of energy or mineral resources should be included as a "public" in an SIA or EIS. This was previously discussed under "Selection of Geographical Boundaries," a design point with which "Selection of Publics" obviously would often overlap.

Selection of Impact Categories

One of the most important design questions is, "What types of impacts shall we discuss and/or attempt to forecast?" This question interacts with all the foregoing design questions and with most of the others to follow. (For example, in regard to decisions about time frames, an SIA focusing mainly on "long-term" social impacts might omit psychological categories involving individual adjustment during a short-term transition phase.)

However, although it may be somewhat shaped and limited by other types of decisions, the selection of impact variables for study is usually the central design concern. There are at least six general approaches which emerge from the literature: (1) choices based on data availability; (2) choices based on forecasting methodology availability;

(3) use of standardized lists or guidelines; (4) the "basic-questions" approach to scoping; (5) situation-specific scoping based on expert knowledge; and (6) situation-specific scoping based on resident input.

Data Availability: Preceding discussions about the practical and philosophical considerations in deciding whether SIA's are to rely only on available secondary data sources have no doubt prepared the reader for the point to be made here--the choice of impact categories may often be determined largely or exclusively by availability of easily accessible and inexpensive data sources. There is no need to repeat those discussions. However, the brevity of this paragraph should not obscure the importance of this consideration in real-life SIA. Few, if any, published articles in the SIA literature explicitly urge restriction of SIA activities to those variables included in the U.S. Census or other standard data sources. Nevertheless, in the real-life world of EIS and SIA preparation, data availability is often a criterion of paramount importance in determining the impact categories to be included.

Forecasting Method Availability: Another "hard-nosed" criterion for selecting impact categories is to choose those for which a reliable and valid forecasting methodology is known to exist (Flynn, 1976). If it is assumed that the forecasting method is to be some form of trend extrapolation--requiring past time-series measures of a quantitative nature--then the impact categories which would be derived under this rule would be a subset of those which might be obtained under the

foregoing principle of data availability. Although SIA is usually defined as a predictive or at least "anticipatory" activity, the fact that this criterion represents the most restrictive of all possible methods for sifting through potential impact categories is in itself a strong argument for moving toward the "feedback" or similar process-oriented models of SIA.

Standardized lists or guidelines: In summarizing discussions at a Canadian conference on SIA, Robinson (1980) reported that participants could not agree on a single set of criteria or guidelines for selecting impact categories, and they unanimously felt government should not impose and standard guidelines because this would "take the creativity out of the discipline at a time in its development when it could least afford the loss" (p. 16). In the United States, some government agency guidelines on EIS preparation do stipulate a very few social topics for study--usually population growth, distributive issues, and/or "community cohesion" (though definitions of the latter are rarely provided). In general, though, neither North American country has adopted an official framework for SIA.

Nevertheless, there have been a number of suggested standard lists of potential impact categories, some based on conceptual models of community dynamics and some simply representing checklists of typical social science variables; some appearing in the academic and some in the government-based SIA literature; some setting forth conceptual variables

and some also (or only) specifying particular indicators and measurements.

In the academic literature, Boothroyd (1978) calls for analysis of 21 different general categories of "social environmental conditions necessary for basic needs to be met," all of which may require a great variety of specific measures. The impact assessment schema proposed by Olsen & Merwin (1977) sets forth 50 social indicators which should be analyzed and projected. Finsterbusch (1978) specifies a systems model including 31 types of resource inputs, 24 structural characteristics of communities, 22 activities, and 24 types of social or individual outputs. (To provide one illustration of these "laundry lists," the variables suggested by Finsterbusch are reproduced in Table 3.)

Andrews, Hardin, & Madsen (1981) note that government guidelines--particularly in the field of water resources planning, which has been highly influential in the development of SIA--have tended to be of two types. The Social assessment manual (Fitzsimmons, Stuart, & Wolff, 1977) follows and expands upon the format of the Social Well-Being Account in the 1973 Principles and Standards ("P and S") of the United States Water Resources Council. This is essentially an atheoretical checklist calling for SIA's to be organized around five major categories and 35 subcategories, involving measurement of at least 387 specific indicators or conditions. The second type stems from the social indicator movement and generally follows the logic of Toward a social report

Table 3

Sample "Laundry List" of Potential Social Impact Categories for SIA's

INPUTS

- I. Resources
 - A. Human resources (including skills)
 - 1. Workers
 - a. Producers of goods
 - b. Providers of services
 - 2. Volunteers
 - 3. Entrepreneurs
 - B. Natural Resources
 - 1. Land
 - a. Productive--farmland, range, forest
 - b. Residential
 - c. Commercial and industrial
 - d. Recreational--parks, woodlands, etc.
 - 2. Water
 - 3. Exportable resources (minerals, petroleum, etc.)
 - 4. Scenery and tourist attractions
 - C. Economic--facilities
 - 1. Primary industry facilities--farms, mines, lumber mills, etc.
 - 2. Secondary industry facilities
 - 3. Utilities--power plants, electric lines, waterworks, sewage system, etc.
 - 4. Commercial and financial institutions--office buildings, stores, banks
 - D. Community facilities
 - 1. Education facilities--schools, school buses, etc.
 - 2. Government buildings and facilities
 - 3. Health and welfare facilities--hospitals, clinics, nursing homes, etc.
 - 4. Transportation facilities
 - 5. Communication facilities--telephone exchanges, radio and TV stations, newspapers, etc.
 - 6. Recreation facilities
 - 7. Cultural facilities
 - 8. Social facilities--meeting halls, clubs
 - 9. Religious facilities
 - 10. Existing housing
 - E. Psychological identification with the community
 - F. Location
 - 1. Accessibility to major centers
 - 2. Accessibility to resorts and areas of natural beauty
 - G. Federal and state assistance
 - H. Tax base
 - I. Knowledge and technologies for producing the community outputs

Table 3. (Continued) Sample "Laundry List" of Potential Social Impact Categories for SIA's

- II. Demands on community resources
 - A. Population (especially dependents)
 - B. Federal and state taxes
 - C. Natural catastrophes

STRUCTURAL CHARACTERISTICS

- I. General structural dimensions of communities
 - A. Degree of centralizations, bureaucratization, and scope of community government
 - B. Degree of citizen participation in policy decisions
 - C. Pluralistic versus monolithic leadership and influence
 - D. Degree of equality of ~~income~~, wealth, opportunities, and privileges
 - E. Degree of diversity of economic base
 - F. Degree of local autonomy (economically or politically)
 - G. Degree of homogeneity, articulation, or integration of groups (versus intergroup conflict)
 - H. Community complexity and degree of specialization of functions
- II. Concrete functioning structures and/or institutions
 - A. The government--administration, courts, police, policy making body
 - B. The local economy
 - 1. The labor market
 - 2. The commodity and service market
 - 3. The credit market
 - D. The education system
 - E. The transportation system
 - F. The communication system
 - G. The recreation and entertainment world
 - H. Religious institutions
 - I. Cultural institutions
 - J. Status system
 - K. Personal social networks
 - L. The housing industry and market
 - M. Zoning, planning, and land use
 - N. Voluntary associations

Table 3. (Continued) Sample "Laundry List" of Potential Social Impact Categories for SIA's

ACTIVITIES

- I. Economic Activities
 - A. Primary and secondary production and construction
 - B. Commerce and finance
 - C. Services and other economic activities
- II. Government services and political processes
 - A. Government legislation and administration
 - B. Education and socialization
 - C. Law enforcement and judicial review
 - D. Health and welfare services
 - E. Citizen participation and mobilization
 - F. News coverage
 - G. Party activity and campaigning
 - H. Conflicts and disturbances
- III. Social and cultural activities
 - A. Recreation and entertainment
 - B. Socializing
 - C. Religious activities
 - D. Ceremonies and community events
 - E. Travel, tourism, and communications
 - F. Migration and turnover
- IV. System-changing activities
 - A. Initiate new activities
 - B. Legislate new laws and regulations
 - C. Institute new organizations
 - D. Reorganize organizations

OUTPUTS

- I. Economic
 - A. Income, standard of living and wealth
 - B. Employment and opportunity
 - C. Housing and habitat
 - D. Transportation accessibility
 - E. Availability of goods and services
 - F. Job satisfaction

Table 3. (Continued) Sample "Laundry List" of Potential Social Impact Categories for SIA's

II. Political

- A. Public participation
- B. Freedoms and civil rights
- C. Availability and quality of public services
- D. Equality and justice
- E. News information
- F. Law and order
- G. Government responsiveness

III. Social and cultural

- A. Social relations (family and friends)
- B. Education
- C. Health, safety, and nourishment
- D. Entertainment and recreation
- E. Mental health and wellbeing
- F. Cultural and religious opportunities and satisfaction
- G. Intergroup harmony: religious, ideological, ethnic, racial, lifestyle

IV. Quality of the environment

- A. Air
- B. Water
- C. Noise
- D. Areas of natural beauty

Source: Finsterbusch (1978, pp. 4-6)

(United States Department of Health, Education, and Welfare, 1969), which specifies goals of social wellbeing. The best example of this type is the "Techcom" model (Technical Committee of the Water Resources Research Centers of the Thirteen Western States, 1974), developed to identify the social factors that function in the system of water resources decision making. This consists of a nested set of categories, the fifth and last of which sets forth several hundred specific indicators.

In reviewing the P and S and Techcom approaches to categorization of social impact areas, it was concluded that although there is some overlap, there are many areas where little similarity exists between them concerning the major social impact variables. They illustrate the problem of noncomparability in social assessment models. (Andrews et. al., 1981, pp. 66-67)

The "Basic-Questions" Approach: The foregoing three approaches to impact category selection represent basic guidelines, rules, or principles which could be applied regardless of the situation. The virtue to such approaches, if virtue it be, is that of uniformity and standardization from one situation to one another. However, the 1978 Council on Environmental Quality guidelines for NEPA EIS's emphasize the desirability of "scoping" in advance of impact assessment activities, in order to determine what topics should best be studied for the particular situation represented by the proposed project in question. The remaining three approaches are all various forms of scoping, although the first has an element of standardization to it.

The Oak Ridge National Laboratory's Social Impact Analysis Group (Schweitzer, 1981) has proposed a standard list of "basic questions" rather than a standard list of variables or indicators. The idea is to focus on the planning issues rather than on the specific social variables or measures, at least at first. Following a geographical definition of the impact region and a careful project description, "basic questions" about both "baseline" (present-day) and "impact" (future, with project) conditions are asked with regard to 11 areas: (1) demography and settlement pattern; (2) land use; (3) local government taxation and spending; (4) housing; (5) public services; (6) transportation; (7) economic structure; (8) political structure; (9) social structure; (10) local support and opposition; and (11) historic, archaeological, and scenic resources. The questions asked about each of these areas represent a sort of initial screening procedure, and the final EIS/SIA would flexibly focus on only the areas where significant concerns or impacts appeared probable.

Note that this is one of the few SIA approaches to emphasize comparison of with-project futures to the present-day situation, rather than to the without-project situation. Note also that the set of impact areas is comprehensive but arbitrary, and others could ask "basic questions" about 111 rather than 11 areas. Finally, note that the approach is broadly socioeconomic in focus, and that only two of the areas fall within the "purely social" domain which is the concern of this dissertation. The suggested "basic questions" for these areas are:

Social Structure

Baseline: What are the major lifestyle, cultural, and ethnic characteristics of the impact region population and of any significant subgroups thereof?

Impacts: How will the existing lifestyle, cultural, and ethnic characteristics of the impact region be altered by project-induced population influx? How will the newcomers be assimilated into the existing community? Where significant adverse impacts are projected, what (if any) mitigation measures can be taken? How will the situation be monitored?

Local Support and Opposition

Baseline: Has there been any significant expression of local support or opposition to the proposed facility? Have there been any local cleavages along these lines?

Impacts: Is any significant expression of local support or opposition to the proposed facility expected to occur? If so, how will such local sentiment impact the proposed project or be influenced by it? How will such sentiment influence the relations among community members? What mitigation measures can be taken? How will the situation be monitored?

(Schweitzer, 1981, p. 298)

"Scoping" via Technical Expert Analysis: At least in the initial stages, scoping to determine the key impact categories can be largely a matter of the judgment or even the whims of the "expert" carrying out the SIA. The planner or physical scientist heading up the overall EIS team will often not question the decisions of the social "expert"--particularly if that team leader has appointed him/herself to be the social "expert."

However, bona fide social science experts may find themselves in positions where resource constraints require them (not just permit them) to use their professional judgment to carry through the impact category selection stage of the scoping process. The tools available to them in such a case may include:

- o their knowledge of the case study literature and of the types of impacts recorded elsewhere as a result of projects similar to the one proposed in the current case;
- o informal contacts (individual conversations or group "brainstorming" sessions) or more structured contacts (e.g., Delphi surveys) with other technical "experts," perhaps including some with particularly specialized knowledge or experience;
- o their own intellectual ability--a combination of knowledge about the particular project characteristics, the particular community involved, and some implicit or explicit model of social process as it applies to that particular project and community.

The last of these calls upon the social science expert to make use of his/her training to make a chain of cause-effect assumptions and thereby generate progressively higher-order hypothetical impacts and impact categories. Porter, Rossini, Carpenter, & Roper (1980) refer to such activities as "tracing techniques," because they involve mentally tracing the ways that one impact can generate other impacts: for

example, employment opportunities can lead to immigration and/or lower unemployment for current residents; immigration could lead to increased demands on public services, housing shortages, and newcomer-oldtimer conflict, leading in turn to crime and other social disturbances; increased resident employment could lead to higher local incomes and preservation of existing extended families in rural areas.

To graph these consequences would result in a tree-like figure, with several smaller branches of indirect effects sprouting from each of the more direct effects. Indeed, the common terms for the products of such activities are "impact trees" or "relevance trees," and this approach has been strongly championed by Finsterbusch (1977a). One potential problem with relevance trees is that they may work out in practice to be another lengthy "laundry list" of all the hypothetical types of impacts and/or social variables which could be imagined...if knowledge of the particular situation is not adequately incorporated to prune away the least important branches of the tree. A very liberal use of individual judgment could produce only a few holistic "scenarios" of alternative futures, differentiated by varying assumptions about the alternative effects of a few key variables. Vlachos (1977) has been one of the most articulate proponents of the scenario approach, which tends to combine the tasks of impact category selection with the entire business of forecasting.

"Scoping" via Input from Affected Residents: One source of "expertise" about the most important social impact variables for study consists of residents themselves. "Issue-based" approaches which focus the social impact process on major concerns and issues expressed by local residents (including "unrelated" problems which could affect residents' perceptions of the proposal) have become increasingly popular in the SIA literature (Berg, 1981; Dale & Kennedy, 1981; DiSanto, Frideres, Fleising, & Goldenburg, 1981; Preister & Kent, 1981). Some of these, of course, relate more to the "feedback" model of SIA, but the logic of attending to resident concerns is the same whether that attention comes within or without a predictive-study mode of attention.

Resident concerns and issues can be determined through surveys, public meetings, ethnographic techniques, and/or written responses to the EIS Preparation Notice. (The latter is usually legally required, if the concerns seem reasonable.) Personal interviews with the leaders of a cross-section of community organizations can be one particularly useful approach; Savatski & Freilich (1977) suggest that such "leadership informant methodologies" are a cost-efficient way to replace large sample surveys in all phases of SIA, and they cite research evidence indicating that a well-executed leadership survey provides views which are representative of the community as later measured through more comprehensive general population surveys. (This assertion may not always be popular with the project proponent, however, if community groups tend to be against the project and uniformly stress its potential

negative outcomes; in that case, it may be important both to conduct a survey to see if a "silent majority" supports the project and sees other important types of outcomes and also to heed the project proponent's ideas about beneficial impact categories.)

One difficulty with this or any other form of scoping to determine appropriate variables for study is that, in practice, contracts are awarded (sometimes on a competitive bid basis) for a fixed price before the scoping is carried out. Reasonable as this may be for the study of physical and perhaps even of standard economic impacts, it is much more problematic for social assessment:

The process of selecting those social phenomena that may be affected by a project cannot be completed in advance of actual study of the potentially affected populations. After preliminary screening, additional selection should be made in the light of information derived from field studies and feedback from the public through the participation program. (Baur, 1973, p. 21)

Baur might have added that final selection of social impact categories often also must await completion of physical and economic assessments, since conclusions about things like alteration of landscape, employment opportunities, and population influx often drive social contracts. Willeke & Willeke (1976) have suggested that the government recognize the problem, either by awarding separate small "study design" contracts for the more complex SIA's or by assembling committees of consultants or in-house social science personnel to carry out the scoping. However, it appears that government contract operations (and certainly private-

sector contracts) just do not operate that way. The more inexpensive scoping methods after contract award, or very "quick and dirty" scoping during the bid and budgeting process, would appear to be the most likely procedures in most real-life SIA situations. In some ways, this can be a boon to SIA, since it requires attention to the practical realities of the situation and discourages reliance on so-called "comprehensive" laundry lists which may contain many needless categories, waste time and money, and stifle the creative aspects of SIA:

The [impact category] identification task is largely systematic application of imagination and intuition for which no sure algorithm can be set down. Therefore, strategy and techniques must be carefully chosen so as to enhance team imagination and intuition without imposing debilitating constraints. (Porter et. al., 1980, p. 177)

Operationalization of Impact Categories

Some of the means for selecting the general impact categories to be studied will also dictate the specific measurements to be used--e.g., selection based on data availability or on standard guidelines which provide "appropriate" social indicators. At other times, the social scientist will decide to attack some more abstract construct ("community cohesion" or "individual lifestyle") and may then have to develop valid operational definitions. This is one of the basic methodological concerns of all social science, and the opportunities and dangers while operationalizing in SIA are identical to those in any other form of social research.

However, because of its tendency to rely on secondary data sources, SIA sometimes has a particular problem with construct validity. That is, broad and abstract social concepts such as "community cohesion" can be measured by some easily available but dubious indicator such as "percentage nonwhite." This will be illustrated later.

Selection of Impact Dimensions

It is not adequate simply to say what social variables will be addressed, or even how they will be measured. The SIA practitioner must also decide what aspects or dimensions of each impact category will be analyzed.

Peelle (1974) provides one of the most comprehensive lists of possible impact dimensions, listing 14 separate aspects: magnitude, certainty, importance, synergistic effects, perceived desirability, time, location, directness or indirectness, singularity (i.e., uniqueness to a particular site), reversibility, quantifiability, cumulativeness, and differential impingement upon people and resources. (A few of these are separately explored in other passages of this chapter.)

Clearly, SIA becomes a monumental task if cast into the mold of a rigid framework requiring extensive or even brief comment on each impact dimension for each category selected. Selectivity is required. The selection of certain impact categories may help in the selection of impact dimensions, since some types of categories are more amenable to some dimensions than others.

Selection of Time Frame

"Time" is one of the impact dimensions just mentioned, but it is important enough to merit a brief separate discussion. Impacts are typically analyzed during (1) the construction stage; (2) the operational stage (which may itself have different phases); and sometimes (3) the post-operational (or "termination") stage, if it is anticipated that shutdown of the operation after a relatively short period of time is possible--i.e., a "boom-bust" pattern such as often characterizes energy or mineral resource development. Finsterbusch (1980) also notes that community decline can come not only after a "boom," but also after a long period of stability, as in the case of the shutdown of a major source of jobs and income for the area. Usually such cases of "industrial withdrawal" would involve the closing of private-sector operations and would therefore not require an EIS, although Finsterbusch does note the example of an Army base shutdown, which, because it is a major federal policy action, would require an EIS under NEPA.

Less widely recognized to date is the importance of the pre-construction or planning stage, when the likelihood of a major change in community or individual life patterns can itself generate substantial economic, political, and psychological impacts (Wolf, 1974b; Burdge & Johnson, 1977; Honey & Hogg, 1978). Anxiety about impending change may sometimes be the greatest psychological impact created by a project.

Another time-related dimension has to do with the permanence of an impact. As noted in Chapter II, Albrecht (1982) suggests that many of the personal and social disruption patterns alleged for boomtowns may be temporary (albeit still significant) adjustment problems.

Evaluation

In the linear model, the final stage of predictive activity (omitting monitoring and mitigating) has to do with evaluating the desirability of the proposed project or of the various alternatives in light of the impacts which have been forecasted. Decisions during the design stage about how this will be done can affect other decisions, including selection of impact categories. As has been frequently noted before, the conventional wisdom in the SIA literature is that evaluation is the proper right and domain of the residents or other publics who will be affected.

However, some SIA practitioners are strongly influenced by the desire to transform all measurements into common units, in order to produce the sort of "bottom-line" conclusions endorsed by those who have wanted the social indicator movement to produce a "national social account" (Fox, 1974) and/or by the broader EIS literature which encourages conversion of all impacts to a checklist format so that "hard, quantitative" conclusions can be made about overall comparative impacts (Burchell & Listokin, 1975; Black, 1981). Usually, this restricts SIA to traditional economic cost-benefit analysis (Conopask & Reynolds,

1977) or some variant thereof (e.g., Mack, 1977). Olsen & Merwin (1977) attempt to create a "standard score" for any quantifiable variable by measuring the discrepancy between the actual value and an arbitrarily-determined "preferred value," then dividing by the preferred value and subtracting from unity. The authors do not address the problems either of changes in communities' "preferred values" over time or of the non-comparability of "standardized" discrepancies from one type of variable to another.

Even more dubious is the attempt to produce a "bottom line" score by presenting a checklist of impact categories, arbitrarily assigning positive or negative "impact weights" to each category for a given project, then summing to obtain a sort of bogus cost-benefit score. This simplistic practice was advocated in a number of social or environmental impact "handbooks" of the mid-1970's (Burchell & Listokin, 1975; Vlachos et. al., 1975). Such practices have been scathingly denounced by writers such as Flynn, as in her summary of the Social assessment manual produced by Fitzsimmons, Stuart, & Wolff (1977) for the U.S. Bureau of Reclamation:

After having filled out 72 pages of checklists, the planner supposedly has fulfilled the primary purpose of the procedure, which is to "forecast future impacts." Yet following this procedure, one could hardly hope to make any kind of scientific impact assessment, for in spite of the extent of the checklists there is no methodology provided that will relate items on the lists to each other, or to a larger schemata or social or environmental conditions. (Flynn, 1976, p. 11)

Boothroyd (1976) believes "that efforts to quantify qualitative information, with a view to making it easier for the decision maker to deal with, is a case of the professional overstepping his responsibility" (p. 130). Besides, he notes, checklist-based "bottom-line" approaches present numerous mathematical and conceptual problems--e.g., dividing a category into two subcategories is a simple way to double the weight given the topic in calculation of the overall "impact score."

METHODOLOGICAL ISSUES: (3) FORECASTING TOOLS

Interestingly, more of the methodological SIA literature (in fact, far more) is given over to philosophical and design questions than to the nitty-gritty "how-to" aspects of making statements regarding the future. Nevertheless, the topic has hardly been ignored. The literature can be divided into discussions of techniques for projecting social futures (i.e., forecasting methods applicable to the "linear" or predictive SIA model); methodologies for "feedback" and/or citizen participation models; and some general paradigms or mid-level models.

Techniques for Projecting Social Futures

Once the thorny decisions have been made about impact categories, specific measurements, level of measurements, time frames, geographical boundaries, and publics, the crucial question remains to be answered: Can the future (both with and without the proposed intervention) be successfully estimated in an SIA--and how?

A summary of state-of-the-art critiques and commentaries will be presented later; in general, these cast some serious doubt on current ability to foresee the future. "In fact, of all the aspects of social assessment, it is clearly the projection process which is the least developed and open to widely justifiable criticism" (Leistritz and Murdock, 1981, p. 178). However, this is not due so much to a shortage of forecasting tools as it is perhaps to a shortage of validity and reliability among the tools.

Writers on SIA and/or social forecasting in general have approached this methodological question on projecting with a breathtaking range of answers. Some feel that only one or two approaches would suffice. For example, Emergy (1974), in a rather abstruse sociological essay, posits a single underpinning to all social forecasting in the alleged existence of "temporal gestalten"--wholenesses-through-time which allow us to sense, dimly, the natural unfolding of a set pattern of historical events through which we are passing. Christensen (1974) lists only two basic approaches to estimating neighborhood impacts: comparative studies and experts' qualitative inferences based on holistic perceptions of social patterns.

However, Wolf (1974b) has suggested 14 different categories of projection tools: demographic analysis; community studies; causal modeling; social indicators; ethmethodology; archival research; survey research; evaluative research; institutional analysis; value analysis; multivariate analysis; matrix methodologies; and "social forecasting" (a

term which is presumably used here to indicate prophecies based on holistic scenarios). Some of Wolf's methodological categories appear to be more appropriate for the task of profiling present conditions than for the task of estimating future developments with or without the proposed change.

Expanding the repertoire even further, social forecasting consultants to the U.S. Army (Mitchell, Dodge, Kruzic, Miller, Schwarts, & Suta, 1977) were able to compile a preliminary list of 150 specific social forecasting methods (although this was a brainstorming product which included everything from complex statistical techniques to "science fiction as forecasts"). These could easily be reduced to 73 separate methods, each of which is briefly described in a supplement to the consultants' main report. After two more stages of collapsing and combining categories, the authors came up with these 12 techniques and three major categories:

Techniques Using Time Series and Projections

1. Trend extrapolation
2. Pattern identification (including social trend analysis, precursor events, Box-Jenkins regression analysis, and Normex forecasting)
3. Probabilistic forecasting (including subjective estimates of probability, risk analysis, and relevance trees)

Techniques Based on Models and Simulations

4. Dynamic models
5. Cross-impact analysis⁸
6. KSIM (a cross-impact variant)⁸

7. Input-output analysis

8. Policy capture⁸

Qualitative and Holistic Techniques

9. Scenarios and related methods (including surprise-free projections, authority forecasting, analysis of modes and mechanisms of change)
10. Expert-opinion methods (e.g., panels, surveys of attitudes, Delphi)
11. Alternative futures (morphological analysis, divergence mapping)
12. Values forecasting (psychographics, lifestyles, life ways)

A more recent sociological review of forecasting methodologies by one of the most prominent individuals in the field, Richard Henshel (1982) covers somewhat the same ground but in a different taxonomic approach:

Normative (Goal-Oriented, Teleological) Forecasting

This is a general approach which assumes either that the future is indeterminate and ought to be shaped by goal statements or that the purpose of the forecasting exercise is to discover a policy that is most likely to produce a desired future. In the latter sense, economic input-output analysis is best regarded as a "normative" approach because government planners use its results to indicate which particular sector of the local economy should be stimulated for the most overall good.

Judgmental or Intuitive Approaches

- Scenarios
- Cross-impact analysis
- Delphi
- "Bootstrapping" (having experts make intuitive forecasts, then getting them to make explicit their thought processes, then relying on the logic of the thought processes rather than the original intuitive forecast)

Leading Indicators or Precursors

In economics, empirical observations have sometimes led to the conclusion that a shift in one variable is, within a certain time variable, automatically followed by a shift in a second variable or set of variables. Causality usually is not an issue or question here.

Trend-Extrapolation Techniques

- Regression (with time as dependent variable)
- Moving averages (utilizing curve smoothing)
- Exponential smoothing
- Box-Jenkins (variant of time-series regression)
- Theoretical growth curves
- Cyclical approaches

(Henshel notes that, for the most part, these techniques rely on the assumption of the recurrence of historical patterns and do not attempt to predict changes in dependent variables based on causal influences of independent variables: "One rationale for this is that the forecaster's imperfect understanding of the interrelation of these forces implies that their inclusion can do more harm than good" (p. 62))

Stochastic Processes

These processes, such as Markov Chain analyses, involve the probability that one of a finite numbers of states will transform into another of the states. For example, in American presidential politics, only one of two or three political parties controls the White House. A quantitative probability can be determined to predict the likelihood of continuity or turnover at any election point.

Segmentation/Multiple Classification/Configurational Analysis/Componential Analysis

The logic is to divide the overall population into different segments with varying likelihoods of exhibiting a particular behavior or condition, then summing for a total-society result. The classic example would be age-sex cohort population projection.

Econometric or Causal Models

Dubbed "econometric" in recognition of the discipline which created and most frequently uses them (economics), mathematical and usually computerized models which specify the expected changes in the value of one dependent variable as the result of changes in the values of independent variables represent one of the truly causality-based approaches in social forecasting.

Consideration of the foregoing techniques--especially those using quantified measures--yields the conclusion that most of them are more suited to estimating "without-project" future values than "with-project" futures. That is because most of them avoid the issue of cause-effect relationships which are, of course, essential to predicting impacts resulting from the change(s) in present conditions or trends from the contemplated introduction of the project under consideration in the SIA.

The major "hard data" exception is that of causal models. Computerized social impact assessment models have been extremely valuable for estimating sensitivity of demographic and fiscal impacts to different policies (Stenehjem, 1978; Ortiz, 1978; Leistritz, Murdock, Senechal, & Hertsgaard, 1980; Murdock & Leistritz, 1980; Leistritz & Chase, 1982), but such models tend to be point-predictive rather than stochastic in their construction. Finsterbusch & Motz (1980) note that such precision in an SIA violates the statistical nature of the social sciences: "The social sciences cannot say precisely what will happen. Their knowledge is based on probable, not certain, effects; it is probabilistic, not deterministic" (p. 20).

Perhaps a more important concern, however, is that computerized models inherently focus on economic and demographic data, rather than social psychological issues. There has been some experimental/theoretical work on computer simulation of social systems and group dynamics (Pool, 1964; Cortes, Przeworski, & Sprague, 1974; Federico & Figliozi, 1981), but this work seems most promising for micro-level considerations such as organizational behavior or macro-level issues such as national voting patterns. The state of the art is not yet geared toward middle-level concerns such as "community cohesion" or "social stress." (That does not mean it will never be, and social/psychological statistics such as mental health records seem well suited for model development. At the moment, however, the field remains open for further development.)

After reviewing the various social forecasting techniques for their applicability to predictive SIA, Leistritz & Murdock (1981) have combined, culled, and reorganized to identify five techniques which seem to be the most frequently used and/or feasible (at least in theory). It is a comment on the embarrassing poverty of attention to forecasting methodology in SIA literature that their overview of the following five methods must currently be ranked as the most comprehensive available summary of practical projection techniques:

1. Trend extrapolation techniques;
2. Scenario forecasting techniques;

3. Social change and development theories;
4. Value forecasting procedures;
5. Expert opinion or Delphi surveys.

Trend extrapolation: This involves, for any particular variable, finding historical measurements over time and using these to make extrapolations for the future. The extrapolations could be simply straight-line projections or, when it is possible to do more sophisticated research, regression analyses to determine the mathematical relationship between the variable and other, antecedent variables whose changing future values might be better known or more easily predicted. The latter approach would have to be used to make trend extrapolation applicable to the "with-project" forecast, while either might be used for projecting the "without-project" future. Use of straight-line projections is risky, however, because (1) most social phenomena do not, in fact, develop in linear fashion, but in peaks and valleys, and (2) some new causative factor other than the proposed project might easily overwhelm the past and present situation.

Trend extrapolation clearly works best for social variables which are (1) quantified and (2) documented and recorded over time. Generally, this means Census data such as population, housing units, labor force composition, etc. Social service data for local agencies and institutions, including mental health caseloads, might also be available.

Some attitudinal or other subjective psychological data can be obtained in quantified form through surveys at the time the SIA is carried out, but there is rarely a data bank containing historical information on repeated measurements over time for such data (particularly for a given community or affected subpopulation within that community).

Scenario forecasting: This is, in effect, trend extrapolation through logic and conceptual modeling rather than mathematical techniques. Its primary methodological champion in the literature has been Evan Vlachos, who explains that this technique "attempts to sketch a logical sequence of events in order to show how, under present conditions and assumptions, a future state or set of alternatives might evolve" (Vlachos, 1977, p. 211). Scenario forecasting requires explication of assumed complex causal relationships and interactions, followed by logical conclusions of what will happen if the current situation is affected by known factors not related to the proposed project ("without-project" forecast) and by factors related to the project ("with-project" forecast).

The validity of the conclusions depend on the researcher's thorough and accurate knowledge of the total social dynamics of the community. (Scenario forecasting in this sense is in the "social ecology" tradition, although it is based on knowledge of a specific area rather than on general theoretical principles.) A problem for SIA in general is whether time and dollar resources will permit the acquisition of such

thorough knowledge. For psychological SIA in particular, it is questionable whether this method is most appropriate for estimates of impacts on such variables as mental health, values, attitudes, etc., although familiarity with the types and levels of support networks might lead to some reasonable conclusions about mediation of stress from change.

One very positive use for scenarios suggested by Porter et. al. (1980) is for the exploration ("assessment") of impacts divorced from forecasting. In other words, it may be impossible to estimate the actual probability figure for the occurrence of any given logical scenario, but its very creation can be of value in detecting opportunities and pitfalls in the proposed project. A compelling logical argument that social stress could result from a project in such-and-such a way may be of more use than a forecast that it will or will not result, so long as the scenario also suggests management steps for handling that potential stress.

Social change and development theories: This would of course be a forecasting method of interest to scholarly "experts," and it has been used in a number of EIS's and SIA's. Generally, the literature on urbanization and modernization has been cited to make some very broad statements about the kinds of social changes expected from the development of rural areas:

That is, such concomitants of changes in economic bases as decreases in the prevalence of extended families, formalizations of social relationships, increased alienation, and

greater openness to change are predicted to occur in impacted areas as they change from predevelopment economic bases to those represented by development. (Leistritz and Murdock, 1981, p. 181).

Unfortunately, such broad statements--which can rarely be accompanied with any precise statements as to the extent of impact--often have the divisive effect of worrying or arousing project opponents and antagonizing proponents. The latter group usually has little difficulty in asserting that "general principles" have little or no application to the particular case at hand. And decision makers are inclined to feel annoyed at flat predictions of doom and gloom with no concrete suggestions as to how these miserable outcomes can be avoided or mitigated.

Furthermore, with the exception of a few fundamental economic theorems of supply and demand, few theories from the social sciences have either the general acceptance or the mystique of scientific unsailability which attaches itself to conclusions of biologists or geologists in an EIS. A treatise on siltation processes may be incomprehensible to the layman but is frequently not subject to challenge because the layman considers it a technical subject far removed from his or her educational background and everyday life experiences. By contrast, references to "cognitive dissonance" may be equally incomprehensible but not subject to similar respect because laymen are more likely to have their own theories about psychological and social phenomena.

Value forecasting: This is a sort of combination of scenario forecasting and (perhaps "or") change theory in regard to the particular psychological question of how residents will evaluate or accept a proposed project and its attendant socioeconomic changes (Miller, 1977). It relies, again, on thorough knowledge of the society's general "mind-set" and the rigidity of its social patterns and institutions. Data must be gathered primarily through participant observation, since the usual purpose is to make a forecast without informing the community about the potential project. Surveys, by contrast, almost inevitably "let the cat out of the bag," particularly in smaller communities, because it is impossible to ask some people about a "hypothetical" project without alerting the entire county.

This represents an opportunity of sorts for psychologists to enter the SIA process, although some might question whether this is actually a legitimate SIA activity. (Others might reply that preliminary judgments of political feasibility should well be the first SIA activity undertaken in project planning.) Again, the danger is that a short time frame could result in a dangerously inaccurate speculation rather than a systematically derived research conclusion.

Expert or Delphi surveys: This approach asks knowledgeable community residents themselves to project the future, either with or without the proposed new activity. In some cases, it might be appropriate to consider every area resident an "expert" about his or her own commu-

nity and to conduct a general population survey. In other cases, and perhaps more usually, key opinion leaders and trusted informants are surveyed. A well-designed single survey could be taken or the "Delphi" variant employed. In the Delphi approach, the respondent panel (usually small in number) is repeatedly posed some of the same questions in different rounds of surveys, and information about responses from the previous round is shared with all participants in a deliberate attempt to push the group toward a consensus prediction. In-person group meeting techniques--such as the "Delbecq" or "nominal group" approaches--can be used for similar purposes.

The advantages of this approach are several. It provides projections by community residents that have intimate knowledge of their community and its residents, and projects that have received concerted and repeated examination by these leaders. Finally, it is clearly a method likely to receive widespread support among local residents, since it is their projections and their leaders' projections that are used in the analysis...

The disadvantages of such techniques include those common to any survey. In addition, questions about the ability of local residents to project levels of change and about the extent to which the experts' (usually community leaders) views represent those of the larger community are areas of concern. (Leistritz and Murdock, 1981, p. 180)

It is clear that the latter two of the foregoing five techniques would also be very valuable for the "feedback" and/or citizen participation models of SIA as well. Therefore, these may now be discussed as well.

Methodologies for Feedback and/or Citizen Participation Models of SIA

SIA theorists who advocate the "feedback model" and/or heavier citizen input to SIA do not, in general, recommend total abandonment of consultant efforts to predict impacts. Therefore, all or most of the foregoing methodological points are also relevant to the alternative schools of thought in SIA. Differences may be a matter more of degree than of substance. Some of these writers are simply concerned with heavier reliance on citizen perceptions as important evidence for inclusion in SIA's (e.g., Savatski & Freilich, 1977), with utilization of public meeting input as a principal mode of choosing impact categories for the later SIA consulting work (Myers, 1978), or with emphasizing impacts on communities most directly affected:

Impacts are to be assessed first from the perspective of those directly affected and then from the larger-interest perspective, a turn around of the usual urban planning approach based on the concept of "the public interest." Local "public interest" and municipality-wide "public interest" must be continually tested and balanced. (Armour, Bowron, Miller, & Miloff, 1977, p. 25)

There have also been calls for drafting EIS's and SIA's in a style more oriented to general public consumption (McMahan, 1978), but some of the same articles also call for reports to be organized in ways more suitable to decision makers and their political needs, ignoring the inherent difference between the two styles (c.f., Johnston, 1977).

Other SIA writers have suggested moving more in the direction of making impact assessment and citizen input an ongoing interactive process. Francis (1975) recommends giving the public a briefing on preliminary impact conclusions before the draft EIS is officially circulated, to inject one more stage of citizen participation and to avoid citizens having the sense that conclusions in the written form of a draft EIS are already 99 percent fixed. Boothroyd (1978) makes the critical point that an EIS undertaken after crucial design questions have been more or less settled means that the statement is likely to become either a citizen tool for killing the project through litigation or else a mere formality which gobbles up time and money without truly affecting the project. He wants both consultant impact predictions and citizen input on an ongoing basis, starting from the earliest design phases of a project:

To propose such a continuous role for impact assessment is to propose that it become part of a process generally known as comprehensive planning, which would make SIA something not really very new. This is true, at least in terms of the broad ideals for comprehensive planning. What is new is that there has become a recognition that in practice, planning, whether termed comprehensive or not, has in the past often been: (a) not really very comprehensive; (b) conducted with little sensitivity to social (and ecological) systems; and (c) insensitive to externalities (i.e., impacts beyond the project's functional or geographic boundaries). Social (and environmental) impact assessment has been developed in reaction to these shortcomings. Even if it proves to have been no more than a passing phenomenon in its own right, it will have been important for having improved the quality of comprehensive planning. (Boothroyd, 1978, p. 129)

Lamont (1983) endorses the conventional wisdom that "professionals" should make impact forecasts and residents should evaluate their meanings and implications. However, Lamont says that recent impact assessments in Alberta, Canada have nevertheless had a different flavor because the goal of the process is "community building" rather than predictive accuracy or even better-informed decisions by authorities: "Public Participation is not a key component of impact assessment. Rather, impact assessment is one tool that may be useful in public participation" (Lamont, 1983, p. 6). He goes on to note the implications for SIA professionals:

If community building is our goal and communities are given responsibility for protecting their future, then the role of impact assessment professionals in defining the answers is limited.

It is important that communities have a descriptive understanding of what effects they may experience. However, the seriousness of any effects such as social dislocation can best be defined by them. It is up to them, through their own communications systems, influence, political maneuvering or legal processes to determine whether the disruption is acceptable or what compensation is required. If there appears to be unresolvable disagreements, either within the community, or between the community and proponent or community and government, then that becomes fodder for the regulatory/political/legal system. Politicians and the courts are paid to resolve issues of where society is going and balancing individual rights with overall well-being. (Lamont, 1983, p. 8)

A few writers have proposed that social impact assessment should be conducted primarily by residents themselves (Robinson, 1980), or at least that such community-based assessments should have a major role in SIA. The problem then becomes determination of which social forecasting

tools are practical for lay persons to use. Runyan (1977) envisions that such impact assessment exercises would generally take place in community association gatherings, and so he recommends structured group discussion techniques such as impact simulation gaming, dialectical scanning, Delbecq, or Delphi techniques.

The feedback model of Figure 3 was developed by Finsterbusch & Motz (1980), who aim their process squarely at the needs of the decision maker. They propose that initial determination or estimation of impacts should be followed by other stages, either of which may make it necessary to reassess probable impacts in an iterative process. These additional stages are "response determination" and "policy adjustments."

Response determination involves informing policy makers about the attitudes of people or organizations toward the proposed new policy. (Finsterbusch & Motz frame their discussion in terms of policies rather than the sort of physical projects for which EIS's are more often prepared; however, the principles would be the same in either case, project or policy.)

Response determination has two aspects. The first aspect deals with predicting negative responses while the policy is still in the formative or proposal stage. The recommended method for this involves interviewing crucial political interest groups in an iterative procedure to determine their probable responses in light of the other groups' responses--e.g., asking labor organizations what they would do if the

policy were passed; then getting management response; then returning to labor; and so forth until a settled picture emerges. (The authors neglect to consider the possibility that such interest groups might lie or withhold information for political purposes, although it is not necessarily inevitable that this would occur.)

The second aspect of response determination involves estimating adaptive responses if the policy is implemented, and Finsterbusch & Motz list six types of individual adaptive responses:

- o search behavior (collecting information, seeking assistance, etc.);
- o change previous behavior patterns;
- o make fresh start (relocate, get new job, etc.);
- o make demands on organizational services (e.g., social services);
- o reorder priorities and values, learn to like what one cannot successfully fight;
- o purely internal psychological adaptations (scapegoating, denial, etc.).

In addition to such individual adaptive responses, the authors also note that responses could be coordinated and political in nature, ranging from a throw-the-rascals-out electoral response to focused violence and vandalism. Unfortunately, Finsterbusch & Motz make few concrete suggestions as to how such adaptive responses might be accurately estimated, nor do they discuss why such predicted responses could not be regarded as higher-order psychological impacts and included among the

forecasts made in the SIA section of the EIS. The latter concern is probably more a matter of basic orientation--i.e., an intrinsic feature of this particular process- rather than product-oriented approach--while the former concern represents an opportunity for psychological involvement in SIA.

Policy adjustment is the final stage of the Finsterbusch & Motz feedback model. As the name implies, this involves changing the proposed policy or project to mitigate or eliminate undesired impacts (or "responses"). Thus, the feedback model puts more emphasis on action (mitigation and management of impacts) than does the purely predictive impact study of the linear model. If the recommended policy adjustments are of a minor nature, this could necessitate a new round of impact assessment and response determinations. However, the authors note:

Often minor changes can substantially meliorate negative social impacts and improve public acceptance. So the goal of SIA is more than the selection of the best alternative; it is also the improvement of the best alternative. (p. 118)

At root, the feedback model proposed by Finsterbusch & Motz differs from the linear model mainly in its orientation toward the needs of the decision maker rather than the needs of the client or lawyer who may have to defend the EIS in court. But the methodological tools (and the problems associated with these tools) are virtually identical with those of the linear model. Inevitably, Finsterbusch & Motz argue, each assessment will have a makeshift element appropriate to the particular situation: "The research design for any specific SIA cannot be laid out

in a general methodology. Each one will be unique" (p. 118). Although this stipulation may seem less than palatable for a "linear" process intended to pass strict legal and social scientific tests of predictive accuracy, it is more reasonable for a "feedback" process intended primarily to decrease decision makers' areas of ignorance to some significant degree.

SIA in Practice: A Sampling of Specific Tools and Techniques

The foregoing pages have discussed theoretical forecasting devices for SIA. To provide the reader with a better feel for SIA in "real life," the remainder of this chapter will provide some examples of specific tools and/or models for the actual practice of SIA. The 12 sample methodologies to be discussed fall along a rough continuum. On one pole are largely atheoretical, quantitative techniques, and on the other pole are more holistic, qualitative, theory-based techniques (with "theory" here used in the loose sense of cause-effect models rather than the stricter sense of a comprehensive set of integrating principles).

The 12 SIA approaches discussed here include: (1) simple checklists; (2) checklists with ideal values; (3) conversions to dollar values; (4) index/indicator quantifications of abstract constructs; (5) gravity model; (6) quantifications of distributive or dispersion concerns; (7) a qualitative approach to distributive issues ("group ecology model"); (8) values analysis; (9) issue identification; (10) ethnographic immersion; (11) scenarios and simulations; and (12) historical parallels.

Not discussed here are several general methodologies of potential merit or import. Specific illustrations of computerized impact models might be presented, but, as previously noted, most such models currently deal with strictly economic and demographic impacts. Other population projection methods are also important to the wider field of socio-economic impact assessment, but they are considered just outside the more "purely social" focus of this dissertation. Finally, cross-impact analysis (the complex manipulation of probability matrices provided on a judgmental basis by experts, to calculate the consequent probabilities of indirect effects) is an approach much used in technology assessment (TA) but rarely used in SIA--possibly because TA audiences are more likely to be comprised of technicians while audiences for SIA/EIS's are more likely to be laymen who would neither grasp nor appreciate the workings and results of cross-impact analysis. This technique could, however, conceivably be given greater application in SIA, and the mathematically-inclined reader interested in learning more about cross-impact analysis is referred to Dalkey (1972) or Gordon & Becker (1972) for explanation of early development and to Porter, Rossini, Carpenter, & Roper (1980) for a more recent overview.

Simple Checklists: The "laundry list" approach to SIA involves specifying a list of social variables about which the assessor is supposed to say something. The means of forecasting are usually of less import than the act of attending to all listed concerns. Predictive methods are sometimes suggested, but proposers of these checklists would

seem to be happy if users simply "estimate" impacts on a subjective basis. These approaches were popular in the early and mid-1970's, and it is possible that many were developed by social scientists who assumed that (1) "comprehensiveness" was a guiding value and perhaps legal requirement; (2) the actual user was likely to be a government staff planner rather than a social scientist; and (3) consequently, the great thing was to direct that planner's plodding attention to a range of potential social outcomes that the poor dumb beast would never have considered on his own. However, it should also be noted that EIS's of that period (and, to some extent, still today) featured checklist- or matrix-style formats for summarizing impacts in all variable categories--physical, economic, or social--so that checking some notation such as "positive impact" or "very negative impact" by the social variable allowed comparison and summing with nonsocial variable impacts. This type of "quantification"--for assessment and evaluation, rather than for operationalization and measurement--is the hallmark of checklists.

Two of the most frequently cited are those developed by the Urban Institute as a handbook for city planners (Christensen, 1976) and by a team of consultants for the Department of Interior (Fitzsimmons, Stuart, & Wolff, 1977). The first of these stresses collection of baseline data to permit good judgmental estimates of impacts in seven areas relevant to metropolitan neighborhood impacts: (1) recreation patterns at public facilities; (2) recreation use of informal outdoor spaces; (3) shopping opportunities; (4) pedestrian dependency and mobility;

(5) perceived quality of natural environment; (6) personal safety and privacy; and (7) aesthetics and cultural values. Two particularly important impact dimensions for urban analysis are accessibility and satisfaction, and "overall neighborhood satisfaction" is also suggested as a possible eighth impact category. Some indicators are suggested for each category, but the main thing is to ensure analytic attention in some form to the overall checklist category. Note that this schema is appropriate for relatively small neighborhood changes--a new shopping center or bridge, perhaps. It is not designed to address the typical concerns which emerge when an entire small community is transformed by a major new industry and consequent population boom.

The checklist developed by Fitzsimmons et. al., based on the old Water Resources Council's "Social Well-Being Account," contains broad categories but also specific variables for quantitative analysis--some 400 of them, in fact. (That list will not be reproduced here.) The most meaningful conclusion about each variable, however, is not exact predicted change in magnitude or level, but the planner's assessment of direction of impact on a five-point scale: ++, +, 0, -, and --. The pluses and minuses are then summed across categories to come up with a "bottom-line" score in common units (i.e., pluses and minuses!) for the no-project scenario and for the various alternative forms (if any) of the proposed project. For the quantitatively-trained social scientist, such evaluation algorithms are either laughable or horrifying, but they seem to have filled a psychological need (albeit fallaciously) on the

part of some planners and decision makers to avoid the problem of "comparing apples and oranges" and to come up with a "bottom-line answer."

Checklists with Ideal Values: Marvin Olsen and his colleagues at the Battelle Human Affairs Research Centers (Olsen & Merwin, 1977; Olsen, Curry, Green, Melber, & Merwin, 1978) developed a list of 50 types of recommended social indicators (some of them logically calling for multiple indicators) for the United State Department of Energy in connection with the social impact assessment and management model reproduced in Figure 4 earlier in this chapter. This checklist also features a schema for converting impacts to common units, but through a very different technique.

For every quantifiable variable, Olsen et. al. suggest that local government and/or residents specify a precise quantitative "Preferred Value" (perhaps through community surveys or policy fiat) for comparison with "Observed Values" (present-day, future with-, and future without-project). For any "Observed Value," a so-called "Standard Score" could be obtained by the formula:

$$SS = 1.0 - \left(\frac{OV - PV}{PV} \right) \quad \begin{array}{l} SS = \text{Standard Score; } OV = \text{Observed Value;} \\ PV = \text{Preferred Value} \end{array}$$

Standard scores could be compared between with- and without-project estimated future "Observed Values," or between the changes from present standard scores to the alternative predicted future ones.

Like other attempts to convert impacts into common units, this one has conceptual and mathematical problems. The mechanics of coming up with a "Preferred Value" would certainly be an issue. For example, for the variable crime rate, would not the usual "Preferred Value" be zero (thereby rendering the formula unworkable)? Who in the political process would be willing to specify a more practical but still greater value--and how would that decision be arrived at? Furthermore, small differences between "Preferred" and "Observed" values could still represent large social problems, especially in areas such as mental health admissions rates; in this sense, the "Standard Score" still does not eliminate the "apples and oranges" problem. (It might be argued that a weighting scheme could be used to correct instances where small deviations represent large problems, but Olsen et. al. suggest that weighting be employed for the purposes of expressing public priorities--e.g., the employment rate is considered twice as important as the crime rate for decision making--rather than for the purposes of mathematical corrections.) On the other hand, Olsen et. al.'s proposal does have the virtue of requiring policy makers to think about, and make explicit, their goals in various social arenas.

Another approach employing some sort of statement about ideal values or directions--although one which is not intended to result in common units that can be summed up for a "bottom-line" evaluation--is that of Guseman & Dietrich (1978). Using a list of indicators stemming from the Social Well-Being Account, they present a "hypothesized

functional curve"--usually a simple straight-line or uncomplicated curvilinear function--relating increasing values of the indicator to an abstract "Quality Index." For example, they assume that an extremely low value for some indicator of "Community Identification" would correspond to a zero value for the "Quality Index," while an extremely high "Community Identification" score equates to a maximum "Quality Index" value--in other words, low community identification is bad; high community identification is good; and medium community identification is medium good-bad. The purpose of this exercise is simply to make explicit certain values which might be held by the assessor or the community or which might be suggested by available literature.

Conversions to Dollar Values: Dr. Jerry Delli Priscoli, social scientist with the Army Corps of Engineers' Institute for Water Resources (IWR), recently described the IWR's thrust in converting "soft" social outcomes to "hard" dollars:

Based on the idea that property-based values tell only a partial damage prevention story, we tried two new roots to human cost accounting: quantifying psychological trauma damages prevented and behavioral damages prevented [by proposed flood control projects]. In the first case, victims of flooding are analytically placed on a value trauma scale and trauma effects are related to American Medical Association levels of impairment. Degrees of impairment are translated into dollars paid by the Veterans Administration for comparable disabilities. In the second case, descriptions of behavior are examined through questionnaires and that behavior is translated into economic disruption costs. Currently, a general methodology is being produced and a program begun to further test these techniques on small flood control projects that previously appeared economically marginal. One case study now completed shows greatly increased benefits beyond property values in communities with low home values. (Delli Priscoli, 1982, pp. 26-27)

A less sophisticated approach to converting noneconomic impacts into dollar terms might be simply to calculate projected per capita income increases expected to result from a given economic development proposal; note the potential negative social impacts; and then ask residents in a survey whether the trade-off is acceptable or not. This was done for a Caribbean tourism development proposal (Bottomley, Hartnett, & Evans, 1976). Mack (1977) developed a somewhat more complicated variant, in which she defines a "utility index-point" as the subjective value that a person or family derives from spending the final, most discretionary one percent of annual income. This is determined through a survey of some other defensible way of "imputing" the answer. Using this answer as one index point, the next step is to ask or impute how many points people would give to have a certain desirable impact or not to have an undesirable one.

It may be noted that all the techniques discussed to this point have been primarily concerned with the problem of evaluating impacts. They illustrate some of the difficulties facing SIA professionals who do not accept the conventional wisdom that evaluating should be carried out with affected residents. Remaining techniques are more oriented to the problem of forecasting impacts.

Index/Indicator Quantifications of Abstract Constructs: Transportation planners trying to decide upon alignments for new highways (or, occasionally, rail transit projects) must often worry about the

accusation that any given alignment in an urban area will bisect and hence destroy a functionally cohesive neighborhood. Their forecasting efforts are largely concerned with whether, and to what extent, this might occur for alternative potential routes--i.e., social impact assessment as site screening. In the 1960's and early 1970's, both federal and state transportation departments tried to answer such questions in a technocratic way--by constructing indices or indicators which would answer this question mathematically for each alternative.

What sometimes resulted were serious problems of construct validity, since abstract concepts were operationalized through use of just a very few "hard" indicators. For example, at the state level, "The basic question they wanted answered was the following: when is a locality really a neighborhood in the sense that true social bonds exist between residents, and when is it merely a loose-knot collection of people?" (Llewellyn, Bunten, Goodman, Hare, Mack, & Swisher, 1975, p. 298). Answering this question involved such concepts as social interaction, community cohesion, and community disruption, but the engineers insisted on parsimonious and simplistically quantitative indicators or indices: "Community disruption, for example, was viewed by one state as consisting of three components: potential reduction in property values, visual disharmony, and increased traffic volume" (loc. cit.).

A series of rather strange indices and indicators evolved in the national transportation literature with many of the same problems. For example, the "Mobility Index"--based on only one indicator, percentage

of households occupying the same household as they did five years previously--was used in an attempt to avoid highways through "stable" neighborhoods. It almost resulted in an alignment through Watts in Los Angeles that would have relocated 5,000 households, because the indicator failed to include low-income renters who must frequently move but stay within the same neighborhood (Stein, 1977).

Based on data from 11 Philadelphia census tracts in the early Social-Interaction 1960's (McGough, 1964), a regression equation called the "Neighborhood Social Interaction Index" (NSII) appeared and popped up in transportation literature again and again for years (Planning Environment International, n.d., ca. 1976; United States Department of Transportation, 1976; Stein, 1977):

$$\text{NSII} = 76.29 - 1.45(M) - 0.36(R) - 0.30(HU),$$

where M = percent of households in neighborhood 2 years or less;
R = percent residential land;
HU = housing units per net residential acre

Based on consulting work for the Maryland State Transportation Department by Kurt Finsterbusch (1976b), another index--the "Simple Negative Social-Impact Index (SNSI)"--was developed and given wide currency:

$$\text{SNSI} = 1/15 [7(D) + 7(A + E + 3T + FH) + (\$)],$$
 where D = density as measured in population per acre, rescaled to a 0-to-100 range;
 A = percent carless persons;
 E = percent of population over 65 years of age;
 T = percent ten-year residents;
 FH = percent female-headed households with own children under 18;
 \$ = median household income, rescaled to a 0-to-100 range

There were others: the "Social-Feasibility Model," which characterized communities with high numbers of blacks or foreign-born as automatically cohesive (Marshall Kaplan, Gans & Kahn, 1972), or the "Social Energy Model," which related community cohesion to BTU's on the theory that community trip-making based on low energy (e.g., walking) characterizes a community that is more cohesive (and not just poorer) than another community whose trip-making is based on high-energy output such as automobile rides (United States Department of Transportation, 1976). Basically, a problem common to most of these approaches was reliance on a few, readily available, and strictly hypothetical input indicators (presumed causes of social cohesion or vulnerability) rather than multiple, proven, and more difficult to obtain output indicators (evidence or consequences of cohesion or vulnerability.)

Fortunately for the state of transportation planning, "Citizen participation has since overshadowed other techniques of identifying and estimating community effects" (United States Department of Transportation, 1976, p. 51). However, something about the field of transportation planning continues to encourage attempts to translate abstract

constructs into simple, and usually simplistic, indicators. For example, Brown (1978) advances the concept of "interactance communities" (a variant on the idea of community cohesion). This method relies on the assumption that regional or local transportation planners maintain extensive data banks on trip origin-destination points by trip type (social, shopping, work, other). Such data are factor analyzed; the factors represent interactance communities; and "community cohesion" is operationalized as an eigenvalue from the factor analysis:

Using this analysis, it does not matter if the residents of an area are socially dissimilar, don't have a sense of community or don't even like where they live. The community is cohesive if the area residents use the same shopping facilities and recreational areas and visit friends in the same zones. (Brown, 1978, p. 14)

Gravity Model: A basic planning tool used to predict such things as dispersion of new population or number of communication linkages (e.g., trips or telephone calls) between two areas is the classic "gravity model." In the case of predicting the amount of new population generated by a proposed project that would settle at an existing location, the model would work as follows:

$$P_{ij} = P_i/D_{ij}$$

(P_{ij} = population associated with project j settling in location i ;
 P_i = present population in location;
 D_{ij} = distance from project site to location.)

While this is a "hard" planning tool for topics outside the primary "pure social" focus of this dissertation, it nevertheless merits brief mention here because (1) it is one of the few examples of a mathematical formula used for prediction, and (2) it is a well-known algorithm which can help form a link with psychological phenomena (see Chapter V).

Quantifications of Distributive or Dispersion Concerns: Although not predictive formulae in and of themselves, several indices are worth noting here as useful quantitative tools for measuring degree with which some variable is equally or unequally distributed over several categories. This is particularly important to SIA's which focus on distributive issues. The first several examples given here are couched in terms of income distribution over a finite number of categories, but the logic could be extended to other variables.

Griffith (1978b) proposes a "welfare approach" to SIA by examining the disparity between the best-off impact zone and the rest. (The "zone" might be a geographical area or an ethnic group for which separate income data are available and/or can be estimated.) The recommended quantification is the Gini coefficient:

$$G_x = 1/2 \sum_{i=1}^n \left| X_i - C_i \right|$$

where X_i is the need value (percentage) in region i ;
 C_i is a total region standard or base level of need;
 and brackets indicate the absolute value, repeated and summed for all n categories.

The range would be from 0.0 (for, say, the case where all regions or groups had the same percentages defined as "low income") to 1.0 (total inequity). The idea is to calculate the current Gini coefficient and compare it to the estimated future value(s), although this leaves unanswered the question of how to estimate the future value. The utility of this technique lies in providing a standardized index to represent degree of distributive equity.

Other proposed quantitative approaches to examining income distribution include (1) calculating the "affluence/poverty ratio" by dividing (a) the percentage of local area residents who fall in the top income category as defined by the upper-quartile cut-off point for the general population by (b) the similarly computed percentage for the lowest income category (Eberts, 1979); and (2) simply adding the top and bottom quartile figures for the particular area, then comparing it to a similar figure for the state or other appropriate large-area baseline figure (Burdge, Burch, Gold, Krebs, Johnson, & Napier, 1978).

Guseman & Dietrich (1978) suggest several other indices which are usually applied to other types of demographic data and which might also be reapplied to numerous other forms of data. First, the Coefficient of Variation (CV) is an index of socioeconomic diversity/homogeneity which can be applied to any variable for which census data are presented in several different categories--educational levels, occupation, or, as in the following case, values of owner-occupied housing units:

$$CV = \frac{\sum_{i=1}^n f_i (X_i - \bar{X})^2 / (N - 1)}{\bar{X}}$$

where \bar{X} = mean or average owner value;
 X_i = midpoint for each category of owner values;
 f_i = number of owned dwellings in each category;
 N = total number of owner units; and
 n = number of owner value categories.

The CV can range from 0 to infinity, but usually does not exceed 1.20. A very homogeneous area is one which has a CV of less than 0.30. (Guseman & Dietrich, 1978, p. 76)

Second, the Index of Qualitative Variation (IQV) can be used to indicate the extent of homogeneity in the area for variables such as ethnicity. Its values range from 0.0 to 1.0, with 1.0 indicating totally balanced mixing:

$$IQV = \frac{\sum (n_i n_j)}{\frac{k(k-1)}{2} \frac{(N)^2}{k}}$$

where n = number in each ethnic category;
 k = number of ethnic categories being used; and
 N = total population.

Qualitative Approach to Distributive Issues ("Group Ecology Model"): Finsterbusch (1982a) has referred to the "group ecology model" of Flynn & Flynn (1982) as the "leading methodology for assessing the social impacts" of large facility construction in nonmetropolitan areas. The characterization of this as a "qualitative" approach is perhaps slightly misleading, since the procedure would encourage quantification wherever possible; however, the model basically stipulates general stages of analysis rather than specific mathematical formulae.

Flynn & Flynn assume that the task of social impact assessment begins after computer-based models or other technical procedures have produced estimated impacts in the areas of (1) Economic Effects (employment and income), which in turn drive (2) Demographic Effects (population size and characteristics), which in turn drive (3) Effects on Housing (amount of housing stock; land values and use; residential settlement patterns; and commercial/industrial location), which in turn or in combination drives (4) Effects on Government (tax structure; revenues; demands for facilities/services; and expenditures).

Once this information is in place, the SIA practitioner begins to carry out his/her chief responsibility: analyzing impacts on social structure. This is carried out in a three-step process.

1. Define and Enumerate Social Groups

There are three objectives in this stage, which are identical to the guidelines for group identification:

- identify groups discernible to study area residents themselves;
- define groups reflecting "functional organization" in the area; and
- identify groups which will experience differential impacts.

2. Profile Characteristics of Each Group

- (1) size of group;
- (2) livelihood of group members;
- (3) demographic characteristics;
- (4) geographic location (both residential and occupational);
- (5) property ownership characteristics;
- (6) dominant attitudes and values toward growth, environment, community participation, and planning;
- (7) patterns of interaction among group members (cohesion).

3. Describe Interaction Patterns AMONG Groups

--economic;
--political;
--social relations.

The reader may note that the prescribed three steps have now been completed with no predictive activity yet carried out. Flynn & Flynn deal with this consideration through some general instructions. First, changes in group characteristics and interaction patterns (on the dimensions listed above) are projected for the "without-project" future. Flynn & Flynn are strict in specifying what exogeneous variables may be used to make such projections, although they are silent on the etiological mechanisms to be employed:

The primary variables which can be used to project changes in the social structure are changes in the demographic compositions of the groups, changes in the economic structure of the Study Area, and national trends which will affect the study area (e.g., increased labor force participation rates for women, declines in agricultural employment). There are many other variables which will affect social interaction patterns in the future if the project is not built, but unless these can be clearly defined, they cannot be used in the baseline projection. (Flynn & Flynn, 1982, p. 17, emphasis added)

Given these stern instructions, it is interesting that Flynn & Flynn are thereupon somewhat vague as to exactly how the distribution of effects to groups should be estimated in the "with-project" future. Other than to say that distributive effects "can be" identified (see below), they end their discussion with little consideration of how the "ecological" estimates are derived.

In order to project conditions with the project, the economic, demographic, housing, government, fiscal, and public services effects of the project are distributed among the groups. For instance, those groups that will benefit from project-induced reductions in out-migration can be identified. Those that will be impacted by traffic can be pointed out. Those that will disproportionately benefit from tax effects can be delineated. Projected changes in the profiles of the groups and in the relationships among groups are then described and the role of the project in those changes is determined.

Thus, the overall strategy in attributing changes in social organization to the proposed project is to distribute project effects to groups, estimate the resulting changes in group profiles, and then forecast the changes that new group profiles would be expected to have on patterns of political, social, or economic interaction among groups. To the extent that the number of groups, group profiles, or group interaction patterns are affected, the proposed facility will be said to have caused a change in the social organization of the Study Area. (Flynn & Flynn, 1982, pp. 17-18)

Values Analysis: Canan & Hennesy (1981, 1983) have taken a major if still experimental step toward the integration of values data into social impact assessment through their study of residents' attitudes on the Hawaiian island of Moloka'i toward the concept of energy self-sufficiency. The island has the highest electricity bills in the United States, and a number of alternative energy developments have been pro-

posed to give this small, rural, traditional area a greater degree of energy self-sufficiency.

The SIA procedure began with a series of semi-structured key-informant interviews on the topics of energy, quality of life, and local goals and values. Content analysis of the recorded interviews was used to derive a list of 13 brief phrases describing major concepts which seemed highly pertinent to Moloka'i issues and lifestyles--e.g., FAMILY, JOBS, SLOW PACE, EVERYBODY KNOWS EVERYBODY, DEVELOPMENT, etc. To these were added three additional phrases: ELECTRICITY SELF-SUFFICIENCY, PREFERRED WAY OF LIFE, and YOU (alternatively reported as "ME"). These 16 phrases were used to construct a questionnaire on local values. A sample of 219 residents (and a separate sample of 29 state and county decision makers) were asked to judge the psychological distance between each of the 120 possible paired comparisons of the 16 items. Data were used as input to the multidimensional scaling algorithm "Galileo" (Woelfel & Fink, 1980), which produced a three-dimensional map showing spatial coordinates for the 16 items for each of the two samples. Central to the analysis were the proximity of various goal or value items to the reference concepts ME and PREFERRED WAY OF LIFE, as well as the comparison between resident maps and decision maker value maps.

Results were used to make some inferences about residents' perceived views of ENERGY SELF-SUFFICIENCY in relationship to the clusters of other values surrounding ME or PREFERRED WAY OF LIFE. In addition, an extensive series of time-series projections were made for numerous

social or economic indicators which could be categorized under the 13 various goal/value headings, and separate chapters written organizing these time-series results around the values data for that category. No projected changes for values themselves were attempted, although the authors suggested such changes could be monitored by repeated applications of the survey form. Thus, one of the major practical uses of the values data was in the report format, and the principal area of improvement needed for such value analysis methods is to make the results even more directly relevant to the standard decision-making (not just the conceptual) process.

Issue Identification: Procedures for identifying citizen concerns and issues--whether directly project-related or seemingly "unrelated" but having the potential to affect opinions and attitudes toward the project--are legion in social research and encompass the whole gamut of standard subjective data collection techniques: surveys, ethnographic approaches, key-informant interviewing, public meetings, structured workshop methodologies, etc.

Certain additional methodological steps have been suggested to increase the sophistication with which issues may be recorded, analyzed, and acted upon. One such technique involves articulation of the level or intensity of issue development. Berg (1982) suggests that issues can be categorized into four levels of increasingly intense controversy: "early warning," "formative," "hot issue," and "implementation" (the

last being of the lay-down-in-front-of-the-bulldozer nature, when the project is actually underway). Social impact analyses and reports will find different types of audiences when issues are in different stages, thus necessitating different styles and formats.

Preister & Kent (1981) present one of the most fully-elaborated ethnographic approaches to issue identification, involving extensive identification of all social networks and all resident issues (project-related or not) carried by each network in the study area. The approach rejects the "leadership informant" concept in favor of sending naive but trained observers into the community and having them later pool and reflect their observations to generate resident themes on a sort of inductive basis. This methodology could benefit from later sample surveys to test and validate observer conclusions, although Preister & Kent feel the ethnographic conclusions alone are adequate. As presented, it also suffers from several unnecessary ideological constraints (such as the insistence that formal "horizontal" networks--e.g., government--are irrelevant to community functioning), and it requires much more time and funding than is usually available in SIA. However, if adopted as a management technique by planners, at the very least it can serve the sensitizing function of making planners aware of resident issues and of key network leaders or contact persons.

Ethnographic Immersion: While the Preister & Kent method immerses observers in the community for the purpose of issue and network identification, other approaches focus more on development of an intuitive grasp of the social structures and processes which bind communities together. Predictive statements about project effects are then based purely on logic and on the expert's qualitative and holistic understanding of the community: "Social impact assessment...is a function of the adequacy of system understanding developed through the process of system definition" (Dunning, 1974, p. 64).

Such a process necessarily takes on a sort of groping character, and there is a danger of muddled and muddled thinking. Many of the descriptions of the process tend to be vague and general. One of the clearest summaries of the ethnographic approach has been provided by Porter, Rossini, Carpenter, & Roper (1980), although the steps they list are actually summaries and interpretations of the approach first set down by Vlachos, Buckley, Filstead, Jacobs, Maruyama, Peterson, & Willeke (1975):

1. Identify the cultural composition and components of the community. Examples: Irish, Italian, Polish, Mormon, American Indian.
2. Learn their philosophy, religion, world views, beliefs, lifestyles, tastes and other intangible background elements before studying the more material, tangible types of data: (a) if such information is available, learn as much of it as possible; (b) regardless of whether it is available the indispensable next step is to talk to some members of the cultural group(s) person-to-person, in order to learn further about these intangibles. (Caution: Observe and follow the modes of communication used in the cultural group. Do not rely on the so-called "leaders" recommended by outsiders. Go into the community yourself,

and meet ordinary people whom you find there, not pre-selected or pre-arranged.) If sociological or anthropological books and articles on the cultural group are available, read them.

3. After obtaining a background as above, look through all the data first before sorting them out. It is important to spend as much time as needed in this step. Look at the data back and forth several times to see overall connections and patterns. Formulate a tentative pattern and several alternative patterns if possible. Go back to the data again to see if any pattern fits the data. If not, change [the pattern].
4. Go to the community again, and talk with people under step 2(b). Find out what categories are meaningful from their point of view. This is the endogenous relevance.
5. Choose what seem to be relevant considerations from the point of view of the relationship between the outside community (including the entire nation) and the project community. This is the exogenous relevance.
6. Organize the data around the endogenous relevance. This should be done in cooperation with someone from the community.
7. Interpret each item in the data in terms of the cultural context. If the data do not make sense, suspect that you are not sufficiently aware of the cultural context. Even if the data make sense, still suspect that "making sense" may be an illusion due to consistent misinterpretation on your part. Always check the interpretations with people in the community.
8. Check whether the data and their interpretations depend on situational factors, and whether the "answer" may change if the situation changes.
9. Try to enter into the thinking of the people in the community; use their logic and frames of reference in describing and explaining the data.
10. Study the interrelations between the variables in the data. Study mutual causal relations, and identify mutually reinforcing causal loops as well as mutually counter-acting causal loops.
11. Return to the exogenous relevance.

12. Interpret the data in terms of the context external to the community.
13. Check whether the "answer" may change if the situational factors external to the community change.
14. Study the interrelations between the variables in the community and the variables outside the community.

(Porter et. al., 1980, pp. 311-312)

Scenarios and Simulations: These techniques often overlap with ethnographic immersion methods but are characterized by more explicit models of cause-effect relationships and consequences. Scenarios represent hypothetical portraits of single plausible futures based on key assumptions and expert judgment:

Scenario writing is a technique of futures research that blends [various facets] of trends and projections] into narrative descriptions of potential courses of development. It attempts to sketch a logical sequence of events in order to show how, under present conditions and assumptions, a future state or set of alternative states might evolve. (Vlachos, 1977, p. 211)

Bonnicksen & Lee define verbal "scenario simulations" as being even more explicit in etiological principles than simple scenarios:

In a scenario, the rules that connect events are not necessarily specified exactly. Instead, they are left to the informed judgement [sic] of the participants in the exercise. There may be several participants involved in writing scenarios, each acting a role that corresponds to some aspect of the problem, or there may be only one participant who portrays all the roles...

The scenario simulation method involves more than simply calling on experts to give predictions of future events. Participants are required to respond to one another within the framework of a model. Thus, a scenario simulation operates in exactly the same manner as a computer simulation. "What if" questions can be asked in a scenario simulation in the same way that the behavior of computer models is examined by chang-

ing parameter values. The difference is that, in a scenario simulation, the manager controls the flow of information in accordance with the model's structure. (Bonnicksen & Lee, 1982, pp. 56-57, emphasis added)

Many SIA's developed by a single expert practitioner are simply scenarios (if uncertainty factors dictate portrayals of "best-case" or "worst-case" outcomes) or simulation-type models (if the SIA professional is willing to risk a more specific prediction) prepared by one knowledgeable person. Simulation processes involving a number of people affected by the project could also be used for predictive SIA, but they would seem to have even more value for participatory techniques where the goal is to increase consensus or understanding of the project.

Historical Parallels: The final technique is a conceptually simple one, which may or may not feature explicit statements about cause and effect. This involves studying the particular community's past adjustments to changes similar to a proposed "new" change. This technique is of course most applicable when the community indeed has the requisite historical parallels, but such cycles of history actually are fairly common for rural towns which experience "boom-bust" patterns in regard to mining or energy development. Burdge, Field, & Wells (1982) studied the history of Skagway, Alaska and found that past adjustment patterns to boom-bust phenomena constitute a good predictor of present and future adjustment. The methodologies for this sort of work clearly would involve historical research and content analysis (Motz, 1977a, 1977b).

Concluding Comment: The range of methodological tools which has just been sampled suggests that SIA practitioners with different professional styles (and/or ideological positions in regard to the philosophical issues previously discussed) may approach the same task through a variety of techniques. Additionally, the range of tasks in SIA is also wide, and one would not expect to find even the same practitioner choosing the same approach for assessment of a proposed new neighborhood overpass as for assessment of a proposed nuclear plant that would quadruple some community's population. Thus, there is no one "right way" to do SIA, and the practitioner must be aware of all possible methodological tools in order to complete the task in an appropriate (if not necessarily "the appropriate") way.

IV. STATE OF THE ART: PRESENT AND FUTURE

One crucial dimension of any "state-of-the-art" discussion involves analysis of methodological capabilities. This was addressed in the previous chapter. The present chapter will focus more on critiques of the overall field's performance, limitations, and ultimate usefulness to the decision-making process.

The social impact assessment literature contains a variety of "state-of-the-art" critiques, ranging from the brief (Connor, 1977; Wilke & Cain, 1977) to the comprehensive (Wolf, 1974b, 1977a; Meidinger & Schnaiberg, 1980); from comments based on individual's strong personal opinions (Erickson, 1979) to summary statements which synthesize multiple viewpoints emerging in conferences and anthologies (Robinson, 1980; D'Amore, 1981; Bowles, 1983; Melser, 1983); from articles focusing on the problems of academicians snared into the corrupting world of applied research (Jobes, 1976; Matzke, 1977, 1978) to articles focusing on the problems of getting useful social management information from ivory-towerish professors (Flynn, 1976; Finsterbusch, 1977b); from analyses based on review of a single EIS (McIrvin, 1977) to those based on experience with dozens or hundreds (Piccagli & Thompson, 1978). Insights into the state of the SIA art may often be gleaned from discussions of particular types of studies, such as those involving energy "boomtowns" (Freudenberg, 1978; Murdock & Leistritz, 1979) or highway planning (Llewellyn, 1977; Llewellyn, Buntin, Goodman, Hare, Mach, & Swisher,

1975). Important information also resides in essentially methodological papers (Vlachos, Buckley, Filstead, Jacobs, Maruyama, Peterson, & Willeke, 1975); Olsen, Curry, Green, Melber, & Merwin, 1978).

Critical points may be divided into those dealing with (1) actual SIA products vs. (2) those dealing with the inherent limitations (or potential) of the field, whether now or in the future. Additionally, SIA may be discussed in terms of (3) utility and feasibility constraints--that is, limitations of a practical or political nature, rather than limitations pertaining to methodology or body of knowledge. Finally, there are (4) proposed solutions or new directions for SIA in light of the concerns and criticisms evolving from the first three perspectives. These four areas will comprise the four sections of this chapter.

CRITIQUES OF EIS/SIA PRODUCTS

In the previous chapter, SIA methodology was discussed primarily as scholars believe it should or could be conducted...i.e., SIA in theory. Now it is time to consider SIA in practice.

SIA in practice means preparation of the social portion of environmental impact statements, at least in the great majority of cases. State-of-the-art critiques of such EIS/SIA products are essentially in unanimous agreement on a number of points:

1. EIS's over the years have rarely contained substantial or adequate social content.

2. SIA's are usually carried out by nonsocial scientists who employ highly questionable methodologies.
3. Even social scientists working on SIA's have failed to prepare adequate analytic approaches for the situations involving the greatest social impacts of all: dramatic shifts in overall cultural patterns of aborigines.
4. SIA's usually are carried out under severe and damaging resource constraints.
5. Both the SIA portion and the remainder of EIS's are too often justifications for decisions which have already been made.
6. Social components of EIS's are rarely integrated into analyses of physical or economic impacts.
7. Both the SIA portion and the remainder of most EIS's are often written in language too technical and abstract for the lay reader.

There have also been a few other miscellaneous points in critiques of SIA in practice, and the expanded comments in the remainder of this section will take note of these as well.

As a cautionary note, the reader should recognize that some of the criticisms of EIS/SIA products may apply more to past than to present circumstances. As the nature of EIS/SIA products changes over time, it takes a number of years before trends become evident, and then perhaps several years after that before articles are written and finally published in academic and professional journals. For American EIS's prepared under NEPA, the 1978 regulations promulgated by the Council on Environmental Quality attempt to address some of the very criticisms in the foregoing list. However, there have as yet been no published analyses of the effects of the new CEQ regulations on the quality of social

portions of EIS's. Periodic sampling of EIS's from around the nation is a valuable, difficult, and, unfortunately, rarely-undertaken task. Therefore, the following discussion must be taken with a certain grain of salt, since some of the comments and objections may now be outdated.

Historic Inadequacy of Social Content in EIS's

This has begun to change to a certain degree in very recent years as social issues have become more frequently the subject of citizen and governmental concern. However, although the substance of EIS's has begun to deal somewhat more often with social issues, the adequacy of such efforts has still been the subject of criticism from the social science community.

The quality of SIA products within EIS's has been found to vary a great deal (Flynn, 1976; Daneke & Delli Priscoli, 1979), but most often the assessments are extremely brief, perhaps a few pages in a multi-volume document with a thousand or more pages (including appendices). In a review of 80 EIS's randomly sampled from the Government Reports Index from 1970 to 1974, it was found that fewer than six social or cultural items were covered in the majority of EIS reports (Wilke & Cain, 1977). Comments on SIA's prepared for energy development projects in western states have centered on the short-run time frame of most such documents (Albrecht, 1978) and the total absence of basic social concerns such as equity and distributional effects (Freudenberg, 1978; Cortese, 1979b).

Piccagli & Thompson (1978) have complained that such EIS's have avoided discussion of social structure or process, and have reinforced decision makers' tendency to act as though "the general welfare" can best be measured by increase in net aggregate income. Others have also complained that "socioeconomic" analyses concentrate almost solely on purely economic matters:

The primary deficiency of social impact assessment in EIS's is that the statements usually consider only one social consequence--the economic impact of the project. The socioeconomic impact section of the typical EIS is generally an assertion that economic benefits will be derived from the project, typically expressed as a claim that employment or gross regional income will increase as a result of a project or that the project is designed to meet some economic demand... Impacts of agency programs on status, cultural or ethnic subgroups, or on the human community as a system are rarely considered in EIS's... It is common for EIS's to note that some social variable will be affected, but not to assert the directionality of the effect, much less the magnitude. Possible social impacts, if noted at all, are merely listed. (Friesema & Culhane, 1976, p. 343)

Writing from the perspective of water planning, Daneke & Delli Priscoli (1979) suggest that a major reason for federal reluctance to utilize "social account" information lies in the "soft" and therefore flexible nature of such information. For example, they say, the United States Office of Management and Budget considers social accounts too vague and subjective to warrant real consideration, and they fear that, if traditional economic cost-accounting systems are diluted with "social" considerations, agencies will build more unnecessary projects

based on intangible social-benefit arguments. Additional reasons for agency under-utilization of social information, they believe, include:

...(1) the time, effort, and expertise required to do social assessments; (2) the "soft" and often subjective character of social indices; (3) general bureaucratic resistance to change; (4) a failure to integrate procedures for social assessment within existing planning policy development processes. (Dan-
eke & Delli Priscoli, 1979, p 368)

Another reason for lack of attention to social impacts in EIS's is one so basic that it may be taken for granted by practitioners and, at the same time, entirely overlooked by nonpracticing SIA scholars. That involves the resistance of government agencies or other change proponents to the concept that the proposed project will actually have any meaningful effects outside the domain of the project's intended objectives, which are usually physical or economic in nature. Engineers in particular may feel that alleged social impacts are unfairly pinned to the coat-tails of a construction project which is simply meeting a straightforward community need as designated by reasonable authorities with an overview of society's total priorities:

For example, in an effort to persuade this author of the "absolute foolishness of the public," a state highway official related the following story. It seems that a proposed new highway project called for the abandonment of an existing road in a small town. In the course of public hearings on the proposal, it became obvious that there was much public dissatisfaction with the planned abandonment. To the utter disbelief of the state highway official and members of his assessment team, this dissatisfaction was finally coalesced into a formidable opposition by a teen-aged girl who took her turn at the podium. Her argument against the proposed abandonment was straightforward--the abandoned roadway would become an ideal "lovers' lane"; and she could guarantee that more than a few pregnancies would result.

"Now they want to blame the highway department for pregnancy!" the state official shouted.

Well, of course, the girl did not say that highway projects caused pregnancies. She merely noted that a particular highway project could cause a situation that might result in pregnancies. In fact, she was probably looking at the project more realistically than was the highway engineer. He was looking at the project as a means of moving goods and people efficiently and safely from one point to another. She was looking at a change in the physical environment that, regardless of its stated purposes, had broader implications for the social environment of local people. (Erickson, 1979, p. 278)

Anthropologist Thomas C. Hogg has noted a similar type of response from physical scientists involved in water resource developments:

Social research often is not considered necessary because of a general lack of awareness of what it represents, the kinds of explanations it offers, or is capable of offering, and the possible improvements it might provide. Water resource development projects generally are conceived as being proper and beneficial--providing relief from the ravages of floods and the like, increasing economic production and adding new jobs in the market. Social research appears to do none of these things. Instead, for many people, it appears to be an unnecessary "tag on" that all too often does nothing more than criticize the development to which it owes its existence. (Hogg, 1978, p. 57)

Questionable Methodologies of Nonsocial Scientists

While social scientists interested in SIA are concerned about the limits of current social science research methodology for the predictive task (see Chapter III), they nevertheless believe that available methodologies have been under-utilized by nonsocial scientists who are called upon to prepare the social components as part of their overall EIS tasks.

Friesema & Culhane (1976) are succinct in their evaluation of SIA methodologies in typical EIS's: they are "crude or blatantly inappropriate"; they contain few social science references; they generally omit the basis for specific quantitative calculations or predictions; and they are generally "devoid of any recognizable social theory and appear instead to be the result of agency hunches" (pp. 344-345). In Wilke & Cain's (1977) review of federal EIS's from the early 1970's, "No social research method or technique could be determined in 86.5 percent of the cases," (p. 107) and logically explicit relationships between two or more sociological concepts were present in only about 10 percent of the cases.

In regard to energy "boomtown" SIA's, Murdock & Leistritz (1979) found that such survey research as was conducted often fell into the quick-and-dirty category, while participant observation reports usually were based on only a few days or weeks in the field. Psychometric or sociometric scales reflected "extremely poor operationalization and measurement"--e.g., single-item measures of dimensions or summary indices of untested validity and reliability. These authors believe there has been too little use of trained social scientists: "The use of non-social scientists to do economic and sociological analyses often produces work of questionable value" (p. 346).

Cortese (1979a) agrees, and he further argues that reliance on engineers or accountants to pen SIA's is responsible for the concentration on tangible factors such as infrastructure problems--rather than

"invisible" changes in social structure--for explanation of pathological symptoms such as crime, suicide, or drug abuse in boomtowns. Wolf (1974b) notes that social consultants were much in evidence during the initial days of EIS preparation, but their contributions were often not relevant to decision makers' informational needs, and so SIA in practice may well remain the domain of nonsocial scientists in the foreseeable future. (Now, a decade later, it is apparent that there are many more social scientists becoming involved in EIS preparation, some as professional SIA consultants, but the majority of EIS's still are likely to contain very brief social portions prepared by nonsocial scientists.)

However, the thesis that academicians or other trained social scientists will automatically produce superior SIA's is called into question by the findings of Matzke (1978), whose survey of university scientists involved in assessment work found agreement "that standards for EIS work were lower than those for other scientific work" (p. 12). This was true for physical as well as social scientists.

Section 1502.24 of the 1978 CEQ regulations attempts to improve the overall scientific content of NEPA EIS's through the following mandate:

Agencies shall insure the professional integrity, including the scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement. An agency may place discussion of methodology in an appendix. (United States Council on Environmental Quality, 1979, p. 15)

Inadequacy of SIA for Dealing with Major Cultural Impacts

Section 101(b)(4) of the National Environmental Policy Act calls on federal agencies to "preserve historic, cultural, and natural aspects of our national heritage..." Subsequent attention in the legal EIS system to "cultural" matters has predominantly involved the protection of ancient cultural artifacts: burial sites, old campground or more permanent habitation areas, etc. Despite calls for widespread anthropological participation in the SIA/EIS process (West, 1975) and occasional SIA participation by anthropologists (c.f., Jacobs, 1978; Honey & Hogg, 1978), EIS concern for "cultural resources" today is primarily archaeological rather than anthropological (Dickens & Hill, 1978). "Cultural" sections of typical EIS handbooks consist of information on such things as officially-designated historic sites and parks (Golden, Ouellette, Saari, & Cheremisinoff, 1979). Occasional proposals in the "cultural resources" literature itself to expand the conception to living cultures (Harding, 1978) have gone largely unheeded.

The foregoing is in part a definitional problem. The substantive concern expressed by many social scientists involves the usual failure of the EIS process both to address cultural concerns (as the concept is understood by social scientists) and to develop adequate methodologies for doing so.

In the United States and Canada, the cultural groups most likely to be affected in extreme ways (equivalent to "modernization" or "Westernization") by the sorts of projects requiring EIS's are indigenous peoples living traditional lives in relatively remote areas: American Indians, Inuit (Eskimo), perhaps some Hawaiians and Micronesians. Rural Hispanic communities may sometimes also face changes which are so sweeping that they may be labeled "cultural" rather than simply "social."

Distinct cultural or ethnic groups in urban neighborhoods may sometimes be affected as a group by proposed highways, shopping centers, sewer treatment plants, etc., but the potential impacts rarely involve wholesale changes in their values and ways of life. Implications from such projects do not rival those faced by Northern Canadian Indians who suddenly shift from a subsistence to a wage economy as construction workers on an energy development project...then perhaps shift back again when construction has finished:

One major negative social impact can result from incorporating hinterland residents into a culture and lifestyle which presumes a continuous cash flow, but locating them in an economy that provides an erratic or only temporary cash flow. In many resource industries the greatest economic activity is during the construction phase. In many others, economic activity is characterized by booms and busts. In mainstream North American culture, households are organized to operate on the basis of a continuous cash flow. If individuals or families who are engaged in a traditional economy abandon their skills, capital requirement, and orientations to participate in a wage-labour economy, they may find that they are unable to return to traditional practices once the wage income terminates. (Bowles, 1981, p. 104)

Despite several national conferences intended to introduce an aboriginal focus or other cross-cultural element to SIA (Wolf & Peterson, 1977; Wolf, 1980b; Social impact assessment, 1980) no standard procedure has emerged in either scholarly writings or government agency guidelines for cultural impact portions of EIS's. Perhaps this shortcoming in SIA is partially because cultural barriers invalidate many standard social research tools such as sample surveys (Goodenough & Smith, 1977) and partially because the great majority of SIA products under NEPA focus on more homogenous populations in the cultural mainstream. It has also been suggested that government agencies have deliberately avoided including much cultural content in EIS's (much less requiring it) because they are simply far more interested in justifying the proposed mineral or energy development project than in evaluating its effects on those Indians on whose lands the project would occur:

Since they tend to be ignored anyway, addressing [cultural] issues in an EIS becomes to greater or lesser degree a pro forma exercise. This in turn feeds back to the question of adequacy in a vicious circle. The analysis is performed inadequately in part because it will largely be ignored anyway, and it is the more easily ignored because it is inadequate. (Boggs, 1978, p. 6)

In the past few years, scholars and consultants have slowly begun publishing some suggested methods and procedures for "Indian SIA" (Stea & Burge, 1980; Geisler, Green, Usner, & West, 1982). Tester (1981) suggests that standard linear approaches to SIA are culturally inappropriate for indigenous northern Canadian communities. He recommends a combination of ethnographic and participatory approaches (perhaps

inspired by the Berger Inquiry) to ensure that SIA includes "the dissemination of information as an essential component" (p. 107), since participation in a decision-making process about a culturally unfamiliar proposal would be meaningless without a significant educational component.

Severe Constraints on Available Time and Money

The lack of time and money for SIA's is often considered a prime reason for the skimpy social content of SIA's and the reluctance of trained research scientists to become involved. "The typical SIA study is one of short duration, meager funding, and low priority," notes Wolf (1977, p. 19). The situation is much the same in Canada (Carter, 1981).

As a consequence, Finsterbusch (1977c) urges SIA practitioners to take a hard look at traditional research maxims and methodologies in order to identify approaches which can provide maximum returns for minimimal funding--e.g., utilization of small-sample "mini-surveys" to determine concerns rather than insistence on large samples and detailed analyses of subpopulations.

A similar call for pragmatism in SIA work is sounded by Peterson & Gemmell (1977), although they are clearly wistful about the idea of applying more rigorous scientific standards and ideals:

We might argue that the needed research is a legitimate cost of the project. If you can't afford the research needed for proper clarification of consequences, perhaps you can't afford the project. But that is not how things are done.
(p. 380)

Tendency to Project Justification

All too often, EIS's are not part of the planning or decision-making process, but part of the implementation process--a requirement to be fulfilled, albeit at great expense, after the basic decisions have already been made. This is perhaps an inherent danger in a system which sometimes considers EIS's as "disclosure documents," wherein the thrust is simply to disclose impacts rather than to evaluate them. It is a short step from disclosing impacts to minimizing or sugar-coating them. The 1978 CEQ regulations specifically state that EIS's under NEPA are to be more than disclosure document--are to be, in fact, aids to the decision-making process--but this perspective has not yet saturated all government agencies.

When Matzke et. al. (1978) interviewed Oklahoma State University scientists involved in EIS and SIA work, they found "a general perception that they had very little influence. They believed that contractors intended to complete the projects, regardless of the outcome of their research..." (p. 12). Given the amount of capital which has usually been invested in land acquisition, architects' renderings, executive salaries, and other upfront tasks once the EIS has been completed (not to mention the EIS cost itself), this belief about the determination of contractors to complete their projects seems well grounded in economic reality.

"Examples of impact studies being undertaken too late in the planning process to have any impact on the decision-making let alone on the design process are legendary," notes Boothroyd (1978, p. 128). Consequently, the EIS either becomes a force for killing the project by providing opponents with a litigative tool or else it is a mere formality which consumes tremendous amounts of time and money without having any particular effect on project design.

Social information in particular seems to have been little used in decision making. In Wilke & Cain's (1977) random sampling of EIS's from the early 1970's, they "found that in 93.8 percent of the cases, no directives regarding the use of SIA knowledge could be detected" (p. 107). That is, to the extent that any social effects were predicted, no use of the information was made in recommendations about whether or how to implement the project. The failure of SIA to influence decision making is still one of the greatest sources of concern to practitioners and scholars of the field today (Melser, 1983).

Peterson & Gemmel (1977) argue that the EIS process is inevitably one of political reaction to a proposal made by project proponents who wish to put that proposal in the best possible light. They feel that the EIS and attendant reaction is a stage not to be omitted or regretted but simply recognized for what it is. On the other hand, they continue, there is also a need for impact assessment methodologies to be applied at an earlier stage:

What is needed, then, is a way to integrate impact prediction with design, so that the design itself is responsive to the same criteria that are being applied in generating the impact statement reaction. (p. 378)

Another viewpoint is that SIA information will have increasing impact on actual decision making as the passage of time makes it more respectable and teaches decision makers of its utility:

The point has been made that environmental impact assessment was at this point some 10-15 years ago and that now the environmental movement is a powerful force. There is reason to be optimistic that SIA will have the same movement towards legitimization. (D'Amore, 1981, p. 367)

Lack of Integration with Other Types of Impacts

This dissertation itself is symptomatic of a problem which has been receiving increasing attention in the SIA literature: the unfruitful partitioning of "purely social" impacts from physical or (particularly) economic impacts. Although NEPA calls for integrated multidisciplinary teams in EIS preparation, there remains a strong tendency for those with expertise in one discipline or general scientific domain to study their topics in isolation from those with expertise in other areas:

While SIA has attempted to be catholic in its overarching use of social science knowledge, the necessary interdisciplinary effort has been hampered by the lack of a common perspective. Economists tend to envision problems solely in monetary terms, ignoring political problems or sociological concerns for such things as community cohesion. Psychologists, sociologists, and political scientists, on the other hand, have been equally guilty of downplaying important economic concerns while trying to explain the complex processes entirely in terms of their own respective disciplines... There is a desperate need for a theory of social impacts produced from the common concerns and inputs of all those relevant disciplinary perspectives. (Soderstrom, 1981, p. v)

A clear echo is sounded by Andrews, Hardin, & Madsen (1981), who note that SIA's can produce different social forecasts because of varying motivational theories and paradigms accepted by economists vs. sociologists or psychologists:

Sociological and psychological factors, where they are listed with economic variables, are usually given separate treatment. What is needed is the development of an integrated, inter-related social and economic approach to assessment. For example, many indirect social impacts are mediated through economic alterations and the growth and diversification of populations that result from project development. These economic and population changes are required as inputs into the study of community and individual well-being. This mandates an interdisciplinary effort integrating economics, demography, sociology, and other social science disciplines. (Andrews et. al., 1981, p. 75)

When social and economic analyses are combined, it is usually in a fashion such that economic effects are presumed to be more direct and social effects are presumed to be the indirect consequences of the economic impacts (c.f., Flynn & Flynn, 1982). One problem with this model of economic impacts "driving" social ones is that the economic projections can be devastatingly incorrect, thereby producing incorrect social forecasts as well. While there has been too little effort to return and compare actual project outcomes with projected ones, several studies of this nature have found that forecasts of workforce size and construction timetables (crucial variables which in turn affect assumptions about population immigration, demands on government service, community cohesion, etc.) turned out to underestimate the true situation--sometimes by 50 to 100 percent (Meidinger, 1977; Braid, 1980; Gilmore, Hammond, Moore, Johnson, & Coddington, 1981).

In reviewing these discrepancies, Leistritz, Murdock, & Chase (1982) report that underestimates of workforce requirements seemed to stem primarily from the cumulative effects of other projects in the area and from changes in the project development schedules. Especially in the case of major facilities such as power plants, there are frequently delays in starting construction; subsequently, double shifts are employed to catch up, resulting in much more importation of construction workers than originally anticipated. While the methodological problems here seem to be in the lap of the economic forecasters, there are clear and troublesome resulting questions for the appropriateness of social forecasters attempting to make definite predictive statements.

Another problem with the model of economic factors driving social ones is that it is one-way, ignoring the effect of social and psychological factors on economic (and demographic) phenomena. Murdock & Leistritz (1979) note that predevelopment resident attitudes toward growth in general or the proposed project in particular could affect siting, technical design features, workforce requirements and subsequent need for immigration, participation of women in the labor force, development of spin-off businesses, levels and types of expanded public services, and government fiscal decisions--not to mention the possibility that the project might not even be approved. Until more consistent recognition is given to the role of social phenomena as independent rather than simple dependent variables, "the role of social analysis within impact analysis will remain largely a peripheral and ineffectual one," in the opinion of Leistritz & Murdock (1981, p. 204).

Overly Confusing, Technical Language

Despite the typical brevity of the SIA section, EIS's as a whole are generally voluminous and technical documents, intimidating to the average citizen whom they are supposed to enlighten (Bardach & Pugliaresi, 1977; Peterson & Gemmell, 1977). The SIA portions sometimes share in the criticism regarding abstruse language, if not the one regarding length. The "plain English" requirement of the 1978 CEQ regulations was an attempt to alleviate this problem, although there has been little published research or commentary on its success in doing so.

It should be noted that this objection to typical SIA products differs from those previously made, which essentially all concerned complaints that SIA's in practice have rarely been "truly scientific." This represents another aspect of the uncertainty over whether SIA should be a scientific product or an aid to a decision-making and/or a political process.

Miscellaneous Other Concerns

Although the foregoing seven points represent the most frequently sounded complaints about SIA in practice, there have been a variety of other criticisms. For example, Piccagli & Thompson (1978) are concerned that EIS/SIA's fail to look carefully at time span implications--e.g., to examine which changes are actually transitory and which are irreversible:

Mental health is an area in which one can expect to incur negative effects that are, arguably, permanent and not alleviable. If, as is sometimes suggested, rapid change, complexity, and population density adversely affect mental stability, one can expect deterioration in mental stability with energy development in the Rocky Mountain States. (p. 491)

Murdock & Leistritz (1979) feel that SIA's devote too much attention to predictions or surveys of attitudes, and too little attention to mitigation recommendations:

For [local government] officials to be told that local residents have high levels of support for development or strong levels of support for environmental conservation is of far less value in managing impacts than to know which of several alternative forms of service delivery residents most favor. (p. 344)

They are also concerned that too many impact statements focus on regional or county, rather than specific community, impacts.

Why Bother?

Given the gloomy view taken by social scientists of how SIA has usually worked in practice, it may be questioned why there is even continued interest in it. One answer is provided by Meidinger & Schnaiberg (1980), who are forthright in expressing their views that long-lasting social change will come only from a redistribution of power in the over-all society. But, they add:

...it is not an all-or-nothing question. Even without fundamental structural change, the prevailing configuration of political forces appears capable of generating more socially compatible, and more equitable, production policies. Even here, we are not sure how much can be accomplished. But we

know of few reasons to do social science aside from trying to find out. (p. 529)

Another viewpoint, perhaps less ideological in tone, is expressed by Jobes (1978):

So long as it is not misleading, some information is superior to no information when decisions must be made, and the cumulation of partial results may lead to firmer theoretical and methodological foundations for subsequent impact assessment. (p. 14)

INHERENT LIMITATIONS

While the scholarly literature generally implies that SIA in practice has not fulfilled its potential, there are also a good many writers who have pointed out that the potential for SIA has some very important limitations, given the current state of the social sciences. That is, these problems do not reflect poor performance, but rather limitations which are inherent so long as the social sciences in general are equally limited. Such reflected limitations include: (1) the existing body of knowledge (both empirical and theoretical); (2) present methodologies; (3) the complexity of cause-effect relationships among social phenomena; (4) imprecision of social concepts; and (5) the effects of the impact prediction itself.

Limits of Existing Knowledge

Finsterbusch & Motz (1980) point out that many of the most important concerns which might be addressed in an SIA have not been much studied by social scientists, so that the body of knowledge about them is limited:

...there have been relatively few studies on the social and psychological impacts of unemployment. Similarly, very little research has been conducted on relocation, which is another frequent impact of such government action as highway and dam construction, urban renewal, and so on. There are many articles relating foreign migration to rates of mental illness or describing the adjustment problems of rural people to cities, but few articles analyzing the social and psychological consequences of moving. (p. 19)

Furthermore, they note, the variety of possible causal factors--combined with changing conditions--makes it dangerous to generalize consequences not only from one place to another, but also from one time period to another even in the same general locale.

There are theoretical as well as empirical limitations. Sociologist Robert K. Merton, whose 1936 article on "The Unanticipated Consequences of Purposive Social Action" may represent the earliest theoretical discussion of SIA concepts in twentieth-century American academic literature, noted that social phenomena are by nature probabilistic, and for this reason alone past experience cannot be considered an absolutely reliable indicator of the future. In considering the problem of prediction based on limited knowledge, he wrote:

Although no formula for the exact amount of knowledge necessary for foreknowledge is presented, one may say in general that consequences are fortuitous when an exact knowledge of many details and facts (as distinct from general principles) is needed for even a highly approximate prediction. (p. 899)

In most cases where SIA is applied to an individual project proposed for an individual community, virtually all the significant social impacts would indeed require "exact knowledge of many details and facts" for even a generalized forecast.

Nevertheless, proponents of scientific SIA at the First International Conference on Social Impact Assessment tended to believe that the problem lies not in lack of available data so much as in lack of determination to assemble and analyze it:

A major concern in this view is SIA's failure to accumulate knowledge in a systematic fashion. Overemphasis on uniqueness [of the specific project and community] has led to studies which lack comparability. Few impact predictions have been tested against actual outcomes. To improve the accuracy of predictions, information on comparable impact situations can be codified; cumulative knowledge would also be enhanced if research paradigms were standardized. For example, Bowles suggested that the adoption of even a rudimentary ecological model for understanding a community's organization of space, time, and activity would improve comparability between impact studies. (Melser, 1983, p. 9)

Limits on Methodology

The Chapter III discussion on SIA methodology, particularly forecasting and projection techniques, obviates the need for extended discussion here. There are certainly many methodological tools at the disposal of the SIA practitioner, and there are certainly many problems with these tools.

Despite general concurrence on this, there are dissenters such as Carter (1981), who labels as a "myth" the proposition that the social sciences use weak and unreliable methodologies:

It can be argued however that methodologies such as social surveys and informant interviewing are well developed and reliable, in relation to their intended purposes. They may be misused for one reason or another--inadequately trained staff, restrictive research budgets, etc.--but they can and do yield reliable and useful results. (Carter, 1981, p. 7)

Carter's point is directed toward the usefulness of social science methods for studying past and present phenomena. On the other hand, there is a fairly wide consensus of opinion among SIA practitioners that there are presently inherent limits on predictive methods, at least at the present stage in the development of the social sciences:

...unlike the situation in environmental impact analysis there are no valid techniques for predicting social impacts. Not enough is known about the variables involved in complex social processes to allow for the development of standard predictive techniques. All predictions of social impacts are based on the experience, knowledge, and intuition of those assessing the impacts. (Clark, Bisset, & Wathern, 1980, p. 193)

Although one can legitimately argue that many of the projection techniques in other social science dimensions are superior only in form, but not in accuracy to social projection techniques (Ascher, 1978), the fact that social projects remain descriptive and that they seldom provide assessments of the magnitude or the distribution of impacts often makes them of little utility to decision makers and others involved in local area planning. Although the increases in the level of understanding provided by such assessments should not be discounted, more definitive projections are essential if the social assessment process is to influence decision making or to gain a more substantial role in the overall assessment process. (Leistritz & Murdock, 1981, p. 184)

Complexity of Cause-Effect Relationships

The slow and painful progress of the social sciences in charting causal relationships among social phenomena results in SIA practitioners often having to choose between logical but unverified seat-of-the-pants models about cause and effect and the more conservative course of eschewing causal models and assumptions entirely:

...the fundamental methodological point is that no single model (say a simultaneous equation model) is even conceivable given the present state of science. The array of effects, contingencies, and independent variables such a model would have to include is truly staggering, the interactions inconceivable. So it is hardly surprising that SIA relies on a montage of what we might call submodels to generate the spatially and temporally extensive pictures required. (Meidinger & Schnaiberg, 1980, p. 523, original emphasis).

The combined limitations on knowledge, methodology, and etiological certainty present almost insuperable problems for the validity of SIA's according to Meidinger & Schnaiberg:

The primary problem of validity at this time is profoundly simple. SIA has none in any "rigorous" sense. That is, there are always more explanatory variables than cases. For, as noted, there has been precious little research on actual effects, and practically none using blocked design, controls, and the like. (Op. cit., p. 517)

The basic limitation on SIA's ability to make cause-effect statements is, of course, that the exercise involves predictions about the future rather than descriptions of past or present consequences. But social science in general is limited in its ability to talk about causality in terms of the types of causal relationships (necessity vs. sufficiency) which Boothroyd (1978) points out as important to SIA.

Erickson (1979) is concerned that the "laundry list" approach to determining variables for SIA study leads to a lack of attention to social dynamics. However, Peterson & Gemmel (1977) argue the point in reverse--that the tendency of most SIA products to consist of disjointed lists of impacts, with little discussion of interrelationships, is itself due to overall lack of social science knowledge about causal impact processes:

This lack of theoretically-based structure causes each impact evaluation project to resemble an original research endeavor. Major research effort is required, in most cases, to find out what the questions are and to organize them in a meaningful way. (p. 380)

There are differing views among SIA practitioners and scholars on the true importance of developing and using valid cause-effect models. Bowles (1983), in an overview of the "social impact assessment community," reports there is a certain degree of controversy between those who feel that systems models should be formal and explicit and those who hold "a more relaxed theology of models." However, he quickly notes, "Perhaps the majority of SIAers...are not troubled by these differences and eclectically take an element now from one approach and then from another as the spirit moves them" (Bowles, 1983, p. 11)

Imprecision of Social Science Concepts

Another inherent limitation to SIA involves the lack of standard definitions and operationalizations for certain concepts, particularly those most likely to be addressed by sociologists or psychologists.

What is a city? What is a democracy? What do centralization, alienation, job satisfaction, or prejudice mean? But do not misunderstand us. We do not suggest that these concepts are undefinable--in fact definitions abound. The problem is that no definition is completely satisfactory because no definition will capture all the dimensions of the concept or social entity. (Finsterbusch & Motz, 1980, p. 21)

The lack of "concrete" and/or standard measures for abstract social concepts is particularly bothersome to government agencies, especially those staffed with accountants or engineers (Llewellyn et. al., 1977) and to nonsocial scientists preparing EIS's (Cortese, 1979a). As noted in Chapter III, an inherent danger is that SIA practitioners will attempt to appease the demand for "hard" data by bending some quantifiable indicator to the task of purporting to measure an abstract concept. This produces serious problems of construct validity:

Thus, the use of inappropriate or inadequate indicators to predict effects of interest is paired with a tendency to equate resultant projections with constructs they do not in fact constitute. For instance, projected change in average local income plus service sector growth is often presumed to depict the change in overall standard of living. (Meidinger & Schnaiberg, 1980, p. 518)

Effects of Prediction Itself (Reflexivity)

In a sense, the four types of inherent limitations in the preceding discussion--body of knowledge, methodology, cause-effect relationships, definition of terms--are all different aspects of the same thing: the embryonic status of the social sciences in general. But a fifth inherent limitation on predictive social impact assessment is an independent matter, flowing from the fact that the EIS process involves public (and/or governmental) participation and review. This limitation on predictive accuracy involves the confounding effect of the prediction itself, as noted by Merton in his pioneering article:

Thus, to the extent that the predictions of social scientists are made public and action proceeds with full cognizance of these predictions, the "other-things-being-equal" condition tacitly assumed in all forecasting is not fulfilled. Other things will not be equal just because the scientist has introduced a new "other thing"--his prediction. This contingency may often account for social movements developing in utterly unanticipated directions and it hence assumes considerable importance for social planning. (Merton, 1936, p. 904)

Interestingly, despite Merton's early caveat and the continuing attention of social forecasters to the question of self-altering (or self-fulfilling) prophecies (Henshel, 1978), the SIA literature has contained only occasional thoughtful discussion of the importance of the impact of impact predictions. (Perhaps this is because EIS's and SIA's have not been much consulted in decisions, and hence the projects have often proceeded without the "full cognizance" of the predictions by those whose behavior would be affected.)

This issue of reflexivity is unique to socioeconomic impact assessment and needs to be factored into the thinking of any SIA activity, whether of the predictive, participatory, or "feedback"-to-decision-maker mode:

The capacity of people to know what is happening to them and to anticipate what will happen in the future, adds a dimension to the analysis of social effects that is not present in environmental impact analyses. ...an understanding of social effects cannot be made without regard to the kind and extent of public involvement in the planning and management of the project. It is necessary to constantly keep in mind that social effects are determined not only by the impacts of the completed project on people, but also by the way the engineers and the people interact with one another, especially during the planning phase. (Baur, 1973, pp. 2-3)

Soderstrom (1981) sees reflexivity as part of a broader pattern of "inherent indeterminism"--essential unpredictability--sometimes asserted to characterize social phenomena. However, Soderstrom feels that reliable and valid cause-effect information, untainted by classical "Hawthorne effects," can be achieved through accumulation of knowledge in a quasi-experimental mode. Expectably, those who reject the notion of SIA as science sharply disagree:

The problem of reflexivity, together with the practical necessity of involving community members in processes of decision making, probably poses insurmountable obstacles to any scheme to test a comprehensive social impact assessment model. A more promising approach to verification would be drawing relevant data from small studies which can be designed in such a way that the effects of reflexivity can be controlled. (Bowles, 1981, p. 34).

Community involvement and awareness conceivably can have confounding effects on the implicit goals of participatory as well as predictive SIA:

...SIA's also have an impact on the communities themselves, as community representatives are quick to point out. The impact of such studies can be negative. Communities across Canada are tired of being studied to death. Yet with all the studies, including SIA, they fail to see recommendations implemented. The manner in which a study is conducted can often create expectations and, when these expectations are not met, they contribute further to the apathy which it is often claimed characterizes North American society. (D'Amore, 1981, p. 370).

SYSTEMIC CONSTRAINTS ON THE UTILITY AND FEASIBILITY OF SIA WORK

The limitations discussed in the preceding section largely apply to the entire field of social science. But other limitations and constraints on SIA relate to the particular decision-making framework (i.e., the EIS process) in which SIA most often takes place. These are limitations not only on the feasibility of attempting to make social forecasts, but also on the validity and general utility of such conclusions as can be drawn. Such systemic constraints include the following:

1. EIS's and their social components are subject to legal challenge and court review.
2. Impact assessment is undertaken not for scientific purposes, but as part of the political decision-making process.
3. SIA is usually conducted for a client, raising questions of professional ethics and moral considerations.
4. The entire SIA/EIS system as presently constituted is oriented to serving the needs of established powers and interests.

5. Social scientists are often very junior members of the overall multi-disciplinary EIS team.
6. There are few official guidelines or standards about topics for coverage in EIS's.
7. EIS's/SIA's tend to focus on individual projects, rather than cumulative impacts of multiple projects.
8. SIA's concentrate on local events rather than the overall policy decisions or societal trends which ultimately have the greatest social impacts.

It may be noted that many of these concerns would represent criticisms to some commentators but strengths to others. As such, they involve basic philosophical issues about what the overall system should be trying to achieve or not achieve.

Vulnerability to Court Review

This can have the dual consequence of EIS's and SIA's containing some "consideration" (or at least superficial listing) of vast numbers of impact categories in order to meet legal requirements for comprehensiveness...but at the same time containing in-depth analysis of very few social impacts, since few social science conclusions can be demonstrated with the same confidence and rigor which applies to conclusions about soil erosion or even traffic counts. (The legal system of course permits testimony from "expert witnesses" in social science fields such as clinical psychology, but the EIS system also operates in the political arena, and it is politically unpalatable to base social forecasts on the pronouncements of one or two "experts." This may be one reason why

forecast methodologies relying on expert opinions--cross-impact analysis, KSIM, etc.--have not been as extensively used in SIA as in TA.)

Since EIS's are prepared or funded by project proponents, any court action would be initiated by project opponents. This fact is hailed by those who feel that government and large corporations are often insensitive to residents (Francis, 1975) and deplored by those who feel that the public interest can be too easily defeated by special interest groups able to use EIS-based lawsuits as "stalling" actions (Bardach & Pugliaresi, 1977). Whatever the evaluation, there is consensus that vulnerability to court review leads to at least the potential for defensive writing in EIS's and SIA's:

The amount of irrelevant material a typical EIS contains implies that instead of entering the decision-making/planning process, such reports are aimed at averting legal interference by project opponents. Overkill in EIS preparation is more nearly calculated to insure that objections are quashed than that all significant impacts are considered in reaching planning decisions. (Wolf, 1974b, p. 9)

SIA for Political Decision Making

Despite the disagreement on how well decision makers are served by the current EIS structure, there is clear agreement that the assessment process is greatly affected by the inherent political aspects of the system. The consequences of this are numerous. "First, it requires SIA practitioners to honestly think about which interests different research

strategies might serve" (Meidinger & Schnaiberg, 1980, p. 26; see also Melser, 1983, p. 11 for further discussion). In most cases, the nature of the situation is that the SIA practitioner is a member of the client's team, a point touched upon above regarding vulnerability to court review and one which will be further explored later.

Friesema & Culhane (1976) believe the inevitable advocacy-orientation of EIS's is responsible for the typical omission of important social impact categories, particularly distributive issues, since consideration of differential impacts "violates [government] agencies' fundamental myth that their programs serve an undifferentiated public interest" (p. 348). At the same time, they argue, the EIS provides a vehicle for these issues to be raised (usually after the draft EIS has been prepared) by outside commentators who are not affected by such organizational or ideological constraints.

Another politically-related explanation for the omission of less clear-cut, tangible social impacts is suggested by Jobes (1976), who points out that political decision makers feel safest dealing with hard numbers and "are likely to recoil from social theory" (p. 16). Thus, even when a good qualitative social analysis may be considered feasible by the SIA practitioner, decision makers and change proponents may be unwilling to regard it as valid or useful information. This seems to be the case despite the fact that the political decision-making process is itself intrinsically value-laden and despite the assertions of some SIA scholars and practitioners that moral judgments are appropriate in SIA:

It must never be forgotten that the SIA professionals' assumption of social responsibility necessarily calls for the researcher, the planner, and the decision maker to deal with morally toned information for what it is and to deal with their own very human tendencies to make moral judgments about those made by study area residents. The user of impact assessments who pleads for "objective" data leads automatically to the formulation of plans without the user having to clarify his own values or make judgments about consequences that are good or bad, right or wrong, and so on, has little understanding of the social. (Gold, 1978, p. 112)

SIA Conducted for Client

In those cases where the client is a private-sector individual or company, the expected relationship between client and hired professional consultant is the one that prevails between client and lawyer, client and doctor, or client and advertising specialist: that is, "I'm paying you to help me." When the client is a government agency and the SIA practitioner is an outside consultant, the explicit understanding of advocacy may not be so clearcut, but the implicit conditions are often the same.

Clearly, this conflicts both with the usual values of social science and with the concept that impact assessment is an objective search for the best decision that could be made:

...the most fundamental problem is the approach of agencies to the EIS process. The EIS is written in the later stages of project planning and decision making. By the time an EIS is written, agencies have devoted considerable resources to project planning... [Such factors] invariably lead the agency to adopt an advocacy position in the EIS document. (Friesema & Culhane, 1976, p. 347)

Peterson & Gemell (1977) point out that client predisposition should not always be dismissed as prejudiced self-interest, especially if it represents an embryonic new policy emerging from pluralistic sources in a government agency.

Especially for the university-based social scientist, participation in SIA work raises moral issues not only because of the essential political rather than scientific value structure involved, but also because of the implications raised by receiving payment from the interests whose proposals are being analyzed in the SIA. For example, Jobes (1976) raises the "moral dilemma" of the social scientist asked to participate in a project which is "undesirable ipso facto" (without, it should be noted, saying how the social scientist reconciles a judgment about "ipso facto" undesirability with the values of objective review and analysis). On perhaps a more practical note, Jobes points out both SIA's and SIA practitioners may often be regarded with distrust by the change proponent, since such a business or government agency is primarily concerned with winning approval for the desired change:

Consequently, the preparation of social impact statements may be regarded as mounting barriers to organizational success. In such cases an adversary relationship may develop between the organization wishing to implement change and the social scientists performing the research. (Jobes, 1976, p. 13)

Matzke (1977, 1978) tends to believe any such conflict is the fault of some social scientists' "tendency to make judgments concerning desirability of outcomes."

Such judgmental actions are not predictions of impact and they certainly presume a hierarchy of values. NEPA does not request scientists to evaluate the desirability of outcomes. (Matzke, 1978, p. 11)

However, Matzke agrees with Jobes on one value conflict which may be faced by a social scientist performing SIA consulting work. This has to do with the scientist's typical feeling that knowledge should always be shared with the public vs. a client's proprietary rights to information for which he has paid. In discussions with university scientists involved in EIS consulting, Matzke found that the reports of these scientists had often been edited and (from their perspectives) distorted in final EIS's, leading to a proposal that consulting contracts require the scientist's certification on the final product. Jobes tends to agree, although pointing out that social scientists typically have poor ability to communicate with the public and may legitimately require some editing and rewriting. She has a greater, if grudging, recognition for clients' rights of confidentiality, but recommends "a statute of limitations on proprietary impact information, upon whose expiration the information is made available to all interested parties" (p. 17).

A variation on the problems of writing "objective" SIA's for a client involves the preparation of an SIA for one's own employer or immediate superior. Many government agencies which have to prepare numerous EIS's now prefer to have in-house capability because of bad experience with outside social science consultants. Transportation officials in various state governments have complained of consultants' "failure to

comprehend the operational problems of the highway department and their propensity for developing products on the basis of armchair logic rather than scientific method" (Llewellyn, 1977, p. 369). Meidinger & Schnaiberg, despite their general suspicion of economic development and government agencies which foster it, believe that so-called "objective outsiders" are less preferable as SIA preparers than are regular staff members who understand the specifics of the project and whose recommendations are more likely to be given respect and attention by decision makers. "The problem then is how to minimize the detrimental influence of organization pressures on SIA," continue Meidinger & Schnaiberg (1980, p. 528), who confess they have no easy solution except "serious and forthright discussion of the problem among SIA practitioners."

Staff social scientists are not always able to carry out all SIA's personally, of course, and their subsequent roles as contracting agents dealing with professional or part-time university-based social consultants sometimes results in their developing more sympathy for the project proponent's than for the "pure" scientist's values and perspectives (Love, 1978).

A social scientist working for a government agency may have another moral dilemma affecting the utility and feasibility of work done on an SIA. His or her government agency may not yet be committed to a particular project, but community residents may be eagerly demanding a development which the social scientist believes they do not fully understand. Llewellyn and colleagues (Llewellyn, Hare, Mach, Peiser, Swisher, &

Westfall, 1973; Llewellyn, Bunten, Goodman, Hare, Mach, & Swisher, 1975) note that rural populations are often most desirous of new highways but are least aware of the subsequent community changes that may be generated. Does the social scientist view the SIA as an opportunity to involve and educate the public, or are "community desires" the major social factor and a good rationale for a brief social section in the EIS?

This raises the point that the client-sponsored nature of EIS's and SIA's poses potential value conflicts not only for those whose values are based on conceptions of objective "science," but also for those whose basic sympathies and allegiances lie with community residents:

...the development situation is often a conflict situation. Project development involves distributing costs and benefits. Clearly, the project proponents expect to derive benefits; they have initiated the project and control its development. Local host communities are typically involuntary parties to a project, from which they mostly derive costs. Just as the project can represent a threat to the local community, however, community opposition can represent a threat to the project and to the interests of its proponent.

In entering this situation, the SIA practitioner is a potential ally or a potential opponent. Maintaining neutrality and credibility with both sides is difficult in itself, but since the practitioner's services must also be paid for, neutrality becomes even more difficult to achieve. The question of who is the sponsor of the SIA and who is the client become important ones for the practitioner. (Melser, 1983, p. 11)

The assumption that the overall community mostly derives costs from a project, of course, only applies to certain categories of projects. In many cases, communities will split in their attitudes toward a proposal,

and the SIA practitioner whose professional domain includes the measurement of attitudes may have another area with potential ethical problems and pitfalls.

SIA as Servant to Established Powers and Interests

Many social scientists have an inherent suspicion of both "big government" and "big business" (often not recognizing the extent to which these two sectors are themselves suspicious of each other). The SIA literature contains much agonizing over the degree to which social scientists should assist in what is perceived as exploitive and/or socially destructive change:

The concept that all developments are designed for the "general good" can only be countered by the evidence that, to the contrary, many developments are for the benefit of the already well-off at the expense of the least well-off.
(Boothroyd, 1978, p. 126)

Also, many social scientists take the implicit or explicit view that SIA is supposed to restrain and perhaps penalize governmental or business interests who propose major projects which affect small communities. Therefore, it is something of a revisionist perspective to point out ways in which SIA can have the perhaps reprehensible effect of actually helping corporate project proponents:

First, by bringing potential opposition (future costs) out in the open, it allows the production system to choose the most efficient strategy for its future production activities (to minimize costs). Second, it fosters some claim to legitimacy for its apparent willingness to consider external effects. Thereby some of the potential opposition that would arise against more brazen exercises of power is defused--also

cutting future costs. Moreover, much of the cost and most of the criticism is really borne...by government agencies. Thus, ultimately it is not certain that the SIA process imposes significant costs on the production system or that it has the potential to change its course significantly. (Meidinger & Schnaiberg, 1980, pp. 531-532)

The idea that social impact assessment in the standard linear or predictive EIS framework actually serves rather than hinders rapacious "establishment" economic interests has perhaps been most fully articulated by Douglas Torgerson (1980, 1981). Essentially, Torgerson is concerned with rejecting the idea of SIA as science or as a "feedback" process to aid entrenched decision makers, either of which he would regard as a "technocratic" mode which minimizes the interests of affected residents, and instituting a "participatory" mode instead:

Assuming the institutionalization of the participatory mode, it is conceivable that impact assessment could become part of a broader social change, involving a reconsideration of the "high-consumption resource-intensive lifestyle" and the whole pattern of development upon which it is based. But the participatory mode of impact assessment remains to be won, if it is considered worth the effort. This fact reflects the existing structure of power...

The hidden agenda in the existing debate over impact assessment, at the levels of both methodology and public policy, concerns the conflict between the technocratic and participatory modes. This agenda is what underlies questions of procedure in methodological arguments and political disputes. (Torgerson, 1980, pp. 154-155)

Arguing further that "technocratic" SIA plays a double role, "serving to legitimate policy as well as to guide it" (loc. cit, p. 189), Torgerson calls for a definition of "rationality" in impact assessment which emphasizes "conscience" rather than objectivity:

Rationality involves not only the observation of a seemingly external world--as scientism would have it--but also attention to our experience of ourselves as human beings and social beings. The heart of reason, then, is our ability consciously to form intuitive judgements [sic] and, with a sense of ourselves and our fallibility, to subject these judgements to doubt, criticism, revision, and reconsideration within the ongoing test of experience and exploration. It is in this way that reason becomes rigorous. But this does not suggest that reason necessarily eliminates all ambiguity, or ever can; rationality simply helps us to orient ourselves in the context of what, experiences suggest, is an elusive, shifting, and inexhaustible world, never wholly within our grasp. (Torgerson, 1981, p. 86)

Another, less pervasive and philosophical way in which SIA is seen as representing entrenched interests is associated with the simple fact that better educated residents of a higher socioeconomic status are always better able to manipulate such concepts to the detriment of people with lower socioeconomic status--e.g., using "the system" for exclusionary purposes such as screening low-cost housing out of an affluent neighborhood (Ackerman, 1973). This is part of a larger debate over whether the entire environmentalist movement may reflect the values of an elite who can afford to impose conservationist values on society at the cost of employment, consumer, or recreational opportunities for the poor (c.f., Krieger, 1974; Eversley, 1976).

Low Status for Social Scientists on Interdisciplinary EIS Teams

NEPA calls for integrated multi-disciplinary analysis in EIS preparation although, as previously noted, SIA's have rarely been integrated into other types of impact assessments. In their study of early

federal EIS's, Wilke & Cain (1977) found that "Consciously employed interdisciplinary approaches were nonexistent" (p. 107). One contributing reason may be that scientists of different disciplines speak different professional languages, and so their work inevitably tends to be isolated and unconnected. This can be a problem on virtually any type of applied social endeavor involving an "outside expert" social scientist working with other types of professionals (King, 1981).

A related and perhaps more galling problem for social scientists is the low status often accorded them in those cases where a multi-disciplinary team is assembled (whether for "integrated" work or not). The lead role in EIS preparation is usually taken by planners or physical scientists, who may sometimes have an active disregard for social scientists and who certainly have more power and status in shaping the overall document (Friesema & Culhane, 1976; Jobes, 1976). Nonsocial team members who look down on social scientists sometimes invite bitter resentment:

Observations of these team members, though they are necessarily tainted with my own subjectivity, include:

1. Such team members are basically ignorant of the diversity, historical development, and the current technical concepts and methodologies of social science.
2. Such team members typically base their perceptions of social science on one or two undergraduate courses they have taken, or on the pronouncements of the mass media.
3. Such team members invariably manage to demonstrate their conviction that what they already know (either of physical or of social sciences), they know very well indeed, and that what they do not know is quite irrelevant.

The presence of such individuals on assessment teams should not be tolerated. Where they are tolerated, they should be ignored. Impact assessment is too complex and serious a business to be subjected to the influence of even high-grade morons. (Erickson, 1979, pp. 220-221)

The most satisfactory solution to problems of low communication and low respect probably would involve using the same team on repeated projects, to develop a sense of familiarity and conclusion. This is most likely to occur within government agencies employing a staff social scientist to work on EIS's; it is less likely to happen with a consortium of private consultants. However, the desirability of fielding an experienced and cohesive EIS team has been well established through practical experience and studies of the effects of practitioners' perceptions on the ultimate outcome for the project in the decision-making process (Susskind & Dunlap, 1981).

Lack of Standardized Lists for SIA Impact Categories

As previously mentioned, many SIA practitioners feel that any legal guidelines dictating standard topics for assessment would not be desirable, since this might cause premature restriction of the discipline to a few "official" topics. In Canada, despite early suggestions that standardized topics might be helpful (Boothroyd, 1975), experience quickly led most involved in the field to reject the concept:

Lists of categories, it was found, could not adequately describe the nature of communities; nor could they adequately ...account for impacts as they occurred in complex networks of relationships and interactions. (D'Amore & Rittenberg, 1978, p. 12)

Nevertheless, the lack of consensus has also had some negative implications for the utility and feasibility of SIA. For example, decision makers and planners who are not social scientists may feel so overwhelmed by the vast range of possible "social" phenomena and the fuzzy nature of some "social" concepts that they feel an urge to reduce the vagueness and complexity to a few, overly simplistic, measures. This contributes to the previously mentioned problem of poor construct validity in SIA's, as in the case of the state transportation agency which defined "community disruption" by measuring potentially reduced property values, visual disharmony, and increased traffic volume (Llewellyn et. al., 1975).

Academic scholars and consultants probably did not help during the 1970's by taking the alternative tack of proposing dozens or hundreds of social variables and/or indicators for analysis in impact assessment. As noted in Chapter III, such a "laundry list" approach generated many irrelevant variables and little consideration as to how the information was to be used in decision making, thereby wasting money and clouding rather than aiding the decision process (Peterson & Gemmell, 1977).

Faced with massive laundry lists of uncertain utility and hefty price tags, many EIS preparers tend to swing back to the opposite extreme--assessment of a minimal number of categories and indicators, and frequently the total omission of all social concerns which cannot be predicted with the certainty of physical events. Although impact assessment laws do require "comprehensiveness," they are generally much

more specific in their explication of physical impact categories than of social impact categories. Thus, unless there is a known probability that the EIS will be challenged on social grounds, it is often more cost-effective to skimp on social content than to indulge in the massive social research which some SIA theorists champion.

Focus on Project-Specific Rather than Cumulative Impacts

The EIS system in theory does consider the combined, additive, and interactive effects of various other plans and proposals in conjunction with the effects of the proposed project. In practice, however, such cumulative impacts are too often neglected in impact assessment, and the current system may foster such neglect by mandating the project proponent to conduct or fund the assessment. Just as a proponent-sponsored assessment is naturally more interested in the project's intended goals than its unintended ones, so too would it understandably be more oriented toward the proposal at hand rather than a raft of "unrelated" potential events.

Lack of cumulative impact analysis would of course cause few problems when the proposed project represents the only major currently-unanswered question about the future. However, the possibility of unpredictable interactive effects is high when there are other important unanswered questions about the future. This is true whether those questions involve decisions yet to be made by government or other private businesses (other "proposed actions") or whether they involve other

forming environment are. But whatever the difficulties, the search for cumulative impacts is central to integrated, futures-oriented planning and to the quest for accounting for a wide gamut of indirect, secondary, aggregative effects of a multitude of actions. (Vlachos, 1982, p. 69)

Because of these difficulties in predictive accuracy for cumulative impact assessment, one solution is to switch objectives from forecasting to sensitivity analysis. This could involve generating a few plausible scenarios based on various key assumptions. In the foregoing example of a resort area in which it is unknown how much development will actually occur, there might be a "full-development scenario," a "concentrated half-development scenario" (half the various resorts will be developed completely and the other half not at all), a "dispersed half-development scenario" (all resorts will be developed to half of the originally projected capacity), and a "no-other-development" scenario. Critics of such an approach could justifiably point out that economic development rarely occurs according to such neat patterns. Nevertheless, something may be gained through the sensitivity analysis indicating which types of projected outcomes--labor requirements, public service demands, resulting impacts on social dynamics--would be most sensitive to different assumptions about events external to the project itself.

The simple fact is that predictions under conditions of multiple pending changes often have little utility or validity--particularly when the predictions are made from the perspective of one project at a time.

In places and times of rapid, multi-faceted change, the cumulative impacts would best be studied in a single comprehensive analysis by government planners and decision makers. Instead, the current system produces a series of project-specific analyses written or funded by project proponents.

Focus on Project-Specific Rather than Policy or Societal Trends

Two other closely related but somewhat different concerns about SIA's usual project-specific focus are that (1) SIA is not adequately employed in broader (regional or national) public policy decisions; and (2) SIA does not adequately consider important societal trends which may be occurring all on their own, without benefit of deliberate policy decisions.

The first of these two concerns again involves a situation wherein "the system" technically does call for assessment beyond the local project level (i.e., for programs and policies), but where inexperience, methodological uncertainties, and habitual practice have constrained the typical analysis to the project-specific level. On the other hand, Wolf (1980a) points out that physical environmental impact assessment climbed the ladder to policy analysis in the course of its historical development and that there is resulting hope for social impact assessment to do the same. He believes it is important that SIA should do so:

While the practice of SIA has become fairly standard at the project level, and is gradually improving at the program level, little has been attempted or achieved on the level of policy impact analysis...

The demand for policy impact analysis has arisen for several reasons: (1) issues of a policy nature are often encountered on the project level, yet they cannot be appropriately or effectively addressed or expressed on that level; (2) rightly or wrongly, it is perceived that environmental impact statements have little or no influence on decision making, and the locus of decision must be approached more directly; (3) there is need for greater comparability in actions taken by governmental organizations at different levels of the federal system and for better coordination of governmental operations at the same level; and (4) greater attention to policy questions is required to forestall the side effects and spillovers of environmental modifications and other social interventions. For all these reasons, raising the level of assessment to the policy level is imperative. (Wolf, 1980a, pp. 28-30)

Wolf holds that local community impacts (in general, without reference to a specific community) are still a crucial concern for SIA, and SIA at the policy level would help to "get a hearing" for such concerns. However, he is vague on the exact methodological nature of policy-level SIA, arguing that policy decisions themselves are of a general and ambiguous nature which require general and ambiguous assessments. This means simply determining overall direction of impacts--positive or negative--without regard to magnitude, and it also means emphasis on determining what the key impact questions are.

In somewhat similar fashion, Wilson (1981) suggests a "first-phase" broad-brush SIA at the policy level, followed by detailed "second-phase" SIA's at the project level. The major point of "first-phase" SIA has to do with "raising fundamental and relevant questions" (Wilson, 1981,

p. xiii). This suggestion of Wilson, a Canadian, is consistent with the 1978 EIS regulations of the United States Council on Environmental Quality, which suggest a "tiering" approach for identifying broad national impacts in national-level policy EIS's, then focusing on region-specific issues in area program EIS's, and finally considering only the immediate and unique local impacts for project-specific EIS's.

An alternative (although not necessarily contradictory) concept for policy-level SIA is provided by Finsterbusch & Motz (1980). Their iterative approach to assessment and communication with decision makers--which has in this dissertation been labeled the "feedback model" and discussed at some length in Chapter III (where it is illustrated in Figure 3)--was actually developed for policy-level SIA, although it is equally applicable for program and project levels.

The second concern about SIA is its inattention to broad societal trends and patterns which may generate vast social impacts totally outside the policy decision-making framework. For example, Morrison (1983) urges that SIA focus more on consequences of technological innovations (which he terms "incremental impacts") rather than only the consequences of localized individual projects ("big bang impacts"--because of their abruptness and hence greater visibility):

It is true, of course, that the Office of Technology Assessment does some of this work. But their focus is not on social impacts and their work is, at least to a large extent, governed by what Congress thinks is important--which may or may not be a good guide. Thus there is not the kind of public support for this research on the incremental impacts that is often (though perhaps not often enough) available for the big bangs. Also, it is much more difficult to think out and exe-

cute research designs on incremental phenomena; designs that will produce definitive results in a short-term effort may be impossible by definition. (Morrison, 1983, pp. 13-14)

After a period of preliminary studies and analyses in the late 1960's during which the concept of "technology assessment" evolved, the United States Congress established the Office of Technology Assessment in 1972 to examine likely unanticipated consequences of technological innovations and their compatibilities with existing political systems. The majority of technology assessment (TA) studies today are government-funded, as the National Science Foundation also supports such efforts. (For overviews of the historical development and institutional framework for TA in the United States, see Porter, Rossini, Carpenter, & Roper, 1980; Coates, 1982; Menkes, 1982; Wood, 1982.) In its early days, TA was frequently oriented to social and cultural effects (Kaspar, 1972; Hetman, 1973; Stober & Schumacher, 1973), but social critics have complained that the field has since drifted into a more technocratic mode in which primary concerns are inter-technological rather than social or psychological impacts (Houston, 1976; Hoos, 1979). Some technological forecasters are now as concerned or more concerned with the impacts of socio-political phenomena on technological innovation as with the reverse (Gibbons, 1980; Rothwell, 1980). While some TA studies have examined localized community factors (Krebs, 1975; Bronfman, Carnes, & Glass, 1980), the usual levels of analysis are regional, national, or global.

Wolf notes that TA and SIA "logically" should have overlap in examining social impacts of technological factors. "While obvious, this has seldom been performed in a comprehensive and systematic fashion" (Wolf, 1977, p. 11). Some potential new links between TA and SIA are the recent formation of the International Association for Impact Assessment and the increasing importance within TA of risk assessment-- particularly the study of societal perception of risk from major facilities such as nuclear power plants (Cole & Withey, 1982; Hitchcock, Anthony, & Filderman, 1982; Spangler, 1982). However, these potential linkages do not totally address Morrison's concern, and many bridges remain to be built between SIA and TA.

Not all the increasing concern over SIA inattention to broad societal patterns directly involves technological change and linkages with TA. Particularly among Canadian proponents of a participatory approach to SIA, the concern has to do with a perceived pattern of political and economic colonialization of indigenous northern rural by urban-based corporate interests:

The central objective of this [work has been to gain] insights which facilitate an understanding of the processes by which large externally-controlled resource industries affect social life and social well-being in small communities in Canada's hinterland. (Bowles, 1981, p. 101)

At the First International Conference on Social Impact Assessment in late 1982, Frank J. Tester (as reported by Bowles, 1983, and Melser, 1983) was the leading spokesman for the view that "sweeping social and

economic changes may be so powerful that relatively contribution is made to the understanding of the human condition by specific studies of particular projects" (Bowles, 1983, p. 13):

Tester criticized SIA for having nothing to say about the economic and political upheavals which are shaping the life we lead. He referred to issues such as massive urban unemployment, the collapse of large corporations, and the crisis that develops as mechanization and robotics make more people redundant...

It was argued by several people that members of rural communities, unlike some social impact assessors, do not see project proposals in isolation from a broader pattern of relationship to the powerful around them. Particular proposals are seen as instances of broader inequities and as attacks on their way of life and not simply in terms of specific project impacts. In order to understand these perceived impacts as they are experienced by the people they affect, a SIA must incorporate these broader social, political and historical conditions within its frame of reference. (Melser, 1983, p. 10)

However, whether it is a matter for regret or for approval, the current North American legal framework institutionalizes only SIA (potentially up to the policy decision level) and TA; broader social analyses are currently a matter for voluntary work by the scholarly community and/or occasional international symposia (UNESCO, 1981). Clearly, local project-level SIA practitioners can benefit from better linkages to TA and independent national social forecasting studies, for the reasons discussed above. But even if TA were to regain and enlarge its socio-cultural-psychological components, and even if broad economic and political forms of social forecasting were to be somehow institutionalized, project-level EIS's and SIA's would still presumably be

required and have value for local residents and decision makers. At root, the foregoing types of criticism are not so much about the failures of SIA itself as about the failures of other social science activities to develop and provide SIA with needed perspectives and data.

PROPOSED SOLUTIONS OR NEW DIRECTIONS FOR SIA

Of the various alleged problems with SIA discussed in this chapter, some suggest their own specific solutions or new directions--e.g., those who think SIA should operate more at the policy level have enunciated both a problem and a proposed solution (although details remain to be worked out, of course). What will be discussed in this final section of the chapter are broader questions about the essential philosophy or paradigm under which SIA should operate. (However, it is still assumed that SIA's will be part of EIS's and will be predominantly project-specific in nature; the reasons for this were given at the close of the preceding section.)

Essentially, eight different proposed strategies or new directions for SIA can be detected in the literature which addresses alleged shortcomings in the field. These would seem to fall into four groups, reflecting four different interests or value orientations which might be served:

Simplifying Strategies for Predictive SIA Practitioners

1. Restrict SIA to those direct impact categories where reliable and quantitative projective techniques exist.
2. Accept predictive SIA as an "art form" rather than a science, using a variety of techniques with different levels of scientific validity.

Ways to Serve Decision Making More Effectively

3. Integrate social impact assessment into early project (or policy) planning and design phases.
4. Give more emphasis to mitigations in the SIA process.

Ways to Serve Communication and "The Public" More Effectively

5. Give more emphasis to participatory and political aspects of the SIA process.
6. Give more emphasis to mediation in the SIA process.

Ways to Develop a Better Data Base for "Science" and/or Future Research

7. Empirical: Build up a detailed reference collection of case studies to provide a more extensive forecasting data base.
8. Experimental: Combine monitoring with scientific method to provide a more valid forecasting data base.

It should be noted that, with the probable exception of the first two, these eight proposals are not mutually exclusive. Any or all of them could be incorporated into the overall SIA paradigm or could be jointly implemented in a particular situation (depending on the circumstances, the requirements of the clients, and/or the predisposition of the SIA practitioner).

Restrict SIA to Quantitative Considerations

This is the most conservative solution to the problems of methodological validity and abstract social concepts, effectively confining SIA to analyses of population and employment impacts. In practice, it is one of the most frequently utilized solutions. In the scholarly literature, however, it has not been so frequently endorsed (probably because it is not a solution appealing to academicians).

Among the most vociferous proponents of this call for using only "hard" data have been Schott (1977) and also Flynn (1976), who links this philosophy with the need for longitudinal data to establish a better forecasting base. However, Flynn urges that monitoring and case study accumulation be not just for the general purpose of generating examples and theory, but for the more more specific and technical task of developing totally quantitative approaches comparable to population projections:

In cases such as "community cohesion," almost the entire job of quantification and methodological development remains to be done. And this can only be accomplished by systematic application of empirical methods which are tested and modified over time... The money and manpower now being spent on social impact assessment methodology must be shifted from the areas of speculation and supposition to the area of careful monitoring of real projects. Only then will the promise of social impact assessment begin to be realized. (Flynn, 1976, p. 13)

Some of the other practical problems encountered in SIA and mentioned earlier in this chapter can themselves represent "hard" objections to the strategy of relying only on "hard" data--e.g., the

essentially probabalistic nature of the social sciences and the empirical evidence of dramatic underestimates in quantitative forecasts of labor force requirements (Leistritz, Murdock, & Chase, 1982).

Accept Predictive SIA As an "Art Form"

In response to those who would limit SIA to the most quantitatively "do-able" tasks, C. P. Wolf (1974b, p. 33) replies: "Yet...SIA is a radical act. Its adherents must be prepared to assume as much risk of ignorance and error as those who willingly proceed in its absence."

Among those willing to accept this risk is Kurt Finsterbusch, who believes that estimating impacts "frequently requires the artful piecing together of expert opinions, claims of potentially impacted parties, official judgments and objective information" (Finsterbusch, 1977b, p. 8). (It should be noted that Finsterbusch and those in his camp tend to speak of "estimating" impacts, whereas Flynn and others in the hard-science school more often speak of "prediction" or "forecasting.")

The SIA literature contains frequent references to social assessment as an "art form." For example:

Currently SIA is very much an art form: there is the nucleus of an emerging science and technology. In physical design, art was systematically examined to yield physics which in turn gave rise to engineering. And today, we use all three. Similarly, SIA is now an art supported by the state; as creative practitioners wrestle with its challenges and examine their successes and failures, the proportion of science and technology will increase. SIA is here to stay. (Connor, 1977, p. 6)

Boothroyd agrees SIA is currently an "art," but he believes it will become a "lasting art," routinely integrated into the planning process, only if certain conditions are met:

As an art becomes more sophisticated, especially a social art, it should become clearer, and thus demystified and accessible to many... Social impact assessment will have become mature when it is not only conceptually and methodologically sound, but also so comprehensible to other planners and citizens that it becomes widely practiced and integrated into total ongoing planning processes. (Boothroyd, 1978, p. 132)

Acceptance of SIA as an art form with eclectic methodologies has a number of implications for its utility and validity. Perhaps one of the most important is that some types of SIA activities will be more appropriate for firm predictions; others, for contingency planning and management; and still others, for public involvement and similar "process" aspects. Hence, SIA becomes an umbrella concept rather than a unitary field, somewhat akin to the global idea of "social planning."

Integrate SIA More in Planning and Design

The concept of "social impact management" raised at the beginning of Chapter III focuses primarily on mitigations and, sometimes, mediative techniques. However, early use of SIA can also be a form of "management," since the intent is to control problems through early identification and consequent actions to avoid or minimize them. Social impact assessment in the project design phase could require a heavier emphasis on prediction of likely outcomes, since very basic and

expensive decisions about the project would be hanging in the balance. The inherent limitations of social science for predicting many types of outcomes could become even more apparent when even more money is at stake. Some of this riskiness would be avoided in cases where the major issue involves the best site for a project, rather than extensive design decisions--i.e., cases where SIA will be used to decide where and not how or whether (White, 1982).

Wolf (1974b, 1977) has been one of the most influential voices calling for the acceptance of social concerns as planning objectives, to be considered from the very inception of a project or policy. His exhortations have generally been addressed to public agencies. However, in addition to the previously mentioned concerns about the limited predictive abilities of the social sciences, there are at least four practical problems with this idea, according to Daneke & Delli Priscoli (1979). First, they note:

Planners, particularly those trained in the engineering and design arts, may be unwilling to give up a portion of their power to the social policy analyst. Moreover, politicians may view social assessment and involvement strategies as a usurpation of their prerogatives. (p. 370)

Second, "the social analyst must seek balance between concerns for 'theoretical competence' and concerns for 'policy acceptability'" (p. 370)--i.e., the occasional competition between social theory and political realities. Third, social scientists often have a problem in displaying results in ways which facilitate understanding by nonsocial

scientists. Fourth, there are basic function and status concerns in government hierarchies (i.e., social scientists will always have lower GS levels than the administrators who make the final design decisions).

Friesema & Culhane (1976) point out a fifth practical problem: "...agencies are loath to make proposals public before all anticipated problems have been solved. They are, in short, unwilling to appear foolish in public" (p. 356). This reluctance to risk the appearance of ignorance may be the biggest barrier of all to early social analysis involving any degree of public participation.

Despite these problems and barriers to using SIA in the planning phase, there may be other tacks which could increase the willingness of government or private-sector change proponents to include some aspects of SIA in the early stages of project design and planning. Perhaps the most likely is the fear of public rejection of new developments, the "not-in-my-back-yard!" syndrome often associated with large industrial projects (Luke, 1980), nuclear power plants (Cooper, 1981), etc. If a change proponent cannot be convincingly shown that early SIA will save money, perhaps a more convincing case can be made that early action will increase community acceptance and hence the likelihood of project approval. This indicates the basic compatibility of the idea of using SIA for early planning (a strategy which might be perceived as part of a "technocratic" SIA mode, since it serves the client) with strategies emphasizing communication and public participation.

Emphasize Mitigation in SIA

Although all EIS's are required to contain a section on possible "Mitigations," this section has often been a brief throwaway, particularly in regard to mitigation of social impacts. In some cases, this may be due to the fact that, by the time the EIS is being prepared, so many basic project design decisions have already been made that only "fine-tuning" changes are possible. But in other cases, skimpy discussion of mitigations may simply represent inadequate attention:

Too often we are concerned with predicting things that we might better be controlling. The impacts of major public projects, for example, tend to be modified by numerous intervening variables. Many of these intervening variables are tied to policy variables that are more or less subject to control. On the one hand, a major intervention can be expected to generate impacts, and the impact task would be trying to predict these consequences. On the other hand, a major intervention can be expected to generate opportunities to manage the future, and then the impact task would be equally concerned with trying to identify these opportunities. (Peterson & Gemmell, 1977, p. 378)

It is perhaps a matter of definition as to whether mitigation or other forms of "social impact management" should be regarded as a component of "social impact assessment," or whether the reverse should be true, or whether the two may be considered separate though complementary activities. In this dissertation, it has been (somewhat reluctantly) accepted that prediction must still be the main focus of SIA due to its embedding in the NEPA/EIS framework, while management activities are concerned with control and hence would be regarded as something different.

However, predictions of problems inevitably lead decision makers to ask questions about control and management, particularly if those predictions are coupled with ample historical experience which provide inspiration for management. The United States government's recognition of severe community impacts sometimes accompanying energy development programs led to the provision of funds for mitigation and management activities as part of the Coastal Energy Impact Program. Federal consultants in the western states have proposed "social resource management" systems for the U.S. Forest Service (Kent, Greiwe, Freeman, & Ryan, 1979) and are still in the throes of a major effort to monitor and manage social impacts of renewed coal mining (Mountain West Research, 1980; Branch & Thompson, 1981). Although the primary management emphasis has been on fiscal and infrastructure impacts for local governments, there has also been growing attention to matters such as community attitudes, lifestyle, and social structure.

Emphasis on control and mitigation of course somewhat complicates the predictive task, since it becomes important to specify whether an anticipated impact is mitigatable and, if so, what effect the mitigative action itself might have in combination with other factors (Boothroyd, 1978). On the one hand, this is valuable in terms of forcing the SIA practitioner to consider how effective a proposed mitigation might really be, rather than permitting him or her to suggest top-of-mind mitigations with little practical potential for implementation. On the other hand, it reinforces any temptation that may exist to abandon the forecasting exercise entirely.

While the private-sector rather than the public-sector client is sometimes seen as a more likely market for mitigation-oriented SIA which also furthers business goals (e.g., low turnover in the labor force, positive attitude on the part of local government), there are also distinct limits to corporate interest in funding mitigations:

Few corporations are interested in or equipped to deal with social problems. Corporations are also ambivalent in in their treatment of those socially ameliorative measures they do undertake. Affirmative actions, such as employment of women or natives, were held by one corporation to be legitimate mitigations of social impacts when the community was in fact demanding local employment. Generally however corporations tend to view actions by local communities as politically motivated and therefore illegitimate. Corporations prefer to remove themselves from consideration of local political issues perceived as irrelevant to project development. Local demands are perceived as taking unfair advantage of project developers to press for quite unrelated political objectives. (Melser, 1983, p. 12)

On the other hand, those who believe that SIA as currently practiced is inherently "technocratic" may also view mitigation/management emphases with suspicion. Frank Tester (as reported in Bowles, 1983), for example, feels that "managerialism" is based on the false assumption that any problem is mitigatable with enough knowledge and/or good will. His preferred political approach to SIA would assume that there are intrinsic and unmitigatable differences among various interest groups. This of course leads to the next proposed new direction for SIA.

Emphasize Citizen Participation and/or Political Aspects in SIA

As has been frequently discussed, "process" models of SIA are of two types--those which view the decision maker (and/or project proponent) as client and those which view "the people" as client. More has been written in the academic SIA literature about the second type, but the imperatives of the marketplace make the first type a more realistic prospect for some form of institutionalized or otherwise commonly practiced approach.

Two major differences between these two types of politically-oriented SIA's involve (1) the practitioner's definition of his/her own role and (2) the attitude held toward public participation.

A practitioner who is providing "feedback" to the decision-making process usually sees him/herself as a consultant, while those who champion the community's interests see themselves as a sort of representative for the community in taking on an active participant role in decision making:

Process-oriented practitioners tend to see their role as identifying and giving voice to the interests of people adversely affected by development, or as helping these people to speak for themselves. They still produce SIA reports describing and estimating tangible impacts, but they will try to ensure that the reports also reflect the emotion and conflicts involved in the development process. (Melser, 1983, p. 8)

A second important philosophical difference between the two camps in politically-oriented SIA involves attitude toward participation. In his profile of the "social impact assessment community," Bowles reports a feeling that this is potentially the most divisive issue currently extant among SIA scholars and practitioners.

On most of the issues mentioned there seemed to be reasonable tolerance for heterodoxy and internal differences in the SIA community even though there is not complete mutual respect. I could not determine whether this was because of a general belief that there are many routes to salvation or because of a general belief that there is no such thing as salvation.

There is, however, one issue which seems to have the potential for producing major cleavage. That is the issue of the relationship of SIAers to the process known as public participation. To this observer the explosiveness of this issue was indicated by the extreme politeness with which it was treated in public, by the guarded way it was treated in conversation, and by the fact that an SIAer usually revealed his or her position only if it was felt that the observer was in agreement with that position. The explicit content of statements regarding public participation often seemed quite similar, but implicit messages indicate that some SIAers feel that the appropriate task is public participation management and others feel that it is public participation facilitation. (Bowles, 1983, p. 12)

The feelings seem to be stronger on the part of those who propose a community-advocacy approach, perhaps because their concepts are farther from current practices and legal institutions. For example, Carniol, Gutnick, & Ryan (1981) propose that SIA be focused entirely on distributive questions, that public funds be available to community groups to hire their own SIA consultants, and that these consultants might possibly square off against corporate-hired consultants in an

adversarial posture. Whatever the merits of such a system, it is clearly far from imminent institutionalization in most parts of North America (much less other parts of the world).

Such pugnacity is usually more apparent from university-based scholars endorsing a community-advocacy model than from agency staff or professional consultants endorsing some form of the "feedback" model, although this may be simply a style difference dictated by recognition of economic and political realities. (University professors may gain from pugnacity; full-time practitioners lose.) Staff social scientists who favor the idea of getting more social feedback to their superiors (c.f., Daneke & Delli Priscoli, 1979) are to a certain extent already taking a "middle-ground" rather than an extreme stance, since they are urging something between the conventional practice of totally objective assessments and the alternative of largely subjective political SIA.

Similarly, consultants who market SIA's focusing on community concerns and issues have more to gain (both in terms of getting business and in terms of success in achieving some role for the community) by striking a more upbeat, conciliatory note. For example, Montreal consultant Louis J. D'Amore writes, "SIA is relatively easy to conduct if one focuses on the concerns of the community as a point of departure" and he suggests that issue-based SIA represents "a return to a basic focus" (D'Amore, 1981, p. 368). Desmond M. Connor, another Canadian consultant, markets the concept of consultants helping to form a "partnership" between entrepreneurs and communities, and then generating

"a joint environmental and SIA statement for the regulatory agency. This report may, of course, include some unresolved issues" (Connor, 1981, p. 142). Such an approach represents a middle ground between an extreme "feedback" model in which the consultant is primarily interested in gathering useful social intelligence for a developer-client and the idealized political approach in which a united development-opposing community is (somehow) the client. As such, it borders on the concept of mediation.

Emphasize Mediation in SIA

Mediation in its "pure" or technically correct form involves the intervention of neutral third parties to help work out compromises in situations where an impasse has been reached; where both opposing sides are willing to enter mediation; and where there is a sufficient balance of power to induce both sides to negotiate in good faith and to live up to subsequent agreements. (However, unlike binding "arbitration," mediation is a voluntary process.)

The concept of "environmental mediation" was pioneered in the early 1970's primarily by various large national foundations and by Gerald Cormick (1976, 1982), who used foundation funding to establish the Office of Environmental Mediation at the University of Washington (now independently functioning as the "Institute for Environmental Mediation" in Seattle). A number of other university-based and/or private nonprofit groups supported by foundations have since emerged around the nation to

engage in mediation, which is also sometimes referred to as "environmental conflict management" (Carpenter & Kennedy, 1980). Such activities have been part of a larger national experimental attempt--including programs such as the Neighborhood Justice Centers and the American Bar Association's Committee on Minor Dispute Resolution--to find alternatives to litigation for resolving conflicts (Laue, 1982).

Historically, environmental mediation has usually involved disputes between environmental organizations (rather than whole communities) and governmental or private developers. However, an extensive study of environmental conflict patterns in the last decade indicates a shift in the focus of such conflicts from purely physical issues to social ones:

Our survey has focused on the 1970s. But the trends suggest that the country may be entering an even more difficult era in which growing demands and diminishing resources will increase the frequency and intensity of the "social" breed of environmental conflict. Yet it is evident from many recent episodes that we still know little about how to cope with such conflict in equitable and efficient ways. (Gladwin, 1980, p. 274)

Another view is that the apparent emergence of social concerns is not a true shift in the nature of disputes, but rather an uncovering of what were some central issues all along, at least in energy development conflicts:

It has sometimes been suggested that concerns about environmental impacts were just a "cover story" concealing more fundamental socio-economic concerns like loss of political control to new voters and monied interests, loss of absolute control over water allocations to agriculture and ranching, and disruption of Western culture. (Plummer, 1977, p. 258)

In truth, however, the concept of environmental mediation has been mentioned infrequently in the SIA literature, although the topic is raised from time to time (Wolf, 1977; Lerner, 1981). Perhaps this infrequency is due in part to the fact that mediation is a process which neither requires the social science expertise of predictive SIA practitioners nor appeals to the feistier instincts of advocacy-oriented SIA theoreticians, and in part to the position of mediators themselves that mediation will remain effective only if it is used rarely--i.e., in cases where prospects for direct and amiable negotiations are bleak (Cormick, 1976).

But even though it may not be explicitly identified by name, the spirit of mediation is implied in some of the previously noted consultant proposals to produce joint developer-community SIA's. Perhaps this should be properly called "quasi-mediation," since it involves the use of a hired consultant (rather than independently-funded neutral third party) and since it seems to work best in the early stages rather than the final stages of angry stand-offs. In other words, the facilitation of communication between residents and project proponents by SIA consultants may be feasible for "conflict avoidance," while neutral mediators are required for "conflict resolution."

Generate SIA Case Study Data Bases: Empirical Approach

Returning now to the goal of SIA as applied social science, one of the great needs at the present time is for a case study data base to

assist in forecasting. This could be obtained through empirical approaches, quasi-experimental approaches, or both.

C. P. Wolf suggested a decade ago (and the comment still seems very appropriate today) that social science theory will probably have to remain the junior partner to empirical evidence as the basis for predictive SIA's for some time to come:

To all appearances SIA is still in the "natural history" stage of science-building, at a point far removed from the mature stage of deductively formulated theory. This being the case, inductive approaches--such as case studies of the community research variety--may be felt more fitting. Lest SIA remain in perpetual infancy, however, they [case studies] should be fielded with a view towards building a cumulative knowledge base. Perhaps the optimal strategy of inquiry is a "mixed" one, combining both inductive and deductive approaches. (Wolf, 1974b, p. 13)

Shields (1977) has proposed using post-facto social impact case studies to generate, on an inductive basis, a set of "grounded theories" for various impact categories which typically recur in SIA (e.g., population, community cohesion, employment, etc.). He recommends a highly detailed literature review and structured presentation of results, so that each case study is analyzed into common units. When the case studies have been rearranged in common units. When the case studies have been rearranged in common formats, it may become easier to generate social impact theories (or at least general conclusions) which are "grounded" in those observed phenomena common to a number of case studies. Procedures somewhat similar to those recommended by Shields have been used in Hitchcock's (1977, 1981) "case survey" review of water

resource development impacts, Noronha's (1979) review of tourism's social impacts, and Cortese & Jones' (1979) summary of energy "boomtown" effects. Finsterbusch (1980) has produced a handbook with chapters which cover, in more conventional narrative form, available literature on a variety of common social impact categories--noise, displacement, etc.

However, development of a truly numerous base of case studies implies extensive monitoring of both intended and unintended effects following project implementations. A number of socioeconomic impact monitoring systems have been put into operation, primarily in western energy development areas and primarily concerned with tracking economic and public services data (Leistritz & Chase, 1982).

Extensive monitoring can also mean fairly extensive cost. This raises several problems for the idea of monitoring for scientific data base purposes, not the least of which is where the funds will come from. Another concern is how the data will be used and whether the monitor is to function as a "policeman" watching for problems to be corrected or as a simple observer accumulating information for scientific purposes:

For public confidence, monitored impacts have to be formally related to methods for mitigation and compensation. The public is not interested in monitoring as an academic exercise, and impact monitoring without procedures for mitigation will be taken as a token or diversionary gesture. (Carley, 1982, p. 78)

The trouble with mitigating impacts as they occur, of course, is the familiar problem of altering the social phenomena which the social sci-

entist wishes to record. This is why there is a basic conflict between the "policeman" and "observer" monitoring mode. Furthermore, community awareness of the monitoring program can alter social behavior (the reflexivity problem) and generate practical political problems for the monitors. For example, the purposes of Canada's Revelstoke Dam Monitoring Program are (in theory) primarily to obtain data on social and economic effects of this construction and to establish a prototype design for impact monitoring elsewhere. In monitoring the impact of the impact monitoring, however, the director has noted:

...it is clear that any impact assessment program, especially where the community feels vulnerable, will catch the eye of the community, and in itself become a factor in the community's perception and understanding of its fortunes and its future.

As a result of this process, and as a result of an unclear understanding of the objectives of the impact monitoring program, this program and the author have been variously referred to as: (a) ombudsman (b) impact coordinator (c) impact monitor (d) impact monster (e) that SOB in charge of coordinating impacts. (Vincent, 1981, pp. 258-259)

Another concern stemming from monitoring cost factors has to do with the resultant credibility of the data. Meidinger & Schnaiberg (1980) argue that, if monitoring is ever instituted as a standard procedure, costs would probably be borne by the project proponent in most cases, casting an aura of suspicion over the case study data and findings. They note that impact monitoring is similar to program evaluation, where clear cause-effect conclusions consistently have been prevented by problems such as exogenous influences, variation in reporting

procedures, and political or bureaucratic pressures to distort the data. This leads to the question of whether any sort of experimental or quasi-experimental design in monitoring procedures could obtain more valid or reliable results than the simple empirical approach.

Generate SIA Case Study Data Bases: Quasi-Experimental Approach

The idea of treating social impact case studies as "natural experiments" surfaced several times in the SIA literature of the 1970's. Johnson & Burdge (1974; Burdge & Johnson, 1977) called for "comparative diachronic analysis," which meant examining impacted communities in relation to a control community matched on as many characteristics as possible. Piccagli & Thompson felt that anticipatory SIA's should be abandoned until a large data base of such comparative diachronic studies had been accumulated "to isolate what effects have indeed occurred in the past--as well as to isolate the effective causes of those effects" (Piccagli & Thompson, 1978, p. 493)

However, the most fully elaborated proposal has been Soderstrom's (1981) conception of using "quasi-experimental designs" to draw causal inferences from impact monitoring efforts. The major difference between a true experimental and a quasi-experimental design, of course, is that communities are not randomly assigned to the experimental or control conditions in the quasi-experimental mode. Soderstrom's ideas involve the following elements:

1. Use of interrupted time-series data: The "interruption" is the project; it is important that an adequate number of measurements be available from secondary sources for the time period before the project is even discussed. Repeated measures over time are required for two types of data: (1) "social indicators" routinely collected by government (census data, public services records, etc.); (2) subjective "quality-of-life" surveys, perhaps with a panel of respondents. Such surveys usually would not have been carried out prior to project planning, but Soderstrom suggests at least two for each project phase.

2. Use of at least one control-group community: This translates into the concept of "multiple time-series," and measurements should be carried out in the control community/communities at the same time as in the experimental community.

3. Multiple measurements in each project phase: Soderstrom notes four phases: (1) baseline, (2) preconstruction (planning), (3) construction, and (4) operation. Because separate and important impacts can be specific for different phases, it is important that multiple measurements be taken within each phase.

4. Media content analysis to guard against "local history threat": Soderstrom argues that the multiple time-series approach provides effective safeguards against all internal threats to validity, with the possible exception of "local history" (some phenomenon unique to the

project community and independent of the project itself which could arguably account for observed impacts). He recommends content analysis of local news media as input for essentially common-sense judgments as to whether important observed impacts stem from the project or from some other site-specific causal agent. Unfortunately, Soderstrom does not adequately discuss what to do in the highly probable event that some non-project-related local occurrences will eventually influence the observed impacts (whether independently or in interaction with project characteristics). Rather, his emphasis is on "guarding against" the argument that this is occurring.

5. Using time-series data to test effectiveness of mitigations:

Soderstrom accepts that monitoring will probably lead to corrective actions when problems are detected. So long as an adequately frequent measurement process is in place, he is less concerned with the "threats" which mitigations might pose to cause-effect conclusions than with the opportunities which a time-series monitoring program can provide to test the efficacy of attempted mitigations. Pre-mitigation time series data can be used to extrapolate trends and project likely consequences in the absence of the mitigation effort; these projected data can be used for comparison with actual outcomes following the implementation of the mitigation. (Of course, this strategy would be vitiated for a long while following the first several mitigation actions, since use of past trend information would be rendered invalid by the introduction of new conditions.)

The overall logic of Soderstrom's proposed approach is illustrated in Figure 5.

Soderstrom acknowledges that the cause-effect conclusions deriving from quasi-experimental designs are not precise. Instead, he argues, the value is in narrowing the range of alternative explanations:

If one accepts the currently prevailing falsification perspective (Popper, 1973) within the philosophy of science, then it is possible to understand that one cannot logically know what is true. Rather, at best, one can know what has not yet been ruled out as false (Cook and Campbell, 1979). Each successive attempt at gaining knowledge is a search for a better approximation to the truth through the elimination of competing explanations. (Soderstrom, 1981, p. 43)

Numerous criticisms and objections could probably be raised to Soderstrom's conception. One would certainly be the weakness of his argument that "local history" can easily be discounted as a threat to internal validity. He himself acknowledges (but provides little discussion of) several important threats to external validity--interaction of the monitoring program with the project impacts; interaction of the selection of the "experimental" community with the nature of the project; and reactive or reflexive concerns. The previously described community reaction to the Revelstoke monitoring program (Vincent, 1981) shows how important the last of these three can be.

It might also be argued that the entire experimental paradigm is simply inappropriate for real-life social phenomena. In experiments, there must be things which are sufficiently discrete to be considered

	<u>BASELINE Time Frames</u>				<u>PRECONSTRUCTION Time Frames</u>					<u>CONSTRUCTION Time Frames</u>					<u>OPERATION Time Frames</u>				
	T_{B_1}	T_{B_2}	..	T_{B_n}	T_{P_1}	..	$T_{P_M}^*$	..	T_{P_n}	T_{C_1}	..	$T_{C_M}^*$	..	T_{C_n}	T_{O_1}	..	$T_{O_M}^*$	..	T_{O_n}
<u>Project Community</u>																			
Social Indicators	0	0	..	0	0	..	0	..	0	0	..	0	..	0	0	..	0	..	0
QOL Survey					0				0	0				0	0				0
Media Content Analysis	0	0	..	0	0	..	0	..	0	0	..	0	..	0	0	..	0	..	0
<u>Control Community/-ies</u>																			
Social Indicators	0	0	..	0	0	..	0	..	0	0	..	0	..	0	0	..	0	..	0
QOL Survey					0				0	0				0	0				0
Media Content Analysis	0	0	..	0	0	..	0	..	0	0	..	0	..	0	0	..	0	..	0

0 = Observations

* Time periods following mitigations

Source: Soderstrom (1981, pp. viii, 52, 95)

Figure 5. Soderstrom's "Quasi-Experimental" Approach to SIA Data Monitoring

truly to exist as discernible entities or "variables." Real-life socio-political events are messier than laboratory variables. They function and interact on multiple levels, such that both reductionist and transcendant interpretations of social reality can be simultaneously both correct (and simultaneously both inadequate). A given social construct such as "quality of life" or "community cohesion" can have only ephemeral utility--of value for understanding the world at one moment, not at the next moment. Experimentalist approaches may ultimately prove as futile as trying to sort out the components of the atmosphere by chopping the wind into pieces with a hatchet.

However, that argument, if it has any merit, applies to the "ultimate" social science goal of cataloguing all knowledge of human behavior. The immediate concern is a more limited and pragmatic one--developing some sort of knowledge base which provides SIA practitioners with reasonable clues (if not absolute assurance) of likely futures.

In this regard, and despite all the apparent pitfalls, the value of monitoring to collect case study information remains self-evident. Very practically speaking, decision makers and lay persons who are not social scientists are more likely to trust historical example than theory or complicated models and mathematical projections. Of course, different historical examples may suggest different outcomes, and this is an important reason to compile a goodly number of case studies pertaining to the same types of change agents (i.e., to determine usual consequences) and also to make careful records of the particular project

characteristics and/or other change factors at work. SIA projections lose credibility if not heavily based on historical evidence:

...the costs would run very high, the research results would take years to compile, and exogenous factors might vitiate the findings; yet, without longitudinal data, estimates of long-range impacts and synergistic effects will probably continue to be pure speculation. (Llewellyn, 1974, p. 104)

PART TWO:

THE ROLE OF PSYCHOLOGY IN SOCIAL IMPACT ASSESSMENT

Turning now from the current mainstream of SIA--dominated by economists and demographers on the "hard" side and by sociologists on the "soft" side--we may examine the present and potential roles for psychologists in the field. The following chapter is concerned with the extent to which SIA has already attracted psychological input and the constraints and opportunities which SIA poses for psychologists. Subsequent chapters examine the most fertile potential ways which psychology and psychologists can contribute to SIA.

V. PSYCHOLOGY IN SIA TODAY: PERFORMANCE AND PARAMETERS

The purpose of the present chapter is to examine the extent to which psychology has contributed to the SIA literature (or vice-versa). As will be seen in the first section of the chapter, the SIA-psychology interaction to date can be characterized as embryonic at best. Therefore, the remainder of the chapter will explore some of the constraints and opportunities which psychologists must recognize in approaching SIA, including (1) those shared with other social sciences; (2) those which are relatively unique to psychology itself; and (3) those which are posed by the policy makers' legitimate question: "So what? What's the bottom line?"

PSYCHOLOGY AND SIA TO DATE

For SIA as an anticipatory activity, psychological topics have been an infrequent focus of attention. However, SIA has been an even less frequent topic for discussion in the psychological literature. That extremely limited portion of the psychological literature dealing with SIA will first be reviewed, following which some comparatively extensive discussion can be made of three different levels in which psychology has emerged in the SIA literature: content, methodology, and theory. However, even here the materials are not extensive, and it is necessary to combine the discussions of content and methodology.

SIA in the Psychological Literature

It appears safe to say rather flatly that the concept of predicting psychological impacts in an EIS-type format is virtually a foreign one in the psychological literature. One element of the psychological literature on social change during the late 1960's and early 1970's did focus on the "human meaning" of change (c.f., Campbell & Converse, 1972), but the emphasis here was on broad cultural shifts; this line of work eventually melded into the mainstream of social indicators research with little apparent effect on predictive analysis of site-specific community transitions.

Among the few published journal articles on SIA per se are two 1975 essays by Catalano and his colleagues (Catalano & Monahan, 1975; Catalano, Simons, & Stokols, 1975). The first, published in a journal of community psychology, simply urges mental health professionals to become more involved in the review (not the preparation) of social parts of environmental impact statements, so they could comment on implications regarding demand for mental health services. The second article does offer some concrete suggestions about ways in which environmental psychologists could participate in the preparation process, but this article was published in a law journal where it has rarely been referenced and is unlikely to be read by an audience of psychologists.

Also in 1975, a special issue of the journal Environment and Behavior was devoted to SIA. However, the bulk of the contributors to this

issue were environmental sociologists or members of other nonpsychological disciplines.

The psychological literature does, of course, contain substantial discussion of observed post facto impacts of some of the change agents frequently encountered in SIA. For example, Shields (1975), in the issue of Environment and Behavior dedicated to SIA, summarizes evidence on psychological impacts of displacement and relocation from public projects. Heller (1982) and Stokols & Shumaker (1982) provide more recent reviews of psychological consequences of displacement. However, here we are inching away from explicit SIA-related content and toward implicit or potentially-related material. The psychological literature may be construed as brimming with topics and findings of potential value to SIA, but our immediate focus is on cases where the relevance has been made explicit.

The most explicit recent apparent reference to social impact assessment in the general psychological literature was Latane's (1981) article entitled "The psychology of social impact." However, this title turns out to be somewhat misleading from the viewpoint of SIA practitioners, because by "social impact" Latane means:

...any of the great variety of changes in physiological states and subjective feelings, motives and emotions, cognitions and beliefs, values and behavior, that occur in an individual, human or animal, as a result of the real, implied, or imagined presence or actions of other individuals. Clearly this is a rather broad definition. (p. 343)

In other words, Latane, like the traditional social psychologist, is truly concerned with the psychological impact of social settings and

situations, and his focus is purely on the micro-social situation: stage fright, inhibition of emergency response, helping behavior in elevators, etc. The article contains no consideration of social impact assessment as the term has been used in this dissertation, and much work would have to be carried out to make the connection.

However, Latane's article is worthy of some further discussion because of some possibly unintended relevance and similarity to principles used by "hard" social planners in fields such as demography and transportation planning. Latane presents two basic conceptual principles about "social impact":

PRINCIPLE 1: Social Forces--"the impact experienced by an individual is a multiplicative function of the strength, immediacy, and number of people affecting him or her" (p. 344), or:

"Social Impact" = $f(SIN)$, where S = Strength,
I = Immediacy,
and N = Number.

PRINCIPLE 2: The Psychosocial Law--For each variable S, I, and N, an exponential value may usually be calculated. Latane concentrates on cases where Strength and Immediacy are held constant, and posits the following "law" about the impact of Number:

"Social Impact" = sN^t , $t \leq 1$.

To elaborate further on Principle 2, Latane argues that impact equals the Number of social forces to some power, t , times a scaling constant, s . Furthermore, t is less than one. This means that the

marginal impact of adding greater numbers of people or other sources of social influence is less than the initial impact per unit from the first sources to be added.

Latane produces a fairly impressive number of original and re-analyzed sets of data for varying laboratory (and a few real-life) psychological situations to back up Principle 2. In many cases, Latane reports, log-linear regression analysis suggests that the square root ($t = 0.5$) of number of people or information sources is the proper function.

What is interesting for SIA about Latane's concepts is the use of a multiplicative function plus log-linear regression analysis to determine exponential coefficient values. When Principles 1 and 2 are taken together, they suggest a generalized model analogous to the classic gravity model used by transportation planners to make trip forecasts or by urban planners to predict allocation of new population among existing communities.⁹ (A true gravity model, however, would have at least one negative exponent, in parallel with the role played by "Distance" in such gravity models.)

In Latane's conception, S, I, and N are highly abstract concepts which might be operationalized in various ways. Further, the approach needs a great deal more testing in nonlaboratory and/or macro-social situations. But the preliminary evidence is persuasive, and this general model--whose twin aspects of quantitateness and conceptual

familiarity could make it psychologically palatable to "hard" social impact analysts--may provide a useful tool and entry point for psychologists to some aspects of SIA.

The abovementioned articles may represent the majority, if not the totality, of the psychological literature directed specifically (more or less) toward SIA. It is a little difficult to make such a statement with total confidence, since neither the Psychological Abstracts nor the standard references for other social science disciplines carry "social impact assessment" as a keyword--a problem noted by nonpsychological SIA commentators as well (e.g., Boothroyd, 1978). However, it is clear that prediction of psychological impacts, within a given community and stemming from a given proposed change in the socioeconomic and/or physical fabric of that community, is a topic which has thus far failed to generate a substantial amount of discussion in the usual professional and scholarly forums of the discipline of psychology. The situation is only marginally better within the SIA literature itself.

Psychology in the SIA Literature: Content and Method

For SIA as a predictive activity, psychological variables have rarely been a focus of attention. The major exception in EIS's has been occasional attention to stress from displacement and relocation. This topic has surfaced often enough that it has generated a fair amount of attention in U.S. government analyses of social impacts from transportation project (United States Department of Transportation, 1976) and

water resources development (Motz, 1983). Transportation-related impact assessments have also sometimes studied "proximity effects" such as noise or other annoyances experienced by people living or doing business beside highways or transit projects (Llewellyn, Buntin, Goodman, Hare, Mach, & Swisher, 1975). The standard methodology for making forecasts has involved case study citations and literature reviews.

Of course, EIS's often also include some assessment of attitudes--usually public opinion regarding the proposed project itself. In energy "boomtown" areas, there has also been occasional attention to the attitudes of established residents toward newcomers who are likely to move into the area during construction and/or operational phases of energy development or other industrial projects. (In Hawaii, EIS's filed under state rather than federal laws have also sometimes contained brief discussions of attitudes toward prospective tourists in proposed new resort projects.)

In all these cases, the standard data employed--if any--are results of surveys on current perceptions and attitudes. These survey results may have great political importance in certain situations and fit in well with the participatory or "feedback" models of SIA. For the predictive ("linear model") approach to SIA, however, such data obviously have limits in terms of providing estimates of the future situation--unless one assumes that the best predictor of future attitudes always would be present attitudes, which is a somewhat dangerous assumption in light of evidence from pre-test post-test studies indicating that

initial negative attitudes toward change are often ameliorated with the passage of time (United States Department of Transportation, 1976; Adler & Jansen, 1978; Murdock & Leistritz, 1979). On the other hand, current public opinion can be an important determinant of other consequences, not the least of which is project approval itself. This theme will be further explored in the next chapter.

In academic literature on the function and methodology of SIA, substantive attention to psychological impacts is also frequently lacking. It is not uncommon for sociologists in particular to list psychological variables as topics worthy of attention, but such exhortations are usually low in explanations of how and why such analyses should be carried out (c.f., Fitzsimmons, Stuart, & Wolff, 1975; Porter, Rossini, Carpenter, & Roper, 1980; Finsterbusch, 1977a--although, as will shortly be seen, Finsterbusch did later take steps to fill in some of the psychological gaps in SIA). Sociological SIA often raises psychological issues as important for assessment--e.g., Lerner's (1981) call for increased attention to "self-blame" (locus of control) as a determinant of general social reaction to proposed disruptive projects. However, research action on such topics apparently has been left to psychologists, who have yet to rise to that challenge.

In what is perhaps the most extensive anthology of articles on SIA to date, Methodology of social impact assessment (Finsterbusch & Wolf, 1977), three entries have psychology at the core. Only one of these (Deane & Mumpower, 1977) specifically elaborates techniques for analysis

at the social psychological level. Deane and Mumpower take a social ecological perspective in suggesting study of the "psychosocial climate" to analyze man-environment relations, but their focus is on micro-social situations (hospitals and institutions), and they concede difficulties in predicting impacts on psychosocial climate at broader levels.

A second paper in the same book (Heder & Francis, 1977) utilizes the environmental psychological concepts of "behavior settings" developed by Roger Barker (1968), but as a device for increasing citizen awareness of environment rather than for predictive analysis. The third paper (Mack, 1977) uses psychology only to the extent of assigning "utility index points" to other variables, in preparation for a variant of economic cost-benefit accounting. This was the first of several efforts by the Army Corps of Engineers to convert psychological problems to dollar costs (Delli Priscoli, 1982), an effort which is subject to criticism because of the widely varying dollar "values" for the same psychological trauma which could be inferred from different governmental standards for compensating various injuries or losses (Finsterbusch, 1982b).

The concept of "values" has emerged in several other ways in the SIA literature. One way is that which underlies the Army Corps' attempt to monetarize psychological outcomes: some sort of assignment of weights or priorities among various predicted impacts, to facilitate a cost-benefit analysis or a choice among several alternatives. This is use of values in the assessment and/or evaluation stages of SIA, after

completion of the projection stage (see Chapter III), and the values in question may pertain to the importance of physical and economic as well as social outcomes. The Army Corps' approach is an effort to assign absolute, "objective" values to personal outcomes. However, other studies in the SIA literature indicate that various individuals or interest groups will often assign very different subjective values to the same predicted outcomes or decision criteria (Phillips, 1975; United States Department of Transportation, 1976). For this reason, Canan & Hennesy (1983) argue for the use of community values as the best criteria for interpreting social impacts, and they gather survey information on values to assist decision makers in understanding those values and the differences between authorities' and citizens' value orientations. Carley & Walkey (1981) urge that a major function of SIA be to gather evidence about resident's value weightings for impact assessment, and they point out the implications of ignoring such a step:

The observation may be made that often in SIA no weighting scheme is selected; that is, each indicator is given the same weight. Where this is the case, the choice of indicators becomes all-important and this, in effect, simply transfers the value-weighting to that choice... If no weighting scheme is suggested in the SIA, the decision-maker will undoubtedly supply his/her own. (Carley & Walkey, 1981, p. 19)

Reliance on current citizen values for judging the importance of various impacts could be subject to the same problem as reliance on current public opinion survey results to forecast future attitudes--i.e., people adapt and change their values and perceptions. However, few scholars or practitioners have urged study of changes in community

values as dependent variables for their own sakes. Rather, the more common practice is to suggest study of values as important determinants of other types of impacts. In an ethnographic context, Gold (1974, 1977, 1981) has frequently stressed the importance of local norms for determining resident reactions to proposed innovations and their likelihood of obtaining an equitable share of the benefits. Porter et. al. (1980) stress the mutual interactive effects on technological and societal value shifts. They also cite a study by Clippinger (1977), who measured the value orientations of traditional New England loggers vs. those who were employed in more modern, "high-technology" logging operations. This study indicated value differences between the two groups which could indicate problems for traditional workers in attempting to convert to high-tech operations. These problems would have implications for stress, employment opportunities, and labor force turnover.

Reported use of psychometric scales for predicting socio-psychological outcomes is also fairly rare in the SIA literature. Hogg & Honey (1976), with their anthropology graduate students at Oregon State University, attempted to measure the psychological adaptability to change of several different social groups (including relocatees) who were potentially affected by a proposed dam. They selected a total of nine items from the Neal and Seeman Powerlessness Scale, Srole's Anomie Scale, and the Authoritarian Personality (F) Scale. They concede that a limited set of measures such as these provide only a crude and questionable indication of adaptability, nor do such items "indicate the

population's resourcefulness in times of crises" (p. 180). However, this effort has the distinction of being one of the few published efforts in the SIA literature to identify psychologically high-risk subpopulations.

Given the sparsity of psychological content in SIA literature, it is not surprising that few purely methodological writings give much attention to psychological assessment techniques. As a follow-up to their Oregon dam assessment, Honey & Hogg (1978) prepared a general research strategy, based on cultural ecology theory, for social assessment of lake restoration programs for the United States Environmental Protection Agency. This focused heavily on ethnographic study of aboriginal native populations, but also recommends a baseline sample survey to determine (1) demographic and biological characteristics of the population; (2) social characteristics; (3) socioeconomic characteristics; (4) sociopolitical characteristics; (5) environmental-aesthetic attitudes; (6) attitudes toward water resource development; and (7) psychological adaptability to change (again noting that this could be only crudely measured in the course of a larger survey). However, when discussing methods for projecting the future situation, Honey & Hogg recommend the applied common-sense approach of learning all that is possible about the current workings of the social system and then making "reasonable judgments" about future consequences.

Naik (1981) has provided an overview of the major methodologies in the SIA literature for analyzing all "social intangibles," which would

include a number of sociological and anthropological as well as psychological concepts. The approaches discussed by Naik (all of which have also been touched upon previously in this dissertation) were:

- o checklist use of social indicators as operationalizations of social intangibles--as mentioned in Chapter III, the two most frequently cited examples are the "Techcom" (Technical Committee of the Water Resources Research Centers of the Thirteen Western States, 1974) and the Social assessment manual (Fitzsimmons, Stuart, & Wolff, 1977);
- o public input through surveys or participation programs;
- o economic models of monetarizing intangibles (Mack, 1977); and
- o scenario-simulation approaches.

Moving from the anticipatory SIA to the post-facto social impact analysis case study scholarly literature, there has of course been limited-to-moderate attention paid to various types of psychological impacts from certain types of projects, particularly those noted in Chapter II: tourism, transportation, water resources, and "boomtown" energy development. Except for displacement consequences, the reported boomtown effects probably include the highest proportion of psychological content--primarily public opinion and attitudes (reviewed by Murdock & Leistritz, 1979); intergroup attitudinal and value conflicts between longtime residents and newcomers (Graber, 1974; Gold, 1982); and stress as manifested by increased mental illness caseloads (Kohrs, 1974; Gilmore & Duff, 1975; Weisz, 1979). However, psychometric measures of stress or quality of life have been infrequent. One of the exceptions was Weisz' (1979) utilization of the Holmes-Rahe Social Readjustment

Rating Scale in Gillette, Wyoming to measure general stress (mean score was 308 Life Change Units, typically considered to indicate "major life stress") and to identify the most-stressed social group (young immigrant renters).

Psychology in the SIA Literature: Theory

As of this writing, there is only one published article¹⁰ which explicitly, and with some degree of thoroughness, examines the applicability of various bodies of psychological theory and literature to SIA. That is the product of a sociologist, Kurt Finsterbusch (1982b), in his exploration of "Psychological impact theory and social impacts."

Finsterbusch's overall approach is one which unabashedly emphasizes negative psychological impacts. "Since SIAs mainly estimate adverse impacts on individuals and groups of individuals," he asserts, "they should be based on an understanding of how individuals experience adversity" (Finsterbusch, 1982b, p. 71).

He believes that "psychological impact theory" possesses two components of particular relevance to SIA. These are (1) stress and (2) life satisfaction theories, although to Finsterbusch the important focus of the latter is on "dissatisfaction and unhappiness" (loc. cit.). Stress theory focuses upon physiological and/or behavioral coping responses to stressful events, with prolonged exposure and/or unsuccessful adjustment strategies resulting in highly tangible personal breakdowns--

i.e., physical or mental disorders. Life satisfaction theory involves strictly subjective responses, usually measured through questionnaires, and there is less "theory" involved because much of the research consists of an inductive search for correlates and presumed causes of satisfaction/happiness.

Finsterbusch's discussion, not overlong to start with, is focused primarily on stress theory. Much of the ground he covers will also be visited in the next chapter of this dissertation and therefore will not be reiterated at any length here. The most appropriate strategy for selectively summarizing Finsterbusch at this point would be to note his comments about ways that the two bodies of literature can best be integrated into SIA. However, Finsterbusch in fact does not make many such connections, settling instead for overviews of the topics he considers of potential relevance. (This is still, in truth, a service, since no other writers had taken psychology even this far into SIA.)

Finsterbusch accepts Lazarus & Cohen's (1977) categorization of stressors into three classes: cataclysmic phenomena, powerful events, and daily hassles. While SIA's can deal with events falling into the "cataclysmic" category (uprooting and relocation) and the "daily hassle" category (increased crowding, congestion, urbanization), Finsterbusch chooses "powerful events" for further discussion in conjunction with an overview of the life changes literature. He reviews the early development of Holmes & Rahe's (1967) Social Readjustment Rating Scale (SRRS) and the subsequent controversy over the true stressfulness of desirable

life events, agreeing with those who believe that only undesirable events are actually stressful and recommending the modified version of the SRRS developed by Hough, Fairbank, & Garcia (1976).

Finsterbusch looks briefly at three research areas dealing with cognitive appraisals of stress which he believes have bearing on SIA. First is the effect of attitudes and beliefs about stressors on perception and affective response--e.g., people who fear airplane crashes find airplane noise more annoying:

Social impact assessors need to apply these findings when devising measures for mitigating the stress caused by proposed actions. Authentic development of public acceptance of a project should reduce the stress which it causes. (Op. cit, p. 78)

Second is the burgeoning area of risk perception--factors which contribute to the over- or underestimation of danger from various sources. Third would be the capacity of the individual relative to the stressor. Control, knowledge, and self-confidence are factors which affect vulnerability to stress.

In regard to the life satisfaction literature, Finsterbusch quickly reviews the work of Bradburn (1969) on personal happiness (considered more affective or emotion-oriented in focus) and Campbell, Converse, & Rodgers (1976) on domains of life satisfaction (considered more cognitive in focus).

As might be expected, there is a call for further research. Finsterbusch lists three areas which he regards as important for increasing

the relevance of psychology to SIA. First and perhaps most important is the need to trace the nature, extent, and reasons for discrepancies between "objective" and "subjective" social indicators--e.g., so-called "positive" and "objective" outcomes (such as increased real estate values) which are sometimes associated with neutral or negative subjective ones. "Until these disparities between social and psychological impacts are better understood, SIAs may be somewhat misleading," he notes (p. 85). Second is further development of knowledge about ways that cognitive appraisal of stress can affect public response, and third is greater elaboration of the role of foreknowledge in coping with stress.

Finsterbusch's analysis sometimes seems hasty and superficial (an impression perhaps due in part to the numerous typographical errors in the published article). He omits any consideration of the potential contributions of environmental and social psychologists, since his suggested bodies of theory spring from community, clinical, and cognitive psychology. Nevertheless, his primary conclusion that satisfaction and stress represent the major psychological responses of value to SIA is consistent with the view which will be expressed in the next chapter of this dissertation (although the discussion there will employ slightly different categories and explore a wider range of psychological phenomena). If psychologists might be justified in complaining that Finsterbusch's article is less than perfect as a cornerstone for psychological input to SIA, it is only because the matter was ignored by psychologists

so long that it finally required the initiative of a nonpsychologist to show where that foundation might be laid.

Before leaving the subject of psychological theory in SIA literature, it might be noted that one general theoretical orientation or perspective underlying major parts of environmental, community, and social psychology is also pervasive in other disciplines involved in SIA. This is the perspective of human ecology. It is important to recognize that definitions and categorizations may vary. Although ecology is considered a "perspective" for purposes of this work, it has also been treated as a sort of meta-discipline, which organizes concepts common to sociology, anthropology, and psychology (Hawley, 1950; Micklin, 1973; Dunlap, 1980).

In psychology, the ecological perspective is generally considered to have arisen from the "topological" psychology of Kurt Lewin (1936), although the importance of environmental determinants of mental health had been heavily stressed in nineteenth-century American psychiatry (Caplan, 1969). Barker (1968) extended the concept of simultaneous study of person and environment to inclusion of the actual person-environment interaction as a unit of analysis in and of itself. Moos (1974) originated the concept of "psychosocial climate," later furthered by Deane & Mumpower (1977), to convey the idea that institutional environments possess "personalities" of their own.

Considered on its own rather than in the context of a psychological subdiscipline, the ecological perspective is more applicable to SIA work

when the proposed change is of a singular and physical nature and when the level of analysis is the small group or individual, as compared to the case when the proposed change involves a complex transformation of the socioeconomic structure and the level of analysis is the overall community. In the latter case, the concepts of social ecology become so broad and abstract that they simply serve to remind the researcher (or SIA practitioner) that "everything is interrelated" and that "one should examine the particular social attributes of this community before predicting impacts."

For example, one of the few articles on the role of psychology in social impact assessment uses the social ecological perspective as its intellectual vehicle, ending up with these less-than-earthshaking conclusions:

First, criteria of environmental quality must be situationally defined; i.e., they must be derived in terms of the particular cultural, psychological, social, and physical factors operative within a given behavior setting. Second, the potentially hazardous effects of certain environmental conditions can be understood only through an analysis of psychological and cultural variables. Thus, even in relation to "stressor variables" such as noise, density, and pollution, the degree to which these conditions prove harmful to health and safety will depend upon the unique attributes of the exposed individuals...

Any assessment of psychological impact would, therefore, involve determining how congruent a particular project will be with the psychological and demographic features of a given population. In an attempt to evaluate the potential congruence between a high-density housing project and the needs of local residents, social psychological methods such as value analysis and attitude assessment could be employed. (Catalano, Simmons, & Stokols, 1975, pp. 56-57)

For a post-hoc analysis of differential community response to major changes, the ecological concept of "intersystem congruence" can be of

great value--e.g., Mills & Kelly's (1972) exploration of the differing responses of several Mexican villages to community development projects. But for predicting community adaptation or resistance to change, the social ecological perspective at this point in its development provides more of a philosophical rationale for ethnographic community study than a clear set of operationalized variables and predicted interrelationships for psychological analysis.

Having explored what role psychology has played in SIA, the focus will now shift for the rest of the dissertation to what role it can play. However, before specific suggestions are made as to substantive contributions or methodological approaches, it is valuable to consider the parameters which define the constraints and opportunities facing psychology in SIA. Because the possibilities at first glance might seem endless--after all, everything that has ever been a research topic in psychology might be held up as a fit subject for inquiry in SIA--the major emphasis will be on recognition of limits. At the same time, some unique advantages and opportunities should also be acknowledged.

LIMITATIONS AND CONSTRAINTS SHARED WITH OTHER SOCIAL SCIENCES

Psychology has in common with the other social sciences (particularly the "softer" fields of sociology and anthropology) virtually all of those inherent limitations and constraints on feasibility which were discussed in the preceding chapter. These points do not require

belaboring, although a few brief examples may serve to underline the commonalities.

The inability of psychologists to develop a body of knowledge which is scientifically valid in its assignment of cause-effect relationships and which provides useful action methodologies for real-life situations has been addressed by a number of commentators, but perhaps most persistently and eloquently by Koch (1973, 1981). Koch has repeatedly accused psychologists of assuming the trappings of science by emulating the form, but not the substance, of the physical and biological sciences. He does not advocate the abandonment of psychology, but rather what he believes to be the more honest replacement of the term "science" with some such designation as "psychological studies."

Gergen (1973) has pointed out the seriousness of the reactivity issue in social psychology: Once social psychological "laws" become known to experimental subjects or the public at large, he argues, people will automatically react against the "laws" and leave them broken, perhaps permanently. Gergen suggests that social psychologists consider themselves historians of the social psychological phenomena of their day, rather than seekers after "eternal" principles which will tend to fall apart as soon as reported to the world.

The moral dilemmas facing other types of social scientists in SIA have had their parallels in the dilemmas encountered by psychologists in their increasing participation as expert witnesses in court cases--i.e.,

questions about making statements in probabilistic vs. absolute terms, whether to present facts bolstering both sides of a question, etc. (Loftus & Monahan, 1980).

Social psychologists who have been involved in social change projects found the 1970's to be a period of facing up to the fact that psychologists do have some very real limitations which did not seem so important in the optimistic 1960's:

First, psychology by itself can never tell us what to do. It can help us to understand our alternatives, but it cannot dictate our choice among them. Values and politics inevitably play a role in social choices... Psychological facts alone do not determine what action should be taken.

Second, it would be arrogant of psychologists to presume that they are simply expert observers and directors of social change. Psychologists are also the products of social change, with their consciousness structured by social conditions and social changes...

Third, psychologists simply are not omniscient and omnipotent. They are constantly consulted for expert opinions, judgments, and explanations of social events for which existing knowledge provides no definitive understanding. More significantly, they are sought for immediate solutions to complex social problems. (Pizer & Travers, 1975, pp. 3-4)

However, the same authors--like those social scientists who refuse to abandon social impact assessment despite their admission that perfect predictions are impossible--believe that psychologists' inability to attain perfection is no reason to give up the battle:

...the pain of individuals will not wait for the accretion of psychological wisdom or certitude. Psychologists are subject to the compelling demands of the suffering and oppressed, and are also vulnerable to the seductive proffers of the empowered and oppressive. Psychologists must remain aware that sometimes Necessity is the mother of fabrication, and that, as psychologists, we can promise "no easy victories"... (Pizer & Travers, 1975, p. 4)

PSYCHOLOGY'S UNIQUE ADVANTAGES FOR SIA

At least as compared to sociology and anthropology, psychology would seem to have at least four advantages in regard to doing SIA work:

1. The growing importance in SIA of models emphasizing resident issues and concerns involves a basic psychological focus: attitudes and opinions.
2. The psychological study of risk perception appears likely to be an increasingly important component of both SIA and TA work in the future.
3. The experimental base of much psychological research may lead to greater confidence about cause-effect relationships in psychological phenomena.
4. Psychologists in general receive relatively better training in quantitative approaches, both in regard to analysis and in regard to operationalizing "fuzzy" concepts.

SIA Focus on Issues and Concerns

In SIA, recent trends have emphasized the study of community attitudes and issues, both those which are obviously of direct relationship to the proposed project and those which may seem "unrelated" (but which may in fact interact with the situation to affect community acceptance and/or lead to concerns over impacts which the proponents believe are tangential and unlikely).

Of course, an understanding of prevailing community values, issues, and concerns has long been an important and integral part of the ethnographic, participant-observer approach to SIA (Vlachos, Buckley, Filstead, Jacobs, Maruyama, Peterson, & Willeke, 1975; Gold, 1977, 1979; Bowles, 1981). This approach has emphasized qualitative analysis and documentation of community attitudes. More recent approaches to SIA have featured modifications of classic ethnographic techniques, but, surprisingly, continued emphasis on solely qualitative handling of resident attitudes and issues.

For example, the participatory approaches of Armour, Bowron, Miller, & Miloff (1977), Connor (1981), and Dale & Kennedy (1981) focus on public meetings and workshops, during which would emerge the issues of meeting participants (but perhaps not, at least verifiably, the issues of the wider community). Broader conceptual schemas--which do not specify meeting formats but which do see the SIA consultant primarily as a facilitator of dialogue and consensus (e.g., D'Amore & Rittenberg, 1978; DiSanto, Frideres, Fleising, & Goldenburg, 1981; Lamont, 1983)--also tend to deal with the stated concerns of active interest groups rather than with the documented issues of the wider community.

Methods involving systematic key-informant interviews (Savatski & Freilich, 1977) and/or linkages of issues with different resident "networks" defined by participant observers (Preister & Kent, 1981) have greater potential for documentability and replication testing, but they

too run the risk of failing to assure a representative sampling of total community opinion.

Scientifically-designed attitude surveys most often have been used to ask simple questions about support for, or opposition to, the proposed project, and occasionally also ask about residents' expectations of impacts (Lounsbury, Sundstrom, Schuller, Mattingly, & DeVault, 1977; Griffith, 1978a; Murdock & Leistritz, 1979).

However, with few available published exceptions (e.g., Canan & Hennesy, 1981), SIA-related surveys have rarely asked about community goals and problems. This seems an unfortunate oversight, since a logical question for SIA is the extent to which a proposal might exacerbate an existing perceived problem or meet an existing perceived need. The participatory approaches do deal with this issue, but only to the extent that active participants in meetings or other forums bring up the issues. Validation surveys of the wider community represent an obvious strengthening of the process, whether the approach taken to SIA is the scientific ("linear"), the "feedback" to decision maker, or the purely participatory model. Community needs assessment surveys such as those suggested by Murrell (1977; Murrell & Schulte, 1980) would be an ideal way to ensure that both levels of citizen concerns--active interest groups and the "man in the street"--are factored into the SIA process. The addition of open-ended questions about perceived threats to individual or community satisfaction (or closed-ended questions about specific issues earlier identified during key-informant work) would also serve to

identify other pending changes perceived to have a potential cumulative or interactive effect with the proposal in question. Surveys could determine whether citizen classification of the importance or "stage" of an issue--as in Berg's (1982) categorization of early warning, formative, "hot," and in-progress implementation issues--coincides with that determined during conversations with organization leaders or government decision makers.

There are several qualifications which must be made to this sense of opportunity for psychological SIA. One involves a range of practical drawbacks to surveys, most of which will be addressed in the next section of this chapter. It might be briefly mentioned at this point that reference data can pose a problem. That is, a single point-in-time opinion survey has less meaning than time-series data or than when seen in comparison to responses from a wider reference population. Some partial alleviation strategies will be discussed in the portion of the next section which deals with survey-related disadvantages.

Another reservation has to do with the fact that psychologists have historically been more interested in researching the dynamics and structure of attitudes than the actual attitudinal content. Indeed, sociologists and political scientists may be more associated with the study of public opinion for its own sake than are psychologists. However, this does not affect psychologist's potential for devoting more attention to content. In fact, it seems likely that decision makers in the policy process may tend to assume (correctly or not) that psychologists would

be better qualified to craft an attitudinal survey than social scientists of other backgrounds.

There are, nonetheless, some opportunities for psychologists to use their historical expertise in exploring determinants of attitude change. Predictions of factors affecting community acceptance of a proposal would be of particular interest to decision makers in the "feedback" models of SIA. Sometimes this might even extend to the concept of "managing" community acceptance (Luke, 1980), although the more typical situation for public-sector projects would involve prediction of which of several alternate communities would be most willing to accept some project such as a nuclear power plant (Byrne & Sucov, 1977). A special case of psychological exploration of potential community reaction would involve instances where there is a possible perceived risk to lives and property from the project.

Risk Analysis and Perceived Risk

Until the past few years, "risk analysis" (or "risk assessment") denoted a highly technical and quantitative procedure for calculating the likelihood of some negative consequence from a new or existing technology. With historical roots in occupational safety (Lave, 1982) and insurance-actuarial computations, as well as engineering feasibility studies, it had no subjective component other than "social evaluation" of objectively-calculated risks (Kates, 1978) and was therefore unaffected by psychological perspectives such as decision theory (O'Riordan,

1982). Although "risk-benefit ratios" (akin to cost-benefit accounting) have represented one technique by which planners and decision makers judge the acceptability of a given prospective project, risk analysis historically has been much less associated with the project-specific EIS/SIA framework than with the national technology assessment framework.

In particular, nuclear energy development is an area in which risk analysis has assumed great visibility and importance. Increasing interest within the risk analysis field regarding the question of acceptable level of risk--or "How safe is safe enough?" (Rowe, 1980; Schwing & Albers, 1980)--began to interact with the social phenomenon of public apprehension over nuclear safety (Firebaugh, 1981; Cotgrove, 1981) to generate vastly increased attention to psychological dimensions of risk perception. Much of this had to do with the discomfort of technical experts and policy makers over research findings that the public perceived nuclear or other technological risks far differently than would be indicated by "official" figures (Slovic, Fischhoff, & Lichtenstein, 1980; Thomas, Swaton, Fishbein, & Otway, 1980; von Winterfeldt, John, & Borchherding, 1981).

The Three Mile Island incident highlighted both disagreements within the scientific community over the degree of estimated risk (Roberts, 1982) and also the issue of changes in affected residents' levels of perceived risk (Covello, Menkes, & Nehnevajsa, 1982). Congressional attention turned to risk analysis:

In 1979 the House Committee on Science and Technology encouraged the National Science Foundation (NSF) to address the problems faced by health, safety, and environmental policy decision-makers, namely, how to assess and balance technological risks and benefits. In response, NSF developed a multidisciplinary program for systematic research on comparative risk analysis, combining it with the Technology Assessment Group in the Division of Policy Research and Analysis to form the Technology Assessment and Risk Analysis (TARA) Program. (Monk, 1982, pp. 124-125)

Within TARA, funds have increasingly been diverted from TA to RA studies, including efforts to develop a theory of risk perception.

Since the role of perception in risk analysis has dramatically increased, there has been a sharp sense of division (Otway & Thomas, 1982) between those who feel that there is no such thing as "objective" risk and those who feel that objective risk can indeed be mathematically calculated:

I am not implying that the findings reported by sociologists are particularly soft-edged, but I do not think one can proceed even with the assessment of values and the discussion of acceptability if the argument has to be decided purely on the basis of opinion polls. Given the variations of opinion that occur even over a period of months, one could not justify basing long-term decisions on such changeable information. (Warner, 1981, p. xii)

On the other hand, one major argument often used to justify psychological studies of risk perception is the potential for determination and management of factors which lead to exaggerated misperception of "objective" risks associated with nuclear development (Slovic, Fischhoff, & Lichtenstein, 1982; Hitchcock, Anthony, & Filderman, 1982). This rationale has been explicitly rejected by two psychologists who

have been historic central figures in research on attitudes toward risk in nuclear power and similar high technologies. Harry Otway and Kerry Thomas argue that a more explicitly political approach should be taken because research has (1) failed to reveal any simple, absolute principles relating risk perception to manipulable characteristics of the technology in question, but rather has (2) indicated that risk perceptions are largely determined by individual beliefs, motives, values, and views of the social institutions which propose technological innovations:

Perhaps, in principle, we already know everything about risk perception--that it depends upon the information people have received, what information they have chosen to believe, the social experiences and values to which they have been exposed, and their entire world views, and that it depends on the dynamics of interest groups, the legitimacy of institutions, the vagaries of the political process, and the historical moment in which it is all happening. Although risk undoubtedly is a relevant variable in the social acceptability of technology there is a growing body of evidence to support the view that the acceptance crisis is not one of risk per se, but rather a crisis of institutions and procedures that is presenting a major challenge to established notions of how representative democracy should function. In short, the risk concept is not sufficient to explain the phenomena that need to be investigated. (Otway & Thomas, 1982, p. 81)

A somewhat similar argument is made by anthropologists who believe that selective attention to risks can best be studied through understanding of total cultural value systems rather than variations in individual beliefs or specific situations (Douglas & Wildavsky, 1982).

Nevertheless, literature reviews by Cole & Withey (1981) and, to a lesser extent, Otway & Thomas themselves (1982) indicate the potential

relevance of psychological research both to risk perception and to the broader issue of technological acceptance. Some of the major applicable work has included the expectancy-attitude theory of Fishbein (1967; Fishbein & Azjen, 1975) and the various choice and decision theories set forth by Coombs (1975; Coombs & Avrunin, 1977), Slovic (1964; Slovic, Fischhoff, & Lichtenstein, 1977), and Tversky & Kahneman (1973, 1977; Kahneman & Tversky, 1979; Tversky & Sattath, 1979). It is clear that, short of matters like world war or overpopulation and starvation, the issue of adaptation or adjustment to rapid technological change is one of the most significant to which psychologists have a major potential for contribution, even despite the abundant moral and ideological questions which may be raised (MacLean, 1982; Covello, Menkes, & Nehnevajsa, 1982). And there are those who strongly disagree with Otway & Thomas about the ultimate value of psychological research in this area, saying that it can be crucial for understanding specific (as opposed to general) instances of public opinion and/or risk perception (Spangler, 1982; Slovic, Fischhoff, & Lichtenstein, 1982).

Meanwhile, the concept of "environmental risk" has begun to penetrate and permeate the EIS system, although the current emphasis here is still primarily on threat to the physical ecosystem, with subjective components again mostly confined to evaluation of expert-estimated risk (Erickson, 1979; Bowonder, 1980-81). Inherent even in this conception, however, is the matter of human risk and human response to that risk. Community acceptance of specific proposed nuclear power plants or other

such high-risk projects has been suggested as a matter of import for both SIA (Byrne & Sucov, 1977) and community psychology (Lounsbury, Sunderstrom, & Shields, 1979). As noted by Finsterbusch (1982b), risk analysis would appear to be a natural and crucial entry point for psychology into SIA.

One psychological extension of risk analysis in SIA, however, seems to have been cut off at the root. The United States Supreme Court decision on the Three Mile Island EIS case stated flatly that stress or other mental health effects stemming from perceived risk need not be considered in the EIS for the resumption of activities at the Three Mile Island nuclear power plant. (See Chapter II for description of this decision, and also further discussion later in this chapter.) This does not mean that psychological risk factors will not be of interest in SIA, but it does suggest that the reason they will be of interest will be limited to their effects on project acceptance rather than their effects on quality of life. Thus, psychological risk analysis will probably have more utility for the "feedback" rather than the linear, predictive SIA model.

Confidence in Cause-Effect Relationships

One of the major concerns with analysis of "indirect" social consequences of proposed projects is the difficulty of making cause-effect statements about likely outcomes. This tends to generalize to a suspicion on the part of many planners and decision makers about the

overall ability of the social sciences to make any "hard" cause-effect statements about intrinsically "soft" types of social phenomena. In this regard, psychology enters the SIA field with a public relations advantage: its historic heavy use of the experimental method in research and its presumed subsequent ability to make firm and valid statements about causal relationships.

In point of fact, psychology--and particularly social psychology--has been undergoing a protracted and increasingly intensive period of soul-searching over the past decade regarding the validity of findings from laboratory experiments. This debate has touched upon both the internal validity of experiments (extent to which events and findings represent only the theoretical phenomena intended) and their external validity (extent to which the events and findings can be generalized to other situations).

Questioning of experimental validity actually began decades ago but slowly combined with another general area of disciplinary self-doubt--the apparent failure of social psychology to make any meaningful substantive contributions to resolution of real-life social problems (Smith, 1974; Hogan, 1979; McClure, Cannon, Belton, D'Ascoli, Sullivan, Allen, Connor, Stone, & McClure, 1980)--to produce the contemporary sense of "crisis" in the field (Elms, 1975; Stryker, 1981). Brunswik (1955) sounded one of the early alarms about external validity, saying that laboratory studies lack the "ecological validity" of being embedded in true-to-life situations and that studies should consist of a

representative sampling both of life situations and of various demographic groups in the population. Concerns about internal validity were sparked by Orne's (1962) observations over the potential for experimental subjects' compliance with perceived demand characteristics of the situation, Rosenthal's (1966) cataloguing of numerous ways in which experimenters could unwittingly affect outcomes, and Rosenberg's (1969) comments on "evaluation apprehension" (the tendency of subjects to want to "look good" in experimental situations involving behavior that might be evaluated as morally reprehensible, such as aggression). These critical themes were elaborated and expanded upon over time by observers such as Campbell & Stanley (1966), Harre & Secord (1972), and Gilmour & Duck (1980), to name only a few.

The experiment still has its ardent defenders as an appropriate scientific tool, although claims for its utility now tend to be more qualified and restricted than was the case several decades ago. Kruglanski (1975, 1976) argues that the purpose of an experiment is to test whether an allegedly universal causal relationship can be disproved in an arbitrarily-selected setting and group of subjects. (If not, it must successfully resist disproof in a series of other settings as well before some tentative validity is accorded the hypothesis.) For similar reasons, Carlsmith, Ellsworth, & Aronson (1976) believe that "mundane realism" (resemblance to real-life situations) is less relevant to scientific purposes in psychology than is "experimental realism" (essentially, adherence to internal validity). Based on analysis of hundreds

of studies from both laboratory experiments and naturalistic studies, Dipboye & Flanagan (1979) conclude that results from neither type of study are more generalizable than from the other. Berkowitz & Donnerstein (1982) argue that "The meaning the subjects assign to the situation they are in and the behavior they are carrying out plays a greater part in determining the generalizability of an experiment's outcome than does the sample's demographic representativeness or the setting's surface realism" (p. 249). And Stryker (1977, 1981) concurs with Schlenker (1977) in suggesting that both experimental and more phenomenological approaches are needed to advance the cause of scientific understanding and to deal with the concern that an experiment is actually a "social situation" in which subjects' definitions of the situation are at least equally important as experimenters' definitions.

As stated in Chapter I, the author of this dissertation believes that--if their work is to become truly useful to policy studies such as SIA--psychologists not only must supplement experimental studies with naturalistic ones, but also must become more concerned with macro-social situations and with situation-specific rather than attempted universal findings alone. However, the point for this present section is a somewhat more limited and cynical one: Psychologists have a reputation for "hard-headed" experimental testing of causal hypotheses which can be of initial public relations value for facilitating entry into SIA. As stated, the point is limited. Once entry has been accomplished, the advantage counts for little further, and future reputation will rest on

actual accomplishments in the applied SIA work rather than the partially illusory "solid" etiological laboratory analysis.

In regard to the "true" applicability of psychological experimental findings to SIA, it may again be pointed out that psychologists' attention in the experimental situation has typically been devoted to the micro-social situation. When the potential change agent whose effects are being predicted is of a nature involving the complete transformation of a socio-economic environment, then the sort of immediate causal factors usually studied by social psychologists--e.g., peer group pressures, numbers of other persons in environment, value orientations, etc.--are mediating variables rather than independent variables, and psychologists have rarely stretched out to study the preceding links in the cause-effect chain. On the other hand, when the potential change agent is more limited in nature and perhaps consists primarily of a single major physical change--e.g., a new housing project or transportation system cutting through a neighborhood--the body of cause-effect knowledge which has accumulated in fields such as environmental psychology may be quite relevant.

In other words, the utility of experimentally-derived psychological principles depends largely on the singularity of the change. Experimental findings on cause-effect relationships must explore the impacts of a small number of independent variables, often just one, while holding other factors constant. If the real-life change studied in an SIA is so focused in its nature as to permit the assumption that other

factors are remaining constant, then the laboratory literature could be quite pertinent. But if the change involves a number of features in the environment, the experimental psychological literature may shed only dim and reflected light.

Quantitative Training

A final (relatively) unique advantage of psychologists as compared to other social scientists lies in their typically more extensive quantitative training. Because one of the great concerns about SIA on the part of decision makers is that so many "fuzzy" terms and issues are involved, the quantitative skills of psychologists may have particular importance. While psychologists are probably just as prone as other social scientists to positivist excesses in the willy-nilly assignment of often-contradictory measures to abstract concepts, both behavioral and social psychologists have also shown themselves capable of simultaneous discipline and creativity in the process of operationalizing such abstract concepts.

For example, Appleyard & Carp (1974), in their analysis of the impacts of the Bay Area Rapid Transit system on neighborhood social factors, used multiple measures of constructs such as "territoriality" and "social interaction." Some were subjective (e.g., interview ratings), and many were objective and environmental in nature (presence or absence of fences, walls, prohibitive signs; number of formal or informal meeting places; etc.). Environmental psychologists working with

unobtrusive measures have generally demonstrated themselves equally creative in numerous studies.

On the social psychological side, Rossi's (1972) discussion of indicators for strength of "sense of community" remains one of the most useful references today on potential measurement strategies for an area too often relegated to exclusively impressionistic study. (Somewhat regrettably for the thesis of this brief section, Rossi is actually a sociological social psychologist rather than a psychologist.) He lists dozens of concrete possible measures--both objective and survey-based--for various so-called "intangible" concepts such as "Interest and Involvement in Local Events," "Residential Localities as Reference Groups," and "Friendships."

PSYCHOLOGY'S UNIQUE DISADVANTAGES FOR SIA

Five potential disadvantages which seem relatively unique (or at least much more pronounced) for psychology as compared to other social sciences will be discussed here:

1. Psychological scales and surveys are often impractical tools for SIA.
2. Discrepancies between the subjective and objective knowledge base about psychological wellbeing are potentially problematic for the decision maker.
3. Psychologists themselves historically have been less eager than other types of social scientists to become involved in "real-world" research topics.
4. SIA historically has focused on the community rather than the individual level--and perhaps properly so.

5. A United State Supreme Court decision has ruled out psychological impact research of at least one type for federal EIS's.

Practical Problems with Scales and Surveys

It has been suggested that some of psychology's greatest potential advantages for SIA lie in quantitative analysis of attitudes and other psychological phenomena which would usually be measured through scales on questionnaires (e.g., satisfaction, alienation, locus of control, etc.). Both straightforward attitudinal data and more sophisticated scaling techniques in an SIA situation would generally rely on administration of a random-sample survey. However, there are a number of problems--both methodological and, more important, practical constraints imposed by political, legal, and economic considerations. These concerns are not, strictly speaking, "unique" to psychology because they would be equally important for any other discipline attempting to gather information through scales and surveys. However, to the extent that psychology is more dependent than other disciplines on such techniques, these concerns and problems assume greater importance for psychology.

Methodological concerns over the validity of survey data represent, of course, an ongoing consideration for all applied or basic social science research. There are numerous potential pitfalls in design and analysis of surveys, and good researchers are usually more concerned with avoiding the pitfalls than with debates over whether surveys should be abandoned as a research tool. For example, there is growing

awareness among survey researchers of the sensitivity of results to question wording, question order, interviewer effects, etc. (Schuman & Presser, 1981). Social desirability effects has long been one of the bugaboos of survey research, although it has been suggested that futuristic work utilizing two-way cable TV will minimize such problems (Wolf & Latane, 1981). Awareness of such potential problems leads experienced researchers to greater care in crafting surveys, just as awareness of potential demand characteristics of an experiment can lead experimental psychologists to greater care in the design of experiments (Berkowitz & Donnerstein, 1982). Also, statistical advances in structural equation modelling--using either maximum likelihood (Joreskog, 1973, 1981; Joreskog & Sorbom, 1981) or partial least squares (Wold, 1980, 1982) approaches--can provide theoretical corrections for some questionnaire "measurement error," but these models are not widely used or accepted by laymen, and even experienced researchers (e.g., Rodgers, 1980) often seem uncertain whether to base interpretations on raw data or on the corrected figures.

However, a few other methodological concerns can represent more serious drawbacks to use of surveys in SIA, at least in particular circumstances. For example, survey results are particularly likely to be invalid when the respondent population is not in the mainstream of modern Western culture, since other cultures often place high value on secrecy and reserve with strangers (c.f., Goodenough & Smith, 1977). Even within the dominant American culture, there are local variations

which may not be apparent to the outside researcher about what questions are likely to be considered intrusions on privacy (Gold, 1981).

The validity of self-report data may also be problematic in some of the psychological and cultural domains most likely to undergo major transitions during modernization or urbanization processes. That is because many important psychological phenomena are not conscious and/or are not part of the cognitive repertoire of most citizens.¹¹ For example, in his observations of one western boomtown area, Gold (1974) discusses the "acute self-consciousness of the locals concerning all manner of things in their lives about which there had long been unspoken, shared assumptions and other taken-for-granted norms" (p. 139). He makes the point that it is very difficult for people to pinpoint in advance (as for a scoping phase, to identify psychological variables of interest) the potential psychological impacts of import to their community because they are simply unaware of their own psychological processes or social norms. The fact that much of subjective culture is "hidden" from the participants themselves is a point which has been carefully analyzed by the anthropologist E. T. Hall (1976) and which also figures heavily in theoretical treatments by sociologists such as Robert Merton (1957). This makes for a distinct disadvantage in the SIA process simply because it means that neither decision makers nor the general public are likely to call for inclusion of--nor to view with much credibility a theoretical analysis of--social psychological variables of which they are basically unaware. This represents a way

that surveys (or, for that matter, key informant interviews) are inadequate as research tools for some phenomena, although it does not detract from their validity in other areas.

More practical problems with surveys and scales would usually represent greater threats to psychological involvement in SIA. Foremost of these is the frequent lack of funds for conducting any survey whatsoever. A standard rule of thumb in survey research is that sampling error should be reduced to plus-or-minus five percent (at the 95 percent confidence level), which requires a minimum sample size of about 400. Depending on the questionnaire length and whether the survey is conducted by telephone or door-to-door, costs could vary from perhaps \$5,000 to \$15,000 for such a survey, including report and analysis. If accurate information about population subgroups is desired, larger total sample sizes and, hence, larger price tags are in order. Finsterbusch (1976a, 1977c) has argued that SIA practitioners as a practical matter might often rely on "mini-surveys" of perhaps 100 to 200 respondents, settling for sampling errors in the seven-to-ten percent range and simply sacrificing analysis of subgroup differences.

When some amount of money is available for surveys, sophisticated scales may still not be practical because of the need to keep surveys to a certain maximum length (both for financial and for practical reasons--survey terminations usually increase sharply as questionnaire lengths exceed 20 minutes). There must be a prioritizing of survey contents. Typically it is considered most important for purposes of the

overall EIS to develop a thorough understanding of the population's basic demographic and economic characteristics, along with project-derived implications for employment, housing, and public services. Of secondary interest, usually, are perceptions of and attitudes toward the proposed change. Also of relatively lower priority (depending on the situation) are perceived prospects for disruption at the wider social level--crime, ethnic or oldtimer-newcomer conflict, etc. Once these topics have been explored, there may be time and money remaining (at least in theory) for some very brief scale dealing with individual impacts--perhaps something as concise as the Srole Anomie Scale, but surely nothing so lengthy as typical mental health or quality of life instruments. And there certainly would be no time to administer several different scales on several different psychological topics. Thus, psychological phenomena would often have to be explored in just one or two questions each rather than by multi-item scales.

Another practical consideration is a political one--the frequent distrust of both decision makers and "hard" scientists for any subject matter which deals with intrinsically subjective phenomena. As discussed in previous chapters, there is often a feeling that "data" based on verbal statements is simply irrelevant to objective reality, and subjectively-oriented social scientists are avoiding the "true" task of scientists, which is to take objective measurements not involving individual responses--e.g., Flynn's (1976) assertion that most social scientists would be inclined to measure air pollution by taking a picture of

the pollution source and asking subjects to examine the picture and then estimate sulfur dioxide on a seven-point semantic differential scale. Related to this is the discomfort which agency technicians and engineers may experience with the level of data (nominal or ordinal rather than interval) often generated by surveys (Delli Priscoli, 1982).

To the extent that the concept of "validated scales" is understood by local decision makers or potential SIA critics, it may be rejected unless the validation has been replicated in the particular community at hand. Similar objections may also arise to use of case studies to justify forecasts about local impacts. This has to do with a tendency of communities to feel they are themselves unique in their ways of thinking--i.e., that "principles" established elsewhere about values, attitudes, motivations, determinants of satisfaction or mental health, etc., simply may not apply in the local context. By extension, scaling instruments validated elsewhere may be suspect. This sort of attitude might be most expected in a place such as Hawaii, where the demographic and geographic conditions are truly very different from the rest of the country. However, psychologists serving as expert witnesses in courtroom trials have already discovered that this attitude is not confined to such obvious locales:

Some differences between the [case study literature] and the case at bar can always be found. In a trial in the state of Washington, [one of the authors] described several studies on the accuracy of clinical prediction of violent behavior, which were done in various parts of the United States. The cross-examination began with this question: "So, Doctor, none of these studies was done on our psychiatrists and psychologists here in Washington, were they?" (Loftus & Monahan, 1980, p. 278)

Another practical concern for federal EIS's is that a great deal of "red tape" can be involved in the standard review and approval process. For any process involving collection of data (whether objective or subjective) from ten or more persons or organizations on behalf of a U.S. government agency, there must be approval by the Office of Management and the Budget; special justification is required for interview schedules consuming more than 30 minutes of a respondent's time (United States Executive Office of the President, 1976).

A final practical problem with scales and surveys in SIA involves the general absence of data banks containing past scaling questionnaire results for particular communities or even for the nation as a whole. Without longitudinal data, projection must be carried out without benefit of quantitative techniques. For the most part, monitoring of social variables occurs (if at all) only after major changes have already been implemented, as in the case of the few (and sometimes sporadic) attempts to monitor social change in energy "boomtowns" (Thompson, Blevins, & Watt, 1978; Branch, 1981; Leistritz & Chase, 1981). Even these monitoring programs have usually focused only on socioeconomic (and perhaps a very few psychopathology) variables, although a more scholarly study of ongoing boom effects in the Shetland Islands (Rosen & Voorhees-Rosen, 1978) involves some scaling instrument data.

A more indirect strategy would be to administer an instrument which has been nationally validated and for which national norms have been recorded, in order to use the discrepancy between local and national

scores to make inferences about (rather than true projections of) probable future changes. Such national surveys have been few, other than public opinion polls regarding specific social issues and--much less frequently--general social or psychological data. One example would be Bickert's (1974) poll of a Wyoming energy boomtown area, in which he compared local responses to items on the Harris Alienation Scale with nationally syndicated results from the same year. For single-item inquiries into various specific social issues, the Roper Center in Connecticut maintains records of national surveys conducted by the American Institute for Public Opinion (Gallup) since 1939. Clubb & Traugott (1979) provide an overview of these and similar national public opinion data resources such as special Census Bureau surveys on crime and poverty or federal Labor Department surveys on labor force composition and job satisfaction.

Several national surveys in the mid-1970's on subjective wellbeing and quality of life (Andrews & Withey, 1976; Campbell, Converse, & Rodgers, 1976) provided important U.S. benchmarks for understanding both levels of, and also interrelationships among, American citizens' perceptions, evaluations, and satisfaction measures. However, both projects were conducted on a one-shot basis, and the results are becoming increasingly dated. One of the most important longitudinal surveys is the General Social Survey, conducted on an ongoing basis by the National Opinion Research Center since 1972 (Davis, 1977), from which the early results were reproduced in the last U.S. federal report on social

indicators (United States Office of Management and Budget, 1977). The sample sizes from these surveys have been adequately large to permit breakdown by types of respondent or types of community; thus, while it would not permit firm statements about past or present attitudes in a particular community, the General Social Survey could provide a comparison base of attitudes from communities similar to an SIA study area. Also, the University of Michigan's Institute for Social Research has sometimes repeated social attitudinal questions in its various national polls, and available trend information on a wide variety of such attitudinal results from 1947 to 1978 has been compiled by Converse, Dolson, Hoag, & McGee (1980). Angus Campbell (1981) also has summarized, in a more narrative form, the results and trends observed from two decades of national surveys conducted by the Institute for Social Research.

Often, however, local regional survey results (state or county) may provide more meaningful comparison data than national figures. Prior to designing a community issue or needs assessment survey, the SIA practitioner would be well advised to determine whether any recent state or county planning surveys have asked questions that would be relevant for the community survey. Some state governments--for example, North Carolina State Office of Budget and Management (1980) and Hawaii State Department of Planning and Economic Development (1976, 1978, 1981)--have sponsored statewide planning surveys, and county or municipal government may also occasionally sponsor similar studies in connection with general plan updates (c.f., Honolulu, City and County of, Department of General

Planning, 1978). These, of course, would almost always be oriented to specific planning issues rather than to satisfaction, wellbeing, stress, alienation, etc. However, the issues in question would likely be more directly relevant to the issues raised by a proposed change or development being addressed in an SIA.

Discrepancies in Objective vs. Subjective Wellbeing

The "soft" social sciences of psychology, sociology, and anthropology may sometimes seem schizophrenic in that they focus on both subjective and objective aspects of human functioning. Particularly in psychology, there is often more evidence about the discrepancies between subjective and objective phenomena than there is understanding about the relationships. Lack of consistency among affective, cognitive, and behavioral components of functioning is one of the most well documented of psychological phenomena, and is responsible in part for the emergence of psychology's behaviorist branch, which tends to discount the relevance of emotional or perceptual considerations.

Studies of quality of life illustrate the problems which result when subjective and objective methodologies lead to different conclusions. A number of different studies have found little or no correlation between standard "objective" quality of life indicators and the subjective sense of wellbeing verbally expressed by residents of an area (Schneider, 1975, 1976; Andrews & Crandall, 1976; Kuz, 1978). At a neighborhood or community level, socioeconomic attributes of residents

usually correlate strongly with other "objective" social indicators but not with subjective measures of quality of life (Bharadwaj & Wilkening, 1977; Wilkening & McGranahan, 1978).

These findings are often used as arguments for the inclusion of subjective measures in analyses of quality of life and/or in SIA's. But, at the same time, they inevitably raise serious questions about the utility and validity of the subjective measures. From the perspective of the decision maker or the layman faced with the subsequent conflicting predictions about psychological impacts from a proposed new project, the effect is not so much one of having received complementary information as of having received contradictory opinions. That is, the literature may simultaneously suggest that crime, suicide, drug use, and psychiatric admissions will all increase, but that subjective quality of life will improve. Or vice-versa. Perhaps because most researchers specialize only in objective or only in subjective phenomena, there has been little examination of the hard questions suggested by this situation: Why, or under what circumstances, do objective and subjective indicators of quality of life differ so much? Which type of evidence is more to be trusted? Is there even any real utility in the concepts of "wellbeing" or "quality of life?" These are the sorts of basic research questions on objective vs. subjective wellbeing which Finsterbusch (1982b) suggests must be solved, both to make SIA more accurate and to assure the compatibility of psychological and socioeconomic analyses of the same situation.

Andrews (1981) has produced one of the most conceptually sophisticated analyses of the relationships between subjective and objective social indicators. Among other things, he points out that apparent contradictions between them may stem from the fact that they are often based on different levels of analysis--e.g., comparison of a cross-sectional study of individuals' subjective perceptions with a time-series study of changes in aggregate level objective indicators. Also, as will be further discussed in the next chapter, one of the most important reasons for gaps in subjective and objective results, according to Andrews, has to do with the effect of expectations and aspirations on levels of satisfaction and happiness. If objective increases in quality of life are expected, they may not increase satisfaction or happiness.

One of the most convincing arguments for the inadequacy of objective indicators alone is set forth by Atkinson (1982), who notes that human response to change is based on all perceived aspects of that change, whereas objective indicators are piecemeal measures of individual aspects of change. For example, Atkinson found that changes in job satisfaction were essentially unrelated to the fact of job promotions, even though advancement in status and income would usually be considered objective evidence of increased individual quality of life. Presumably, numerous other and unmeasured job parameters--e.g., degree of responsibility, job performance, relations with colleagues--account for this discrepancy.

While the reasons for objective-subjective indicator "contradictions" are slowly being sorted out, the fact remains that these

reasons are complex and sophisticated in nature. Practically speaking, they still represent a liability for the introduction of individual-level subjective data to the policy-making process.

Reluctance of Psychologists to Take On "Real-Life" Topics

Psychologists have another type of disadvantage which might be described as "psychological" (to the extent that is not a deliberate choice) or else "ideological" (to the extent that it is a deliberate choice). As a group, psychological researchers frequently characterize themselves as "ivory tower" types and, when they do grapple with real-life applied social questions, confine their involvement to particular laboratory-style situations rather than to general policy issues:

Psychologists are often reluctant to apply their laboratory-based theories and data to large-scale social problems. The reluctance is well-justified. The chasm between laboratory results and public policy is typically too wide. (Kiesler, 1980, p. 1079)

As one example, a recent line of psychological research has involved a topic of potential interest and relevance for urban SIA: ways in which stress from crowding can be affected by social coalitions. However, such research has frequently been confined to studies of college dormitory situations (c.f., Gormley & Aiello, 1982; Rohe, 1982). These involve "field" rather than "laboratory" research, but the gap between such micro-situations and, say, densely populated public housing projects is still too wide to permit generalization of results. Some of

this psychological preference for the micro-situation may simply represent lack of research funds--dormitory students are both available and incur no costs to interview--but an element of preference is also sometimes present.

It would certainly be a silly and inaccurate statement if one were to say that all psychologists shrink from getting their hands dirty in the "real world." Behaviorally-oriented community and environmental psychologists in particular have been active in efforts to alter the social and physical environment in ways that will reduce juvenile delinquency, improve educational performance, increase self-esteem and community satisfaction, etc. (c.f., Knapp & McClure, 1978; O'Donnell & Tharp, 1982). Some social psychologists were actively involved in the community empowerment and social change movements of the 1960's and early 1970's, although, as previously noted, their sense of inadequacy in that effort has contributed to the feeling of "crisis" in social psychology (Elms, 1975; Hogan, 1979).

However, there has been an undeniable ambivalence in the social commitment of psychology as a whole. For example, in reviewing the first decade of the Journal of Applied Social Psychology, editors Streufert & Suedfeld (1982) could congratulate themselves that "applied" social psychology--dealing in a general way with real-life situations--had become respectable, but at the same time were tentative in their feelings about embracing "applicable" social psychology research--that which "is designed (and often requested by policy makers) to provide

immediate and hopefully reliable and valid answers to currently pressing problems" (p. 339). Moving to another subdiscipline, community psychologists are by self-definition the most dedicated of all types of psychologists to social action at a broad ecological level. But a careful review of literature published in community psychology journals (McClure, Cannon, Belton, D'Ascoli, Sullivan, Allan, Connor, Stone, & McClure, 1980) resulted in the discovery that the actual focus of community psychology research has been closer to the traditional micro-situation focus of social psychology than many practitioners of community psychology would care to admit.

Of course, the editorial policies of professional journals do not always mirror the activities or the philosophies of all members of the discipline. However, they do provide a sense of what is considered respectable and appropriate professional research. Compared to other social science disciplines, psychology appears to have a stronger streak of that brand of academic conservatism which proclaims knowledge for knowledge's sake and which eschews the contaminating influence of off-campus social phenomena. Such an ideological (or psychological) orientation was carried to its logical conclusions by Littman (1961) who argued that psychology should properly be a "socially indifferent science," dedicated to universal truths but unconcerned with behavior of specific social groups in specific social situations. To the extent that psychology is indeed a discipline which delights in the study of humanity but has little regard for individuals, it is a discipline

irrelevant to the needs of SIA. SIA does not need reliable answers to the question: "What will be the usual principles of human behavior across an infinite number of settings and situations?" Rather, it needs reliable answers to questions such as: "What will be the usual responses of three-generation farming families to displacement from family land after five years advance warning and active involvement in the selection of property for relocation?"

Historical SIA Focus on the Community Level of Analysis

To date, SIA has been chiefly concerned with the community and not the individual as the proper level of measurement and unit of analysis. This could be to some extent due to the predominance of sociologists in the more theoretical aspects of SIA. However, sociologists have hardly engaged in conscious conspiracy to exclude psychologists. It is more likely that historical focus of SIA on the overall community as a level of measurement is due to (1) the fact that most available data sources (e.g., census figures) lend themselves most readily to analysis at the aggregate level, and (2) the inevitable priority which decision makers themselves assign to the community as a whole, since both large corporations and government agencies must function at such a systemic level.

However, this historical pattern has certain consequences with which psychological SIA must reckon. One such consequence is simply that so many other, nonpsychological variables have been established as

appropriate areas for investigation in an EIS that it is very difficult to add extensive psychological assessment to the standard procedures without significantly extending the already typical voluminous length of EIS's, not to mention their burgeoning costs.

In line with legislative emphasis, physical and biological scientists were the first to have extensive input to EIS's, and their sections of EIS's still typically consume the greatest numbers of pages. Standard handbooks on overall EIS preparation--the type which provide "laundry lists" of topics to be covered--usually contain numerous and quite specific physical/environmental variables, along with a very few and general socioeconomic ones (c.f., Burchell & Listokin, 1975; Canter, 1977).

However, as economists, demographers, and sociologists began to develop SIA as a field of its own, their own "laundry lists" of important topics inevitably have been weighted toward their respective disciplines and contain only a few and generalized psychological concepts.

For example, in the checklist set forth by Fitzsimmons, Stuart, & Wolff (1977), of their five major categories with 387 (minimum) specific indicators, just one category deals with "Individual, Personal Effects" while the other four deal with "Community, Institutional Effects," "Area, Socioeconomic Effects," etc.¹² And of the 70 indicators for this one major "Individual" category, most deal with health, safety, impacts on family-service social agencies, and so on. One subcategory entitled

"attitudes, beliefs, and values" contains 11 items dealing with essentially political concerns--that is, attitudes toward the proposed change or the proposing agencies. Finsterbusch & Motz (1980) break down "Impacts on Individuals" into five types: biological, environmental (alteration of habitat), economic, social-personal life, and psychological. Their discussion of psychological impact is brief and confined to alienation, stress from life changes, and depression or breakdown resulting from relocation or unemployment.

Psychologists are of course free to write their own laundry lists someday. These could easily be assembled by sampling a few hundred keywords from the Psychological abstracts. But whether such lists would ever result in the actual consideration of all these variables in an SIA--and whether they in fact should--is another matter altogether.

In fact, it is not entirely a heretical position to suggest that SIA quite properly should attend to economic and social structural outcomes first, since these are the determinants of psychological impacts. To attempt to predict psychological consequences with no attention to the mediating social and economic forces would result in a psychological impact statement based more on theology than on either logic or social science. A recurring theme in the remainder of this chapter is that psychologists working at the individual level of analysis may, sometimes, give meaning and significance to conclusions from the community level of analysis. However, this means that the community level must be examined first. And it also may mean that psychological effects will

sometimes be squeezed out of the picture as an unnecessary extension of the assessment process.

Supreme Court Decision Chilling Psychological Impact Assessment

As discussed earlier in Chapter II, the United States Supreme Court in April 1983 made a decision in the case of Metropolitan Edison Company et. al. v. People Against Nuclear Energy ("PANE") which specified that the federal EIS for resumption of activities at the Three Mile Island nuclear power plant need not explore the psychological stress or mental health impacts flowing from residents' perceptions of risk. The Court held that the National Environmental Policy Act (NEPA) mandates study of impacts on the physical environment and of only those social or economic consequences which are closely associated with physical impacts. Stress and anxiety from perceived risk were held to be too far down the causal chain to be subject to the scope of NEPA:

...the question whether the gains from any technological advance are worth its attendant risks may be an important public policy issue. Nonetheless, it is quite different from the question whether the same gains are worth a given level of alteration of our physical environment or depletion of our natural resources. The latter question rather than the former is the central concern of NEPA...

If contentions of psychological health damage caused by risk were cognizable under NEPA, agencies would, at the very least, be obliged to expend considerable resources developing psychiatric expertise that is not otherwise relevant to their congressionally assigned functions. The available resources may be spread so thin that agencies are unable adequately to pursue protection of the physical environment and natural resources. (United States Law Week, 1983, p. 4374)

The Supreme Court held that anxiety or tension brought on by fear or policy disagreements would clearly be a matter for the political

process and not for NEPA, and the Court found it difficult to draw a line between this sort of psychological outcome and that stemming from alleged risk:

PANE's original contention seems to be addressed as much to the symbolic significance of continued operation of TMI-1 as to the risk of an accident... NEPA does not require consideration of stress caused by the symbolic significance individuals attach to federal actions. Psychological health damage caused by a symbol is even farther removed from the physical environment, and more closely connected with the broader political process, than psychological health damage caused by risk. (loc. cit., footnote 12)

There can be no doubt that psychological injuries are cognizable under NEPA... As the Court points out, however, the particular psychological injury alleged in this case did not arise, for example, out of the direct sensory impact of a change in the physical environment, cf. Chelsea Neighborhood Associations v. United States Postal Service, 516 F. 2d 378, 388 (CA2 1975), but out of a perception of risk. (Op. cit., p. 4375)

Thus, psychological reactions to "direct sensory impact of a change in the physical environment" are affirmed as being within the scope of NEPA.

Second, the case cited by Justice Brennan represents just one of a series of early court decisions which held that EIS's should indeed consider social and psychological consequences of proposed projects on nearby residents (Atherton, 1977). The 1983 decision thus is really only a notice by the Supreme Court that there are limits to the scope of NEPA along the causal chain, not that psychological impact per se exceeds the limits of NEPA.

The logic of the Supreme Court highlights a risk inherent in the thesis that psychological impacts provide a sense of meaning to community-level social and economic impacts. The risk is a general one, applying to the probable reaction not just of the legal system, but also of the political and economic actors involved: decision makers, agency staff, private-sector change proponents, and even the general public.

In most cases psychological impacts will be higher-order (more indirect, further down the causal chain) than will be the economic or (This passage bodes little good for sociologists citing symbolic interactionist theory or psychologists citing attribution theory in federal EIS's.)

This decision clearly has a potential to chill inclusion in EIS's of psychological risk analysis in particular and psychological stress forecast in general. However, as has frequently been the case in this dissertation, some reservations and qualifications must be made. In this case, they are of an optimistic nature.

First, Justice Brennan, in a brief separate concurring opinion, took pains to note that:

There can be no doubt that psychological injuries are cognizable under NEPA... As the Court points out, however, the particular psychological injury alleged in this case did not arise, for example, out of the direct sensory impact of a change in the physical environment, cf. Chelsea Neighborhood Associations v. United States Postal Service, 516 F. 2d 378, 388 (CA2 1975), but out of a perception of risk. (Op. cit., p. 4375)

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In most cases psychological impacts will be higher-order (more indirect, further down the causal chain) than will be the economic or even the sociological impacts. One consequence is that change proponents and/or decision makers simply may have a much harder time seeing the connection between the proposed project and the alleged psychological outcomes. An example which has been suggested is the case of an

energy development, resulting in an influx of workers earning high wages, resulting in housing shortages and generally higher cost of living, resulting in financial problems and/or dislocations of previous tenants, resulting in extreme stress and perhaps occasional tragedy:

If you told the engineers involved they would say, "That's got nothing to do with our putting up a power station. If a poor old lady has to go into a nursing home because she can't afford to live in her own house and dies six months later, how can you say that's got anything to do with our power station?" Because it's so far down the causal chain, it's going to take some very careful documentation and research to show strongly enough that this is a factor. (Wolf & Peterson, 1977, p. 6)

Directly related to this concern is the basic fact that higher-order impacts cannot be as accurately predicted as more primary impacts because of the added effects of the additional mediating variables which will enter into the causal chain. From the pure-science perspective, this impairment of predictive ability represents the darkest cloud over the potential role of psychology in SIA.

However, from a political perspective, there may be an even more serious problem. Decision makers can readily argue that such higher-order impacts are less relevant because they are less actionable--that is, mitigation and management strategies are more likely to be carried out at the level of housing, land use, and population distribution than at the level of social process or individual stress. Furthermore, psychopathology and social deviance are a consequence of physical or economic problems which have already been socially defined as undesirable, no matter what their effects on crime, mental health, or quality

of life scores. Christenfeld (1979) argues that social problems such as poverty and intolerance may be battled whether or not it is ever established that they are causally associated with mental health problems. Similarly, decision makers and planners do not require precise knowledge of psychological impacts to be inspired to remedy at least the more obvious of structural problems such as housing shortages, lack of resident participation in decision making or economic benefits, high levels of noise, or the submerging of an established population in a tidal wave of newcomers with different backgrounds.

This raises the very basic question of why decision makers would or should be interested in assessment of any higher-order psychological variable. The tentative answer has already been put forth--because psychological impact information can imbue socioeconomic consequences with meaning and significance--with acknowledgement that this answer will not always be acceptable. A fuller elaboration of psychology's potential to provide an answer represents the purpose of Chapter VI. However, prior to beginning that chapter, the final section of this Chapter V will more fully explore the question, since it indeed forms one of the most important parameters for psychology in SIA.

"SO WHAT?" AND THE "BOTTOM LINE": THE UTILITY QUESTION

As EIS's and their appendices steadily increase in length to 1,000 or 2,000 pages, the preparers must be increasingly able to answer the irritated question, "So what? Why are you telling me this? What's the

bottom line?" For a psychological example, studies of man-environment interaction as the actual unit of analysis (e.g., behavior settings, psychosocial climates) may be intellectually fascinating but are also highly likely to elicit a reaction of "So what? Places don't vote, and places don't get hurt or happy. People do." Only if the connection can be clearly drawn is the decision maker likely to care about such topics.

This is essentially a concern over the utility of impact information for the concerned public in the short term and for the decision maker in the final sense. There are a number of variants of the decision maker's "So what?" question of which prospective psychological contributors to SIA should be aware and which they might profitably ponder.

At the broadest level, the "So what?" question is indicative of the lack of established criteria for decision makers to evaluate whether changes not directly and discernibly related to policy goals should be considered "good" or "bad." What is the bottom-line conclusion to be drawn from a prediction that lifestyles will change, or that neighborhood character will be affected, or even that some groups will benefit economically while others will lose? Why should such information have any bearing on decisions about the proposed project? Such questions can certainly be answered in a number of ways, but few of the potential answers relate to the constitutional or legal mandates of government decision makers--e.g., balancing the budget, promoting economic development, or providing the services which the proposed projects may further.

This uncertainty on the part of decision makers is reflected in the lack of legal criteria for selecting "important" or "significant" social variables for study in SIA's:

Are impacts significant if they lead to any changes in indigenous persons' preceptions of their communities? Are they significant only when they lead to higher rates of social disorganization and family dissolution? Are factors that increase the long-term economic viability of the community but negatively affect various groups within the community negative or positive? (Murdock & Leistritz, 1979, p. 353)

In the classic or "linear" model of SIA developed by the U.S. Army Corps of Engineers, such questions are answered in the "Evaluation" stage (see Figure 2 in Chapter III), which involves taking "value-free" findings to the public for assignment of value weightings by residents themselves. However, it is questionable whether the procedure is actually scientific and "value-free" before the Evaluation stage, since values enter into the variable selection process (Wolf, 1974b). Furthermore, decision makers may not be content with this method of evaluation because they know that public perceptions may change, or because they may doubt that the public input is truly representative, or because they may feel that evaluation is ultimately their responsibility as decision makers.

One possible solution to the general confusion over importance of variables is to rely on the scoping process--those variables or impact categories determined to be significant in that particular case or situation during the Scoping stage are considered significant, ipso facto.

If psychological variables emerge as important concerns in this process, then they are important by definition. While reliance on scoping is probably the best way to reduce confusion over the importance of social variables analyzed in EIS's, it does not remove that confusion completely. First, the public and/or government decision makers as a matter of practicality contribute to variable selection during scoping, but they do not formally ratify the final list of variables; thus, there is still the chance that some selected variables may be regarded as having little utility. Second, even if all parties could somehow be brought to consensus as to what variables should be addressed, it is unlikely they would agree on the relative weights to be placed on each. Third, information which emerges during the impact assessment process can cloud the issue further--e.g., discovery that some effect previously thought minor will in fact be major, or increasing citizen preoccupation with some particular subject.

Thus, there is no easy answer to the "So what?" question at its broadest level. Furthermore, there are additional and more specific variants of the "So what?" question that may be important for psychological SIA.

One variant of particular import to psychology involves the ambivalence of the layman's conceptions about stress and adaptation. Told that rapid or large-scale change may produce various forms of social or psychological disruption, the response may be, "So what? Doesn't any form of change produce stress? People adapt, don't they? And stress is

needed for growth and development, isn't it?" Portions of the sociological SIA literature can encourage this line of thinking:

...we can argue that since frequent dislocation is a normal part of Americans' experience, adjustive strain can be absorbed on the social psychological level. For example, there is a concern that some people (perhaps many) will be displaced or have adverse effects on their lives because of improper social impact assessment, that they will not be able to recover. But, humans are, on the whole, remarkably resilient creatures. We have managed to adjust to extreme climatological and sociological conditions with a rapidly increasing population. We are relatively reasonable creatures and when we know that we are being taken into account, even in unpleasant situations, we are more likely to accommodate rather dramatic forced change. (Vlachos, Buckley, Filstead, Jacobs, Maruymana, Peterson, & Willeke, 1975, p. 39)

The psychological literature itself backs up these conceptions in many ways--e.g., the life-changes studies which indicate that the simple degree, and not the desirability, of life change is the key determinant of both physical and mental stress reactions (Holmes & Rahe, 1967; Rahe, 1969; B. S. Dohrenwend, 1973; Holmes & Masuda, 1974).¹³ In line with this hypothesis, Thoits & Hannan (1979) found that low-income persons going on an income-maintenance program exhibited at least a short-term increase in psychophysiological distress after this change and the associated changes in life style. These are examples of psychologists putting forth the counter-intuitive argument that positive events can also produce stress. Also, psychologists themselves argue that negative social or personal conditions can indeed produce positive change (c.f., B. S. Dohrenwend, 1978; Toch, 1979), thereby strengthening the layman's assertion that a touch of adversity is good for the individual or community character.

However, the psychological research suggests that positive outcomes result only when certain conditions exist and/or only for certain types of people. Herein probably lies one of psychologists' best replies to this type of "So what?" question--that differential vulnerability to stress can to some extent be predicted and to some extent mitigated.

There are some other possible replies, but they have problems. Pointing out the dollar costs of anticipated pathology (mental health services, crimefighting, welfare, etc.) might be a useful service to decision makers in many cases and should be seriously considered to the extent that they can be predicted. But if the predicted figures are not substantial and/or cannot be invested with a high degree of reliability (as would often be the case), they may be easily be discounted as being both uncertain and as being "the price of progress."

Psychologists could argue that stress will be more severe in the general population than is currently anticipated by the decision makers and the general public, but this assertion involves the need for some very persuasive evidence and could lead to a feeling that such psychologists are painting an exaggerated, self-serving picture of doom. Some of the most extreme American examples of social problems from sudden change in recent times are to be found in western energy boomtowns. In reviewing the actual survey evidence about residents' subjective expectations of and eventual responses to these social problems, Murdock & Leistritz (1979) found that residents often correctly anticipated the types (if not always the degree) of social problems associated with

rapid development, and that their satisfaction with boomtown life in fact turned out to be only slightly less than they expected it to be. Thus, social scientists walk on shakey ground when issuing kneejerk, blanket pronouncements of disaster, even when these may represent their honest assessments. A more politically palatable, and probably more responsible and defensible, approach for psychologists lies in the identification of vulnerable groups.

Another sort of "So what?" question which psychologists (or other social scientists, for that matter) may often expect to encounter was touched upon earlier in this chapter. This involves resisting the idea that psychological impact evidence literature from other locales will apply to the local situation: "All right, so you've presented a lot of evidence about things that happened in New York, Italy, China, and Brazil. So what? What does that tell us about what will happen in Our Town?"

Loftus & Monahan (1980) point out that this is an entirely legitimate question, in both the legal and scientific realms. The only valid reply is that the research findings have been replicated in such a wide variety of settings that they have proven their universal applicability. Such a reply can be quite convincing if this is indeed the case. Therein lies a challenge for the academic research community, which sometimes has a professional aversion to bothering with replications. And, too often, such replications as are carried out are exact replications with virtually identical subjects (e.g., the omnipresent

college sophomore). To represent a social science finding of practical utility, research results must be robust across a wide variety of settings and peoples.

Loftus & Monahan also suggest that case study research findings will have greater generalizability to other situations if predicted in advance on the basis of a coherent theory. While perhaps true, such an argument is likely to carry greater weight with other social scientists than with political decision makers. Psychologists entering the field of SIA should be prepared to admit that certain types of case studies are in short supply and cannot be considered valid examples for generalizations to other locales.

Yet another variant of the "So what?" question relates both to the authority lodged in decision makers and also to the relative importance of predicted psychological impacts when compared to other types of problems which are clearly within the decision maker's purview. It might be paraphrased this way by a decision maker: "Listen, you come in here and tell me people's attitudes are going to be affected, their self-images will falter, they'll be stressed, that sort of thing. I'm not sure those problems have anything to do with my job. I do know that I'm responsible for making sure this community has adequate police and fire protection, sewer service, and housing, and I'm having a hell of a time getting those tasks accomplished as it is. I'm more concerned with how this proposed new development is going to impact our sewer system than with how it's going to affect answers to some questionnaire about

quality of life. Anyway, I know my neighbors think a backed-up sewer would definitely interfere with their quality of life."

Again turning to the energy boomtown examples, consider the purely nonpsychological problems facing small towns as they try to plan for the type of major development which would require an EIS:

If they're unprepared and crash development of energy ensues, such towns face mini-civic disasters of the type that afflicted Rock Springs, Wyoming, after it received a big power plant: overflowing schools, overtaxed sewer systems, high rates of crime, child abuse, drug use and divorce, and the aesthetic assault of jerry-built aluminum trailer and mobile home settlements.

Conversely, towns that place themselves in debt anticipating energy development take a big risk. Energy projects can be (and often are) delayed. Or they shift locale to the next county, so that the town never gets its investments returned in property taxes. (Pearce, 1980, p. C-3)

Faced with dilemmas such as this, it is very easy indeed for local decision makers to feel that their hands are full with the tangible problems which they know to be their (somewhat awesome) responsibility and that the intangible possible social and psychological problems merit a "So what?" by comparison.

Cortese (1980) replies from a sociological perspective by arguing that local government decision makers err in attributing the cause of crime, child abuse, mental illness, etc. to overtaxed government services and infrastructure problems. He feels that changes in social structure through population diversification (i.e., newcomer-oldtimer conflicts) produce more difficulty than does simple population growth.

If this argument can be supported by more research evidence than exists at the present time, it may provide both sociologists and psychologists with the most effective reply to the last of the foregoing "So what?" questions. In the meantime, this particular concern over utility may carry a great deal of weight, and general statements about the ecological interrelatedness of human and infrastructural systems are unlikely to convince harrassed decision makers that additional impact information falling under the psychological rubric will provide useful approaches for solving the "truly serious" problems facing them.

These practical considerations of public officials are paralleled by a philosophical position adopted by some scholars in the social indicators and/or SIA fields. This position essentially is that public policy should concern itself with providing citizens only with equal opportunities to (or meeting "needs" for attaining) individual well-being and happiness, rather than assessing the actual current or projected levels of life satisfaction. McCall (1975) has taken such a position within the social indicators and quality of life literature, while Tester (1980) proposes that SIA concern itself more with "human needs as distinct from human values" (p. 15). Both essentially argue that government should meet basic minimum requirements for wellbeing rather than attempt to assure happiness or satisfaction itself. Such minimum requirements are usually assumed to be economic or material in nature, obviating the need for psychological or other "intangible" types of social scientific research.

While the effect of this argument is to forego analysis of psychological variables in quality of life and/or SIA studies, the underlying rationale of the argument is actually based on certain assumptions about human psychology. For example, the types of "needs" cited by McCall are simply borrowed from Maslow (1954, 1970) and his concept of a "hierarchy" of needs or motives. For McCall, the salient point in Maslow is that satisfaction of one need or goal will simply activate another one, so that general societal satisfaction or contentment is an impossible goal for policy makers to attain.

Man is a wanting animal and rarely reaches a state of complete satisfaction except for a short time. As one desire is satisfied, another pops up to take its place. When this is satisfied, still another comes into the foreground, etc. It is characteristic of the human being throughout his whole life that he is practically always desiring something. (Maslow, 1970, p. 24)

On the other hand, the Maslowian perspective as advanced by McCall implies that prerequisites for "basic" human needs can indeed be identified. In fact, however, Maslow was positing a "theory of human motivation"--and not reporting conclusive empirical research results--when he suggested that "physiological" and "safety" needs must usually be met before the "higher-order" needs (belongingness and love; esteem; self-actualization) emerge. Maslow himself stated that this hierarchy was not a rigid law of nature, but a theoretical general pattern which could be violated in many individual cases.

The idea of a natural hierarchical ordering of human priorities is one which has proved to hold great intuitive appeal for policy makers,

economists, and corporate managers. The name of Abraham Maslow is probably better known to such individuals than the name of any other psychologist. Ironically, though, Maslow's concepts have generated little research among the types of psychologists likely to be interested in the problems associated with SIA. Maslow's theories have been influential in humanistic clinical psychology (which usually focuses on "self-actualization," a level of need which is far beyond the mandate of government in most communities) and in organizational psychology (which focuses upon management implications for motivating employees). But these motivational theories have failed to motivate social psychologists or community psychologists to explore the implications for social structure and functioning. Rather, the major psychological studies of human happiness, satisfaction, and wellbeing (Bradburn, 1969; Andrews & Withey, 1976; Campbell, Converse, & Rodgers, 1976; Campbell, 1981) have examined subjective and objective correlates of global wellbeing but have failed to include the possibility of hierarchical relationships in research design or data analysis. With the exception of one or two rather obscure articles (such as Yang, 1980, in a Chinese journal), there has also been little even in a purely theoretical vein on the possible application of Maslow to quality of life concepts.

This omission is an unfortunate one for the potential linkage between psychology and SIA. For a policy maker, there is a great deal of common-sense face validity to the proposition that one must meet economic and physical concerns before worrying about vague social or

psychological considerations. This can lead to the total omission of all concern with such "intangible" matters. Such omissions might be minimized if solid psychological research were available on these two interrelated questions:

- (1) Are human needs in fact hierarchical in the way suggested by Maslow--i.e., do economic needs take priority?
- (2) If so, at what point are economic needs satisfied, such that government should properly turn its attention to "higher-order" needs?

Some prominent scholars have suggested the more general concept of "need fulfillment"--without specification of any hierarchical aspect--as a core approach to defining quality of life or social wellbeing. For example, Stokols (1979) posits that stress is the result of environmental incongruence with individual needs or goals. Milbrath (1982) suggests a general model for quality of life which is based in large part on the needs and goals which accompany individual or community lifestyles. On a more empirical note, Murrell and associates (Murrell & Schulte, 1980; Murrell, 1983; Murrell, Schulte, Hutchins, & Brockway, 1983) have approached quality of life through community needs assessment surveys about the availability and adequacy of desired public services. (Later in this dissertation, it will be suggested that somewhat broader surveys on community goals and needs represent one of the most promising immediate ways to introduce more individual-level data into SIA. However, the focus of such surveys is not upon "psychological variables" except in the broadest sense of being attitudinal data.)

While the idea of "fulfilling needs" would seem to have some chance of assuaging the "So what?" question, it does not by itself address the issue of which needs are more important--particularly in the typical case where a project is viewed as meeting economic needs at the expense of less tangible social or psychological needs. If basic research psychologists were to revive the hierarchical perspective, even if just to test its validity through objective studies, the results might ultimately benefit the process of impact assessment. In the meantime, however, psychologists entering SIA must assume the more conventional posture of specifying psychological variables which might be impacted by purposive community change. And the variables specified must have some chance of satisfying the sort of "So what?" questions which have been raised. A major purpose of the following chapter is to suggest what some of the most likely psychological variables might be.

VI. POTENTIAL CONTRIBUTIONS OF PSYCHOLOGICAL VARIABLES AS "BOTTOM LINES" IN PREDICTIVE SOCIAL IMPACT ASSESSMENT

This chapter will examine the potential lines of connection between "classical" academic psychology (i.e., bodies of scholarly research knowledge) and "classical" (i.e., predictive) SIA, particularly insofar as psychology can provide dependent variables or "bottom lines" for assessment. The following chapter will look at some additional roles which psychological knowledge and/or psychologists might take in less classical approaches to predictive SIA or in those aspects of SIA which are not primarily concerned with scientific forecasts. Both chapters include consideration of the differing potential roles which psychologists can play as practitioners or as supporting researchers. It will be suggested that the supporting research role is often the more useful at this stage, although the nature of that research and its published form must be adjusted if it is to be of true utility as policy research.

It has already been suggested that one of psychology's greatest challenges in the field of SIA is justifying the utility of its subject matter and findings to decision makers who already have difficulty in weighing the meaning of more tangible impacts. While several broad answers to the "So what?" response have been proposed--the addition of human meaning to impact assessment; the identification of high-risk, psychologically vulnerable groups--the truth is that no one justification will always suffice. The differing characteristics of each proposed project, each potential recipient community, and, of course, each

individual person asking or answering the "So what?" question will determine the suitability of any given response.

However, the major purpose of this chapter is to identify the most likely ways that psychological knowledge can, sometimes, contribute to predictive social impact assessment. The greater part of the chapter will consider psychological variables as "bottom lines," or end variables with presumed intrinsic value in and of themselves. This discussion will come in three sections: (1) a conceptual schema which attempts to relate the various elements of psychology as the SIA "bottom line"; (2) an overview of the most likely "bottom-line" psychological variables; (3) an overview of psychological research relating to key project characteristics which can produce psychological effects; and (4) an illustrative in-depth discussion of psychological research related to several forms of economic/employment project characteristics.

CONCEPTUAL SCHEMA: ELEMENTS OF PSYCHOLOGY AS THE "BOTTOM LINE"

If psychological phenomena such as mental health or subjective wellbeing are to be advanced as legitimate topics for extensive impact assessment, four dimensions must be taken into account: (1) the psychological variables themselves; (2) the characteristics of the proposed project assumed to affect these variables; (3) the type of ecological relationship involved in the association between project characteristics and psychological impact, and (4) the methods by which psychological knowledge can be tapped for inclusion in SIA. These represent the four topics of this introductory chapter section.

Key Psychological Variables

Which psychological variables are the most likely to be accepted by the public and its decision makers as intrinsically important "bottom-line" concerns? Judgments rather than proofs are required to answer such a question, and this discussion is intended as a statement and elaboration of the author's judgment.

At the risk of reverting to the "laundry list" syndrome, Table 4 represents an attempt to categorize some of the major variables which are most usefully addressed in typical socioeconomic assessments. The different "levels" correspond to the perspectives usually assumed by different types of social scientists. That is, the "cultural" level variables are most often of concern to anthropologists; the "economic" level, to political scientists and economists; the "sociological" level, to sociologists; the "social psychological" level, to both sociological and psychological social psychologists; and the "intrapsychic" level, to community, clinical, and/or environmental psychologists.

To date, social impact assessment has concentrated primarily on variables at the economic level, secondarily on variables at the sociological level, and tertiarily (if at all) on variables at the social psychological level. For reasons discussed in Part One of this dissertation, there has been little attention to the "cultural" level in most impact assessments. But--with the very occasional exception of (mostly speculative or anecdotal) discussion of mental health impacts in post-facto case studies--the "intrapsychic" level is perhaps most neglected.

Table 4

Selected Key Socioeconomic Variables at Various Levels of Study

"CULTURAL" LEVEL (National or Macroregional)

- Type of economy (subsistence vs. wage)
- Food-gathering mechanisms
- Theology, spiritual values
- Broad patterns of authority and government
- Group vs. individual orientations
- Other unconscious value orientations
- Socialization practices and patterns

"ECONOMIC" LEVEL (Microregional)

- Industrial bases (= labor force composition)
- Availability of capital
- Distribution of wealth and resources
- Government decision-making structures
- Population composition

"SOCIOLOGICAL" LEVEL (Community)

- Social segmentation, structure
- Informal social activities, organization
- Intergroup dynamics
- Family formation, cohesion

"SOCIAL PSYCHOLOGICAL" LEVEL (Group)

- Lifestyles, conscious values
- Person-group interactions and dynamics
- Psychosocial climate; character of place
- Attitudes toward, relationship with land, place

"INTRAPSYCHIC" LEVEL (Individual)

- Life changes, individual events
- Stress/mental health
- Satisfaction/happiness
- Environmental cognitions and values; aesthetics

The psychological variables listed in Table 4 under the "intra-
psychic" and "social psychological" levels are those nominated for designation as the variables most likely to be accepted as having intrinsic "bottom line" value for study in SIA's. Other variables might of course be suggested for either level (and perhaps for other levels in the table as well), but these are the psychological topics which the present author believes are most likely to make the sort of contribution to SIA which will be considered by decision makers and/or the public to be of some value. Each group of variables--social psychological and intrapsychic--will be further discussed in its own section of this chapter following presentation of the rest of the conceptual schema.

Project Characteristics with Implications for Psychological Impact

The foregoing subsection presented certain types of psychological variables which, arguably, would frequently be considered to have intrinsic value in social impact decision making. But it cannot be realistically assumed that all of these variables would always be relevant to any and all proposed projects. Rather, certain project characteristics would present cues that psychological impacts are more likely to be fruitful areas of study in an SIA. This subsection posits certain characteristics which are felt to be most likely to have strong implications for psychological impact assessment, and the following subsection relates particular project characteristics to the types of psychological "bottom lines" which are most often applicable.

Table 5

Proposal Characteristics with Strong Psychological Implications

(A. Project Characteristics)

1. Economic Growth or Change
 - shifts in income levels, distribution
 - shifts in socioeconomic status
 - individual employment/unemployment
 - global economic shifts
2. Induced Population Growth
 - rate
 - ultimate level
 - composition
 - density ("crowding")
3. Landscape/Urbscape Changes
 - urbanization of wilderness or rural land
 - new types of structures or landscaping
 - accessibility/barrier effects
4. Special Building Design Characteristics
5. Displacement/Relocation
6. Noise
7. Social or Physical Risk Factor

(B. Process Characteristics)

1. Change Proponent's Role and Status in Community
2. Extent of Publicity/Notification
3. Efforts to Involve Public
4. Past/Present Issues with Implications for Perceptions of This Project

Table 5 presents a suggested list of proposal characteristics with strong implications for psychological impact assessment. The table breaks down the characteristics into two types: project characteristics (what the project is) and process characteristics (how the project is planned and introduced into the community). Because this chapter focuses on classical "linear" SIA, the emphasis in the later detailed discussion of Table 5 variables will be on the project characteristics, since these would represent the independent variables for a social scientist making SIA forecasts. In real life, however, process characteristics may have equal or greater bearing on such psychological impacts as presence or absence of alienation from a sense that the project has been "forced down the throat" of an unwilling community.

Ecological Relationships Between Project Characteristics and Impacts

Since the seminal writings of Kurt Lewin (1936), psychologists have generally paid at least lip service to the concept that behavioral science must study the person in the context of the environment rather than as an isolated phenomenon. Usually, however, psychologists have focused on the effects of environmental factors upon personal response than upon Lewin's suggested conception of the person-environment interaction as an appropriate unit of study in and of itself. Some of the occasional important exceptions to this have included Kelly's (1966, 1968; French, Rodgers, & Cobb, 1974) work on "person-environment fit" as an approach to studying stress; Barker's (1968) concept of "behavior

environmental psychology; and Moos's (1974) elaboration of the "psychosocial climate" idea for studying behavior within institutional settings.

Given the embedding of SIA in the environmental impact statement framework, this idea of person-environment (P-E) interaction seems to have a natural connection with psychological impact assessment. In truth, that connection is primarily an intellectual one, with few if any implications for the actual inculcation of psychological materials into real-life EIS's. However, some discussion of the ecological P-E links between project characteristics and psychological impact variables may serve the purpose of helping to point out to theoretically-oriented psychologists just what the linkages may be between academic bodies of psychological knowledge and the sorts of project characteristics which are relevant to SIA.

Table 6 posits four different "research traditions" in psychology, differentiated by (1) whether the usual person-environment interactions of interest truly involve a P-E interaction as a unit in and of itself, (as opposed to the situation where environment determines behavior), and, (2) if so, whether the P-E unit is usually of interest as the dependent or the independent variable. Independent and dependent variables are indicated by the arrow--e.g., "E → P" denotes the research tradition in which environmental factors (E) are studied as independent variables which affect personal behavioral response (P).

Table 6

Person-Environment Research Traditions, Characteristics, and Impacts

PSYCHOLOGICAL RESEARCH TRADITIONS: PERSON-ENVT. INTERACTIONS	RELEVANT PROJECT CHARACTERISTICS	RELEVANT PSYCHOLOGICAL IMPACT VARIABLES	
		Intrapsychic Level	Social Psych. Level
$E_G \rightarrow P$	Population (size, composition) Economic Change Displacement	Life events Stress Satisfaction	Lifestyles Person-Group Dynamics
$E_I \rightarrow P$	Noise Population (density) Building Design	Stress Satisfaction Environmental Cognitions	Psychosocial Climate Attitudes/ Relationship re Place (Territori- ality)
$(P-E_G) \rightarrow P$	Risk Factors (Direct impacts of various types affecting "person- environment <u>fit</u> " concept)	Life events Stress Satisfaction	Person-Group Dynamics
$E_I \rightarrow (P-E_I)$	Landscape/Urbscape Changes	Environmental Cognitions, Values	Attitudes/ Relationship re Land Psychosocial Climate ("Neighbor- hood Character")

NOTES: P = person; E_G = global environment; E_I = immediate environment;
 (P-E) = person-environment interaction as a unit of study.

A third distinction in Table 6 is based on whether the environment is approached in the usual research paradigms as "global environment" (E_G) or "immediate environment" (E_I). This distinction is implicit in psychological theories and approaches, although it is rarely discussed explicitly. "Global environment" is basically related to Lewin's idea of a life "field" encompassing all of an individual's surroundings and experiences, present and past. These are the sorts of "environmental" considerations usually studied by mental health professionals, and they are usually connected with "quality of life" responses (stress, satisfaction, life changes). "Immediate environment" refers to the particular physical/social setting in which the individual finds him/herself at any given moment. These are the sorts of "environmental" considerations most often studied by environmental psychologists in their research on environmental cognitions. The categories are, of course, intended to be illustrative and suggestive, not rigid "truths."

Methods for Using Scholarly Knowledge in Psychological SIA

There are essentially just two ways to utilize scholarly knowledge about psychological outcomes in predictive SIA: literature citations and emulations of research techniques in the field setting.

Because sociologists have been much more involved in social impact analysis case studies, sociological literature citations can be used as historical evidence to support forecasts in other but similar communities. To a limited extent, this is also possible for that relatively small amount of psychological literature deriving from empirical

small amount of psychological literature deriving from empirical observation rather than laboratory experiments. However, the bulk of psychological literature is more conducive to forecasts based on theory. As has been noted at several earlier points in this dissertation, social science theory has important weaknesses as a base for SIA-type forecasts. Any given theory supported by one body of literature is almost always challenged by another body of research literature. Theory which strays too far from common sense or convention wisdom courts dismissal by EIS decision makers; theory which wanders too close to common sense is redundant and unenlightening. In psychology, theories are usually limited to micro-social situations and may not apply to the macro-social changes which characterize the SIA situation.

Nevertheless, judicious application of psychological references must be the major channel for applying current psychological research knowledge to SIA. Discussion of such references should clearly and comprehensibly state the basic theoretical principles which can be defended by the research literature and should probably also contain a certain amount of examples applicable to the situation at hand, since it has been shown that acceptance of intellectual proposition is greatly strengthened by the inclusion of anecdotal material (Anderson, 1983). As will be discussed further in the final chapter of the dissertation, preparation of reference materials for SIA practitioners represents one of the most important scholarly support activities which can be undertaken by psychologists who wish to be involved in impact assessment in a nonpracticing mode.

The second way that psychological knowledge can be of use to SIA is in the provision of research methodologies. This might mean psychometric scales or other instruments for measuring variables of interest, or else research designs for analyzing local data to make forecasts based on trends or historical associations with other variables. For example, the research to be discussed later in this chapter on the relationship between global economic shifts and quality of life variables could simply be used as "evidence" of the relationship to be expected, or it could be viewed as a guideline for replication in other communities.

Unfortunately, budgetary constraints often limit the amount of primary research and/or expensive secondary computerized analysis of existing data which can be carried out in an SIA. Surveys, usually with small samples, and key informant discussions represent the major primary research methodologies available to most SIA practitioners. Thus, simple scales such as the Langner-22 inventory or the Social Readjustment Rating Scale for life events represent the most likely psychological contribution to SIA. The compilation of psychological reference sources for SIA practitioners would hopefully include a catalogue of these for the various relevant topics.

"BOTTOM-LINE" PSYCHOLOGICAL VARIABLES

The purpose of this section of the chapter is to provide some initial discussion of the different psychological topics listed in

Table 4 as likely "bottom lines" for psychological SIA. These variables were suggested to fall more or less into two categories: social psychological and intrapsychic.

Social Psychological Variables

The key social psychological variables suggested in Table 4 include (1) lifestyles and conscious values; (2) person-group interactions and dynamics; (3) psychosocial climate and character of place; and (4) attachment to land and/or territoriality.

"Lifestyle," since the 1960's, has become a popular if fuzzy term for signifying the particular activities, modes, and/or conscious values which individuals or groups regard as distinguishing them (usually in a positive way) from others. Its very popularity forms the chief argument for regarding it as a frequently acceptable "bottom line." An assertion that a proposed project will erode or strengthen cherished lifestyles is one of the most powerful conclusions that can be drawn about it. It may of course also be one of the most overly general and imprecise, since "lifestyle" can mean vastly different things to different people. In fact, "lifestyle" impacts have formed one of the most frequently discussed social topics in environmental impact statements across the nation, but the content of EIS "lifestyle" sections can vary greatly. In some EIS's, the term is simply used to refer to basic economic activities--e.g., a shift from agriculture to manufacturing as a

community's primary economic base, or perhaps some interference with foodgathering activities such as hunting or fishing (Griffith, 1978a). In others, it may refer broadly to unspecified concomitants of degree of urbanization--e.g., population increases leading to a "more urban lifestyle." Such useages suggest but do not specify. They imply that changes at the economic level have important social psychological consequences, but they do not attempt to identify the nature of those consequences.

"Lifestyle" suggests a number of dimensions, including daily activities, recreational preferences, values, and communication modes (Banz, 1976). One of the most obvious dimensions, explicit in the term itself, is the concept of "style"--whether life is fast-paced or slow, simple or complex, individualistic or group-oriented, etc. This is perhaps the dimension most often omitted from current EIS discussions and one which psychologists, with their history of personality assessment techniques, can help develop. However, it must be noted that psychologists have been little involved in the analysis of lifestyles, with the distant exceptions of environmental psychologists entranced with "ecologically responsible lifestyles" (Coffin & Lipsey, 1981) and of marketing researchers who have used A-I-O (Attitude-Interest-Opinion) scales to segment consumers into different psychographic groups (c.f., Wells, 1974; Tull & Hawkins, 1976; Cosmas, 1982).

Perhaps the most extensive work on lifestyles has been conducted through the Stanford Research Institute's "Values and Lifestyles" (VALS)

Program, which has been primarily used for marketing research for private clients. Both demographic characteristics and value orientations are used to cluster Americans into nine basic lifestyles, labelled with such descriptive monickers as "belongers," "survivors," "experientials," etc. Much of this work has been proprietary in nature, but recent publication of a book detailing social science applications of the VALS schema (Mitchell, 1983) may help to renew and stimulate psychological interest in the quantitative study of lifestyle.

Psychological research into the nature and structure of conscious values¹⁴ presumably associated with lifestyles has been limited to a handful of social psychologists, although several of these have produced major works on the topic (e.g., Smith, 1969; Rokeach, 1973, 1979). The psychological work on values suffers--at least from the SIA perspective--from its typical lack of relationship with the more objective facets of lifestyle, such as economic activities or physical setting. "Lifestyle" is a holistic concept, suggesting the integration of numerous objective and subjective factors at both the individual and community levels (Milbrath, 1982). Social and community psychologists are in a position to help develop the sorts of psychographic techniques appropriate to policy research, but much basic methodological work remains to be done by supporting researchers before SIA practitioners have anything more useful than some pencil-and-paper value scales to apply.

Person-Group Relationships: The second social psychological variable nominated in Table 4 as being of major potential value for SIA is the general topic of "person-group interactions and dynamics." This differs from the sociological level concept of "intergroup dynamics," which would involve conflict or amiable relations among different ethnic groups, newcomers vs. oldtimers, tourists vs. residents, etc. This latter concept--social strife--has strong face value as a "bottom line" concern. By contrast, person-group interaction means the degree to which individuals are involved with other people and/or feel a sense of belongingness and shared norms: i.e., extent of alienation and/or anomie. The social and psychological isolation of individuals within the larger community is a general topic which seems absurd to consider in EIS's for some types of projects, such as schools or sanitary landfills, but highly appropriate in EIS's for a more limited class of major projects, especially those which would result in such a major expansion of population size and type that many people could conceivably experience a sense of social estrangement.

The major theoretical perspectives on both "anomia" (in persons, or "anomie" when applied to society--i.e., a lack of shared norms or beliefs which integrate individuals into a common society) and "alienation" (the facet of anomia which describes the individual's subjective feeling of isolation from society) have been fashioned by sociologists, particularly Durkheim (1897) and Wirth (1938). More recently, Srole (1956) postulated five components of anomia:

unattainability of personal life goals; unpredictability of the general social condition; indifference of superiors and authorities; undependability of peers; and general inhospitality of the overall life situation. For alienation, Seeman (1972) has suggested six forms (with illustrative behavioral consequences): (1) powerlessness (political inactivity); (2) meaninglessness (wildcat strikes); (3) normlessness (mass movements); (4) value isolation, alternately referred to as cultural estrangement (ethnic prejudice); (5) self-estrangement (mental disorder); and (6) social disorder (school absenteeism; low educational or information level; suicide).

Although alienation and anomie have perhaps been more extensively studied by sociologists, psychologists have also been greatly interested in the tendency of people to withdraw in large cities in response to crowding (Griffitt, 1977), to urban design factors (Mayo, 1977), to the effect of sheer population (McCarthy & Saegert, 1978), and subsequent social differentiation found in cities (Sadalla, 1978). The mental health implications of social isolation vs. integration have also been a subject of psychological analysis (Wolf & Goodell, 1976; Lynch, 1977). Toch (1979) has emphasized the positive opportunities for social change inherent in the strong emotional feelings which characterize persons whose persisting sense of alienation requires "bottling up" of affect.

While this research tradition represents a good jumping-off point for psychological SIA, there are also some limits on its applicability. Methodologically, there is the familiar problem in applying much of

psychological research to SIA--i.e., most of the studies deal with long-standing, prevailing conditions, not effects of change. In the public decision-making process, fears about depersonalization and loss of community feeling are usually most acute in small areas facing suddenly expanded population. Unfortunately, most of the available psychological literature concentrates on huge metropolitan areas, not on small towns which suddenly turn into somewhat larger small towns. Thus, in the locales in which social psychological input on depersonalization would have the most utility for SIA, the literature may have the least validity. Disappointing as this may be for the potential psychological SIA practitioner, it points to an important need for those who are interested in providing supporting research.

Psychosocial Climate/Character: The third key social psychological variable suggested in Table 4 is "psychosocial climate; character of place." At this point, the conceptual thrust tilts somewhat away from conventional social psychology (individual in social group context) toward environmental psychology (individual in socio-physical setting), although at a broad ecological level the distinction may be considered an artificial one, since the basic concept is the same: the individual's perceptions of and interactions with the external environment.

While the idea that environments can have their own "personalities" dates back to the "environmental-press" concept of Henry Murray (1938), the most vigorous recent work has involved two separate lines of thought

pioneered by Roger Barker (1968, 1978; Barker & Schoggen, 1973) and by Rudolf Moos (1974, 1976; Wandersman & Moos, 1981). Barker's conception of "behavior settings" emphasizes an essentially objective approach to measuring person-environment interactions as units of analysis, while Moos's work on "psychosocial climate" contains more focus on environmental perceptions and response.

Behavior setting theory represents a perspective unique in psychology, one which has generated an entirely separate and elaborate set of theoretical constructs. For Barker, most behavior settings (environments in which behavior occurs) have "programs" (social and environmental cues) which govern the tempo and intensity of human "behavior mechanisms." These can be categorized into four domains: cognitive, affective, psychomotor, and gross motor. Behavior settings may also be rated on the extent of "participation" among the setting's occupants.

The foregoing partial lexicon of terminology is not intended to provide a true explanation of the theory, because this would require a much more substantial amount of space. Rather, it is intended to illustrate the distinctiveness and idiosyncrasies of the concepts. Perhaps because Barker's work is so different, it has produced bewilderment among a majority of social scientists and intense interest among a few. Disciples tend to fall into two categories. Those interested in using behavior settings as a form of objective social indicator usually emphasize measurement of the numbers and types of business or economic "settings" in a community; this approach is best exemplified by Fox &

Ghosh (1981), who call for an exhaustive catalogue of spatial and temporal dimensions of community business activities as part of a social accounting system. However, psychologists have generally fallen into the second category, consisting of researchers into the effects of "overmanning" or "undermanning" in behavior settings (Bechtel, 1974; Schoggen, 1978; Wicker, 1979)--i.e., effects of having more or fewer people in a setting than the optimum number of roles provided by the "program." While it has been suggested that undermanning leads to greater social participation and hence to presumed better psychological health, it has also been hypothesized that it could produce more stress and exhaustion; in fact, despite the continued debate, neither Barker's theory nor the available research evidence specifically support either position (Perkins, 1982).

From the SIA perspective, behavior setting theory suffers from several liabilities. Practically speaking, the concepts are currently just too alien and the policy implications of findings are consequently obscured. Also, the required quantitative measurements for entire neighborhoods or communities would be overwhelming, and the likelihood of relating these to the proposed project (in order to make a forecast) seems nil. Even retrospective analysis of effects of a past intervention seems difficult to imagine--unless one shares the good fortune of Harloff, Gump, & Campbell (1981), who were able to use Barker's original data as a comparison base following construction of a major reservoir in the small rural area previously studied by Barker and his colleagues.

The limitations on the applicability of behavior setting theory seem frustrating because of the obvious potentials for SIA of a systematic approach to studying demand characteristics of a macrosocial environment. Perhaps one contribution which SIA-oriented theoreticians might make is to reassess behavior setting theory for practical policy implications and begin to translate some of the concepts into terms slightly more familiar and meaningful to psychologists, sociologists, and laymen.

Moos's work on "psychosocial climate" also has some limitations in apparent face validity and familiarity of terminology. However, the potential for overcoming these limitations in a short time period seems greater. Moos considers his perspective to be "social-ecological" in that it combines both purely social concepts ("social climate") and attention to the purely physical environment. His earlier work focused mostly on perceptual ratings of built environments on numerous categories falling into three basic dimensions:

Relationship dimensions assess the extent to which people are involved in the environment, the extent to which they support and help one another, and the extent of spontaneity and free and open expression among them.

Personal Growth or Goal Orientation dimensions assess the basic directions along which personal development and self-enhancement tend to occur in a particular setting. These dimensions vary among different environments, depending on their underlying purposes and goals. For example, in psychiatric and correctional programs, we have autonomy, practical orientation, and personal problem orientation, whereas, in family settings, we have independence, achievement orientation, intellectual-cultural orientation, active recreational orientation, and moral-religious emphasis.

System Maintenance and System Change dimensions deal with the extent to which an environment is orderly, is clear in its expectations, maintains control, and is responsive to change. (Moos, 1979b, p. 147)

In recent work (c.f., Moos & Lemke, 1982), the analysis and measurement task has expanded from subjective ratings alone to a "multi-phasic environment assessment procedure" which also involves expert ratings of the physical environment, secondary data analysis, and key informant discussions with environmental authorities (e.g., school principals or hospital administrators). Thus, this research tradition sometimes concentrates on "psychosocial climate" as a holistic independent variable affecting personal growth and wellbeing and sometimes as a dependent variable meriting analysis in and of itself. Both considerations have some utility for SIA, although the current focus is on the latter.

It is no doubt true that the utility of the concept would be enhanced by reduction of the scholarly terminology to "plain English." When described in the scholarly term "psychosocial climate," it may strike the public and/or government decision makers as academic gobbledy-gook. But when translated into phrases such as "the feeling you get from the place" or "neighborhood character," the idea becomes more familiar and compelling. The idea that a place has a "climate" or a "character"--even if this is to some extent dependent on the eye of the beholder--is one which extends much further past the boundaries of social science than does the behavior setting concept. For example, commercial operations such as restaurants may be considered to have "personalities" compatible with certain consumer segments (Sill, 1982).

The available literature presents some other limitations, such as the fact that most of the published psychological research in the area

deals primarily with the "personality" of institutional buildings, particularly schools (Moos, 1979a) and health care facilities (Moos & Igra, 1980). However, the general methodological approaches in this literature represent models which could be easily adapted if the SIA budget permits any primary research. And for projects which feature central physical structures and many occupants (public housing, schools, government buildings), "psychosocial climate" at least represents a heuristic conceptual device for summarizing discussion of individual physical and social features.

Attitudes/Relationship re Land: The final social psychological variable set forth in Table 4 as a promising "bottom line" variable includes "attitudes toward, relationship with land." Arguably, this may actually be a cultural-level concern because it can involve such pervasive and unconscious value orientations that individual respondents are unable to respond competently to straightforward psychometric questions. That is, rural or wilderness residents with a semi-religious attitude toward the land or ocean may not at first even understand the perspective of utilizing land as a private commodity for monetary investment purposes. Nor, for that matter, may urban real estate agents comprehend the other perspective. However, such ignorance of alternate value systems is perhaps more often the case in Third World developing nations. In the United States, such value conflicts are much more likely to develop gradually and with a large degree of conscious recognition.

One of the more intriguing theoretical discussions of this concept has been promulgated by an environmental sociologist, Erik Cohen (1976). Taking an ecological perspective, Cohen reviews various theoretical perspective and suggests there are four major "ecological orientations" which individuals or societies take toward the physical environment:

1. The instrumental orientation relates to the environment merely as a means or medium for the achievement of individual or collective ends, and not as a value in itself. Space or the environment serves as a resource or as a locus of resources the exploitation of which is either technically feasible or economically profitable...

2. The territorial orientation relates to the environment in terms of control over it, be it in the form of physical dominance or of political organization...

3. The sentimental orientation relates to the environment in terms of the sense of attachment it conveys to an individual or a community; attachment may be the result of a sense of belonging to a place, or it may be derived from a place's prestige...

4. The symbolic orientation relates to the environment in terms of the significance which a spatial feature harbors for an individual or a community, either in aesthetic, moral, or religious terms. (Cohen, 1976, pp. 50-51)

Cohen relates each of these to various institutions, regulative mechanisms, and types of environmental organization produced by societies to deal with land management. The discussion provides a most fertile theoretical starting point for social and environmental psychologists to begin analysis of an issue which is at the heart of many social policy disputes over economic development of rural and wilderness areas.

Environmental psychologists to date tend to have focused their own theoretical and research interests on much more narrow questions than

the broad ecological relationship with land. One source of much literature has involved the determinants of "environmentalist" values and orientations, either among government policy makers (Mazmanian & Sabatier, 1981; Maggiotto & Bowman, 1982) or the general public (Dabelko, 1981; Van Liere & Dunlap, 1981). This literature contains indications of anxiety over whether concern for the environment is just an upper-class phenomenon (Cutter, 1981; Loveridge & Neiman, 1981). Such value conflicts may be construed as inevitable among groups which hold different "orientations" in Cohen's sense. However, it seems unlikely that decision makers or even the general public would consider this more explicitly political and ideological environmentalist value orientation to be an intrinsic "bottom line" worth extensive analysis in SIA.

On the other hand, a cluster of concepts having to do with "sense of place" or "attachment to place"--most frequently studied by geographers but sometimes also by psychologists--may occasionally seem significant in communities characterized by a strong degree of local pride. To some extent, these ideas mesh with the concept of territoriality, although psychologists outside the ethological domain have mainly looked at territorial behavior from a mental health perspective (Reid, 1976). (For a sociobiological perspective on territoriality, see Dyson-Hudson & Smith, 1978.) But a more direct example is provided by Proshansky's (1978) construct of "place-identity." Place-identity is seen as a major component of self-identity, i.e., the dimensions of self having to do

with the relatively stable patterns of goals, feelings, skills, preferences and behavioral tendencies elicited by one's usual physical environment. Sense of self is thus seen in some ways as determined by sense of place and in some ways as identical with sense of place. Such a concept is tailor-made for the argument that psychological SIA can lend a human "bottom line" to EIS's. The challenge to psychologists then would be to create a more precise theory and set of quantitative tools for making more tangible what will otherwise remain a promising but overly abstract idea.

Intrapsychic Variables

In Table 4, four intrapsychic variables are posited to constitute psychological topic areas which will sometimes have face validity as "bottom-line" concerns for SIA: (1) individual life changes and events; (2) stress/mental health consequences; (3) satisfaction/happiness; and (4) environmental cognitions and values (including aesthetics). These concerns are most frequently the domains of community and/or environmental psychologists. They are also the phenomena which have been least considered in SIA's to date and which are most promising for the purpose of lending some sense of human meaning to "objective" EIS findings.

Taken together, the first three variables--life changes, stress, and subjective happiness/satisfaction--constitute the various threads of psychological inquiry into the concept of quality of life (or, alternately, "wellbeing"). Therefore, before these three are discussed

separately, some brief discussion of the unitary "quality-of-life" concept is appropriate.

Quality of Life: As a body of literature, "quality of life" (or "wellbeing") studies are virtually synonymous with the whole social indicators movement, and they suffer from the definitional confusion and ideological disputes within that movement. Einsweiler (1978) has summarized the controversies which thread their way through the literature and which he believes "make the current work less useful than it might be" (p. 306):

- o objective vs. subjective measures;
- o ideological orientation (e.g., physical vs. spiritual; consumption and competitive vs. cooperative approaches).
- o value of aggregate data and/or composite indices;
- o descriptive vs. prescriptive indices;
- o measures based on societal vs. individual objectives;
- o long-range vs. short-range considerations;
- o emphasis on input vs. output indicators.

Most of these issues parallel philosophical questions about appropriate subject matter for SIA (see Chapter III), but the one that most

affects the basic question of to whether psychology can contribute to SIA is the first--whether subjective wellbeing indicators should have any role to play in studies of "quality of life." That is because, with the partial exception of some objective measures of stress/mental health (e.g., mental illness incidence rates), most of the potential psychological phenomena relating to quality of life can be measured only through psychometric analysis of subjective events--or, at very least, individual self-reports of behaviors and circumstances.

On the one hand, many social indicator scholars (especially those in nonpsychological disciplines) feel that subjective aspects of "quality of life" are so intangible and unreliable for measurement purposes that the whole topic should be abandoned in favor of more palpable measures, (e.g., social stress measures such as crime and divorce rates or--if individual stress is to be permitted as a legitimate topic--mental illness admission rates). From the methodological perspective, some commentators believe the potential pitfalls in use of psychometric scales--different meanings attributed by different respondents to the same response categories; inaccurate replies; heavy influence of recent events; etc.--virtually invalidate the very concept of subjective wellbeing:

The basic role social indicators ought to play is to provide an alternative to the traditional measures of welfare oriented towards an evaluation of subjective feelings of individuals.
Adopting social indicators should mean abandoning all attempts at measuring, comparing or aggregating individual utilities.
(Drewnoski, 1977, p. 244, original emphasis)

On the other hand, there is abundant statistical evidence that objective conditions accounts for only a small percentage of the

variance in self-reported happiness or stress (Schneider, 1976; Andrews & Crandall, 1976; Andrews 1981). Furthermore, there are philosophical arguments in favor of the subjective quality-of-life approach. For one thing, reliance on indicators of social or psychological pathology produces an exclusively negative approach to quality of life. Furthermore, the focus on only the most extreme symptoms of discontent (since society usually keeps records only on significant disruption of social or individual life) carries with it an implicit assumption that those who are not suffering nervous breakdowns, committing aggressive acts, or developing ulcers must, ipso facto, have a high quality of life. Finally, despite all the problems associated with subjective responses to surveys and questionnaires, it still may be the height of technocratic arrogance simply to infer an individual's or group's subjective wellbeing from outward indications, without ever taking the step of asking that individual or group about his/her/their opinions on the matter.

Whether public policy makers or EIS prime contractors will feel that subjective wellbeing is a legitimate focus for psychological SIA is a question which cannot be answered without knowledge of the individual personalities and circumstances involved. Opinions about the intrinsic importance of subjective "quality of life" are no doubt as sharply split in the world of political decision makers as in the world of social-indicator scholars. Much of the following discussion is based on the assumption that EIS decision makers will at least sometimes be open to the matter of "individual utilities," especially if the subject

can be to some extent quantified, reliably documented, and persuasively related to particular project characteristics.

With this caveat in mind, we may now return to the introductory discussion of the three "quality-of-life" variables--life changes, stress/mental health, and satisfaction/happiness--followed by some consideration of aesthetic responses and environmental cognitions.

Life Changes/Events: "Life changes" or "life events" are usually studied by psychologists as independent variables which lead to increased stress symptoms or decreased subjective wellbeing, and the typical research focus has been on the extent of association between life changes and subsequent physical or emotional impairment. The events usually studied have been things like divorce, positive or negative change in job status or income, moves into new housing quarters, etc.--that is, major but fairly normal occurrences in family or individual lives, and occurrences which (at least in most of the research literature to date) are not necessarily part of any broader socioeconomic patterns which are producing similar occurrences in the lives of a great many neighboring families or individuals. The research on such normal life changes was largely stimulated by the investigations of Holmes & Rahe (1967; Rahe, 1969; Holmes & Masuda, 1974) into the increased incidence of physical, psychophysiological, and emotional ailments following experience of large numbers of life changes in short time periods. Thus, the literature on life changes constitutes a

particularly distinctive subset of the wider psychological research literature on determinants of stress.

Although most of the attention to life changes has concerned their role as potential stress determinants or mediators, some studies--e.g., those focusing on economic events (Kasl, Gore, & Cobb, 1975; Catalano & Dooley, 1983)--see expanded discussion of project economic aspects later in this chapter)--have also paid attention to undesired life events as dependent variables. That is, there has also been some attention paid to the probability of experiencing various life changes as a result of background socioeconomic phenomena (e.g., increased community unemployment rates leading to individual divorces) or as a result of other life events (e.g., loss of a job in a particular family leading to divorce in the same family). These sorts of events represent intuitively significant human "bottom lines" with or without reference to higher-order psychological consequences. Displacement from family homes, to many people, represents a significant impact whether or not it relates to, say, mental health. True, most of the major life events of this sort could well be addressed in SIA's through sociological or economic consideration of aggregate-level indicators: job loss or gain through unemployment rates; family breakups through divorce rates; direct relocation impacts through analysis of displaced families. However, psychological knowledge could sometimes be brought to bear in two different ways. First, meaningful human events which are not the subject of governmental record-keeping are sometimes the topic of

psychological research--for example, family socialization practices have long been a topic of interest for social and developmental psychologists (Bronfenbrenner, 1950; Erikson, 1950; Pizer & Travers, 1975). Second, psychological studies can help determine the interrelationship of two different types of events--for example, are increased unemployment rates and increased divorce rates separate phenomena, or do the same households tend to be afflicted by both? The general principle here is that psychologists can sometimes contribute to SIA simply by studying individual-level as opposed to aggregate-level life events, whether or not there is a further concentration on emotional consequences.

Stress/Mental Health: Stress and mental health represent two related but, from a research viewpoint, two somewhat different fields of inquiry. From a layman's conceptual viewpoint, however, the two concepts are very similar, with mental health impairment representing an extreme consequence (or manifestation) of sustained stress. In fact, to many laymen, this area is what "psychology" is all about. Few people would shrug and say "So what?" to a forecast of increased or decreased mental illness, suicide, or drug/ alcohol abuse rates. Reports of such statistical indicators of stress and of greatly increased mental health clinic caseloads have been among the few clearly psychological topics in the generally sociological-level energy boomtown social impact case study literature (Kohrs, 1974; Gilmore, 1978; Weisz, 1979). Therefore, this general topic will be discussed at greater length than was the foregoing one.

Stress being somewhat the larger (and usually vaguer) of the "stress/mental health" combination, it will be considered first. There are two broad stress research traditions (Singer, 1980): the physiological and the psychological. The physiological is the older, and it tends to view "stress" as an endocrinological response to external threat or disease. The father of stress research has been Hans Selye (1936, 1956), who defines stress as "the nonspecific response of the body to any demand" (Selye, 1980, p. 127). Selye first developed his interest in stress out of curiosity as to why a variety of physical diseases or toxic agents tended to produce many similar symptoms--especially (at least in laboratory rats) an enlarged and hyperactive adrenal cortex; atrophied lymph nodes and thymus gland; and gastrointestinal ulcers. This led to Selye's descriptions both of the chemical nature of stress responses and of the presumed standard pattern of response over time to sustained stress. Biochemically, he said, the brain responds to any environmental stimulus--negative or positive--by triggering a chain of glandular secretions culminating in the emission from the pituitary gland of adrenocorticotrophic hormone (ACTH) and, from the adrenal gland, of cortisol and epinephrine. Cortisol produces a "fight-or-flight" state of generalized alarm in the body, while at the same time blocking further ACTH discharge. If the stress persists, the endocrinological changes follow a set pattern labelled the "General Adaptation Syndrome" (GAS): the initial alarm reaction is followed by an adaptive "stage of resistance," which can ultimately be worn down into the final counter-adaptive "stage of exhaustion."

Some of the key concepts in Selye's work, then, are: (1) an original purely chemical focus; (2) change of any nature, good or bad, can elicit the stress response; and (3) this response is "nonspecific" in the sense of being the same for all types of stressors. Some changes in this view are beginning to enter the research literature. Recent biochemical research indicates that different stressors may actually elicit different hormonal stress responses (Herbert, 1983). Meanwhile, Selye himself has tempered his pure biochemical perspective with some psychological (or at least philosophical) elements. He now distinguishes between "eustress" (positive stress) and "distress" (bad stress) (Selye, 1974)--a distinction similar to Lazarus' (1978) conception of challenge vs. threat--and between "hyperstress" (too much stress) and "hypostress" (too little stimulation) (Selye, 1983).

However, the second broad research tradition--i.e., the psychological one--contains many more elements and threads. Van Dijkhuizen (1980) identifies three "schools": stress as a response, as a stimulus, and as a field of research. Psychologists are perhaps most likely to regard stress as a stimulus (sometimes under the term "stressor"), but they also concentrate on many types of responses not emphasized by biochemical researchers. These range from sociological-level pathological behavior such as crime or family disintegration, to an emotional sense of anxiety, to active mental illness, and to responses to psychometric scale questions about any or all of the preceding topics.

Early psychological studies of stress often incorporated some models or quasi-theories of stress (Scott & Howard, 1970), but were more

concerned with the specific situations in which stress reactions were being examined: battle fatigue (Grinker & Spiegel, 1945); death of loved ones (Lindemann, 1944); mass hysteria (Cantril, 1947); imminent major surgery (Janis, 1958); or community disasters (Baker & Chapman, 1962).

Two major synthesizers of psychological thought on stress during the 1960's were James Kelly (1966, 1978) and Richard Lazarus (1966). Kelly articulated the concept of "person-environment fit" as a perspective for evaluating both emotional and behavioral response to a given situation. An individual with a certain set of psychic or tangible resources would master one environment but be stressed by another. A number of more recent theoretical orientations on stress (c.f., French, Rodgers, & Cobb, 1974; Stokols, 1979; Streufert, Nogami, & Streufert, 1980) represent more sophisticated developments of this basic idea of balance or congruence between person and environment. (See Caplan, 1983 for a current review of the concept.) Empirical research in this tradition suggests that the relationship between "stressors" and "strains" (evidence of distressed response) would be curvilinear either due to threshold effects (Wildman & Johnson, 1977) or because strains would increase as personal resources deviated in any direction from the ideal dictated by that environment (Van Dijkhuizen, 1980). This conception of stress tends to resemble anthropological systems approaches to social stress (Lumsden, 1975) in that ecological adaptations are expected eventually to emerge after initial adjustment difficulties.

Lazarus (1966; Lazarus, Averill, & Opton, 1974; Lazarus & Cohen, 1977) distinguished "psychological" (as opposed to physiological or sociological) stress as being characterized by the cognitive appraisal of threat. For Lazarus, stress involved not only hormonal change, fight-or-flight behavior, and negative affect, but also cognitive events. These cognitive events might be dependent variables, since Lazarus felt that stress resulted in changed cognitive functioning (often impairment but sometimes facilitation). Most often, though, he was interested in cognitive mediators of the stress response. In Lazarus' model, a stimulus results in the process of "primary appraisal," to see if any threat to physical safety or subjective self-esteem is present. If so, a closer examination or "secondary appraisal" leads to selection of one or more coping mechanisms, which may involve direct action tendencies (avoidance, attack, etc.) or more purely cognitive defenses (such as denial, isolation, projections, etc.). Depending on the situation, the latter might be inappropriate or socially undesirable, which would tend to result in a state that might be considered "mental illness." (Of course, direct actions might also be socially problematic--e.g., assault and battery.)

While a literature on coping with stress had already begun to develop (Mechanic, 1962), Lazarus' emphasis on mediators led to strengthened interest by psychologists in the twin concepts of vulnerability and resistance to pathological consequences of stressful situations. A wide variety of hypothesized determinants or mediators to stress have since been studied, and these can broadly be grouped into three categories:

- (1) nature or number of stressors;
- (2) psychological mediators; and
- (3) situational mediators.

Psychological analysis of the direct relationship between strain and the type and quantity of stressors has rarely (with the exception of the small number of psychologically-oriented boomtown studies) looked at the types of community-specific environmental or socioeconomic changes usually studied in SIA's. However, some of the situations under study have implications for SIA. For example, on the physical side, stress responses to traffic congestion have been explored (Novaco, Stokols, Campbell, & Stokols, 1979). On the socioeconomic side, there have been studies of stress from modernization in general (Marsella, 1977), from particular types of economic developments such as tourism (Guntern, 1978), and from broad "social change" at a regional rather than a cultural level (Bloom, 1968a; Schwab, Bell, Warheit, & Schwab, 1979). On the latter count, Bell, LeRoy, Lin, & Schwab (1981) found that lower socioeconomic groups in the southeastern United States had the lowest "awareness of change" on average, but that low SES individuals who were aware of change were particularly at risk in terms of reported psychopathological symptoms. This suggested to Bell et. al. that awareness of change has higher "cost" for disadvantaged groups, and that psychological mechanisms for denying the true extent of change are not only the

expected response among lower SES groups but are also a "healthy" mental phenomenon (i.e., denial is preferable to depression, anxiety, anger, etc.).

However, the type of stressor which has been studied by far the most often by stress researchers is the "life change" or "life event" discussed previously as a dependent variable. This research tradition is rooted in studies by Hinkle (1961) and colleagues (Hinkle & Plummer, 1952; Hinkle & Wolff, 1958) of the tendency among a small group of telephone company employees to account for a large proportion of reported employee illness. The authors found a number of other indicators of strain and life dissatisfaction among this group, and speculated about possible events which could have produced such a disposition.

Holmes & Rahe (1967) subsequently developed the Schedule of Recent Experiences (SRE), a list of 43 experiences or transitions encountered by many people in the course of a life (e.g., marriage, divorce, pregnancy, troubles with the boss, taking out a mortgage). Using the same 43 experiences, they also created the Social Readjustment Rating Scale (SRRS), which utilized the ratings of randomly selected judges to assign scores for relative magnitude of "life change" represented by each item (Masuda & Holmes, 1967). Thus, the SRE is an instrument for counting the number of selected life changes in a respondent's life during the recent past, while the SRRS weights these results by the estimated amount of "readjustment" or "life change" thought to be implied by different events. Both instruments were shown in repeated

studies (most of them subject to criticism as being retrospective, but some prospective as well) to be significantly if modestly associated with both physical and mental illnesses (c.f., Myers, Lindenthal, & Pepper, 1971; Wildman & Johnson, 1977; Zautra & Beier, 1978). While Holmes and his colleague Minoru Masuda continued to show interest in the SRRS as a tool for studying perceptions of life event magnitudes for their own sakes (Masuda & Holmes, 1967; Holmes & Masuda, 1974), Rahe (1978, 1981) concluded that estimated magnitudes of "life change" for each event were confounded with too many other subjective responses. Rahe has utilized the unweighted SRE to establish correlations with or predictions of physical disease (Rahe, 1968, 1969; Rahe & Arthur, 1968, 1978) and mental illness (Rahe, 1979).

The question of weighted vs. unweighted life events is only one of many methodological controversies which have developed in the life changes measurement literature (B. S. Dohrenwend & B. P. Dohrenwend, 1974, 1981; Kasl, 1983). Among others, there is the question of cultural and social class differences in judgments of life event magnitude (Askenasy, Dohrenwend, & Dohrenwend, 1977); etiological confounding of independent variables (life events) with other independent variables (associated life events being "double-counted") or dependent variables (sickness being viewed sometimes as a life event, sometime as an outcome) (B. S. Dohrenwend, 1978b; Tausig, 1982; Kasl, 1983); need for empirical rather than judgmental method for determining life change magnitude (Ross & Mirowski, 1979); and implications of using various

life event contents (Ruch, 1977) or differing levels of expectability (Pearlin & Lieberman, 1979) within the same instrument.

One of the most persisting methodological debates also has strong theoretical implications, and that is the issue of whether socially desirable life events (e.g., getting a promotion) should be counted as "stressful" as an undesirable one (e.g., getting fired) or should be considered stressful to any degree at all. In their original inclusion of such positive events in the SRE, Holmes & Rahe (1967) were following the logic of Selye and physiological research evidence that any environmental change or demand can elicit physical arousal (and, presumably, stress). The idea is still defended by some, such as Barbara Snell Dohrenwend (1973, 1978a), who contends that negative life events also usually contain greater magnitudes of absolute change as well. And there is some evidence that the absence of positive life events may have its own separate implications for mental health (Zautra & Simons, 1979). However, mounting empirical evidence now suggests that only undesirable life events are responsible for triggering most of the physical or emotional problems which have been associated with life change (Vinokur & Selzer, 1975; Mueller, Edwards, & Yarvis, 1977; Ross & Mirowski, 1979; McFarlane, Norman, Streiner, Roy, & Scott, 1980; Tausig, 1982).

Additionally, more recent research indicates that life events must be characterized by both undesirability and the lack of a sense of control to result in serious psychological distress (Fairbank & Hough, 1979; Suls & Mullen, 1981). Such research indicates that life events

produce strain only if they are negative in nature and if the individual has one of several personality characteristics--e.g., external locus of control and disinterest in "sensation" or "stimulation" seeking (Johnson & Sarason, 1979; Cooley & Keesey, 1981). However, this is edging us into the area of psychological mediators, which is a topic to be discussed shortly.

Given all these methodological and theoretical issues, it is not surprising that the SRE and SRRS have been supplemented by a number of other life change measurement instruments, all suggested by their authors to represent substantial improvements (e.g., Paykel, Prusoff, & Ulentuth, 1971; Hough, Fairbank, & Garcia, 1976; Dohrenwend, Krasnoff, Askenasy, & Dohrenwend, 1978; Sarason, Johnson, & Siegel, 1979). But despite these methodological advances, life event scale scores have generally been able to explain only 4 to 10 percent of the population variance in illness or psychopathology. Some of this is clearly due to the existence of other causal factors. But it has also been found (Suls & Mullen, 1981) that a much stronger causal link can be established if and only if certain characteristics of the person or the situation are present. Thus, it becomes imperative to examine the remaining two of our original list of three broad stress outcome determinants: psychological mediators and situational mediators.

Psychological mediators have, not surprisingly, tended to receive more attention from psychologists. Lazarus' work on cognitive mediators

has contributed to a broader study of "coping processes" employed by individuals to deal with stressful situations. Monat & Lazarus (1977) divide this research into two areas, that dealing with enduring and fairly fixed personality characteristics (traits, dispositions, or consistent "coping styles") and that dealing with more active and fluid strategies and mechanisms (either behavior or cognitive). The former tends to ask how an individual usually copes, on average, across all situations, while the latter focuses on determining which particular coping strategies are usually employed by successful (or unsuccessful) copers in given stressful situations.

Empirical survey research has explored the role of both ideas and some combinations of these concepts as well. Pearlin & Schooler (1978) examined three general "protective strategies" used by 2,300 urban residents in a variety of situations: (1) eliminating or modifying conditions giving rise to the problem; (2) perceptually controlling the meaning of the experience; and (3) keeping emotional consequences within manageable bounds. They found that some respondents showed more consistency of coping styles across situations than did others. In general, people's reported coping strategies appeared more effective in certain types of situations (interpersonal role areas of marriage and child-rearing) than in others (job roles). Ilfeld (1980), factor analyzing the same dataset, found three factors quite similar to the three cited above, and his analysis further emphasized that people usually selected different coping approaches for different situations, albeit from

different overall repertoires. Folkman & Lazarus (1980) employed a technique focusing directly on recent individual-specific events, rather than posing general questions about overall or hypothetical response. They found little evidence that coping strategies are consistent over situations for individuals. Also, for two broad types of coping--rational "problem-focused" coping and defensive "emotion-focused" coping--they found that forms of both were used by almost every individual interviewed in almost every situation discussed (although relatively more problem-focused coping techniques might be utilized in job situations and more emotion-focused techniques in domestic situations).

Despite results of these survey inquiries into various styles of coping with everyday stressors, other types of research have found some fairly solid indication that particular personality traits are associated with physical or mental illness from acute or long-term stress (see Minter & Kimball, 1980, for a review of this literature). For one example, hard-driving achievement-oriented "Type A" individuals have clearly been shown to demonstrate both different cognitive coping styles (greater suppression and denial) and greatly increased likelihood of numerous forms of stress-related physical illness (Rosenman, Friedman, Straus, Wurm, Kositchek, Harn, & Werthessen, 1964; Chesney & Rosenman, 1983). Personality theorist Hans Eysenck (1983) has discovered that victims of cancer and psychosis are both low in Neuroticism scores. Kobasa (1979; Kobasa, Maddi, & Courington, 1981) has developed the concept of the "hardy personality style"--a disposition toward commitment,

control, and challenge which dampens the negative effects of stress--and has developed a scale which could be utilized to measure the average level of "hardiness" in a community or subpopulation.

Another personality-oriented stress research area involves an information-processing model--i.e., stress as information overload (Hamilton & Warburton, 1978). This concept features the two related personality constructs of "arousability" and "degree of stimulation-seeking" (Johnson & Sarason, 1979; Sarason, 1980; Cooley & Keeseey, 1981). Similarly, Mehrabian & Ross (1977) have presented indications that "information-screening" personalities suffer less arousal and subsequent stress by imposing a hierarchy of importance or a pre-conceived cognitive pattern on complex situations, thereby reducing their information rates. Although much of this work has been conducted in a personality context, it is clearly also relevant to those studying cognitive mediators such as threat perception in the context of coping repertoires (e.g., Coyne & Lazarus, 1980).

Research on cultural or national differences in coping with stress (Rapoport, 1976, 1978; Howard, 1974; Lazarus, 1982) may also be considered to be concerned with personality variables, in that differences in cultural perceptions are internalized within the person.

A final major personality variable emphasized in stress research to date has been locus of control, with the typical finding being that individuals with external loci are more severely affected by stressful

life events (Johnson & Sarason, 1978; Kobasa, 1979; Novaco et. al., 1979; Sandler & Lakey, 1982). Most of these studies suggest an interactive role for locus of control--i.e., screening out or intensifying the effects of other variables, particularly life events and social support--although Wheaton (1980) found a more linear, additive effect, suggesting that "fatalism" could play a straightforward role as a stress determinant in and of itself.

Situational mediators are attributes of the situation--as it is perceived by the individual--which affect stress outcomes. The concept of "control" also emerges as a sort of "situational mediator," although the idea here is perceived competence in a given situation rather than the locus of control personality disposition. For example, stress management training for Russian cosmonauts is centered on an information theory of emotions, which largely holds that the gap between the required amount of information and the available amount of information in a stressful situation will determine the degree of panic or stress experienced (Santy, 1983). Although the sense of mastery suggested here is within the individual, only particular situations are relevant for eliciting the feeling, and other situations may present a different story. The distinction is in some ways a fuzzy one, since community psychologists have long assumed that improving people's sense of control in enough specific situations will result in overall increases in internal locus of control (Ryan, 1971; Hoffman, 1978; Christenfeld, 1979), and there is evidence that loss of perceived control in a number of

specific situations can lead to a generalized sense of helplessness (Seligman, 1975; Glass, 1977; Davidson, Baum, & Collins, 1982). Also, because the key focus of control is an important outcome rather than the stressor itself, "reactions attributable to perceived losses of personal control should be similar for a wide variety of measures" (S. Cohen, 1980, p. 175). However, there have also been numerous laboratory studies manipulating sense of control in a single situation and establishing a strong relationship with measures of stressful outcomes (Glass & Singer, 1972; Averill, 1973; Cohen, Glass, & Phillips, 1979).

Another important situational mediator (the person's situation, rather than the stress situation itself) involves the degree and type of tangible resources available. Money is perhaps the most clearcut such resource, although the incorporation of education, occupation, and/or social status into the SES concept is usually involved in research studies. Thus, socioeconomic status is a major resource for dealing with most stressful situations in life (Rushing, 1978; Wills & Langner, 1980). It should perhaps be noted, however, that there are a number of rival explanations for the phenomenon of greater stress manifestations among lower SES groups--for example, the proposition that these groups experience more stressors and/or negative life events (Myers et. al., 1974; Dohrenwend, 1978b) or are socialized to hold more of an external locus of control (Wheaton, 1980) or have not acquired as many effective psychological coping strategies (Pearlin & Schooler, 1979). Turner & Noh (1983) found that SES has no impact on likelihood of psychological

distress for women if both internal locus of control and social support are high (but not if just one is high), suggesting that the joint occurrence of these might be higher in upper SES groups. In fact, the simple idea that money and power might be useful resources seems to have occurred less frequently to psychologists than have more abstruse concepts regarding disproportionate stressors or poor learning experiences.

However, the most frequently studied situational mediator--and, again, the "situational" term refers more to the person than the stressor--has been the availability or nonavailability of social support. The concept of "social support" is related to but distinct from the broader study of "social networks," which has become something of a growth industry in the social sciences (C. J. Smith, 1980). Social networks have often been studied by sociologists as interesting phenomena in their own right, with attention paid to theoretical dimensions such as Span (network size), Intimacy (degree of specialness or closeness ascribed to network members), Range (geographic distance of network members), Frequency (of contacts with members in a given time), Kin Status and Sex of network members, and Jointness (whether members are part of spouse's network) (Graham, 1978). Studies of the impact of social support on stress or wellbeing do not all utilize the social network concept, although the conceptual groundwork has been laid for uniting the two fields (Mitchell & Trickett, 1980; Gottlieb, 1981; Wellman, 1981). In many ways, though, social networks have attracted more interest among psychologists for their potential as a medium for

distribution of agency-sponsored mental health services (Sarason, Carroll, Maton, Cohen, & Lorentz, 1977; Turkat, 1980; Flaskerud & Kviz, 1982; Birkel & Reppucci, 1983) than for their role as mediators of social support.

The role of social support in regard to stress has been studied in two ways: as a determinant of stress outcomes in and of itself, and as a "buffer" of the effects of particular stressors. Ultimately, the two are not that different, since studies of social support as a determinant usually imply an enduring role as a buffer against a whole series of unspecified life stressors. (On the other hand, sociological theories stressing the need for social integration can be construed to suggest that life events may interfere with basic social interactions, and produce stress for this reason--see Thoits, 1982.) Several studies have indicated that high ambient levels of social support are associated with positive mental health and/or subjective wellbeing (Lin, Simeone, Ensel, & Kuo, 1979; Turner, 1981) and that the qualitative dimension of intimacy is more important than the quantity of social contacts (Miller & Lefcourt, 1983). Recent research into the differential effects of support from family versus that from friends indicates some complex relationships with culture, sex, employment status, and adjustment or stress in specific life roles (Raymond, Rhoads, & Raymond, 1980; Holahan & Moos, 1982; Procidano & Heller, 1983). Similar complexity is found in studies of social support as a "buffer." The buffering effects have been found to exist between life events and psychological distress more

for quality than for quantity of support (Wilcox, 1981); much more between external locus of control than internal locus of control and stress (Sarason, Levin, Bashom, & Sarason, 1983); and more for mental and physical health outcomes than for job-related strains (LaRocco, House, & French, 1980).

The social support concept is emerging as a central research topic for the mid-1980's in social and community psychology, thereby generating significant critical as well as enthusiastic comment. On the enthusiastic side, Gottlieb (1983) sees social support as a "focus for integrative research" in the field of community psychology, and Thoits (1982) has stressed the relationship between the social support concept and sociological meta-theories. On the critical side, however, Monroe (1983) has noted that much of the apparent evidence for the relationship between social support and physical or psychological distress is based on methodologically deficient retrospective studies. Conclusions may differ from retrospective to prospective studies and from designs controlling for prior symptoms to those which do not. Surprisingly, perhaps, there is more firm evidence for association between social support and physical illness than for any strong relationship between social support and psychological problems.

The foregoing discussion of (1) types of stressors, (2) psychological mediators, and (3) situational mediators omitted discussion of a final crucial element of any model of the stress process: (4) the

nature of the pathological strain on the individual. Unfortunately for the purposes of predictive SIA, one of the least researched aspects of stress involves the exact nature of anticipated stress outcomes. Expectably, given its overlap with the fields of medicine and biochemistry, stress research often examines consequences for physical illness and excessive mortality (e.g., Jenkins, Tuthill, Tannenbaum, & Kirby, 1979). Behavioral community psychologists with an interest in intervening to solve or prevent social problems (Jeger & Slotnick, 1982) have often concentrated on delinquency, educational proficiency, or other social interaction variables which might sometimes be considered the usual domain of sociologists rather than psychologists (O'Donnell & Tharp, 1982; Vaux & Ruggiero, 1983). Attitude theorists have seen stress as "worry" or "concern" over specific stressors (Levy & Guttman, 1982). The most frequent "purely psychological" stress outcome variables studied in the psychological literature, of course, have involved indicators of emotional/behavioral maladjustment.

But there has been little consideration of what form of pathology can be expected (assuming occasional breakdowns in coping) after exposure of communities to sustained stress. Perhaps this has been because researchers tend to be interested only in the occurrence or non-occurrence of small sets of narrowly defined dependent variables, or perhaps it reflects the theoretical perspective of Selye and his position that stress responses are identical no matter what the nature of the stressor. (However, even the literature on purely physical outcomes

of stress has noted that different stress indicators are related to different antecedents--see Hudgens, 1974, and Jenkins et. al., 1979.) Some theoretical articles have begun to suggest models for predicting the nature of strains (Boyden & Millar, 1978; Jenkins, 1979; Leventhal & Nerenz, 1983), but the difficulties of conducting valid prospective research seem to have inhibited much empirical research in this area.

As may already be apparent from the preceding discussion, many psychological analyses of stress have focused only on mental health outcomes. ("Mental health" is being used here as a generic term for individual disturbances; it is intended to include the alternative term "behavioral disorder" which is preferred by some psychologists.) Thus, to a large extent, the "mental health" part of the "stress/mental health" category has already been covered in the consideration of stress itself. However, a few additional comments about mental health may help to provide some perspective on the overall topic.

Much of psychology's attention to mental health has been in a clinical context--i.e., the alternative views of a Freud, a Jung, or a Skinner on the most effective ways of providing therapy. Most of these clinical traditions are not particularly relevant to SIA because of their tendency to focus only on the individual and his/her immediate family relationships, ignoring the broader socioeconomic context in which life is carried on. Some behavioral therapists are not even interested in intraindividual history or etiological roots of disorder, finding them irrelevant to the therapeutic task of instilling new

response patterns. By contrast, sociological students of behavioral pathology have been primarily interested in the social roots, or "sociogenesis" (Wheaton, 1978), both of multiple forms of pathology including mental illness (Lemert, 1951) and of mental disorder in particular (Goldstein, 1979; Eaton, 1980). Sociologists have been especially interested in the relationship between social class and mental illness (Hollingshead & Redlich, 1958), and they were largely responsible for generating the debate over whether disproportionate problems in lower classes are due to social causation, a societal labelling tendency, or the inclination of troubled individuals to sink to the bottom of the social order (Rushing & Ortega, 1979; Link, 1981; Scheff, 1966). Sociologists have consequently been long involved in ecological studies of stress and mental health, and many of the citations given in the preceding pages were for works authored by sociologists.

However, two interrelated developments in psychology in the last several decades have brought psychologists into the same ecological arena as sociologists, with a consequent blurring of disciplinary lines in studies of the social roots of stress and mental illness. The first development was the involvement of psychologists along with sociologists in survey research on unreported psychopathology in community populations (Gurin, Veroff, & Feld, 1960; Srole, Langner, Michael, Opler, & Rennie, 1962), a type of study which has since been joined and supplemented by "quality-of-life" surveys on life satisfaction (Andrews & Withey, 1976; Campbell, Converse, & Rodgers, 1976; Veroff, Douvan, &

Kulka, 1981; Atkinson, 1982). The second development was the widening of the community mental health center movement into the entire new sub-discipline of community psychology (Rappaport, 1977; Mann, 1978). Much of community psychology's emphasis has been on individual preventive therapy (Cowen, 1977) in a community setting, despite some discouraging evidence that utilization of such services does not lead to greater adjustment to stressful experiences (Lieberman & Mullan, 1978). What is more important here, however, is the ecological perspective on mental health which community psychologists have usually adapted. Community psychologists revived pre-Freudian psychiatric interest in community roots of mental illness (Caplan, 1969; Heller & Monahan, 1977), and many have focused on social stressors and social resources as the primary or best conceptual framework for improving community mental health (Dohrenwend, 1978a; Gottlieb, 1983). Consequently, psychological perspectives on mental health today may have more relevance for SIA than would have been the case three decades ago.

The overall relevance and utility for SIA of stress and mental health studies is--like most fields of study in psychology--mixed. In this particular case, though, the intrinsic appeal of stress and mental health outcomes as "bottom lines" particularly strengthens both the current value of the field and the urgency of addressing the limitations.

The limitations, from the SIA perspective, might be mentioned first. They primarily consist of two major deficiencies in theory or

conceptual organization which have already been mentioned to some extent. The first of these is the lack of research studies focusing on stressors associated with neighborhood or community change. A relatively small amount of research has dealt with cultural or social change at a level much more general than is usually dealt with in EIS's, and a great amount of research has focused on individual "life changes" at a level far more specific than EIS's and SIA's can possibly address. Conceivably, predictions about project impacts on life changes might be used as a basis for predictions about consequent stress and mental health impacts, but this could often seem to be stretching the presumed causal chain of events to the point of being social-science fiction. Stokols (1979) has noted that stress research tends to deal primarily with acute life-change crises rather than with chronic stressors and the eventual consequences of partial habituation to ambient stress such as noise, traffic, and air pollution. It is exactly such incremental incursions into environmental quality which represent the usual major costs against which project benefits have rarely been weighed in impact assessments to date.

The second significant deficiency is the lack of either empirical evidence or even of a compelling theoretical/conceptual framework to support predictions of what TYPE of social or individual strains will result from particular socio-environmental stressors. No matter what the proof for existence of a nonspecific organismic "General Adaptation Syndrome" in response to all forms of stress, it is difficult to argue

that an overstressed individual will exhibit depression AND schizophrenia AND ulcers AND violent tendencies AND respiratory problems AND nonspecific anxiety AND suicidal tendencies AND cancer, etc., etc. Yet typical studies of stressors usually explore impacts on only a very small set of dependent variables (frequently only one), as though each dependent variable were a perfectly adequate representative of some such unitary construct as "strain" or "disorder." The fact that life crises account for only 4 to 10 percent of the variance in any one outcome seems hardly surprising when one considers how many forms might be legitimately included among the category of "stress-related outcomes." All of this makes for a distinct disadvantage to an SIA practitioner attempting to forecast impacts on, say, mental health vis a vis those on crime, family breakdown, alcohol or drug abuse, etc. Jenkins (1979) has made a start on clarifying the issues by suggesting a model that segregates stressors, pathological end-states, and other characteristics of the stress situations into four different levels--biological, psychological, interpersonal, and sociocultural. For example, his hypothesized biological-level stressors include "deprivation of biological needs" and "excess inputs of physical or biological agents," posited to be associated with these pathological end-states: deficiency diseases, exhaustion, addictions, chronic dysfunctions, and structural damage. At the other end of his spectrum, the sociocultural level, stressors include cultural change, role conflict, status incongruity, value conflicts with important others, and "forced change in life situation," while presumed pathological end-states are alienation, anomie, breakdown

of social order, and disintegration of the cultural systems of values and norms. While this sort of model may be overly simplistic (in, for example, that it seems to suggest that a sociocultural level stressor will not generate interpersonal, psychological, or biological problems), it does provide an illustration of the sort of conceptualizations which are needed to generate testable hypotheses and applicable research.

Perhaps the most positive aspects of the psychological literature on stress/mental health, however, involves the methodological tools and concepts adaptable to SIA. For example, in regard to "bottom-line" outcomes and dependent variables, mental hospital admission rates provide a tangible and quantitative form of impact in a field where so many of the topics of concern (e.g., alienation, satisfaction, community cohesion) are abstract and subject to differing interpretations. And a number of fairly reliable scales have been developed for measurement of milder stress/mental health problems in the general population--e.g., the Global Psychopathology Scale (Bell et. al., 1981) and the Langner-22 scale of psychiatric impairment (Langner, 1962), which has successfully been defended against various allegations of invalidity and bias (Johnson & Meile, 1981) to provide a standard measurement tool for the past several decades.

Even more useful to SIA, though, are validated instruments for measuring the determinants and/or mediators of stress outcomes. One of the weakest examples would be the SRE and its weighted companion, the SRRS (Holmes & Rahe, 1967), or any of the numerous subsequent scales

developed for measuring life changes. This is a "weak" example not only because any particular scale could include only a sampling of potentially stressful life changes (Rahe, 1979), but also because of uncertainties regarding actual connections with stress outcomes and because of difficulties relating life-change impacts to SIA-type project impacts. Nevertheless, even this problematic type of scale represents a concrete model for original instrument development in SIA practice and/or supporting research intended for an audience of SIA practitioners. It would not be a difficult thing to adapt the concept of readjustment from individual life changes to readjustment from community or neighborhood changes and to produce research validating this type of scale.

But for SIA practice, other existing psychometric instruments provide stronger examples of useful scales, particularly in regard to survey measurement of the overall vulnerability of a community (or the identification of subpopulations particularly vulnerable) to stress. The "Ways of Coping" checklist developed by Lazarus (Folkman & Lazarus, 1981) provides an illustrative form of a scale for determining cognitive and behavioral coping styles in any particular area. The Social Support Questionnaire (Sarason, Levine, Bashom, & Sarason, 1983), or some local adaptation, represents a useful way to determine the extent to which social interconnections may "buffer" current residents against anticipated stressful changes. And Kobasa's (1979; Kobasa et. al., 1981) measures of "hardiness" are another example of psychometric tools

for assessing local resistance or vulnerability to stressors. Beech, Burns, & Sheffield (1982, Chapter 9) provide another set of vulnerability measures, based on personal physiological dispositions and affective styles. There are also techniques for measuring stress vulnerability based on theoretical approaches (Kessler, 1979) or on simple measurement of demographic characteristics associated with higher manifestations of strain and psychopathology (Moroney, Gillings, Salber, & Schmidt, 1976). (However, the latter approach is perhaps better suited for identifying areas presently in need of mental health services, since use of demographic correlates for establishing vulnerability to stress would always result in the prediction that change can only make things worse for lower SES groups.) In fact, the psychological literature provides something of an embarrassment of riches for the SIA practitioner who might be interested in measuring vulnerability to stress. A valuable service which could be performed by the supporting research community would be the thorough cataloguing and evaluation of such tools for the purposes of impact assessment.

As a final post-script to the matter of identifying groups which are particularly vulnerable to stress, it may be noted that SIA practitioners also have the option of attending to subpopulations which are clearly known to be at risk, focusing assessments of "hardiness" on these groups rather than the community at large. For example, if a project involves relocating people, the displacees represent such a group. There have been several reviews of the extensive literature on

relocation impacts (Finsterbusch, 1980; Heller, 1982), and the topic will be explored at somewhat greater length later in this chapter under "Key Project Characteristics." Another group long established to be particularly vulnerable to stress and mental illness in American society comprises half the population: women. The true extent of, and reasons for, females' greater vulnerability to stress in the overall population has been a matter of extensive scholarly debate (Gove & Tudor, 1977; Fox, 1980; Turner & Noh, 1983; Kaplan, 1983; Williams & Spitzer, 1983). For the purposes of SIA, the female experience of particular interest would often be the initial participation of women in the labor market, a topic which has generated considerable research and extremely complex findings (Rodgers, 1977; Haw, 1982; Warr & Parry, 1982). Impacts may be especially significant in rural areas undergoing rapid economic development (see Moen, Boulding, Lillydahl, & Palm, 1981, for a review and pair of case studies).

Satisfaction/Happiness: The third quality-of-life variable to be assessed here involves subjective satisfaction or happiness. As with "stress" and "mental health," the concepts of "satisfaction" and "happiness" are probably more nearly synonymous to the layman than to the psychologist. Angus Campbell (1980) indicated a clear distinction between them when he suggested that subjective quality of life has three components--strain (already discussed in conjunction with stress), satisfaction, and affect. "Happiness" is generally associated with affective reaction to daily life, while "satisfaction" questions tend to

elicit a more cognitive evaluation of broad life status (McKennell, 1978). Particularly in the last 15 years, psychological research into subjective quality of life has focused much more heavily on satisfaction than happiness, despite some problems with the concept to be discussed shortly. However, many or most studies of satisfaction also contain at least a few brief questions about happiness, and at least some of the major research conclusions about the structure and determinants of satisfaction have also been found to apply to happiness.

Before proceeding further into this topic, it should perhaps be briefly mentioned that life events, stress, satisfaction, and happiness do not represent the total domain of psychometric approaches for studying individual "wellbeing" or quality of life. From a very intra-psychic perspective, Csikszentmihaly & Graef (1980) have pioneered the study of wellbeing as defined by the amount of subjective "freedom" experienced in everyday life, a perspective related to Reich & Zautra's (1983) conception of "demands" (interferences with choice and freedom) as representing a major determinant of quality of life. From a more behavioral tack, a number of scholars in the social indicators tradition (e.g., Hobson & Mann, 1975; Jones & Pierce, 1977; Juster, Courant & Dow, 1981) have recommended collecting time-use diaries from a sample of community populations as a quasi-objective approach to quality of life at the individual level; these approaches often involve subjective ratings of the importance of daily activities or preferred amount of time for a particular activity versus actual amount of time. While an

appropriate degree of consideration would be warranted by such approaches in any overall consideration of quality of life, they are omitted here--on an admittedly arbitrary and judgmental basis--as unlikely ever to win much support as intrinsically appealing psychological "bottom lines" for social impact assessment.

The obvious and principal appeal of satisfaction/happiness analysis for SIA is that these outcomes can represent a positive approach to quality of life which is missing in the stress/mental health formulation. For many people, the mere absence of suicides and nervous breakdowns (or even of insomnia and nailbiting) does not necessarily equate to a strong sense of joy, personal growth, contentment, or other aspects of wellbeing. There is even a certain philosophy of life which holds that true exhilaration is not possible without the risk of catastrophe, so that high levels of social "pathology" could easily be considered as compatible with high individual quality of life. However, one fundamental attribute of satisfaction/happiness is that it (or they) cannot be measured from secondary data sources. Society keeps detailed statistical records of problems--not joy, not personal growth, not contentment, not happiness, not satisfaction. This means that primary data collection is required for SIA consideration and/or underlying supportive research regarding satisfaction/happiness.

Survey analysis of satisfaction and happiness began on a large scale in the 1950's with Hollingshead & Redlich's (1958) community study of social class and mental illness; the "Manhattan study" of mental

health in New York (Srole, Langner, Michael, Opler, & Rennie, 1962; Srole & Langner, 1975); and a national survey of Americans' attitudes toward their own mental health conducted in 1957 (Gurin, Veroff, & Feld, 1960). These studies focused primarily on stress and mental illness, but also included some questionnaire scale items of a positive nature. The "Kansas City Study" (Neugarten, Havighurst, & Tobin, 1961) was the first to concentrate primarily on life satisfaction. In the 1960's, there were major studies aimed at identifying the domains of life involvement (Cantril, 1965) and the determinants of avowed happiness and general affect (Bradburn, 1969). Also in the 1960's, ongoing national surveys such as the Gallup polls (Atkinson, 1982), Lou Harris surveys (Presser, 1982), and the University of Chicago's General Social Survey (Davis, 1977; Davis, Smith, & Stephenson, 1978) began asking a few questions about happiness and satisfaction, so that a longitudinal data base on such matters has been accumulating on a national basis. In the 1970's, large-sample national and metropolitan survey research through the University of Michigan's Institute for Survey Research (Andrews & Withey, 1976; Andrews & Crandall, 1976; Rodgers & Converse, 1975; Campbell, Converse, & Rodgers, 1976; Herzog, Rodgers, & Woodworth, 1982) and regional surveys (Bharadwaj & Wilkening, 1977) focused primarily on satisfaction with life in general and major domains of life activity. A 1976 replication (Veroff, Douvan, & Kulka, 1981; Bryant & Veroff, 1982) of Gurin et. al.'s original 1957 national mental health study was oriented in equal parts toward both psychopathological symptomatology and positive life satisfaction. National Canadian studies (Coates, Moyer, &

Wellman, 1969; Atkinson, 1982) have followed a similar course of development, and a series of European surveys on wellbeing (Fine-Davis & Davis, 1982) have defined "mental health" primarily in terms of life satisfaction.

Four basic types of psychometric items--all essentially of the Likert format--have been used to measure satisfaction/happiness: a 7- or 11-point satisfaction scale (completely dissatisfied to completely satisfied) for "life as a whole" or for specific domains; a seven-point "delighted-terrible" emotional response scale to life as a whole; Cantril's (1965) self-anchoring ladder scale, asking people to rate their current lives on a continuum from "best possible" to "worst possible" life for them; and simple three- or four-response-category questions about how happy the respondent feels. (It should be noted that the few comprehensive researchers into happiness--e.g., Bradburn, 1969; Warr, Barter, & Brownbridge, 1983--have employed much more sophisticated scales for measuring happiness.) The limited evidence from longitudinal surveys indicates good test-retest reliabilities (Rodgers & Converse, 1975; Atkinson, 1982), and construct validity as measured by inter-item validity (adjusted for measurement errors) appears to be good for all these types of measures (Andrews & Crandall, 1976).

A major thrust in the subjective quality of life literature has involved analysis of the "structure" of wellbeing and the various measures of subjective quality of life. Such analysis has taken place at a number of levels, perhaps the most basic of which is the

distinction between affect and cognition alluded to at the beginning of this discussion. Another basic distinction involves the independence of positive and negative affect. Bradburn (1969) noted that measures of positive and negative affect were essentially uncorrelated, rather than forming opposite poles of a unitary dimension (although he proceeded to create a single combined "affect balance scale" by the simple expedient of subtracting negative from positive affect scores). This finding was replicated by several subsequent researchers (Westbrook, 1976; Zautra & Reich, 1980). Warr et. al. (1983) found evidence to support a number of alternative explanations for the apparent independence of positive and negative affect. Bradburn had measured each in terms of the number of positive and negative experiences in a fixed recent period of time; Warr et. al. found that people's lives did indeed consist of a mixed bag of good and bad experiences, but that measures of how much of the time people felt happy or unhappy tended to produce a more unidimensional and bipolar picture. They also found that two independent personality dimensions were separately correlated with the two affect scales. Thus, the question of independence of positive and negative affect remains an open question.

There are several other levels on which the analysis of structure has taken place. One has involved consideration of the life domains comprising or determining overall quality of life. Much of this research has been predictive in nature and will be more thoroughly discussed in short order. However, one interesting footnote to this work

has to do with the question of what specific domains or activities (e.g., family, work, income, friendships, etc.) to measure in the first place to see if there is any empirical relationship with global life satisfaction. Cantril's (1965) seminal research in this area has guided many subsequent investigations, but there have been some alternative approaches. For example, ecological theory has been used as a base for devising categories (Bubolz, Eicher, Evers, & Songtag, 1980). Original research with general population samples (Flanagan, 1977) and psychiatrists and their patients (Blau, 1977) has also been used to come up with activities grounded in real life, although this work has tended to confuse determinants and domains with outcome symptoms such as interference with eating or sleeping. Empirical approaches employing multivariate analysis have produced varying results, reflecting the varying natures of original survey questions posed. Zautra, Beier, & Cappel (1977) found three "factors of life quality" described as happiness, community participation, and preferences. Rhoads & Raymond (1981) also found three quality-of-life factors, but these were conceptualized as "a life-space continuum with three basic levels: intimate life-space, social functioning, and community functioning" (p. 293). And the three factors identified by Bryant & Veroff (1982) were interpreted as happiness, strain, and personal inadequacy/competence.

A final approach to partitioning subjective wellbeing involves empirical analysis of the independence or intercorrelatedness of various measures. On the basis of numerous self-report studies, Lawton (1977)

concludes the following five subjective phenomena are independent:

(1) positive intrapsychic states (e.g., happiness, mood, positive self-concept, life satisfaction); (2) intrapsychic symptoms (anxiety, depression); (3) morale-related aspects of psychophysiological and somatic symptoms (headaches, loss of appetite, etc.); (4) interactive states (anomie, loneliness); and (5) self-rated health. (See Warr & Parry, 1982, for a similar cataloging and discussion of separate measurement-oriented quality of life concepts.) However, it is apparent that the definitions and focus of wellbeing here have expanded back to a level broader than is being considered in this section, and so we shall return to consideration only of satisfaction and happiness measures.

The major problem with life satisfaction/happiness studies from the viewpoint of all the policy sciences, including but not limited to SIA, is the essential unobtainability of universal satisfaction or happiness, particularly through the mechanisms available to societal policy makers. Uniformly high satisfaction is often regarded as an impossibility not only for the practical reason that resources are unavailable to supply physical requirements alone, but also for the underlying reason that--in the belief of most scholars--it is psychologically impossible for everyone to be satisfied at the same time. Satisfaction is a function of the appraisal of one's current situation in comparison with some reference point or reference group, and the concept of "universal satisfaction" implies that one's own situation must be so equivalent to that of everyone else that it is impossible to succeed in comparison with the

standard of reference. It is of course possible to argue that different things make for satisfaction/happiness in different people, but decisions about societal resources rarely involve the opportunity to consider such fine distinctions in individual needs and goals.

The significance of "aspirations" and "expectations" in mediating satisfaction/happiness was intellectually recognized even in the early days of satisfaction research (Gurin et. al., 1960; Bradburn, 1969; A. Campbell, 1972). It was underscored through empirical research findings, such as Duncan's (1975) discovery that satisfaction with personal standard of living was increased only by individual advances over group norms and not by overall social advances, or Rodgers' (1977) data indicating that satisfaction effects of employment for women were dependent primarily upon whether the women wanted to be working in the community participation, and preferences. Rhoads & Raymond (1981) also found three quality-of-life factors, but these were conceptualized as "a life-space continuum with three basic levels: intimate life-space, social functioning, and community functioning" (p. 293). And the three factors identified by Bryant & Veroff (1982) were interpreted as happiness, strain, and personal inadequacy/competence.

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(see Andrews, 1981 for an overview), but it might be noted that one of the more important concerns is the extent to which people use their own past situations versus appraisals of social peers' current situations as a major reference point. Shin & Johnson (1978) found that avowed happiness in an American sample was much more correlated with "comparisons with others" than with "comparisons with the past." Future research will hopefully explore this question in greater depth, looking at the types of circumstances or the personal factors which encourage choice of one reference point versus the other.

More problematic is the likelihood that expectations and aspirations are dynamic in nature, constantly shifting in response to both external and internal changes and thus assuring that satisfaction and happiness are ever fleeting states. McCall (1975) pointed out that Maslowian theory states that the satisfaction of one need level automatically shifts the motivational focus to a higher level. Amos, Hitt, & Warner (1982) found empirical evidence that the process of economic development at the regional level is related to aspiration levels and hence to life satisfaction. This conundrum has had profound effects on the attitude of prominent life satisfaction researchers, such as Willard Rodgers, on the phenomena they have spent much of their own lives investigating:

...to set about the goal of trying to maximize satisfaction for everyone might well be a thankless task, and one that invites the use of unacceptable means. Society has little or no access to most of the cards in this game: something may be done to modify at least certain environmental conditions, but it may well be that...these objective conditions have only a small influence on individual evaluations of the environment.

Even more bewilderingly, the very process of improving objective conditions may also increase what is expected, with the end result that objective improvements may have little apparent impact, or even negative impact, on levels of satisfaction. The "revolution of rising expectations" is most apparent in developing countries, but the same phenomenon pervades developed countries as well, as witnessed by ever new consumer demands to match rising levels of real income. (Rodgers, 1981, p. 96)

Rodgers believes the appropriate "bottom lines" for evaluating societal conditions (i.e., in the sense of choosing the best social indicators) are therefore the objective social measures such as income, public health, family stability, etc. However, he still believes there is an important role for subjective wellbeing information in terms of identifying which indicators should be selected and how they should be evaluated--e.g., do rising divorce rates mean greater domestic stress or just greater freedom to escape from stress?

An alternative response to the problem, however, is simply to determine on a judgmental basis what socioeconomic conditions are prerequisites for (although not guarantees of) high subjective quality of life, and then to measure both the level and distribution of these "needs" within a society. This represents a common objective approach taken both in social accounting and social impact assessment. But the question remains: Are the "experts'" chosen indicators the same things which the general population of a community would agree are "basic needs?" Some subjective quality-of-life researchers (e.g., Milbrath, 1979; Gratton, 1980; Murrell, Schulte, Hutchins, & Brockway, 1983) have therefore reconceptualized their survey objectives to focus on the

"needs" for (rather than the "determinants" or "correlates" of) individual quality of life. While this approach has some theoretical advantages and results in a slightly greater emphasis on exploring the importance of various government services, it ultimately results in research design and analysis very similar to that employed in earlier quality of life research--analyzing the relationships between response to questions about satisfaction and other perceptions or characteristics of the population.

The major contribution of "satisfaction/happiness" research to SIA would probably be to interpret the importance of other types of impacts. This is a slight but significant difference from the usual "bottom-line" perspective taken in this chapter. That is, it is perhaps conceivable that decision makers will accept predictions of stress/mental health impacts as outcomes with intrinsic meaning in their own right, but--for the reasons just discussed--there is likely to be skepticism about forecasts regarding project impacts on overall "happiness" or "life satisfaction." But what the satisfaction/happiness literature (or research paradigm, if original community-specific research is possible) can contribute to SIA is an understanding of the relative importance of various other impacts which have been analyzed. If a project is anticipated to increase income but also have negative health impacts, which outcome should be considered the more important? This is the perennial dilemma in which decision makers find themselves when confronted with an EIS suggesting complex project impacts and one which might be aided

through psychological research into determinants of satisfaction or happiness.

This research has examined the determinants (or, more accurately, correlates) of satisfaction at two levels: global and specific. The global level refers to an individual's overall appraisal of his/her life situation, while the specific level has to do with satisfaction in particular domains--family, job, community, etc. Satisfaction in the varying domains is often also of interest as a predictor of global life satisfaction. In some studies (Rodgers & Converse, 1975), summed domain satisfaction scores have been used as an alternate measure of overall wellbeing.

There are several theoretical perspectives on global life satisfaction determinants--primarily resource availability and activity/role analysis (Herzog, Rodgers, & Woodworth, 1982)--but, in practice, most research has involved predicting satisfaction from demographic characteristics and/or satisfaction in specific domains. In virtually every study thus far cited, the major demographic predictors (controlling for other variables) of happiness and satisfaction have been income and marital status. Rich and married people do indeed enjoy life a great deal more than the poor and lonely. Age plays a more complex role, with older people reporting less happiness, but also more life satisfaction and less worrying. (See Herzog et. al., 1982 for an overview of the literature and one of the most comprehensive analyses of multiple datasets on age differences.) However, projects of the nature

studied in SIA's do not affect any individual's age, and so the key findings here are the primacy of income and family life-cycle effects.

Compared to demographics, domain satisfaction has generally proved a better statistical predictor of overall life satisfaction, although this is due at least in some part to shared method variance (Andrews & Crandall, 1976). The major national quality-of-life surveys in the 1970's (Campbell et. al., 1976; Andrews & Withey, 1976) determined that satisfaction in 12 to 15 life domains could account for about half the variance in overall life satisfaction. However, the research findings are not easy to summarize, primarily because the pattern of relationships has been found to vary greatly by nationality (Fine-Davis & Davis, 1982), ethnicity (Raymond, Rhoads, & Raymond, 1980), socioeconomic status (Gratton, 1980), income group (Bharadwaj & Wilkening, 1980), sex (Campbell et. al., 1976), and age (Herzog et. al., 1982). In general, domains and activities associated with immediate everyday life (personal health, income, family, housing, job, etc.) are more strongly associated with happiness and satisfaction than more abstract or distal concepts (religion, government, participation in community affairs, etc.). From the SIA perspective, this complexity suggests (1) SIA practitioners could benefit from a satisfaction/ happiness "handbook" presenting the available knowledge in much more complete form than has been possible here, and/or (2) original, community-specific research on local satisfaction and perceived needs could be a very useful part of any given impact assessment effort.

The satisfaction research has also explored predictors of satisfaction/happiness in various specific domains (although, in most cases, not as thoroughly as for overall life satisfaction). Some of the domain satisfaction findings are perhaps better seen as supplements to broader fields of study. For example, "satisfaction with self" is a frequently analyzed dependent domain variable (A. Campbell, 1976; Andrews & Withey, 1976), but it is probably better studied in conjunction with the self-esteem literature (Lewinsohn & Amenson, 1978; Wills & Langner, 1980). Job satisfaction is another specific domain often studied by wellbeing researchers (Gavin & Montgomery, 1982; Atkinson, 1982), but there was a vast and independent body of literature on this topic long before the quality of life studies were initiated (Seashore, 1974; Portugal, 1976) and occupying the attention of stress researchers (Vossel & Froehlich, 1979) in more recent times. Literature on satisfaction with low-income housing projects (Kalt & Zalkind, 1976; Rent & Rent, 1978) would clearly be useful to the occasional SIA concerning such a project, although it would be more useful yet in conjunction with environmental psychology studies of building design characteristics (and during the project design, rather than the impact assessment, stage of planning).

The concept of community satisfaction may be one of the most salient for SIA. It is also one of the most frequently studied domains, perhaps because of the long interest on the part of sociologists in the "community" concept (Lynd & Lynd, 1937; Hillary, 1955; Warren, 1970, 1978). Because much of this traditional literature involved discussions

of the various functions or components of "community," one of the first thrusts of the new community satisfaction research involved determining perceptions of, or satisfaction with, different components of community, determined and measured either on the basis of theory (Fitzsimmons & Lavey, 1976; Fitzsimmons, 1977) or through empirical research and multivariate analysis (Bardo, 1976; Bardo & Hughey, 1978). As is often the case in multivariate analysis, the number and interpretation of dimensions has varied greatly, depending on item content, place, and the statistical technique employed. However, as research objectives shifted to determining the relationship between identified factors and measures of community satisfaction, it was generally determined that about 40 percent of the variance in satisfaction could be predicted by factor scores, whether the study indicated three basic factors (Goudy, 1977) or 38 (Widgery, 1982). Unfortunately, the differences in methods and concepts have yet to yield a clear picture of the major determinants of community satisfaction. For example, Ladewig & McCann (1980) report that "accessibility" to local facilities and amenities is by far the strongest predictor of satisfaction, followed by availability of local media outlets. Goudy (1977) found that the "social dimension" (participation, power distribution, community pride, etc.) was the best predictor. Gavin & Montgomery (1982) note a complex two-way interaction between job satisfaction and community satisfaction. Widgery (1982) found the best predictors in an urban Michigan community were "trust in local government and political system," "satisfaction with family and friends," and "satisfaction with aesthetics."

The reasons for these apparently contradictory results, while open to speculation and further research, quite obviously involve not only method effects but the consequences of apparently minor but possibly very important distinctions related to the overall concept of "community satisfaction." This is indicated by the number of studies involving similar theoretical concepts but widely differing conclusions. For example, studies of neighborhood satisfaction (as opposed to, although sometimes confused with, community satisfaction) have tended to emphasize attitudes toward and social similarity with immediate neighbors, aesthetics, and security (Lansing & Marans, 1969; Galster & Hesser, 1981; Davis & Fine-Davis, 1981). Widgery (1982) found very different correlates of community vs. neighborhood satisfaction, as well as marked demographic differences in the determinants of each. Work on community attachment (emotional involvement or identification rather than evaluative satisfaction) has stressed the importance of community size and density vs. social integration factors such as length of residence and social status (Kasarda & Janowitz, 1974; Buttel, Martinson, & Wilkening, 1979; Goudy, 1981; Riger & Lavrakas, 1981; Wasserman, 1982). A semi-behavioral approach to community attachment involves willingness or resistance to make a residential move (De Jong & Fawcett, 1981; Kirschenbaum, 1982). Satisfaction with social integration in one study (Bharadwaj & Wilkening, 1980) was related primarily to family satisfaction, while satisfaction with social support appears to be primarily a function of the number of personal confidants rather than any other attributes of social networks (Stokes, 1983). Finally, analysis of

satisfaction with community services (Wasserman, 1982; Murrell et. al., 1983) represents an aspect of community satisfaction edging close to traditional needs assessment studies.

This illustrates the complexity of both the types of "community" with which some involvement might be felt and also of the types of affective, cognitive, or behavioral response which individuals can have to the varying levels of community. Thus, while impacts on community satisfaction may sometimes seem an appealing "bottom line" for SIA, the available knowledge is probably still too disorganized and embryonic to permit firm forecasts. Overall life satisfaction, while a vaguer concept, offers more immediate value to SIA as an aid to evaluating conflicting EIS findings. But the intuitive appeal of "community satisfaction" (and/or community attachment and/or neighborhood satisfaction, etc.) is still compelling, and it is to be hoped that future research can be conducted somewhat with the needs of SIA practitioners in mind, so that future conceptual and empirical clarifications will be quickly available to assist the impact assessment process.

Environmental Cognitions/Values: The final category of "intra-psychic" variable suggested in Table 4 as often being both important and valued in SIA involves environmental cognitions and values. How people perceive their physical environment and respond to it is a psychological question which ties in very directly with the original physical orientation of the entire EIS system (as suggested by the U.S. Supreme

Court's 1983 decision in the Three-Mile Island case--see Chapters II and V).

For the sake of brevity in this discussion, Table 4 has collapsed into a single category a wide range of research areas touching upon both environmental cognitions (perceptions, interpretations) and affective response (aesthetics, mood). Much of the purely cognitive research has focused on the legitimacy of the "imaginary map" or "map-in-the-head" metaphor first suggested by Trowbridge (1913; Kozlowski & Bryan, 1977) for depicting human means of acquiring and storing knowledge about relative spatial locations. Recently Kuipers (1982) has subjected this research to a critical review and has concluded that the idea of a "cognitive map," while a useful metaphor, does not accommodate all evidence about spatial cognition and has tended to restrict research in other areas. From the SIA perspective, cognitive maps would usually not seem a promising "bottom-line" variable, with the possible exception of some work on learning how to get around new small-town environments (Devlin, 1976) and the significance of "landmarks" and other environmental cues (which might be altered by a major project) for getting around a city (Lynch, 1960; Appleyard, 1970; Evans, Marrerro, & Butler, 1981). Another major line of work in environmental cognitions which would seem to have only distant value for SIA involves ontological research on the development of spatial knowledge in children (Piaget & Inhelder, 1967; Hart & Moore, 1973). In a review of these and other areas of research into environmental cognition, Evans (1980) notes that psychologists in

the field have only recently begun to pay much systematic attention to perceptions of real-life geographic settings. Obviously, as this attention increases, so will the value of the work to SIA.

The issues involved in affective response to physical environments seem of more potential utility in SIA. For example, questions of aesthetic impact are frequently raised in environmental assessment. Psychological research at the experimental level (Berlyne, 1971, 1974) has primarily involved basic and rather abstracts such as "stimulus complexity," and this orientation may impair its value for assessing major changes in the landscape, since limited evidence suggests that visual content (ocean, forest, buildings) is more important at the molar level than complexity (Ulrich, 1981). However, a separate and more immediately useful body of literature has been developing on techniques for quantifying aesthetic response to landscapes (c.f., Brown, 1974; Zube, Brush, & Fabos, 1975). Related to this has been research on the overall range and dimension of emotional response to environment, which has included both work from the stress literature on mood (Bartlett, Gove, Miller, & Simpkins, 1975) and affective quality attributed to the physical environment (Russell, Ward, & Pratt, 1981). Russell et. al. found that emotional descriptors used to characterize physical environments (e.g., "exciting," "relaxing," "gloomy") can be reduced to a two-factor model, with one dimension being Pleasant-Unpleasant and the other Sleepy-Arousing.¹⁵ Obviously, such research also overlaps with the previously discussed "psychosocial climate" investigations of Moos

(1974, 1979b); for environmental psychology variables, the distinction made in Table 4 between the "social psychological" and "intrapsychic" variables is a little fuzzier and more difficult to maintain than it is for other types of variables.

One variable which surely ranks among the more likely contenders for acceptance as a "bottom line" criterion in SIA (at least some of the time) would be public perception of overall environmental "quality." (Again, there is possible overlap with other categories in Table 4, such as environmental values at the social psychological level or satisfaction at the intrapsychic level. However, research on perceived environmental quality has generally been carried out by environmental psychologists also concerned with other aspects of environmental cognition and affect.) The measurement of perceived environmental quality was pioneered in good part by Craik (1972, 1975; Craik & Zube, 1976), but a great variety of methodological tools has emerged--a particular asset for the potential practice of psychological SIA, which is so often deficient in quantitative methods. Hyman (1981) has reviewed the methodological literature on "Perceived Environmental Quality Indicators" (PEQI's) and catalogues at least 15 approaches, falling into three general types: (1) descriptive assessments (e.g., adjective checklists, semantic differential scales, repertory grids); (2) preferential judgments (e.g., Guttman scales, preference ratings); and (3) evaluative appraisal (e.g., Q-sorts, willingness to pay, trade-off analyses).

PEQI's represent an approach to measuring the meaning and importance to local residents of the specific environment which could be

changed by a proposed project. To be useful in SIA, they should be supplemented by measures of the quality and importance of other socio-environmental factors which might be impacted by the project (e.g., economic factors). More problematic is the issue of forecasting changes in the level of perceived environmental quality following project completion. As a methodological tool, PEQI's are currently more appropriate for profiling present conditions than for predicting change. An opportunity for research scholars to produce work of value to SIA would lie in prospective longitudinal case studies (preferably in multiple sites) to measure the degree and determinants of change in PEQI following implementation of various types of projects.

KEY PROJECT CHARACTERISTICS: AN OVERVIEW

In the opening portion of this chapter, it was pointed out that psychologists often organize their thinking by the psychological dependent variables of interest to them but that SIA starts from the project characteristics and asks: "What effects will these have?" Table 5 "nominated" certain categories of project characteristics as being particularly likely to have psychological impacts of at least occasional interest and import to decision makers and the public: (1) economic growth or change; (2) induced population growth; (3) landscape/urbanscape change; (4) special building design characteristics; (5) displacement/relocation; (6) noise; and (7) social or physical risk factor. Table 5 also noted several important "process characteristics," although these

will be given only cursory attention here due to the predictive orientation of this chapter.

Each of the seven suggested key project characteristics (and sub-categories of several of them) will be discussed here, and aspects of one--economic changes--will be subjected to a more comprehensive analysis in the final section of this chapter as an in-depth illustration of the potential opportunities and constraints presented by psychological research literature for the SIA practitioner and/or the SIA-oriented supporting researcher.

Economic Growth or Change

Often, major new projects bearing economic attributes are characterized as having economic "benefits" but social "costs." Usually, economic outcomes such as new jobs or increased local tax base are regarded as intrinsic bottom lines in their own rights, while the typically more intangible costs (changes in lifestyle, sense of alienation, resentment among different social groups) are considered to be separate and independent consequences. In many and perhaps most cases, this model will be adequate. Occasionally, however, it may be appropriate to consider the indirect psychological impacts of economic change.

To the limited extent that psychologists have become involved in economic studies, the research has usually focused on consumer psychology or psychological variables affecting willingness to spend vs.

desire to save (Katona, 1975; Warneryd, 1982). However, the concern in SIA would be with psychological variables as dependent rather than as independent variables. Table 5 suggests four particular economic characteristics which may trigger higher-order psychological impacts: (1) shifts in levels or distribution of income; (2) shifts in socioeconomic status; (3) individual employment/unemployment changes; and (4) global economic shifts. There is some overlap among these characteristics, so that several of them may be discussed together.

Income and SES: The first two variables--income and socioeconomic status--are particularly interrelated, although socioeconomic status (SES) is a broader and more abstract concept than income level. The strong negative relationship between personal income (and/or SES) and all forms of psychological disorder is one of the most thoroughly documented facts in psychology (Hollingshead & Redlich, 1958; Gurin, Veroff, & Feld, 1960; Srole, Langner, Michael, Opler, & Rennie, 1962; B. S. Dohrenwend, 1973b) and has been comprehensively reviewed by Dohrenwend & Dohrenwend (1969) and by Wills & Langner (1980). There is some indication the relationship is curvilinear, with particularly disproportionate problems among the very lowest SES groups (Ilfeld, 1978). Studies of subjective happiness (Bradburn, 1969) have also found that poor people, contrary to comforting myths, are more likely to report frustration and unhappiness as well as to experience mental health problems. For the most part, these studies do not establish a causal relationship--it is, for example, possible to argue that disturbed and unhappy people are

less likely to make money and to sink to the bottom of the social order--but circumstantial evidence would seem to be in favor of the "social causation" model, i.e., that poor socioeconomic conditions contribute to unhappiness and poor mental health more often than the reverse is true (B. P. Dohrenwend, 1975).

However, most of the foregoing studies have examined longstanding and stable differences in income or SES groups. The SIA situation calls for examination of change--either change in individual circumstances or perhaps the reaction of people whose situation is not changing even though the general background economy may be improving. The literature here is more limited and, perhaps expectably, more complex and contradictory. Brenner (1973) found lower-income groups to be the least vulnerable to severe mental health problems in response to economic downturns. In fact, hospital admissions rates in New York State were slightly more likely to decrease for the poor during hard times, a finding which seems not inconsistent with Thoits & Hannan's (1979) discovery of a temporary increase in psychological distress after low-income people embarked on an income maintenance program. On the other hand, Dooley & Catalano (1979) found changes in low-level psychophysiological distress were more strongly related to economic shifts among lower-income groups than among higher income groups.¹⁶ They also found more reported mild symptomatology at all times among lower-income groups, although they later (Catalano & Dooley, 1983) found no SES differences in average numbers of life events or probability of being physically ill.

Several principles appear useful in trying to make some sense out of this tangle of findings. One, as previously mentioned, is whether the economic change did or did not benefit the individual directly. For those who do benefit, the key concept appears to be frame of reference. This is particularly important in assessing the likely subjective benefits of increased income. Easterlin's (1973) cross-sectional analysis of the relationship between income and personal happiness in 19 countries, and Duncan's (1975) analysis of longitudinal data on satisfaction with income in Detroit, both found that variations in individual income within a group were related to individual sense of wellbeing, but that group variations or advancements did not result in increased average satisfaction for the group as a whole. Thus, people feel happier as they rise within their reference group, but not necessarily as their entire reference group rises with them.

Another issue is whether increases in income may not usually lead to increases in expenditures, so that disposable income may not increase that much (whereas debts and obligations may be skyrocketing). Atkinson (1982) offered this as a possible explanation for his finding that it required a 40 percent family income increase over two years to produce increased average satisfaction with income in a survey subgroup. Smaller increases did not change overall satisfaction. Nor, for that matter, did objectively-measured declines in income. However, people who subjectively felt they had experienced a "large decrease" were less satisfied with their income. The discrepant associations for objective

and subjective income changes suggests both that simple questions about income levels do not tap all relevant information and also that subjective reports about the extent of increase or decrease may be more meaningful than apparently "objective" self-reports of income level.

Employment and Global Economic Shifts: The literature on changes in employment/unemployment status also reflect the importance of the reference group situation for psychological outcomes. Studies of whole-sale industrial plant shutdowns (Aiken, Ferman, & Sheppard, 1968; Cobb & Kasl, 1977; Kasl & Cobb, 1982; Buss & Redburn, 1982) have found less indication of mental health consequences than have studies of people whose job terminations had not been shared with everyone else in their companies (Tiffany, Cowan, & Tiffany, 1970; Liem & Rayman, 1982). This is generally attributed to the greater likelihood of guilt and self-blame among those who "failed" in relation to their still-employed peers.

While SIA's may sometimes be carried out in situations which feature upcoming unemployment, the more typical project characteristic would be the creation of new jobs in a community. Jobs are usually quite adequate as a "bottom line" in and of themselves to local policy makers, who cannot be expected to worry too much about the exact psychological consequences of new employment or employment shifts. The issue of job satisfaction may arise if the new jobs are of a nature which do not fit the lifestyles, training, or dispositions of prospective

workers--e.g., introduction of an industrial or resort development into a previously totally agricultural area--but this concern is more likely to be addressed during economic analysis of "labor force availability" than to be relegated to psychological impact assessment. On the other hand, psychologists may have an important contribution to make in assessing the overall benefits of certain controversial types of jobs, such as tourism employment (sometimes alleged to produce a "servant mentality" or other decrements in human dignity--see Kent, 1975; Samy, 1975) or the value of periodic boom-bust jobs vs. no work at all (Gordus, Jarley, & Ferman, 1981).

Although psychological research into effects of unemployment and/or re-employment has been limited, the subject is potentially a very important one in many SIA's. For this reason, this economic project characteristic has been selected for much more detailed discussion later in this chapter, along with the next economic characteristic from Table 5--global economic shifts. Briefly, "global economic shifts" means general swings in the overall economy and their relationship with stress or reported subjective wellbeing. Two types of economic shifts have been studied, one much more than the other. Inflation has been a source of interest in the economic/consumer psychology, where it has been found that reported stress is more related to a sense of personal threat from inflation than to individual income level in Israel (Epstein & Babad, 1982). In American studies, changes in inflation rates have been found to be generally unrelated to changes in mood or psychological symptoms

(Catalano & Dooley, 1977; Dooley & Catalano, 1979). Psychological effects from changes in regional unemployment rates have been much more intensively studied, although still by just a handful of psychologists (Brenner, 1973, 1977; Frank, 1981; Catalano & Dooley, 1979a, 1979b, 1983; Dooley & Catalano, 1979, 1980). This topic differs from the previously discussed impacts of personal unemployment in that it examines the effects of general background community employment on the mental health of the community as a whole. Because shifting unemployment rates are much more likely than inflation to be (1) a proposed project characteristic and (2) at least in part a community-specific phenomenon, the later detailed discussion of "global economic shifts" will focus only on the literature dealing with changing unemployment rates.

Induced Population Growth

An increase (or decrease) in local population would represent a very important primary impact. Unlike economic primary impacts, however, population increases are not so often regarded as clearcut "bottom lines" in their own right. That is because their secondary impacts can be greatly mixed, in the sense of being both positive and negative. The positive outcomes are usually construed as being economic--increased markets or tax bases--while the negative ones are social and/or psychological--e.g., social tensions, individual alienation, access to institutions such as government, loss of freedom and

spontaneity, etc. (see Applebaum, Bigelow, Carmer, Molotch, & Relis, 1976, for a catalogue of such negative impacts). For this reason, there may sometimes be a marked interest in psychological consequences of population growth, as decision makers and the public attempt to weigh the varying indirect outcomes of population changes.

Table 5 notes there are at least four crucial dimensions of population growth with psychological implications: rate of change, size of ultimate population, composition, and density ("crowding"). All will be discussed here, albeit with more emphasis on the last, because of its particular interest value in many communities.

Rate of Growth vs. Absolute Level: Two separate but related sociology-based research traditions stress the reputed ill effects of rapid change vs. those of sheer size of urban population. Much of the sociological suspicion of boomtown impacts derives from the work of Durkheim (1898) and, more recently, Toffler (1970), which postulates great human difficulty in adapting to rapid and sweeping molar change. The thesis here is clearly psychological in nature, but psychologists have rarely addressed this issue in quite the form usually set forth by sociologists in SIA-type situations. On the one hand, a vast portion of psychological theory and research has implications for, or elements of, this issue--stress/mental health studies of "adjustment"; life changes; analysis of global economic shifts; manenvironment relationships; etc. (As just one example from the latter category, Proshansky, 1978, argues

that "place-identity" is a crucial component of self-identity, implying that rapid change in the nature of a home place would disrupt self-identity.) On the other hand, few if any psychologists have conducted extensive studies of impacts which can be attributed simply to rapid population increases after other potential explanatory variable have been held constant. Because sociological "conventional wisdom" holds that rapid change (and particularly rapid population growth) is disruptive, more psychological studies of adaptive constraints or capabilities in this area would constitute an important contribution to SIA.

By contrast, a substantial psychological literature has evolved on urbanization consequences--i.e., the psychological effects of living in large cities vs. small towns. This supplements the sociological tradition established through Toennies' gemeinschaft-gesellschaft dichotomy and through Wirth's theories regarding the anomic consequences of metropolitan living. Wirth (1938) held that increased community size (and particularly when combined with increased density and heterogeneous composition) is associated with increased social segmentation, which in turn leads to the fragmentation of society and the estrangement of the individual. Wirth's basic precepts are reinterpreted in environmental psychologist Roger Barker's (1968) behavior setting theory, which may suggest that "undermanned" settings (where roles and situations outnumber people, as is usually the case in rural environments) lead to more socially healthy conditions than "overmanned" ones.

In community psychology, Edward Sadalla (1978; Oxley, Barrera, & Sadalla, 1981) has been a champion of the Wirthian perspective that the quality (if not necessarily the quantity) of social contacts and interactions is reduced in large population centers. Stanley Milgram (1970) claims that urban life generates stimulus "overload," which "characteristically deforms daily life on several levels, impinging on role performance, evolution of social norms, cognitive functioning, and the use of facilities" (p. 1462). Helping behaviors, especially with strangers, have been observed much less frequently in cities:

The urbanites do not trust others and usually refuse to help strangers. Their social and moral involvement with others is restricted. Even in the exercise of everyday civilities they are reputedly deficient. People may bump into each other without a word of apology... Their social relations are characterized by superficiality, anonymity, and transitariness [sic]. (Basavanna, 1978, p. 39)

On the other hand, McCauley & Taylor (1976) found contradictory evidence about social patterns--i.e., equal or deeper intimacy and involvement in the social contacts of urbanites as compared to rural villagers. And although there is some indication of slightly lower mental illness rates among small-town residents, studies of rural-urban differences in mental health disorders have not revealed any sweeping or consistent patterns across all categories of impairment (see Dohrenwend & Dohrenwend, 1974 or--for a briefer but more recent review in the "boomtown" mental health context--Reynolds, Wilkinson, Thompson, & Ostresh, 1982).

Discussion of the psychological literature on urbanization could be expanded to cover many chapters, especially since this literature includes several topics which are separately mentioned in this presentation (e.g., noise and crowding). However, much of this work has a basic problem from the SIA perspective: Most studies involve cross-sectional analyses of prevailing rural-urban differences rather than longitudinal studies of actual population growth in small to medium-sized communities. SIA requires forecasts of impacts associated with the process of growth, unless it can be reliably demonstrated that psychological correlates of high population levels begin instantly upon the attainment of those levels. Studies of change may present a different picture than would be expected by static point-in-time analyses. One recent investigation using aggregate-level data discovered that high population growth rates in Canadian communities are actually associated with reduced mental illness hospitalization rates (Wood, 1983). Such analyses are subject to a number of methodological problems--reporting effects, ecological fallacies, lack of information on duration of the phenomena, and inability to identify the vulnerable population (e.g., longtime residents or newcomers, a particularly important issue in light of the evidence shortly to be mentioned about immigrants' susceptibility to mental health problems). The cross-sectional literature is not totally without value to SIA, since a population spurt may be construed as bringing the community into a new social state with stable and characteristic properties in regard to person-group relationships and/or mental health. However, increased attention to process dynamics will be

needed in the psychological literature on urbanization before this literature can truly constitute a valid knowledge base.

Population Composition: A third important dimension of population change has to do with the composition of the population. An SIA finding that an ethnically homogeneous community will become more heterogeneous, or that substantial numbers of lower-income people will move into what is now a middle or upper-income area, would constitute a political "bottom line" in its own right. Social psychological studies of exact mechanisms of ethnic conflict (c.f., Clarke, 1976; Merry, 1980) and/or the mediating effects of different leadership styles in bicultural situations (Garza, Romero, Cox, & Ramirez, 1982) would tend to be viewed as interesting footnotes to the basic conclusion of probable increased social tension.

One important compositional change that might not be so automatically considered a "bottom line" in and of itself could be increasing proportions of newcomers in the population as a result of rapid growth situations. At the socio-political level, sociologists outside the boomtown field have begun to attend to the implications of the recent nationwide urban-to-rural migration patterns for local community politics (Graber, 1974) and general shifts in social structure (Price & Clay, 1980). In fact, rural sociologists are now re-evaluating their previous implicit ideological emphasis on the evils of rural "decline" and are giving more thought to the unanticipated consequences of rural

industrialization or other forms of "development" (Hobbs, 1980). However, the phenomena with which social and community psychologists might be even more concerned could include group dynamics and mental health implications.

The rural energy boomtown case study literature contains numerous indications that such rapid resource developments can result in strained relations between newcomers and oldtimers (Doran, Duff, & Gilmore, 1974), disintegration of socioeconomic alliances among different groups of longtime residents (Gold, 1975), transformation of informal social control mechanisms to less effective formal controls (Watts, Thompson, & Blevins, 1976), rapid and sometimes confusing diversification of social roles (Murdock & Leistritz, 1979), and redistribution of status and power (Cortese, 1980). Although these primarily involve a focus on the "sociological" level of intergroup relations, there are also strong implications for the "social psychological" level of person-group alienation or involvement. Community psychology studies of the role of mobility and other factors on "neighboring" behaviors (Unger & Wandersman, 1982) or on the predilection to blame outside social groups for personal problems (Zautra, Young, & Guenther, 1981) represent a possible entry point for such concerns.

Another facet of newcomer-oldtimer relationships involves supposed value conflicts over further community development. According to several popular stereotypes, newcomers are likely to (1) oppose any more population growth after they themselves have moved to the rural

communities and (2) agitate for government expenditures on various improvements considered of secondary importance by longtime residents. While this may be true at some times and places, the few quantitative attitudinal surveys conducted on these topics contradict the myths. In a multi-state survey of high-growth rural areas, Fliegel, Sofranko, & Glasgow (1981) found no difference between longtime residents and newcomers in their uniformly high approval of continued population growth. As for newcomer demand for additional services, Smit & Joseph (1982) found that newcomers to a rural area would indeed prefer a host of additional capital outlays but that their prioritized choices in conditions of budgetary constraint closely match those of longtime residents.

The other important psychological outcome of increasing proportions of newcomers in the population involved mental health impacts. Again, the boomtown case study literature contains strong indications that such palpable mental health indicators as caseload, suicides, and drug and alcohol abuse rates--along with externalized pathological behavior like crime and rowdiness--are realistic concerns for psychological SIA (Kohrs, 1974; Gilmore, 1978). Despite a pronounced sympathy among sociological SIA writers for longtime residents thought to be "overwhelmed" with change, much of the observed mental health pathology actually occurs among the newcomer population (Weisz, 1979). This is frequently attributed to the physical and social isolation of newcomers in such areas, but it is also consistent with a variety of psychological

studies which have found increased emotional and behavioral pathology rates among immigrants to a country and sometimes among migrants within the same country (Odegaard, 1932; Malzberg, 1940; Bhaskavan, Seth, & Yadav, 1973). However, mental illness hospitalization rates for any one immigrant group decrease as the proportion of the population comprised by that group increases--i.e., as more social support resources from the country of origin are present within the population (Murphy, 1973). This suggests a probable curvilinear relationship between mental health problems and newcomer population proportions. Since most of the classical psychological studies are of immigrants from other nations rather than immigrants to some community from other communities in the same nation, the issue deserves a good deal of further research from SIA-oriented scholars before SIA practitioners can rely heavily on the literature for forecasts.

Density/Crowding: The fourth and last dimension of population growth involves increased density and its (sometime) psychological correlate, a subjective sense of "crowding." While studies of reactions to "urban" environments do not necessarily distinguish between the Los Angeles sprawl and the Manhattan high-rise model of city life, the density/crowding literature is specifically concerned with reactions to a greater number of people (or, occasionally, buildings) in the same physical space.

Psychological interest in crowding intensified in the early 1960's when Calhoun (1962) published results of laboratory studies on

development of pathological behaviors among rats as the population was allowed to grow naturally within a confined area. As the population density increased, so did abnormal sexual behavior, neglect of the young, and marked aggression in some animals and withdrawal in others. Subsequent studies have identified pathological reactions to high density in other species, in both laboratory and natural settings (Southwick, 1967; Davis, 1971; Marsden, 1972; Jorde & Spuhler, 1974).

However, results of extensive research into effects on human beings have proved much more complex and ambiguous. Stokols (1972) helped to resolve some of the confusion by making a key semantic distinction between "crowding" (a subjective state and/or response) and "density" (objective measures such as ratio of person to area or distance between buildings). Rapoport (1975) argued that "density" was also subjective, since ratings of density in the same situation could vary from person to person. Although most researchers still use "density" to refer to objective measures, Rapoport's article was influential in stimulating cognitive psychological research into what is now more generally called "perceived crowding," and factor analyses have confirmed that the feeling of being crowded in a situation is conceptually distinct from ratings of how crowded that situation is for the same respondent (Kalb & Keating, 1981). Rodgers (1981) found generally weak correlations between objective density measures and perceptions of crowding.

Although they often do not specify differential implications for perception vs. affective or behavioral response, a number of theoretical

constructs have been suggested for explaining at a conceptual level just when a situation would or would not be considered "crowded." Two of the most frequently cited are the social or behavioral interference and the stimulus or social overload models. Proponents of the interference approach (Saegert, 1973; Stokols, 1976; Schopler & Stockdale, 1977) argue that "crowding" occurs when the presence of other people interferes with obtaining desired behavioral goals. Overload model theorists (Milgram, 1970; Esser, 1972; Valins & Baum, 1974) say that "crowding" occurs when people's information-processing capabilities are overwhelmed by perceptual stimuli and/or demands for social response. Several other theoretical constructs have also been offered to explain differential "crowding" judgments or responses. Altman (1975) has stressed the role of privacy; Sommer (1969) and Sundstrom (1975) have concentrated on incursions into "personal space"; and Wicker (1973) has viewed crowding as an instance of "overmanning." (There has also been extensive empirical research into the role played by numerous situational and psychological mediators, and some of this will be touched upon later.) In many ways, though, these additional theoretical positions represent special cases or extensions of the basic two models of interference and overload.

As is quite often the case in psychology, the debate between two "competing" theories is proving a false issue, since both can be correct under different circumstances. A factor-analytic study of perceived crowding in various situations (Keating, 1979) found two primary factors

equivalent to the two major theoretical constructs, plus a third factor having to do with misattribution of stress to surrounding groups of people. (The latter "scapegoating" response is somewhat analogous to Freedman's 1975 contention that density simply serves to intensify people's normal reactions to a situation.) More recently, Taylor (1981) used multidimensional scaling for empirical identification of "crowding" dimensions among different subgroups with homogeneous replies. He found that most groups manifested perceptual dimensions roughly comparable to the interference and overload constructs, but that affective responses to the situations were differentially correlated to these dimensions for different groups--i.e., some subjects were most bothered by situations interfering with freedom of movement ("spatial constraint") and others were most "crowded" in situations overloading them with required social interaction ("social constraint"). In addition to individual differences, there are also indications that different situations elicit different overall average types of crowding stress reactions (Karlin, Epstein, & Aiello, 1979).

Psychological research into human density/crowding effects has involved various methods, levels, and dependent variables of interest. The two principal methods have been (1) experimental studies and (2) correlational analyses of psychometric ratings and responses (and/or correlational analyses of objective density measures with either psychometric ratings or recorded pathology) (Griffitt, 1977). Experimental studies have tended to focus on a situational level--settings in which

tasks are to be performed or social interaction is expected. Correlational analyses have more often focused on enduring housing or urban form levels--immediate residence, neighborhood, or city (Schmidt, Goldman, & Feimer, 1979). From the SIA perspective, evidence about crowding impacts on what may be regarded as "behavior settings" can be useful if these are important everyday settings with intrinsic significance to decision makers and the public (e.g., schools, work areas, major streets). However, most of the situational literature to date has focused more on artificial laboratory-created contexts, and so the work on housing, neighborhood, or communitywide crowding would probably be the more relevant for the time being.

The major dependent variables studied in most of the crowding literature have been (1) perceptions of "crowdedness" (which is also often used as an independent variable along with objective density measures in studying the remaining dependent variables); (2) self-rated emotional response to crowding (discomfort, uneasiness, etc.); (3) satisfaction with housing or community as a function of crowding; (4) impairment or enhancements of task performance; (5) social behavior (helping, communicating, arguments, withdrawal) and implied psychological states (alienation or anomia); (6) physical health; and (7) indicators of stress and pathology (personal-level, such as mental health, or societal-level, such as crime). Pathological behavior (and sometimes health, which is often examined concurrently with pathology) has been primarily studied through analysis of aggregate-level statistics. Of

these, perceptions and mild emotional responses do not really seem to be likely significant "bottom lines" for psychological SIA, even though a great deal of the literature is concerned with them. Task performance, as previously noted, could be an important variable for selected tasks, but the present literature presents some validity problems and/or deals with situations normally not requiring SIA's (e.g., increasing school classroom sizes). Social interaction and alienation effects have most often been studied in conjunction with the urbanization literature already mentioned. Therefore, the following brief discussion will be concerned with the remaining three variables-pathological behavior, health, and satisfaction.

Density impacts on pathology/stress and physical health would appear to vary with the level of analysis. At the overall urban level, little or no effects have been found, but there have been at least some studies which found significant problems associated with high household densities.

High-density urban areas usually have higher rates of crime, mental illness, poor health, etc. However, these appear to be primarily associated with low income and other socioeconomic characteristics of typical inhabitants of such areas. Schmitt (1957) found no relationship between area population density and crime or delinquency in Honolulu after controlling for demographic characteristics, although he did later (Schmitt, 1966) find some association with other indicators of health and social disorganization. Galle, Gove, & McPherson (1972) found very

little such association with urban or neighborhood density, however, and Booth & Cowell (1976) found no relationship between physical health and neighborhood density after controlling for socioeconomic variables. Freedman, Heshka, & Levy (1975) could find no relationship in New York City data. Kirmeyer (1978) concluded that these and other studies reviewed showed a preponderance of evidence against any pathological effect of aggregate urban density independent of socioeconomic characteristics.

Research on household density has produced contradictory results, but there have been at least some indications of negative impacts from crowded households. In contrast to their lack of findings for overall urban density, Galle et. al. (1972) and McCarthy, Galle, & Zimmer (1975) found a strong relationship between intrahome density and various measures of health and social disorganization after controlling for demographics. Booth & Cowell (1976) found more limited and milder physical health associations, although Booth & Johnson (1975) found health implications for children growing up in high-density conditions. Gove, Hughes, & Galle (1979)--in a survey of 2,000 Chicago residents designed to minimize collinearity between density and socioeconomic variables--found that both objective density and subjective crowding in the home were strongly related to poor mental health, poor social relationships in the home, and poor health care; they were less strongly but still significantly related to poor physical health and poor social relations outside the home. On the other hand, there have also been some studies

which have found little relationship between household density and stress (Mitchell, 1972; Levy & Herzog, 1974; McPherson, 1975) or physical health (Rohe, 1982). Part of the contradiction may come from different measures of density. While the number of persons per room has usually been found the best predictor of pathology, this measure has been challenged by some (Baldassare, 1978), and Galle et. al. found that another measure--number of rooms per unit (considered a proxy for size of home)--was most strongly related to mental hospital admission rates. Also, the work of Rohe (1982), to be discussed further shortly, indicates that the strength of association between household density and behavioral problems can vary with such factors as relationships and perceived similarity between occupants.

Much less work has been carried out on the relationship between density (or perceived crowding) and satisfaction with home, neighborhood, or community. The most extensive study is Rodger's (1981) analysis of a survey of some 1,200 Detroit metropolitan residents. Rodgers found that perceived crowding at each level was much more highly correlated (in the 0.40 range) with subjective satisfaction than were any of the objective density measures. However, in a multiple regression analysis, objective density measures did add to the percentage of variance explained, suggesting that they contributed to satisfaction independently of perceived crowding. Most of the additional variance attributable to objective density measures was associated with household income, meaning that objective density effects were either spurious

or were mediating effects ultimately due to income. In an alternative analysis using the LISREL computer program technique to remove assumed measurement error due to response bias, Rodgers concludes that objective density has actually almost no effect on satisfaction, and what little can be detected is totally mediated by perceptions of crowding. (Rodgers does not offer an opinion as to which analysis is more accurate.)

In a stratified sample of students and residents in a Pennsylvania college town, Rohe (1982) found a moderate zero-order correlation between residential satisfaction and residential density. Controlling for socioeconomic variables and other density measures lowered the level of association but left it statistically significant (at the $-.23$ level). This level of association held for various groups, such as those with different histories of living in crowded environments.

Rohe's work is particularly significant as a model for future SIA-relevant research which could help to identify groups which are particularly vulnerable to crowding stress. There has, of course, been a great deal of research into various types of mediators of perceived crowding and/or crowding stress--e.g., physical or architectural characteristics of the setting (Desor, 1972; Baum & Davis, 1976; Rohe & Nuffer, 1977); aspects of the social environment (Fisher, 1975; Stockdale, 1978); personality traits and mechanisms (Loo, 1978; Taylor, 1981; Streufert, Nogami, & Streufert, 1981); the exact nature of the task or setting (Cohen, Sladen, & Bennett, 1975; Stockdale, 1978); and, particularly, the level of perceived control over the situation (Sherrod,

1974; Baron & Rodin, 1978). However, most of these variables would usually be either irrelevant to the SIA situation or beyond the typical ability of the practitioner to measure. What is usually needed is a straightforward principle permitting reliable identification of vulnerable groups.

Rohe's study is self-admittedly too limited in geography and demographic characteristics to permit generalization across the country, but the initial findings are intriguing and the essential analytic approach a necessary one for identifying vulnerable groups. Rohe divides his sample into various subgroups and notes the differential strength of association in each group. Several of his findings are counterintuitive. For example, he finds that density impacts on stress and health are much stronger for large family than for large nonfamily households; that respondents report social withdrawal in high density situations more when household members are perceived as similar; and that arguments increase with household size more readily for people with a previous history of living in high-density households. It will be of obvious interest whether or not these results are actually replicated and successfully interpreted in future studies. However, the point for now is that such findings, if substantiated, provide the SIA practitioner with some basis for identifying which types of people (e.g., family more than nonfamily households) are vulnerable to increased residential density.

The question of the overall utility of the psychological literature on crowding is perhaps another matter. Theoretical perspectives are

typically conflicting and inconclusive, although Rusbult (1979), in a literature review intended for planners, suggests that the interference model is most appropriate for policy studies because it "is capable of identifying those areas of human life which are in greatest need of attention" (p. 741)--i.e., can be related to survey or social-indicator evidence of societal goals/needs. On the empirical side, one of the most striking findings in the literature is the lack of relationship between aggregate urban density and personal stress or social pathology. It is an interesting question as to whether the public or its decision makers would accept such an "expert" conclusion in a controversial issue involving major density increases in a particular urban area. On the other hand, the data on residential density impacts, while not yet definitive, has great potential significance for SIA. The current American trend is for families to pay increasingly larger sums for increasingly smaller dwelling units, and there is perhaps some tendency for decision makers to assume that people are adapting to this situation with little or no sociopsychological cost. Such an assumption can on the one hand lead to uncritical acceptance of proposed cracker-box housing subdivision or, on the other hand, to an equally sanguine "without-project" future (if the project would provide housing) of a "no-growth" policy that actually simply means more population in the same number of residential units.

The psychological crowding research typifies a standard deficiency in psychological research from the SIA perspective: the lack of study

into change processes. Experimental analyses which plunge subjects into new situations are almost always dealing with transient and short-term conditions. Major environmental factors are usually considered only in cross-sectional correlational studies which can neither establish causality nor document the unique effects from the process of change itself. There have been a few studies with some limited longitudinal element--e.g., Walden, Nelson, & Smith's (1981) research into college freshmen's adjustment to high-density dormitory conditions--but there is a need for many more. Again, at least for the time being, SIA-directed research appears to be a prerequisite to the widespread use of psychological knowledge in actual impact assessments.

Landscape/Urbscape Changes

Many, perhaps most, projects requiring EIS's are public facilities which have few implications for economic or population growth. (A distinction should of course be made between projects which are constructed to permit growth, such as flood control measures, and those which are built in response to growth, such as schools. Other projects, such as highways, may be both in response to recent growth and also conducive to further growth.) The significance of physical alterations to rural countryside or urban layout may seem greater when economic and population changes are not involved, although the question of "visual impact" can be a matter of concern even when substantial economic and population growth is also present--e.g., the transformation of a rural or wilderness area into a resort-residential community.

Table 5 suggests three particular forms of landscape/urb scape changes may trigger both psychological impacts and decision-maker interest in the nature of those impacts: (1) urbanization of wilderness or rural land; (2) creation of new types of structures or landscaping; (3) accessibility/barrier effects. These are all project characteristics which affect environmental cognitions and values.

Urbanization means both growth in population, which was just discussed, and physical transformations of the landscape. Psychological literature on urbanization was discussed (albeit sketchily) earlier in this chapter. Virtually all of the social psychological and intrapsychic level variables in Table 4--lifestyles, person-group interactions, psychosocial climate, relationship with land, individual life changes, stress, satisfaction, and environmental cognitions--would possibly be affected by urbanization.

However, very little of the psychological literature is organized on the basis of exploring the effects of the urbanization process as an independent variable. More typically, as in the case of work on rural-urban differences in mental health, analyses are cross-sectional in nature and are organized by the nature of the psychological dependent variable (with rural-urban differences as just one of a number of independent variables). Exceptions tend to be quite indirectly related to SIA. One rather distantly related body of literature involves some psychological explorations of an issue more commonly addressed by

recreational sociologists--the question of impingement on "wilderness solitude experiences" in national parks as affected by numbers of other campers or hikers (Womble & Studebaker, 1981) or internal cognitive mechanisms (Hammit, 1982). Another remotely-related research focus deals with the possibility of inherent natural human preference for certain types of natural landscapes, especially the savanna terrain in which modern man is believed to have evolved (Appleton, 1975; Balling & Falk, 1982).

A variation of the latter type of inquiry with more apparent promise for SIA might be studies of differing affective response--both objective physiological and subjective--to natural versus urban landscapes. Little has been done in this area, but preliminary results are promising in that they tend to suggest some rather distinctive conclusions:

...the findings from the psychological measures suggest that, compared to the influences of the urban scenes, exposure to water or vegetation views have more positive effects on rather specific clusters of emotions--such as sadness and fear arousal. For the case of other types of feelings, such as dominance and stability, the influences of nature and urban scenes may be similar. Likewise, the alpha and heart rate findings suggest that the differences in physiological influences of nature versus urban scenes are not global in character. (Ulrich, 1981, p. 549)

While such literature has potential for psychological impact assessment of major changes from physical urbanization of rural or wilderness land, it still does not seem to strike at what could most often be seen as the heart of the matter: changes in lifestyle, ecological

relations with the land, subjective quality of life, and personal identity with the old and new landscapes. Community and environmental psychologists in research institutions could support the cause of SIA by adding a psychometric dimension to standard sociological case studies of such types of socio-physical transformations. In this fashion, a variety of different psychological "bottom lines" can be simultaneously studied for different or inter-related effects stemming from the types of change often contemplated in an SIA-type situation.

New Structures/Landscaping: The second suggested important type of physical transformation would involve the creation of new types of structures, landscaping, or other physical features in existing residential or commercial areas (or perhaps the alteration of old forms). Again, the pertinent literature tends to be organized less by such causal variables and more by the possibly relevant psychological dependent variables--aesthetics, psychosocial climate, behavior settings, etc. A sprinkling of studies looks at diverse social and psychological consequences of physical variables such as open urban land (James & Brogan, 1974) or different street layout patterns (Mayo, 1979). However, there is a relative paucity of research concentrating on the community or neighborhood physical environment as compared to features of buildings or individual rooms. One useful thread which might be related to the idea of changes in "neighborhood character" would be the different residential preferences of various classes and categories of people (Salling & Harvey, 1981).

Conceptual overviews by psychologists of land use or landscape transformations have been rare. One is provided by Wohlwill (1978), who lists several areas of interest, most of which have been previously considered here:

First, there is the impact of land use on the senses, as suggested by the somewhat inappropriate terms, "visual pollution" and noise pollution," along with more general aesthetic factors, which concern individuals' affective response, both positive and negative to their surroundings...

Second, land is the source of deep-seated feelings, attitudes, and values, particularly in regard to such issues as private vs. public ownership, free access, etc. As a corollary, questions of regulation of land use become the focus of vigorously expressed attitudes and opinions. This, then, is the province of the environmental social psychologist.

Finally, if we take the concept of land use in a direct behavioral sense, it is apparent that land is not only "used" by farmers, by railroads and factories, by governmental bodies at all levels, but, in a different sense, is used in diverse ways by people. This aspect of the problem, which is itself of significance for the regulation of land use, is clearly grist for the mill for the behavioral ecologist, and, in a different vein, for the student of personal space and territoriality. (Wohlwill, 1978, p. 25)

Accessibility/Barrier Effects: The third suggested type of key project characteristic has to do with "accessibility/barrier effects." By this is meant the enhancement or obstruction of physical transit routes (pedestrian or automated) in neighborhoods to important local destinations--schools, community shopping areas, recreational attractions, etc.--which contribute to a sense of community identity. Such concerns suggest a straightforward physical catalogue of social foci and access routes (Moore, 1978), and indeed this has been the usual approach

taken in the SIA literature most often concerned with accessibility/barrier effects--i.e., the transportation assessment literature (Llewellyn, Goodman, & Hare, 1976; United States Department of Transportation, 1975, 1976).

However, the purpose of this fleeting discussion of the subject is to suggest to environmental and social psychologists that this may be a fitting topic for future research. Social psychological studies of "community cohesion" examining accessibility effects have been carried out by sociologists (Rossi, 1972) and planners (Appleyard & Carp, 1974). Psychologists themselves could surely contribute to the SIA knowledge base by exploring the obvious ramifications of accessibility/barrier effects on person-group dynamics, stress from social isolation, and satisfaction with residential neighborhoods.

Special Building Design Characteristics

Certain projects consist essentially of central structures inhabited by residents, employees, or service consumers--e.g., public housing projects, government office buildings, sewage treatment plants, schools, hospitals, etc. In such cases, psychological SIA can benefit from a growing body of environmental psychological research into the effects of "built environments" on housing satisfaction, worker satisfaction/productivity, social interactions, patient recovery rate, etc. Ideally, such knowledge is most effectively used in the actual architectural design process. However, impact assessment can represent

an independent backstopping stage to flag and identify social psychological consequences of design problems. And it can also serve the function of bringing these issues to the attention of known user groups who may read the EIS (e.g., resident associations, unions), so that these groups or individuals may raise their own concerns or considerations for inclusion in the decision-making process.

Unlike the situation with macro-settings, environmental psychological research on consequences of building design is quite often organized by the nature of the independent variable (i.e., either type of building function or architectural feature of the building). Some examples include college dormitories (Case, 1981), college classrooms (Wollin & Montagne, 1981), elementary school classrooms (van Wagenberg, 1981), public housing (Kalt & Zalkind, 1976), single-family homes (Weisner & Weibel, 1981), and housing for the physically disabled (Reizenstein & Ostrander, 1981). It should also be recalled that much of the work on psychosocial climate can easily be organized by the type of setting involved, since only a few types (health care institutions, schools, and some workplaces) have yet been studied from this theoretical perspective.

A residential design genotype which has elicited considerable interest is the high-rise building, which has been examined in terms of its impact on the "livability" of the surrounding neighborhood environment (San Francisco Planning and Urban Renewal Association, 1975); sense of involvement, power, or alienation on the part of residents (McCarthy

& Saegert, 1978); and satisfaction as mediated by ability to form social networks (Williamson, 1981). Studies organized and catalogued in this fashion (i.e., with emphasis on the independent variable) tend to be both more accessible and more useful to the SIA practitioner, who is concerned with psychological effects of project types similar to whichever one may be under study.

At the same time, psychological knowledge tends to progress through analysis of psychological dependent variables. Much of the current work stems from Festinger, Schacter, & Back's (1950) research into variations in person-group dynamics as a function of different immediate environmental design factors within a room. This line of inquiry has blossomed into analysis of impacts on such broad topics as group task performance, crime, and social network formation (O'Donnell & Tharp, 1982). O'Donnell (1980) has also reviewed a burgeoning literature on impacts of environmental design on behavioral pathology and its prevention.

The utility of this general area of work for SIA is sharply mixed. For projects consisting primarily of central buildings, there is an abundance of literature on psychological impacts, although it would certainly be more accessible if encoded in some sort of "handbook" for the SIA practitioner. However, such projects do not necessarily form a large proportion of the proposals studied in SIA's. More importantly, there are practical political problems ("political" in the sense of client relations) in pointing out architectural design flaws in a project. As stated at the beginning of this discussion, the best area for

use of environmental psychology knowledge about building characteristics is in the architectural design and planning stage.

Displacement/Relocation

When a construction project results in the simple displacement of residents or business operations--with no effort to relocate--this fact alone may seem an adequate "bottom-line" impact. That is, decision makers usually would not require evidence or arguments about subsequent mental health consequences in order to feel that it is a serious thing to lose one's home. On the other hand, many government officials may feel that all concerns have been met if the displacees are relocated to new homes or business sites, and a careful assessment of relocation impacts can serve to educate them further about the complex results of such environmental shifts.

Relocations have been frequently studied in the social impact analysis case study literature, particularly in the areas of transportation projects, urban renewal, and water resource development (Drucker, Charles, & Reeves, 1974). One of the best recent overviews of that literature is provided by Finsterbusch (1980), who concludes that psychological impacts represent a primary concern:

As a general rule, relocated households are sufficiently compensated by the government for their property. Residents tend to move to better housing, and many renters become owners. Commuting distances to jobs, services, and activities increase somewhat, but the changes which are the most strongly negative are the psychological costs of moving and the disruption of social patterns. (Finsterbusch, 1980, p. 109)

Not many events are more distressful than being forced out of one's home. Against one's will one's entire life is changed by the move to new surroundings. All of the ordinary daily routines will be changed, even if only slightly, and many close and friendly relationships will be affected. In urban areas it generally turns out that life after the move is almost as enjoyable as before the move, but this cannot be known beforehand, and there is the possibility that irreversible harm will be done to important social relationships and favored behavior patterns. Some people suffer considerably from relocation, especially when it is forced. In other words, moving involves risks that are fertile grounds for fear. (Op. cit., p. 119)

The literature on residential relocation reviewed by Finsterbusch also suggests that satisfaction with the physical housing environment often increases with relocation, but satisfaction with the social environment (i.e., neighbors and nearby friends) decreases. This usually has to do with disruption of longstanding social support networks (Korsching, Donnermeyer, & Burdge, 1980). The elderly are particularly vulnerable to this sort of distress from forced relocation.

It should be noted that several studies of impacts on objective social indicators of a nonhealth nature--e.g., employment, income, and housing--do not suggest any consistent pattern of difficulties among displaced persons (Napier & Moody, 1977), even among groups which expressed strong negative attitudes (Napier & Wright, 1974) and even though the studies indicate displacees are likely to have been disadvantaged to begin with (Newman & Owen, 1982).

A somewhat independent body of psychological research literature has also emerged on the subject of relocation, although psychologists

have studied effects of voluntary relocation (Stokols & Shumaker, 1982) perhaps as often as they have looked at involuntary displacement and relocation.

The psychological literature on forced relocation has recently been reviewed by Tamar Heller (1982), who examined displacement from job transfers, dispersement of mental health patients to community settings, and--the instance most applicable to SIA--urban renewal. Urban renewal studies, including the very few utilizing a quasi-experimental design, have generally found that feelings of uprootedness and even "grief" linger for several years; that high rates of loneliness, depression, and general life dissatisfaction are present among relocatees; and that there is a great deal of resentment over loss of old social contact with friends and neighbors (although immediate family ties may be strengthened by the move).

However, individual reactions to displacement vary greatly. Heller's literature review suggests that such differences are most influenced...

...by (a) individual differences in capabilities and resources, (b) individual perceptions and expectations, (c) degree of environmental change, and (d) the quality of the old and new environments. Of the individual difference variables studied, initial poor health, old age, low income, neurosis, and depression are most often associated with stressful reactions to relocation. Cognitive mediators that seem to have the greatest effect on the postrelocation adjustment are the individuals' expectations about the move. (Heller, 1982, p. 488)

The major cognitive mediators appear to be sense of control or involvement, and the levels of expectation about relocation outcomes. Heller

suggests that preparatory programs are needed to give people a sense of participation and to reduce inappropriate expectations (either overly negative or overly positive).

Noise

High noise levels clearly have both physical and psychological impacts (Kryter, 1970)--so clearly, in fact, that detailed discussion of them may often seem redundant in an EIS if the major question is whether high noise is good or bad. But it is more typical that noise is addressed in circumstances where high decibel output is an unavoidable aspect of a project (e.g., an airport) and the question is not whether this is good or bad but how bad: exactly what will the negative impacts really be?

Psychophysiological researchers have been particularly concerned with effects of noise on performance in work or educational settings, and the social impact case study literature contains some additional (often anecdotal) information on noise effects on mental health and simple community annoyance. Again, the reader is referred to Finsterbusch (1980) for a concise overview of these and other noise impacts from the SIA perspective. It may be noted that Finsterbusch finds no "definitive" evidence that noise creates mental illness where none exists, but there is a tendency to aggravate existing stress symptoms. Finsterbusch also reproduces the National Academy of Science CHABA Committee's (1977) EIS guidelines on noise, which includes survey

evidence on the percentage of residents who report themselves "highly annoyed" at various decibel levels.

While some of the psychological research literature deals with effects of noise emanating from the types of situations studied in SIA--e.g., construction blasting, factory operations, highways (Glass & Singer, 1972)--much more is oriented toward laboratory experiments on effects of artificial noise conditions on task performance and information processing (Weinstein, 1974; Jones & Broadbent, 1979; Dornic & Fernaeus, 1981). Some of the theoretical issues are intriguing, such as the "rehearsal-masking hypothesis" (Millar, 1979), which postulates that high noise quite literally leaves one unable "to hear myself think." Such propositions are still more a matter of sharp scholarly debate (Poulton, 1979; Smith & Broadbent, 1981) than of proven fact or even tentative consensus. These research orientations are not without relevance to psychological SIA, but there is a need to translate them into real-life environmental terms and to conduct more empirical research in SIA-type situations.

Social or Physical Risk Factors

For the sake of brevity, two rather different concepts are merged here. The unifying concept is that of a new and unfamiliar change in the macro-environment which engenders fear about the survival of either (1) one's socioeconomic support structure or (2) the actual physical self. The first is the more general and probably the more typical,

while the second is an important special case applying to the introduction of new technologies perceived as possibly dangerous to the public health. In psychological terms, the first situation would usually elicit generalized anxiety, while the second would produce both anxiety and concrete fear.

The first situation has to do with the anxiety and feared loss of control which often accompanies a recognition of impending major change. It is probably the major social psychological impact which emanates from the planning phase of any large project or any proposal which has implications for a given individual's job, home, family, etc. Long before an EIS is ever prepared, rumors and incomplete accounts in the news media can stir far more psychological apprehension about a proposed project than the project itself may ever cause in the way of post-construction social impact. Some very basic concepts in the social psychological research literature--particularly locus of control (Rotter, 1966; Lefcourt, 1976; Gregory, 1981), learned helplessness (Seligman, 1975), and attribution theory (Weiner, 1979)--clearly represent avenues of psychological contribution toward the analysis of these social and intrapsychic processes.

However, two qualifications should be noted. The less important is that planning-stage impacts are more important to alleviate than to forecast, especially since they are usually already in place once the SIA procedure has begun, and so this subject technically is more appropriate for process models of SIA than for our present focus on the

"linear" model. The more important qualification is that the available psychological research literature tends to be of an experimental/laboratory/microsocial nature which may inhibit the generalization of findings to the real-life community setting. Again, what may be a source of disappointment to the psychological SIA practitioner could be seen as a source of opportunity and challenge to the supporting researcher, since there is a clear need for more field studies in this area.

The second type of project risk characteristic would involve perceived implications for health and life. The Chapter V discussion on risk perception and risk assessment would again be relevant at this point. Public perception of risk levels is often incorrect and highly influenced by various cognitive components of the situation, particularly the severity and drama in the feared consequence as compared to the odds that the consequence will actually occur (von Winterfeldt, John, & Borchertding, 1981). Thus, airplane trips or nuclear power plants are perceived as riskier than automobile trips or coal mines, respectively, despite the fact that more lives have been lost in the latter circumstances than in the former. One possible consequence of the introduction of perceived physical risk from a new project could be a decision to move away from the community. The environmental psychology literature contains a number of studies (most of them actually published by geographers--c.f., Burton, Kates, & White, 1978) on reactions to hazards in the natural environment, such as earthquakes

(Jackson, 1981) and floods (Payne & Pigram, 1981). The work of Kiecolt & Nigg (1982) provides one model for research into the effects of natural risk on mobility intentions which could easily be extended to the area of industrial risk.

However, it will also be recalled that the 1983 U.S. Supreme Court decision on the Three-Mile Island case has choked off federal EIS study of anxiety stemming from risk. Such studies may still be desired--perhaps even demanded--in state or local-level EIS's where applicable. Again, though, there is a strong possibility that psychological knowledge in this area may be directed toward process-model model SIA as much or more as toward predictive SIA forecasts.

Process Characteristics

Table 5 suggests a number of characteristics of the process by which the project is introduced into the community may have strong implications for psychological reaction: the change proponent's role and status in the community (if any); the extent to which people are given advance knowledge of the project; efforts made to involve the public in planning; and the existence of any current or recent issues which could affect perceptions of the present project.

Because the present emphasis is on SIA as social science rather than as social impact management, little further need be said about this for the time being. Nevertheless, it should be noted that in some

circumstances these "process" factors can be far more influential in determining social and psychological impacts than any of the actual "project" characteristics. An identical project may be proposed for two very similar communities. In the first, the change proponent may be a respected and trusted local company or agency which notifies the community long in advance; involves interested parties in planning; and carefully scouts out and copes with any misperceptions lingering from community experience with other issues and problems. In the second community, the change proponent may be an "outsider" or a distrusted local agency which keeps project plans secret as long as possible; adopts a completely proprietary attitude toward planning; and ignores the possibility that the public and its elected representatives may connect the project with some past issue which seems irrelevant to the change proponent. Even if the project is implemented in both of the two hypothetical communities, it is likely that the social and psychological impacts would be much different and much more negative in the second community.

SELECTED KEY PROJECT CHARACTERISTICS: EMPLOYMENT AND ECONOMIC CHANGE

The previous section was a survey of the various general categories of key project characteristics suggested as frequently having important psychological consequences. However, it would seem appropriate to subject one or two of these to a more in-depth examination, as an illustration of the opportunities and deficiencies presented for SIA. This

section is intended to give some idea of the considerations which would have to be analyzed in presenting psychological research findings to the SIA practitioner. However, material written primarily for a practitioner audience would require a simpler (perhaps outline-style) format to be useful to real-life SIA preparers, few of whom consider themselves scholars of psychology.

The general topic selected for a comprehensive follow-up discussion has to do with project economic characteristics. The major reason for selecting this general topic is its usual salience to policy makers. Another reason involves the regrettable tendency in much SIA literature to consider "social" impacts as separate from "economic" ones. Economic impacts are generally counted among project benefits and noneconomic "social" effects are generally regarded as costs. But the psychological literature provides a bridge, to a certain extent, and an opportunity to examine both positive and negative indirect effects of economic change.

Introduction and Comparison of Two Economic Topics

The following pages will explore the potential relevance for SIA of psychological literature touching upon several possible economic characteristics of proposed projects. The literature to be explored involves two interrelated but slightly different fields of research: (1) psychological effects of individual employment/unemployment; (2) effects of global economic shifts (i.e., changes in general economic indicators, including but not limited to employment). For the most part, this

literature evolved in response to theoretical or policy interests other than SIA-type situations. Consequently, much of the currently available research in its present form is not directly applicable to SIA. But indirect applications will be noted, along with the potential for more direct uses if the focus of future research is slightly redirected.

Each discussion will consist of these components: (a) literature overview, organized by type of psychological impact variables (mental health, happiness, etc.); (b) evidence about differential vulnerability of various population subgroups; (c) unresolved SIA-related research issues; and (d) a brief analysis of the utility of the literature for the SIA practitioner.

The first topic to be explored is that of individual employment or unemployment. Before this literature is reviewed, it may be valuable to note its historical commonalities and differences with the second type.

In modern social science, the relationship between economic disruption and individual anguish was first extensively explored in Durkheim's (1897) work on suicide. In subsequent years, the Great Depression (a name which itself bears psychological connotations) inspired numerous sociological case studies--generally of a qualitative nature--on the deterioration of family, community, and individual peace of mind (Bakke, 1934, 1940; Angell, 1936; Cavan & Ranck, 1938; Komarovsky, 1940). Much of the more recent sociological work in this case study and/or community

study vein has continued to focus on family impacts (Strange, 1977; Root, 1979; Gordus, Jarley, & Ferman, 1981), although there has been some overlap with the major psychological focus: stress and mental health.

Initial studies of economic impacts on mental health tended to emphasize the strong role of class and/or income status on the likelihood of reported symptoms (Hollingshead & Redlich, 1958; Gurin, Veroff, & Feld, 1960; Srole & Langner, 1975). However, as noted earlier in the chapter, these essentially cross-sectional studies leave the question of causality unresolved and have only distant relevance to SIA because of their inability to chart the effects of rapid change in income or socioeconomic status due to communitywide economic transitions. They have, nevertheless, made the interrelationships between economic factors and individual wellbeing very apparent to psychological researchers.

Reviews of the more recent literature on economic change and mental health (Dooley & Catalano, 1980; Gordus, Jarley, & Ferman, 1981) have tended to divide this work into two types: studies of individuals experiencing unemployment or similar economic disruptions, and time-series correlational analysis of aggregate community levels of mental health impairment following global economic shifts. Scholars in each of these specialized fields have occasionally tended to criticize one another for taking the opposite approach:

The assumption that work or financial stressors vary over time with changes in the economy has not been tested. The individual-level analyses, therefore, have not addressed the question of interest, which is: Do the measurable

characteristics of the economy, i.e., the system of production and distribution of goods and services, have a health effect that is systematic and can be modeled? (Catalano & Dooley, 1983, pp. 47-48)

...it is not at all clear that a representative sample of a population should exhibit changes in symptoms in response to area-wide economic trends. For this to happen we would have to assume, for example, that monthly changes in the employment index for the city of Boston somehow initiate stress reactions among a large percentage of the 750,000 residents of that city. Although we do believe that the "spread of effect" from joblessness is substantial, it is unlikely that indicators of strain based on the entire community population will be heavily influenced by small changes in economic activity--unless, of course, the majority of the community is directly experiencing unemployment... (Liem & Rayman, 1982, p. 1117)

It is perhaps apparent that such scholars are talking past one another and dealing with slightly different questions and purposes, both of which have merit and value in their own contexts. From the viewpoint of SIA, the individual employment/unemployment research would be of use in estimating direct project impacts, whereas the studies of psychological consequences of global economic shifts would lend themselves to analysis of indirect impacts. For this reason, it is also apparent that it will be of particular value to have research designed so as to explore both the direct individual impacts and the indirect community "ripple effect" of economic changes, and at least one study now under analysis (Rayman & Bluestone, 1982) was fashioned with that intent.

Similarly, it will eventually be crucial to have research studies which explore the psychological impacts of fairly rapid community

or socioeconomic group shifts in income or class status, since the present economic-effect research tends to take on faith rather than on hard evidence the proposition that observed mental problems are usually the result of job loss rather than the opposite:

No conclusive argument can yet be made as to whether an unfortunate labor market experience triggers individual disturbance or vice-versa. Well-designed studies are needed that will incorporate (1) the cross-sectional approach that connects mental illness to low socioeconomic status, and (2) longitudinal studies that often associate job separation with mental disorder. The two approaches will have to be mounted together and include a series of case studies that take other significant variables into account. (Gordus, Jarley, & Ferman, 1981, p. 130)

Economic Characteristic Number 1: Individual Employment/Unemployment

Overview of Available Literature on Individual Employment/Unemployment: Except in the rare case where a governmental agency is considering the elimination of some major source of local employment, EIS's and SIA's are generally not prepared for actions which will result in significant unemployment. Rather, the typical case is one where new employment opportunities are claimed; noneconomic costs are known or asserted; and one question of interest is whether any non-economic benefits might flow from the new jobs to balance the costs. Unfortunately, though, the major emphasis on the literature has been on the detrimental effects of job loss. Positive consequences of new employment or re-employment are only incidentally explored and/or must be inferred from the information on the negative circumstances.

Of definite value in the psychological literature are studies which touch upon employment or unemployment effects in the course of broader theoretical studies of life events, life satisfaction, and/or stress (e.g., Bradburn, 1969; Coates, Moyer, & Wellman, 1969; Pearlin & Lieberman, 1979; Pearlin, Menaghan, Lieberman, & Mullan, 1981).

The most comprehensive studies, however, are those which are more directly oriented to public policy issues relevant to employment loss and which feature longitudinal studies of both mental and physical health impacts dating from the time of imminent termination through at least a year after the date of job separation. These studies fall into two subcategories--impacts of wholesale plant closings (most directly relevant to the occasional SIA dealing with clearcut industrial withdrawal) and impacts of individual job losses or lay-offs when organizations trim but do not totally eliminate their workforces. Studies in both subcategories have fairly similar theoretical foci, but their policy-relevant purposes are somewhat different. The purpose of studying plant closing effects is to make better preparations for future shutdowns, while researchers involved in stress from more typical lay-off situations have to date been concerned with battling an economic ideology which holds unemployment as a natural and even healthy economic phenomenon with little negative consequence for the unemployed (Rayman, 1982; Liem & Rayman, 1982).

In the first subcategory of studies, Aiken, Ferman, & Sheppard broke important ground with their 1968 study of former employees of the

Packard Motor Car Company. More recently, Buss & Redburn (1982) charted some of the impacts of steel plant closures in Youngstown, Ohio. However, perhaps the most extensive and often-quoted study was conducted by Sidney Cobb and Stanislav Kasl over a period of several years, beginning in 1969 (Cobb & Kasl, 1977; Kasl, 1979; Kasl & Cobb, 1979, 1982; Kasl, Gore, & Cobb, 1975). The researchers located two manufacturing plants due to shut down, one in an urban and the other in a rural setting, and also recruited a matched set of urban and rural control workers from stable employment situations. Matching was achieved not only on demographic characteristics, but also on several psychological scales relevant to response sets and/or tendency to psychophysiological deviance (Block's Ego Resilience Scale, CPI Flexibility-Rigidity Scale, the Crowne-Marlowe measure of need for social approval, and a "Readiness for Illness Behavior" index). The target population consisted of married male bluecollar workers aged 35 to 60 who had worked at the subject companies for at least three years. Subjective and objective measures of physical and psychological health were collected at periodic intervals from a time about one month before the scheduled closing (when the workers were very aware of the upcoming end of their employment) for several years after the closing.

In the second subcategory, Ramsay Liem and colleagues (Liem, 1981; Liem & Liem, 1979; Liem & Rayman, 1982) conducted a panel study of 40 blue- and 40 white-collar families with at least one dependent child (plus 80 matched control families) for a one-year period following the

husband's job loss. The emphasis in the in-depth interview sessions was relatively more on stress and psychological problems than in Cobb and Kasl's study, which dwelled more heavily on physical health. The major design difference, of course, was that Liem gathered his sample of the unemployed from a variety of industries, virtually none of which had totally shut down.

Another recent study was that of Rayman & Bluestone (1982), some preliminary results of which are summarized in Liem & Rayman (1982). This research explored the structure of the aircraft industry--including typical subcontractors and other forms of secondary employment from the industry--in Hartford, Connecticut. This industry is of the "boom-and-bust" variety which is often the subject of SIA evaluation in more rural contexts. A sample of workers in the overall industry was surveyed first by mail-out questionnaire and then, in 40 percent of the cases, by follow-up personal interview. The subjects were currently employed but had experienced lay-offs in the past ten years; the research focused on their ability to cope with those periods of unemployment. Such a study is of course subject to the usual problems of retrospective research, but it is of value because of its rational attention to the economic structure of the industry being examined.

In general, the major studies found some evidence of transient emotional strain from unemployment--particularly in the period immediately before and after actual termination--but far more trouble from physical than mental symptoms:

Collectively, these studies do not portray job loss as a source of dramatic, overwhelming stress and disorganization for everyone who experiences it. However, there is good evidence that losing one's job can increase health risks, exacerbate chronic and latent disorders, alter usual patterns of health-seeking behavior, and exact numerous other social and interpersonal costs. (Liem & Rayman, 1982, p. 1116)

There is less evidence of mental illness from the plant-closing studies than from the more general individual unemployment studies. Liem and Rayman note that the average period of unemployment for workers in Kasl and Cobb's study was much less than in their own study, possibly because the overall economy was much healthier at the time of the earlier study. However, the crucial psychological difference between the two situations is thought to involve the greater potential for guilt and self-blame when individuals are terminated or laid off one or two at a time:

Unemployment resulting from plant closings carries with it less self-condemnation than more generalized unemployment does. Whether or not an individual was in any way responsible for the loss of a job in any particular case, it is highly probable that the worker who is laid off while others remaind on the job suffers a loss of self-esteem. Although there may be no rational reason for self-blame, the unemployed individual sees himself or herself as somehow inferior. Clearly...a general plant shutdown offers much less opportunity for blaming one's own shortcomings. The very nature of a mass layoff provides the newly unemployed with an opportunity to join with others similarly afflicted, even for a short time, for discussion, mutual support, and solidarity.

Some of the specific research results for various key psychological variables are as follows:

Satisfaction/Happiness: Implications of unemployment for satisfaction and/or happiness have tended to emerge as incidental, indirect, or implicit research findings. Perhaps the key concept would be satisfaction with self--i.e., self-esteem. However, there have been few attempts to measure this directly; rather, it is usually treated as a hypothetical variable which contributes to or is manifested by more directly observable stress effects. One of the rare studies which included a self-esteem index was that of Pearlin, Menaghan, Lieberman, & Mullan (1981). They found that persons who had experienced "job disruption" (primarily terminations, but also some demotions) were on average no higher or lower than anyone else on the self-esteem measure. However, they also determined that this was a strong function of both psychological coping mechanisms and social support; people low on coping abilities and social support apparently suffered severe blows to their self-esteem from job disruptions. From the perspective of SIA, however, this finding is virtually a truism and offers little information, unless the SIA research permits a psychological survey to determine the population's general psychological coping abilities.

Global life satisfaction or happiness were measured in some of the early studies. In Bradburn's (1969) study of "avowed happiness," cross-sectional data indicated that a state of unemployment was related to both positive affect (because of relationship with income, Bradburn hypothesized) and negative affect (presumably

although not demonstrably through worry, anxiety, and other negative reactions). Bradburn's more limited data about change in employment status, however, produced a more complex picture; this will be discussed in the upcoming section on "Unresolved SIA-Related Research Issues." Aiken et. al. (1968) found that the sensitivity of morale and life satisfaction to unemployment was mediated by several factors, primarily economic resources. Workers who found re-employment in jobs with reduced status and wages tended to report reduced general life satisfaction.

Both the sociological literature and indirect evidence from the stress literature strongly suggest negative impacts of unemployment on satisfaction with the family and friendship domains. Liem (1981, Liem & Rayman, 1982) report that, as length of unemployment increases, wives of unemployed men are increasingly likely to say there are difficulties in family relationships. Kasl et. al. (1975) treated "satisfaction with social support" as a mediating variable and found that it was related to the likelihood of actually contacting a doctor when terminated men felt physically unwell.

Life events have been little analyzed in the individual unemployment literature, although they will show up more often in the literature on global economic shifts to be reviewed shortly. Of course, unemployment is itself a major life event which takes the form of the basic independent variable in the research literature

presently under discussion. However, it would certainly be valuable to know more about the extent to which it typically triggers other important events such as divorce or personal financial crises. Interestingly, one of the few passages in the literature suggests that such a chain reaction of life did not take place in the plant closing study of Kasl et. al. (1975). These authors did not study the relationship between unemployment and other individual life changes, but rather focused on a summary index measuring the number of reported changes and its relationship to the total number of shifts from unemployment to employment or vice-versa during the life of the study:

Since the indices of Job Changes and Life Changes were uncorrelated ($r = -0.02$), and since cases and controls had practically identical mean numbers of events, we are reassured that the plant closing and job changes did not precipitate other events (e.g., residential moves, wives going to work) which would confound the comparisons, and that the job loss remains the primary point of contrast between cases and controls. (Kasl et. al., 1975, p. 111)

Clearly, this particular finding would be time- and situation-specific. In other towns and at other times, shutdowns or even individual unemployment would no doubt result in other life changes.

Reported psychological moods or symptoms are the major focus for much of the research. The early Great Depression studies (e.g., Bakke, 1934; Komarovsky, 1940) reported observations of anxiety and depression among the unemployed, as have some more recent

small-sample sociological studies (Powell & Driscoll, 1973; Fineman, 1979). However, findings from the more recent quantitative studies are more equivocal. They seem to depend upon which type of unemployment is studied--plant shutdowns or individual situations--and on the degree of seriousness of the symptom under consideration.

In their plant closing study, Kasl & Cobb (1979) found a great deal of anger, anomie, and resentment among their urban sample, although these symptoms were not so apparent among the rural workers (possibly because social support networks there were independent of the plant). However, moving to the more serious level of depression and anxiety, the researchers found little evidence except during the very early phases (Kasl, 1979). As the months rolled by after the shutdown, depression levels remained fairly constant and were uncorrelated with variations in physical health (Kasl, Gore, & Cobb, 1975). Similarly, in their Ohio steel plant closing study, Buss & Redburn (1980) found a brief initial flare-up of anxiety, depression, and alcohol or drug use, but little if any extended impact.

The picture has been considerably different in the studies of individuals suffering employment in a variety of conditions. It will be recalled that such individuals are presumed to feel more self-blame and that many in these studies suffered job loss for a longer period of time than in the plant shutdown studies. Pearlin et. al. (1981) found definite elevations in reported depression, even (to a slight extent) among those with good coping skills and

social support resources. Rayman & Bluestone (1982) recorded reports of substantial emotional stress accompanying periods of unemployment among "boom-and-bust" aerospace workers. Liem (1981) found increasing psychiatric disturbance as the period of unemployment increased, including "greater depression, anxiety, hostility, and psychoticism than controls" (p. 356).

Mental health facility admissions have not been much studied in this body of literature, although they will form a central focus of research on global economic shifts. The sorts of behavior which usually result in inpatient or outpatient care have been detected in some of the individual unemployment studies mentioned above, but the researchers have been cautious to date about emphasizing the "mental illness" level of impairment:

We cannot conclude at this time, however, that involuntary job loss precipitates mental illness. Heightened symptom levels in families with unemployment can reflect increased stress relative to control families without indicating clinical level impairment. (Liem, 1981, p. 357)

At the same time, Liem notes that his sample of unemployed contained many more cases of marital disruption and "extreme despair"--including one suicide--than was the case for the control group.

Stress-related physical health: Physiological symptoms have been strongly implicated in all major recent studies on unemployment effects. Kasl & Cobb (1979) found unemployment was strongly

associated with coronary disease, dyspepsia, and hypertension. In an early study (Kasl, Cobb, & Brooks, 1968), they charted changes in serum uric acid and cholesterol levels in men undergoing job loss. Rayman & Bluestone (1982) found association with high blood pressure, insomnia, and neurasthenia, as well as increased smoking.

Some of the research has focused heavily on subjective reports of physical problems, such as Liem's (1981) tracking of increased "somatic complaints" among unemployed men. Kasl et. al. (1975) focused their study on the greater propensity of unemployed plant workers to take the "sick role"--either reporting in a health diary that they just did not feel as well as usual, actually disrupting their normal daily routines due to poor health, or seeing a doctor--a set of behaviors which proved more connected with the plant shutdown than were any of the mental health measures. Perhaps the most striking findings were those for simple subjective reports of not feeling well. When adjusted for seasonality, the dismissed workers were much more likely than controls to report not feeling well in the weeks just before the shutdown and in the period four to eight months after the closure, but less likely to feel poorly during a measurement period five to seven weeks after shutdown. This might be interpreted as a period of relaxation or "bouncing back" from initial stress, followed by another decline as unemployment continued. However, Kasl et. al. also found that the likelihood of not feeling well was equally great in period of unemployment and subsequent re-employment:

This suggests that the fluctuations in [likelihood of not feeling up to par]...reflect primarily the process of reacting to the loss of a long held job (viz the strong anticipation effect) and to change in the work environment irrespective of whether the change is to a new job or to no work at all. (Kasl et. al., 1975, p. 111)

Differential Vulnerability: The psychological literature on unemployment among individuals is speckled with references to differential reactions among different demographic, resource, or psychological coping skill groupings. However, these differences are usually not a central research focus, and little attention has been paid to replicating them.

Furthermore, many of the studies have been deliberately restricted to particular groups--e.g., married blue-collar males within a certain age range--thereby precluding analyses of differences for some variables. In fact, almost all the individual unemployment studies have been confined to effects on males. In some ways this is unfortunate, but in other ways it is appropriate to study the sexes separately, since other research has indicated that women's psychological response to working varies greatly from that of men (and from that of other women, depending on age, class, and geographical location). See Warr & Parry (1982) for a review of that literature. The primary unemployment literature to date looks at women mostly in their roles as wives of unemployed men. Such women have been found to be increasingly vulnerable to high levels of anxiety over family relationships as the period of their husbands' unemployment drags on.

Demographically, Liem & Rayman (1982) report more stress among middle-aged workers with young dependents than among single, younger workers. For Kasl et. al. (1975), the "younger" workers (in their 30's and 40's) happened to be the group with more dependents, and these reported more somatic complaints in the early phases. However, the health effects lingered longer for the older workers. Similarly, an interaction with time was found for education level. Better educated workers reported more physical problems in the "anticipation" stage prior to the plant closing, but less educated workers thereafter had more days when they felt down. Kasl et. al. interpret this to mean that the less educated were slower to realize the import of their plight and the handicap which their lack of education presented in finding another job. Whatever the true reason, such findings do illustrate the fact that response varies over time and that such time variation is an important dimension for all future research.

Although it may seem intuitively obvious that economic resources (e.g., financial savings) would mediate the stress of unemployment, psychologists have paid little attention to the effect of this variable since Aiken et. al. (1968) showed that it did indeed affect sense of wellbeing among the unemployed. Similarly, Rayman & Bluestone (1982) showed that likelihood of re-employment due to union affiliation was an important mediator of stress, but there has been little attention to this sort of pragmatic resource in the psychological literature. Psychologists have been more interested in the effects of intangibles such

as "social support" (Kasl et. al., 1975; Liem & Liem, 1979; Pearlin et. al., 1981) and psychological coping skills (Pearlin et. al., 1981). These latter variables have been shown to be important mediators, and it perhaps understandable that theoretically-oriented psychologists find it valuable to demonstrate empirically that: "All in all, it is evident that the mediators do mediate" (Pearlin et. al., 1975, p. 350). At the same time, nonpsychologists might be forgiven for finding these results to be a bit on the tautological side, since project proponents are usually unable to mitigate impacts by improving anyone's social support network or ego resilience. On the other hand, for purely predictive and diagnostic SIA purposes, a survey of coping skills and social support could identify particularly vulnerable subpopulations.

Unresolved SIA-Related Research Issues: Other than the basic issue of whether unemployment does in fact produce serious psychological consequences, the literature contains substantial discussion of only a few other issues. However, some incidentally-mentioned issues and some which might just be inferred are also worth noting.

For long-term unemployment, is mental or physical illness a cause or an effect? In some ways, this may be considered a variant of the longstanding debate over whether increased mental illness rates in lower socioeconomic groups is a cause or an effect. Kasl et. al. (1975) found that those dismissed workers who remained unemployed longest had more somatic complaints and actual days of

nonfunctioning, but many of these workers showed higher levels early in the longitudinal study. This suggests continuing unemployment could have been in part caused by the illness. Liem & Rayman (1982), on the other hand, found that stress symptoms increased with length of unemployment, suggesting they were an effect. This issue can be addressed only through further prospective, longitudinal research.

What are the effects of re-employment? Very few SIA situations involve potential widespread unemployment. More often, they would involve projects offering new employment opportunities. While some of the longitudinal studies in the literature followed the reactions of men who were later re-employed, responses to such re-employment have usually not been reported in as much detail as responses to the original job terminations. But fragmentary though they may be, some of these findings are very intriguing and rather complex as well. Liem & Liem (1979) found that stress symptoms in the unemployed not only abated upon return to work, but they also reached a level less than those of controls, suggesting a very beneficial relief or contrast effect of re-employment. But not all types of re-employment are apparently so beneficial. Aiken et. al. (1968) found that dismissed auto plant workers who settled for new jobs with reduced wages and status had lower morale/mental health scores even than those who remained unemployed for several years straight. And Cobb & Kasl (1979) found the greatest evidence of stress among those who

had periodic employment interspersed with times of unemployment, as might be expected for construction workers or other participants in a "boom-and-bust" local economy.

Thus, there is the anomaly that periods of unemployment in the work history of a displaced worker may be more destructive than prolonged joblessness. Prolonged unemployment can be a more stable and predictable existence than the wild fluctuations of periodic employment. We have been led to believe, particularly in the literature of the 1930s, that prolonged joblessness was the most destructive social experience. (Gordus, Jarley, & Ferman, 1981, p. 138)

Another interesting commentary on the experience of re-employment is provided by Bradburn's (1969) multi-wave study of positive and negative affect. It will be recalled that Bradburn found that positive and negative affect are uncorrelated (at least as he measured them) and that cross-sectional data indicated unemployment is related to both positive and negative feelings. However, a more complicated picture comes from his study of changes in affect level among those people who either gained or lost jobs from one interviewing period to another. Losing employment was associated with a decrease in positive affect but no increase in negative affect (although Bradburn hypothesized that a longer time interval would have turned up an eventual increase in negative affect). However, gaining employment did not significantly affect either positive or negative affect levels for the previously unemployed. This is in apparent contradiction to Liem & Liem's (1979) finding about the compensatory effect of re-employment on stress, although it must be

remembered that somewhat different measures and concepts are involved here. This discrepancy certainly begs additional research.

Are urban vs. rural differences real and, if so, why? This question will prove particularly salient for the literature on global economic shifts, where studies in urban and rural contexts have produced radically different results. In the literature on individual unemployment, the only evidence of such differences is in the Kasl and Cobb study, which included both a rural and an urban plant shutdown. A number of peripheral differences were reported between the urban and rural study populations, most of which tended to suggest that plant closing was more disruptive for the urban than for the rural workers (Kasl et. al., 1975). Again, in this particular study it was found that the workplace had played a more central role in organizing the social lives of urban workers than of rural workers--a circumstance that would certainly not prevail in every urban/rural comparison.

Can unemployment have positive mental health effects? Liem (1981) and Gordus et. al. (1981) have reviewed some sociological literature indicating that unemployment can have positive aspects. However, they point out that such positive outcomes are usually confined to special circumstances which basically all feature a sense of confidence that rapid re-employment will not be a difficult process.

Are research findings contaminated by "experimenter demand?"

This phenomenon--also referred to as the "Hawthorne effect" by sociologists--refers to the possibility that the act of studying behavior will change the nature of that behavior, usually in the direction which subjects feel is desired by the social scientist. Such contamination is a danger in both prospective and retrospective studies which permit subjects to know or easily guess the basic purpose of the research. While the issue has not been much discussed in the individual unemployment literature, many of the central studies are subject to criticism on this count, casting some shadow of doubt on study validity. The issue should be kept in mind for future research.

Utility for the SIA Practitioner: This research has one major and one minor use for the practitioner. The more likely potential use is as reference material for predictive statements. The less likely one is as guideline for active research in identifying vulnerable groups.

As reference material, the individual unemployment literature dealing with plant shutdowns has clear value for those very occasional SIA's which involve major industrial withdrawals--e.g., a federal military base closing. (Even here, of course, the utility of psychological impact depends upon the unique circumstances; often, the simple fact of job terminations is a sufficient "bottom line" that psychological effects of unemployment seem self-apparent or unnecessary.)

Of greater usual value would be those aspects of the research which have usually been glossed over rather lightly in the literature to date--e.g., effects of re-employment and/or periodic employment patterns. Further research in such areas would be of definite benefit as reference materials to SIA practitioners. Even so, however, current research directions ignore psychological effects of situations which are of great import in SIA. For example, transitions from one type of economic base to another--e.g., from agriculture to tourism or energy development in rural Hawaii--would involve substantial retraining and psychological adjustment. Development of a good literature base in this area would be most helpful.

It is rare that an SIA situation would permit the sort of psychometric primary research needed to identify subgroups with poor average psychological coping skills or support networks. Nevertheless, in cases where such research is both appropriate and possible, studies such as Pearlin et. al. (1981) provide valuable guidelines for instrument design.

Economic Characteristic Number 2: Global Economic Shifts

Overview of Available Literature: The pertinent research literature examines effects of general economic swings on physical health, mental illness, and other forms of "disorder" in the general population. This literature generally does not address the effects of specific economic

interventions (although some of the variables studied are analogous to certain economic transitions which may be studied in an SIA). Rather, it attempts to trace associations between (1) changes in overall economic performance within a certain community and (2) indicators of psychopathology or other "disorder" in the same community. Typical indicators of economic performance have included proportional employment in key economic sectors, various unemployment measures, and summary indices of the absolute or proportional shifts in the distribution of the workforce over various economic sectors. The latter types of indicators have been utilized for testing hypotheses that economic change per se, regardless of its positive or negative nature, may be connected with disorder.

Sociological literature in such a vein predates, and is much more extensive than, psychological literature. The classic work of Emile Durkheim (1897) related increases in national suicide rates to social disruption resulting from major economic shifts (either positive or negative). More recent and more quantitatively sophisticated sociological research (e.g., Pierce, 1967; Vigderhous, 1977; Mark, 1979) has effectively documented such an association between economic climate and suicide rates. There have also been studies relating changing economic conditions to criminal activity (Brenner, 1976) and family instability (Galligan & Bahr, 1978; Berman, 1982).

Although such variables might be of interest to some social psychologists, the psychological literature has tended to focus on indicators of mental illness, with some attention to physical health and the

frequency of "economic life events" (i.e., shifts in employment status or financial resources). Economic life events have primarily figured as hypothesized mediating variables, but have also been studied to a certain extent as dependent variables in their own right. Types of mental illness indicators most frequently studied have been various treatment or institutional admissions rates, but there has also been some attempt to explore the relationship between economic change and shifts in survey-reported emotional moods and psychopathological symptoms. To date, subjective satisfaction--with self or with life in general--has not figured much as a dependent variable in this research.

The major psychological pioneer in researching mental health impacts of global economic shifts has been M. Harvey Brenner (1969, 1973, 1977). Brenner studied the statistical relationship between changes in first admissions to mental hospitals and in the annual percentage of work force engaged in manufacturing in New York State from 1914 to 1967. He found an overall strong relationship between decreases in the manufacturing employment rate and increases in first admissions a few years later (i.e., negative correlation). However, Brenner was also able to analyze differential relationships for various age, sex, and educational groups, and he found important differences in the strength and even the direction of the economy-disorder correlation. For example, for the elderly and those with less than grammar school education, decreases in the manufacturing employment rate were associated with decreases in first admissions (i.e., positive correlation). While psychologists have

primarily attended to these findings on mental health admissions, Brenner's work also tentatively established a relationship between New York unemployment and many other stress indicators--e.g., infant mortality, deaths from alcohol-related or cardiovascular disease, and suicide rates.

With a few exceptions (Barling & Handal, 1980; Eyer, 1977; Frank, 1981; Marshall & Funch, 1979), most of the subsequent psychological research published since the mid-1970's has been that of Ralph Catalano and David Dooley (Catalano, 1979; Catalano & Dooley, 1977, 1979a, 1979b, 1980, 1981, 1983; Catalano, Dooley, & Jackson, 1981; Dooley & Catalano, 1977a, 1977b, 1979, 1980; Dooley, Catalano, Jackson, & Brownell, 1981). Through both secondary and primary survey data in three locations--Kansas City, a rural Maryland county, and the Los Angeles-Long Beach Standard Metropolitan Statistical Area--Catalano and Dooley have been able to explore some of the interrelationships between objective factors (economic shifts and institutional admissions) and subjective reports of life events, depressed mood, psychopathological symptoms, and physical health.

Most of the published research by Brenner, by Catalano and Dooley, and by the few other investigators of this field has established that:

- (1) economic shifts, especially negative ones, are followed by at least some negative psychological consequences a short time later (within a few years in Brenner's data, but within only a few months in the more recent studies);
- (2) the nature of the association over time varies for different segments of the population.

Beyond this, however, the relative handful of published research findings has produced complex and occasionally contradictory findings. The apparent relationship between "economic shifts" and "psychological disorder" has varied greatly depending on the measurements employed for each construct, on the time and locale of the research, and on the different population segments considered. Some of these differences form issues which will be mentioned shortly in the following sections on "Vulnerability" and "Unresolved SIA-Related Research Issues." Meanwhile, brief mention may be made of key findings regarding impacts on psychological dependent variables:

Life events have been utilized as both dependent and potential mediating variables by Catalano and Dooley in studies on all three of their major datasets (Kansas City, rural Maryland, and Los Angeles). For most of these studies, life events were broken down into various categories--Noneconomic, Desirable/Indifferent Economic, Undesirable Economic, Job-Related Economic, and Financial-Related Economic. The variable actually used for analysis was usually total unweighted sum of events in each category, although heavily skewed distributions eventually led the researchers to dichotomize the variables (e.g., reported at least one event vs. no events) (Catalano & Dooley, 1983).

In the Kansas City studies (Catalano & Dooley, 1977; Dooley & Catalano, 1979) life events of all types were generally found to

increase within a few months following times of increased unemployment and/or absolute economic change. However, in rural Maryland (Dooley, Catalano, Jackson, & Brownell, 1981), no relationship whatsoever was found between periods of economic change and later changes in the average reported levels of life events. In the California study (Catalano & Dooley, 1983), results were particularly complex. Increases in undesirable job and financial events tended to follow periods of economic contraction (for the middle socioeconomic status group only), but did not necessarily follow periods of economic change per se. On the other hand, economic change per se was associated with lagged increases in desirable or indifferent job and financial events. Thus, the statistical relationship between economic change and individual life events remains a matter very much in need of further analysis and clarification.

Reported psychological moods or symptoms are dependent variables utilized thus far only in the Kansas City and Maryland studies of Catalano and Dooley. In Kansas City, a measure of depressed mood levels for the preceding one week was well related to both previous year's life events and recent economic changes, particularly negative changes (Catalano & Dooley, 1977). However, acknowledged psychophysiological symptoms for the past year on the Langner-22 inventory was related only to global economic change (both negative and absolute) and not to the individual's reported life events (Dooley & Catalano, 1979). None of the relationships

between economic change and mood or symptoms found in Kansas City were detected in the rural Maryland replication (Dooley, Catalano, Jackson, & Brownell, 1981)--a rural/urban inconsistency which will be further discussed shortly.

Mental health facility admissions were, as previously mentioned, analyzed by Brenner (1973), who found an overall strong relationship between his measure of unemployment and total first admissions for inpatient facilities. This finding, and some (though not all) of his contradictory findings for specific subgroups, were partially replicated by Marshall & Funch (1979) and Frank (1981). Frank's study of state hospital system inpatient/outpatient admissions in the state of Hawaii provides the most geographically "uncontaminated" research, in that effects of economic events in nearby areas are essentially eliminated. Frank found solid lagged correlations between unemployment rates and total first admissions, although unemployment was associated with increased later admissions for men and decreased admissions for women.

Catalano and Dooley also studied inpatient first admissions to mental facilities in both Kansas City (Catalano & Dooley, 1979b) and rural Maryland (Catalano, Dooley, & Jackson, 1981), where both economic change and average level of survey-reported symptoms were considered as independent variables. In Kansas City, admissions were related to economic problems but not to symptoms. In Maryland,

admissions were related both to earlier negative economic conditions and (at least for some groups) to reported symptoms. These two relationships proved to be separate and independent--i.e., reported psychopathological symptoms did not mediate the relationship between economic change and admissions.

Thus, one of the few truly consistent findings in the current literature seems to be that economic change--particularly of a negative nature--leads to increased mental health facility admissions. However, even this proposition does not hold for all population segments, and the reasons and causal mechanisms are in doubt.

Stress-related physical health, and its relationship with preceding community economic change, has thus far been investigated in spotty fashion, although a general pattern of association seems to be emerging from the literature. Negative economic change has been associated with subsequent increases in mortality from cardiovascular-renal disease (Brenner, 1976), simple cardiovascular disease (Brenner & Mooney, 1982), and ischaemic heart disease (Bunn, 1979). Economic change per se has also been implicated in general mortality rates (Eyer, 1977) and manufacturing accident injuries (Catalano, 1979). When other stressful life events were controlled, undesirable economic life events were found to be associated with survey-reported incidence of recent illness or injury in California, but desirable or indifferent economic events were not associated with physical health (Catalano & Dooley, 1983).

In addition to research findings, the typical methodology for these studies is also worth noting. Most of the published research involves the correlation of two or more sets of archival time-series data (e.g., records of unemployment rates and mental health facilities for the same time period or a lagged time period). Furthermore, data points usually represent aggregated totals or averages, and so the correlations are between or among records for the community as a whole rather than records for individual people. Even when survey time-series data are incorporated into the analysis, as in the work of Catalano and Dooley, most of the data points used for correlational analysis are aggregated sample sums or averages rather than individual respondent data. (To date, no panel or other repeated-observation designs have been employed; each time period's survey has utilized a fresh sample.) Among other things, this means that the number of "observations" upon which analyses are based is usually small--e.g., an 18-month analysis is probably based on just 18 monthly data points per variable, even if the underlying survey sample size is several hundred per month.

This methodology has a number of implications for the validity of the research design and analysis. Some of these include the need to ensure equivalence of geographical areas for the various archival data-sets (a point which has generally received a great deal of careful attention in the literature) and the need to consider the possibility of significant error factors when samples rather than total population data are incorporated (a point which has received little or no attention).

However, the two most obvious concerns may be (1) the potential for "ecological fallacies" in interpreting results, and (2) the risk of falsely assuming that a statistical association represents a true causal connection when an unmeasured third variable may in fact control both observed series of events. The "ecological fallacy" refers to Robinson (1950) and his now-famous warning not to generalize aggregate-level relationships to individuals. The problem does not occur for this type of research so long as one recalls that predicted temporal consequences of economic change involve total community response. The specific individuals apparently most directly affected may not be the ones to evidence psychological problems--e.g., in the boomtown situation, newcomers rather than longtime residents may manifest the most mental health symptoms. The possibility of an apparent causal relationship being spurious due to an unmeasured third variable is a more serious concern. (Alternatively, the third variable may mask a true causal relationship between the two observed variables.) Fortunately, a number of steps can be taken in the design and/or statistical analysis of such research to guard against the possibility of rival hypotheses. A discussion of these matters is far beyond the present scope, and the reader is referred to Cook & Campbell (1979), McCleary & Hay (1980), and Catalano (1981) for more technical explanations. In the meantime, it may suffice to raise the basic reminder that correlation does not necessarily imply causation.

A final methodological caution is at a more basic level and involves several interrelated matters which have been too lightly brushed over in

the literature to date. First is the matter of the length of time following economic change before psychopathological changes are detected. Brenner examined lags in terms of years (the units for which his secondary data were available), while researchers such as Frank or Dooley and Catalano have rather peremptorily shifted the research focus to lags of a few months. No research has yet systematically explored what sort of time frame is actually most appropriate. Also, there has been some but not enough use of moving averages to address the possibility of extended effects, occurring at different times for different people, rather than quantum "spikes" of psychological reactions all occurring more or less simultaneously in a certain time unit following an economic shift. Furthermore, analysis of increases in psychopathological symptoms or behavior tells nothing about the persistence or length of such problems. In short, the research has not yet addressed important questions about true temporal parameters of negative psychological reaction to global economic shifts.

Differential Vulnerability: Much of the published research is dedicated to exploring demographic differences in responsiveness to economic change and to proposing theory-based reasons for observed differences. However, differences observed in one study have often vanished in attempted replications, suggesting that such theoretical analysis may be premature in most cases.

For example, Brenner (1973) posited an "economic loss" interpretation for his finding that mental illness admissions were negatively

rather than positively associated with unemployment for the elderly and (after controlling for age) for the least educated. He hypothesized that these groups were most likely to fall in the low income category, an unmeasurable variable for his study, and that low income groups really had the least to lose in terms of true income during recessionary periods. He assumed that the middle income and perhaps the middle age groups had the most to lose in worsening economies.

However, in the work of Frank and of Catalano and Dooley, differences for various age and income or education groups which had been predicted from Brenner's theory generally did not materialize. Age differences in the strength and nature of economic-psychopathological relationships have presented no consistent pattern whatsoever. Frank (1981) failed to replicate Brenner's education finding in her Hawaii study, although she noted that her inability to control for age might be responsible. Dooley & Catalano (1979) found that reported psychophysiological symptoms in Kansas City were much more strongly and positively related to unemployment for the lower income than for the mid income group, in clear contradiction to Brenner's hypothesis. But then, in the attempted rural Maryland replication, income differences in the strength of this association vanished completely--as, for that matter, did the overall association itself (Dooley, Catalano, Jackson, & Brownell, 1981). In the California study of reported physical health effects, Catalano and Dooley (1983) found that an intuitively appealing etiological model (negative economic shifts result in more undesirable

economic life events, which result in more illness or injury) seemed to be borne out for the middle socioeconomic status group only. The higher group tended to react in the opposite way, and the lower group manifested no relationship of this nature.

Perhaps the single most consistent finding over a variety of studies has been that males are predictably sensitive to negative economic change, while female patterns are more erratic. In this case, Brenner's (1973) theorizing--that men are more work-involved--seems to have held up better. In his and all subsequent work on mental health facility admissions, increases in unemployment rates or other negative economic indicators have been followed by increases in male admissions. (The findings have been less clear-cut in regard to reported symptoms, but findings for reported symptoms carry the additional problem of social desirability bias.) Dooley and Catalano (1979) also found that males in Kansas City reported more recent Economic life events than did women, and that frequency of males' Economic life events was quite strongly and positively correlated with frequency of Noneconomic life events (while females' Economic life events were negatively correlated with Noneconomic events).

The "pattern" for females has been much more variable. Dooley and Catalano (1979) found that economic change per se rather than negative change was associated with subsequent increases in females' reported Noneconomic life events and psychophysiological symptoms. Catalano, Dooley, & Jackson (1981) found that negative economic change was

associated with subsequent female admissions to mental health facilities, while Frank (1981) found female admissions to be associated with economic upturns. Catalano et. al. attempt to explain some of the differences in female patterns in terms of Barker's "overmanning" theory (Barker & Schoggen, 1973), but they concede that the theory requires more knowledge of the exact nature of changing female roles than they had available for their two study sites. Continuing rapid overall shifts in American female roles--and the significant regional or community variations in such transformations--may well continue to produce contradictory findings on females' reactions to economic change in future community-specific research.

With the probable exception of increased male admissions following negative economic change, such demographic "differences" seem too inconsistent to suggest any reliable patterns in differential vulnerability to global economic stress. It is probably better for community psychologists to amass more data before inductive theory creation than to continue to bother with a series of rapidly demolished deductive theory constructions in this area.

Unresolved SIA-Related Research Issues: There are a number of key unresolved questions which are pertinent to SIA uses of the available literature and its tentative conclusions. Scholarly researchers can be of particular service to the field of SIA by providing some better answers to the following four questions.

Can positive global economic change have negative mental health consequences? This is of course simply a particular example of the broader question of whether "desirable" life events are stressful. The economic change literature is full of contradictory or partial evidence on the topic. As previously noted, Brenner (1973) and Frank (1981) found that several population segments, particularly females, were more sensitive to positive change and/or change per se than to negative change. Brenner (1979) also found that economic upturns of a rapid nature were associated with psychophysiological distress. Eyer's (1977) research showed that rapid economic expansion was predictive of higher mortality rates and some forms of psychopathology. Catalano and Dooley's early (1977) Kansas City work seemed to indicate that absolute economic change was a better predictor of frequency of all life events (including negative ones) than was negative economic change: "...the present findings contradict the intuitive assumption that only economic downturns produce disorder. Economic change associated with growth or diversification is also apparently stressful" (p. 304). However, later analyses by the same researchers seemed to point in the opposite direction-- i.e., negative economic change was usually a better predictor.

The issue is an important one, especially in light of the typical feeling on the part of noneconomic social scientists that rapid economic change can be as harmful as economic stagnation.

To the extent that economic change is associated with mental illness, does it "provoke" or just "uncover" that illness? The "uncovering" perspective as advanced by sociological mental health researchers such as Scheff (1966) has stimulated much of the economic change research, since it provides a theoretical alternative to the more intuitive proposition that economic troubles cause new mental health problems or exacerbate pre-existing tendencies. The "uncovering" theory holds that individual deviant behavior is the same in good economic times and bad economic times, but that economic stress reduces family or community tolerance and so leads to more labeling and institutionalizing. The work of Brenner (1973) and early Catalano & Dooley (1977) seems to support the more typical provocation hypothesis, but the latter authors later (Catalano & Dooley, 1979; Catalano, Dooley & Jackson, 1981) find more evidence for provocation.

The issue is academic for SIA if the "bottom line" is simply mental health facility admissions, but it is important if more judgmental evaluations of project quality-of-life factors seem merited. However, the most valuable contribution which scholars could make at this time is not to resolve the debate but to make it more rational. The provocation and uncovering hypotheses are not mutually contradictory for a community as a whole, and it is probably more important to determine the conditions under which one process vs. the other occurs than to determine which single explanation is the "true" one.

What exact mechanisms mediate the relationship between economic change and observed mental illness? This is the more general etiological question, while the preceding one involved a special issue. However, most other questions about causal mechanisms implicitly assume a "provocation" model, since the focus is on changes in possible mediating events or behavior within the individual rather than changes in social tolerance for pre-existing deviant behavior. The various studies by Catalano and Dooley incorporating longitudinal survey data have explored the potential role of economic life events and/or the role of either life events or symptoms as mediators of illness. The statistical indications were that increased frequency of economic life events did not explain the relationship between economic change and increased symptoms (Catalano & Dooley, 1977) and that increased individual symptoms did not explain the observed communitywide relationship between economic change and increased mental health facility admissions (Catalano & Dooley, 1979; Catalano, Dooley, & Jackson, 1981). Negative economic life events were found to mediate the relationship between economic downturns and illness or injury, but only for one socioeconomic group (Catalano & Dooley, 1983).

A great deal more research is indicated before it can possibly be concluded that individual life circumstances or psychological responses have nothing to do with the relationship between economic change and mental health facility admissions. There are a great

many possible sources of artifactual null findings in the present data--e.g., possible nonlinear relationships ignored in essentially linear analytic techniques; ecological-fallacy issues stemming from the mix of aggregate survey scores and general population data; etc. For SIA, where the impacts of a single proposed project must be estimated, much more must be known with some confidence about the causal relationship between economic change and mental health consequences. It is simply not enough to say that a project will reduce unemployment and hence empty the county mental wards. The causal connections must be documented.

Are urban vs. rural differences real and, if so, why? In their Kansas City data, Catalano and Dooley found strong relationships between background economic change and reported levels of life events and psychological symptoms a few months later. These relationships were totally absent among the rural Maryland respondents (Dooley, Catalano, Jackson, & Brownell, 1981). The authors suggest a number of possible reasons why the failure to replicate a relationship may be misleading--e.g., sampling error; depressed variability in the rural group due to more stable economic climate, more homogeneous population, and/or fewer reported life events and symptoms; and greater tendency of rural respondents to give socially desirable answers. On the other hand, they also suggest a number of reasons why the rural nonrelationship may be a real one--e.g., better individual coping abilities due to higher levels of social

support; greater value given in rural settings to interpersonal than to economic rewards; etc. The question is left as unanswerable until further studies are conducted in other locales.

The reason for the importance of this issue is an obvious one. SIA's are conducted in an abundance of settings, both rural and urban. It is crucial to know if the validity of a prediction varies with the setting.

To date, only a handful of psychological researchers have attacked the issue of how global economic change affects mental health. The plethora of remaining questions stems far less from inadequacies in their work than from lack of colleagues. From the perspective of SIA, this is unfortunate, since broad economic shifts are among the most significant characteristics which proposed projects can exhibit. The few researchers in the field have operationalized "economic change" in a variety of ways. Often, the most attention has been paid to apparent delayed effects of changing unemployment rates. However, from the viewpoint of SIA, it may be even more important to study the effects of proportional employment shifts from one economic sector to another. This has been done in a number of studies, in which these shifts are generally considered to represent indicators of "absolute economic change" as compared to "negative change." SIA practitioners will be less interested in the absolute-vs.-negative theoretical interpretations than in the nature of the change. If major intersectoral employment

shifts are shown to be associated with negative mental health consequences, then they would be considered ipso facto negative rather than absolute. The effects of such changes are better studied because these changes occur in real-life SIA situations and not because they are thought to typify either "absolute" or "negative" change.

Utility for the SIA Practitioner: The SIA practitioner can make use of the psychological evidence on economic change and mental health in one of two basic ways: quote consistent findings in the literature or duplicate the research techniques for the actual community which is the subject of the study.

For the most part, the literature is as of yet too limited in extent and too complex or contradictory in its conclusions to represent solid source materials for predictive statements in an EIS. The most consistent finding to date is that unemployment is associated on a delayed basis with increased recorded mental health treatment for males. The extent of the delay or of the expected psychopathology is still far from being reliably quantified. The potential for a good knowledge base in this area seems exciting, but it is up to the basic researcher rather than the SIA practitioner to build such a base.

To the extent that the scholarly literature addresses a public policy rather than theoretical purpose, that purpose usually has to do with the potential for predicting mental health facility admissions or related demands for public services resulting from global economic

shifts (Catalano & Dooley, 1980, 1981). This is very close to the purposes of SIA and--if the state of the art ever actually permits such predictions--would have direct bearing on the SIA process. In the short term, however, this purpose is probably too ambitious for the more feasible use of scholarly literature: establishing general principles and relationships which provide a qualitatively valid human "bottom line" to economic impacts. Additionally, of course, there is the basic question of the validity of transferring conclusions from a literature on results from global economic shifts to predictions of results from specific major community economic transitions.

The second potential use for the literature in applied SIA would be to use the reported research methodology in the particular SIA community context. The time-series research techniques employed in the available literature are of two types. The more complex incorporates longitudinal survey data on reported life events and/or psychophysiological symptoms. The SIA situation rarely permits the time, much less the financial resources, to generate several years' worth of primary data. The less complex analytic technique relies on existing datasets--relevant economic indicators and mental health treatment records, as well as time-series data for potential rival hypotheses which should be added to the analysis in the nature of statistical controls (e.g., weather data). There are some practical constraints to this type of research as well. While packaged software for time-series analyses is becoming more widely available, it is still usually more expensive than the private

consultant can afford. There are also the usual problems of determining the geographical compatibility of archival datasets for different variables, not to mention the very basic question of whether available economic indicators reflect the most important economic characteristics of the proposed project.

Nevertheless, analysis of the intercorrelation among different sets of time-series data is clearly a "do-able" research activity for the SIA practitioner. The true relevance and value of doing such original research on secondary data is something that will have to be judged by the practitioner in light of the particular circumstances of each proposed project and each study budget. But the tools at least exist, and the available literature provides guidelines on how to use them.

VII. ALTERNATIVE PERSPECTIVES ON THE ROLE OF PSYCHOLOGISTS AND PSYCHOLOGICAL KNOWLEDGE IN SIA

The preceding chapter examined ways that psychological knowledge might contribute to the prediction of psychological impacts in conventional or "linear" SIA, in which the objective is to write a report containing forecasts of probable social outcomes from the implementation of a proposed project. While this sort of predictive SIA still represents the mainstream social assessment activities under the American NEPA system, there are a number of alternative approaches or slightly removed roles for social scientists to assume in the public policy decision-making process at the local level. The purpose of this final dissertation chapter is to examine some of the ways that psychologists and/or psychological knowledge might make a contribution in ways other than making prophecies about psychological "bottom lines."

The chapter consists primarily of four such alternative perspectives: (1) a modified (and moderated) approach to predictive SIA, in which psychological impacts might still constitute at least some of the dependent variables; (2) use of psychological variables as independent or mediating variables in prediction of crucial nonpsychological "bottom lines"; (3) nonpredictive action roles for psychologists in SIA; and (4) scholarly support roles.

A RECOMMENDED "MODERATED" APPROACH TO PREDICTIVE SIA

This section of the chapter represents the author's personal recommended approach to SIA. It is in part an idealistic approach, in that it makes the happy assumption that adequate resources of time and funding will be available as needed. But it is also a "moderated" approach, in that some compromises are suggested with the idea of making predictions grounded entirely in social science principles.

The section contains a brief discussion of two "moderating" principles which distinguish the recommended procedure from more conventionally scientific approaches to scientific SIA: (1) a willingness to shift SIA objectives from predictions to analysis of potentials, and (2) a needs-assessment survey approach to determination of critical issues and concerns for assessment. The remainder of this section is given over to (3) a description of the recommended approach.

Shifting SIA Objectives from Prediction to Potential

The thought to be introduced here is not a greatly sophisticated one, but it seems rarely to have received much consideration in the SIA literature. The suggestion is simply that predictive SIA lower its sights from deterministic forecasts of exactly what will happen to more probabalistic assessments of likely potential outcomes--i.e., pointing out areas of concern and areas of opportunity, along with possible action strategies to minimize the concerns and maximize the opportunities.

This is a task which still requires (but does not exceed) the knowledge base and forecasting methodological capabilities of the social sciences. Furthermore, it is compatible with all of the other suggested directions for strengthening and expanding SIA--except for the "hard-nosed" strategy of restricting SIA to prediction of quantifiable topics with reliable forecasting methods (which might turn out to be a formula for extinguishing the field altogether). Examining likely problems and opportunities is still an anticipatory task which fits snugly into the existing legal EIS framework. It can be done under the "linear," "feedback," or political-participatory models of SIA. It can certainly attend to political issues of distributive equity and can be achieved with as high or as low a ratio of expert-to-citizen participatory input as one prefers. It would make maximum use of case study data bases without demanding eternal verities of unshakeably valid cause-effect relationships. Above all, it would encourage mitigations without any qualms that correction of potential negative impacts would have the reprehensible effect of invalidating expert predictions.

The recommendation is not to abandon forever all hope of making any firm predictive statements. As time goes by, there would certainly be increasing frustration with SIA's which discuss "dangers" and "opportunities" but which do not attach any probability estimates to the various parameters. However, the fact is that available social science knowledge does not currently justify the selection of such quantified probability statements for most sociological or psychological impact

variables. Later in this chapter, a discussion of potential psychological contributions through "scholarly support roles" will attempt to provide some guidelines for research which would be of value in making firmer predictive statements than can now usually be justified.

In the meantime, the SIA practitioner must often depend largely on case study literature (for sociological and some social psychological or intrapsychic variables) and a muddle of psychological theory, laboratory experimental evidence, and psychometric scales (for most social psychological and intrapsychic variables of interest). The essential recommendation here is to recognize the limits of such material as "knowledge" but also to utilize its capabilities as indicators of crucial topic areas for management-oriented anticipatory SIA. Even when a well-structured scholarly reference source cannot provide a foolproof prediction of what will happen when a certain change agent is introduced, it can provide hope or warning of what may happen, thus facilitating both decision making and contingency planning. That is not an ignoble goal for psychologists or other social scientists in the local policy-making process.

The Individual-Level Perspective and Community Needs Assessment Surveys

The basic concept being proposed here is that individual-level perceptions and concerns can best be integrated into the SIA process in a more-or-less institutionalized way by the regular use of needs assessment surveys (most likely, although not necessarily, during the

scoping phase). Opinion surveys may not necessarily strike the psychological scholar as appropriate tools for addressing "true" psychological concerns, many of which may be subtle or partially subconscious in nature. However, secondary analysis of opinion survey data is coming to be recognized as a useful scholarly research tool for the study of social change (Presser, 1982). More importantly, in the SIA process, the introduction of community surveys would provide a medium for the eventual "piggybacking" of more purely psychometric scales aimed at such objectives as identification of high-stressed subpopulations particularly vulnerable to negative effects of change.

In the community psychology literature, two fairly similar types of community surveys provide possible models. "Quality-of-life" surveys have been aimed at researching the life domains in which satisfaction measures are most correlated with global life satisfaction for overall populations or particular subpopulations (c.f., Fitzsimmons, 1977; Bubolz, Eicher, Evers, & Sontag, 1980; Rhoads & Raymond, 1981.) Such information can be of good indirect value to SIA, but more direct utility may be derived from the second type: "needs assessment" surveys conducted for the immediate purpose of providing citizen input to local government decision making. The most extensive work in this area within community psychology has been conducted by Stanley Murrell (1977, 1983) and his associates (Murrell & Schulte, 1980; Murrell, Schulte, Hutchins, & Brockway, 1983). Some of this overlaps with the "quality-of-life" survey model, illustrating the point that needs assessment surveys can be vehicles for additional types of research.

The logic of conducting a needs assessment survey for SIA purposes is to identify crucial community goals and objectives as criteria for evaluating likely project impacts. While the "needs assessment" concept usually suggests identification of deficits, it can also extend to the identification of valued existing community assets about which people may feel some sense of threat and need to protect.

This logic strongly suggests that such surveys be carried out during the EIS scoping phase, so that the general population of a potentially impacted area can help determine the impact variables to be assessed. By including some brief project description in the survey instrument (hopefully at a time after more extensive descriptions have been conveyed by local news media), this research can also identify the project characteristics and potential impact areas of most concern to local residents.

While scoping seems a particularly opportune time for such surveys, circumstances may suggest other timing. Needs assessment surveys are particularly logical tools for impact mitigation planning once it has been determined that a project already in operation seems to have caused unanticipated problems (c.f., Bickert, 1974, for a boomtown example). But from the SIA perspective this is closing the barn door after the Horsemen of the Apocalypse have already escaped. Surveys can be taken after the environmental assessment or the draft EIS is prepared, before the final EIS version is assembled, to measure the effects of preliminary impact information on community attitudes toward the project. And

if the project has occasioned some form of mediation to resolve local controversies, the survey can serve the function of validating the proposed agreement in the wider community.

More detailed ideas for possible survey content are included in the following discussion, which integrates the two principles previously set forth into a broader schema for conducting SIA's.

Schema for "Moderated" Social Impact Assessment

The recommended approach recognizes that SIA may take place in either or both of two stages during the project decision-making process. The first is the project planning and design stage. Ideally, EIS's have always been intended to be integrated into this stage, but in fact they rarely have. (It is for this reason that the later discussion of possible "Nonpredictive Action Roles" for psychologists includes activities that may occur at this time.) SIA's at this stage are therefore something of a "blue-sky" idea from a practical viewpoint, although some of the SIA activities recommended for this stage might possibly still be carried out in the very early parts of the second stage.

That second stage is the government permitting and review stage, which is when EIS's and SIA's are more typically prepared. If SIA work is delayed until this stage, as is usually the case, the activities to be set forth here could be undertaken without the activities recommended for the first stage. Again, however, it is possible that certain SIA

activities from the planning and design stage might still be belatedly undertaken, albeit probably in hastier form.

SIA in the Planning and Design Stage: Social impact assessment is not a legal requirement for project planning, but it often makes good sense from a management viewpoint, especially for potentially controversial projects. This is the best time to establish a dialogue with the community and gather meaningful resident input. If SIA is delayed until the formal EIS is undertaken, many of the affected parties may feel the key project design decisions are already set, and so the chance for frustration and an adversarial mentality would be much increased. This logic argues for a "process" (citizen involvement or "feedback" model) approach to SIA, but there is also a need for definite research studies during this period.

This stage is the best time to carry out the sort of social planning--e.g., employee housing decisions; identification of desired labor force and its psychological requirements--which will eventually lead to lower operating costs and more effective utilization of project facilities. It is the best time to study community needs and objectives in order to increase the compatibility of a proposed project with these needs and objectives.

In other words, the research product for SIA at this stage is best described as a community profile. Three components are recommended for this profile:

- o Analysis of Historical and Economic Forces Shaping the Community: Through secondary analysis of existing data, the SIA researcher can provide a succinct overview of the major forces which have both created and limited a community's contemporary economic and social development, and which affect attitudes and decisions of opinion leaders toward change in the community. This product may be an eventual EIS section and can also serve as a handbook to introduce new project personnel to the community in future years.
- o Analysis of Social Structure and Process: To communicate and work within an established community, a change proponent must know something about how that community ticks--at the "micro-level" of personalities and neighborhood politics, as well as the "macro-level" of history and economics.

In preparing such an analysis, it is suggested that the social researcher gather important "micro-level" information about key topics such as (1) viable community organizations and their potential interests in the proposed project; (2) community leaders--both officeholders in organized groups and also informal but respected opinion leaders; (3) distinct social groups within a community and their relationships with one another; (4) political networks and decision-making systems (both formal and informal); (5) effective communication channels for dealing

with residents, whether these be conventional news media, popular bulletin boards and gathering places, or neighborhood grapevines.

- o Needs Assessment Research: As previously discussed, a community survey should determine both "deficit" needs and "threatened assets," as well as more positively-stated objectives. It may also do well to probe for apparently unrelated issues and problems which can color local perceptions of, and attitudes toward, the proposed project.

Table 7 contains an illustrative "menu" of possible items and issues for such a survey.

While the product-oriented formal research components of SIA in the planning and design stage focuses on the general community, the "process" components should focus on (1) local government decision makers and (2) organized interest groups--e.g., environmentalists, community associations, labor unions, etc. The reasons for dialogue with these two levels include a certain degree of public relations objectives (establishing rapport, increasing the chances for successful negotiations in controversial projects) but simultaneously embodies the same purposes as the community needs assessment survey: determining the perceptions and values by which the project will be evaluated by these people, and scouting for "unrelated" issues which will affect attitudes

Table 7:

A "Menu" of Possible SIA-Oriented Needs Assessment Survey Items

Exact survey items would depend on project nature, as well as client objectives and resources. The following suggested three-part format constitutes an illustrative (not a rigid) approach to determining needs, problems, or concerns in three broad categories.

(A. Satisfaction with Community Opportunities, Services, and Facilities)

For each item, respondents might be asked two questions: How important is this to you for general quality of life in any community? How well are your personal needs for this being met in this community?

- | | | |
|--|---|--|
| o employment opportunities for self? | o employment counseling and training | o police service |
| o employment opportunities for children? | o government welfare and social work services | o fire protection service |
| o availability of good, affordable housing | o pre-school child care/after-school programs | o emergency medical service |
| o shopping facilities | o playgrounds | o other medical (doctors, hospitals in area) |
| o restaurants | o programs for the aged | o utilities |
| o nightlife | o good public schools | o sewage system |
| o movies | o college/university | o garbage collection |
| o facilities for active sports | o adult education courses | o highways/streets |
| o beach parks/access to ocean | | o public transportation system |

(NOTE: For some of these items, a supplementary or alternative procedure could be comparison of objective data vs. statewide norms or standards.)

Table 7. (Continued) A "Menu" of Possible SIA-Oriented Needs
Assessment Survey Items

(B. Satisfaction with Individual or Family Quality-of-Life Domains)

The same two questions--importance? satisfaction?--might also be asked about some or all of these areas:

- | | | |
|-------------------------------|--|--|
| o adequate income | o rewarding work or
usual daily
activity | o active recreation |
| o adequate housing | | o attractive outdoor
environment |
| o freedom from crime,
fear | o time for family
activities | o feeling comfortable
with all types of
people in area |
| o learning, stimu-
lation | o caretaking for
children/elderly | o access to decision
makers |

(C. Current Issues and Controversies)

Open-ended questions or closed-ended items can be used to establish existence of controversies or concerns and to measure attitudes on these issues. Exact issues will always be site- and time-specific, but some possible examples include:

- | | | |
|--|--|---|
| o concern over young
people leaving the
community | o friction between
newcomers and old-
timers | o political disputes
among different
demographic or
special interest
groups |
| o current wave of
concern about a
particular topic--
e.g., closure of
traditional access
to beaches | o controversy over
other proposed new
economic develop-
ments or public
facilities | o anticipated shut-
down of a previous
economic resource
base for the
community |

(NOTE: A supplementary or alternative procedure for generating similar information would be interviews with key informants, particularly community group leaders. It is often desirable to survey both community group leaders and the general public, in order to make comparisons.)

toward the project. Thus, the formal survey is the research tool for the general population, while informal dialogue is the more effective tool for dealing with special organizations and agencies. In both cases, the real objective here is understanding the psychology of the community and/or its formal elements.

SIA in the Government Permitting and Review Stage: This is the time when EIS's and SIA's are conventionally done, because this is the time when they are required for government approvals. The approach recommended here concentrates relatively heavily on acquisition of individual perceptions and attitudes through scoping activities. Scoping in the overall EIS system is primarily for the purpose of narrowing down potential topics to the most important ones. But from the perspective of individual-level SIA, it is the best opportunity for opening up the process to community input.

The other main methodological tools are key informant interviews and review of literature, especially case studies. As previously discussed, the case study literature is most valuable for an anticipatory document that features analysis of potential than of flatly predicted impacts--i.e., a management-oriented discussion of dangers and opportunities. Therefore, the final product emphasis would be on project mitigations and enhancements as much as, or more than, on social forecasts. While the following outline suggests incorporation of the standard "linear" approach to the greatest possible extent, it is

suggested that it is ultimately more important to do something about social impacts than to predict them.

A three-phase approach is recommended. In the most ideal possible situation, the budget for the second two phases would be set only after completion of the first, "initial scoping" phase.

Phase 1: Study Design and Initial Scoping

- o Review (1) client needs and concerns; (2) key project characteristics.
- o Review physical (and, if already determined, economic) impacts for social implications.
- o Initial contacts with key informants (government decision-making agencies and important community figures) to begin identifying crucial impact categories and community concerns.
- o Initial case study review to determine potential impact areas. Develop scenarios of major opportunities and dangers from project.
- o Identify other potential change factors which may (1) affect community attitudes toward client's project, and/or (2) interact with impacts of client's project in such a way as to change the level or nature of those impacts.
- o Identify special subpopulations of concern (e.g., relocatees, persons adjacent to project site, groups likely to bear greater costs or receive greater benefits, potential project supporters or opponents, etc.).
- o Identify relevant project phases for impact assessment--e.g., planning, construction, operation, termination--and relevant time frames when possible.
- o Develop draft survey instrument, tentative list of impact categories, and SIA scope and budget for remaining work.

Phase 2: Final Scoping and Quantitative Analysis

- o Compile socioeconomic profile and history of community (or use information already assembled from SIA in planning and design stage).
- o Quantitative analyses for direct, tangible impacts (e.g., population, employment), based on existing data and project characteristics.
- o Direct impacts: general profile of community's future without the proposed project.
- o Conduct community survey to ascertain (1) project awareness; (2) attitudes toward the project; (3) perceived impacts of project; (4) other information relevant to final selection of impact categories--e.g., valued characteristics of community, perceived community problems. (See sampling of recommended items in Table 8. Depending on project circumstances, timing for survey might vary--i.e., might occur in Phase 1 or 3.)
- o Prepare cause-effect flow chart for potential indirect impacts.
- o Preliminary report write-up: findings to date.
- o Prepare tentative list of data sources and make final determination with client about indirect impact categories to be explored in Phase 3.

Phase 3: Analysis of Indirect Impacts and Mitigations

- o Indirect (higher-order, less tangible) impacts: conduct such quantitative analyses as are possible.
- o Return to field to gather more qualitative evidence about impacts through key informant methodologies and systematic observation.
- o Community dialogue procedures (public meetings and/or informal contacts with key figures) to (1) provide input on planning and mitigations; (2) help round out qualitative assessment of impacts; (3) disseminate information about project. (NOTE: Depending on the project, community dialogue may also be appropriate during Phase 2.)
- o With both client and community input, prepare indirect impact scenarios focusing on significant risks and opportunities. If a needs assessment survey has been conducted, these scenarios should relate the risks and opportunities to key community needs and objectives.

Table 8:

A "Menu" of Possible EIS-Stage Impact Assessment Survey Items

Following are some recommended types of questions. However, exact survey items and format would depend on study objectives and resources.

- o Compared to other nearby communities in which respondent could afford to live, what are the most liked characteristics of this community?
- o The most disliked characteristics?
- o Determine awareness of project and project characteristics. Record awareness of certain important project characteristics, and also record any misinformation reported by survey respondents.
- o Does respondent favor or oppose the proposed project? How strongly?
- o Why does respondent favor or oppose the project? (NOTE: Respondents should also be given the opportunity to say their position is not "favor" or "oppose," but "it depends." The follow-up question--"on what does it depend?"--then becomes one of the key survey items.)
- o What are the perceived impacts, if any, on the most liked and most disliked community characteristics?
- o What other impacts does the respondent believe the project will have on his/her personal life or on the community? (This could be an open-ended question, or a list of crucial impact topics could be presented to see if respondents believe the consequences for each would be positive or negative.)
- o What are the perceived risks and opportunities raised by the project?
- o At this point, ask any additional questions on special topics related to this project--e.g., Where should employee housing go? Is anybody in your family likely to apply for work here?
- o Repeat question on whether respondent favors or opposes proposed project, to determine if the survey itself has any immediate effect on attitudes.
- o Obtain demographic information (age, ethnicity, income, education, sex, length of residence in community and/or on island).

(Continuation of "Phase 3" Text)

- o Prepare final recommendations on "Mitigations"--ways to minimize or compensate for possible negative consequences, and to maximize positive ones.
- o Final report write-up.

The foregoing approach to a "moderated" predictive (or at least anticipatory) SIA is not oriented only to psychologists. It is suitable also to sociologists, anthropologists, or any SIA practitioner interested in dealing with less tangible as well as direct and tangible social impacts. But the approach also has particular utility for the objective of increasing the psychological content of SIA's, at least to the extent of directing more emphasis to individual-level concerns and issues.

In the remainder of this chapter, however, we shall consider some other alternative roles for psychology and/or psychologists besides the introduction of psychological variables as "bottom-lines" in predictive SIA's.

PSYCHOLOGICAL PREDICTORS OF NONPSYCHOLOGICAL "BOTTOM LINES"

The ultimate reviewers of an EIS/SIA are the public and the decision makers for whom the document is prepared. Depending on the time, place, personalities, and situations, these parties may or may not have interest in some or all of the potential psychological "bottom lines" discussed in the previous chapter. However, it is likely that they may

be interested in the way which psychological processes affect other, nonpsychological "bottom lines" of import to them. For example, a policy maker may argue that the issues of individual wellbeing, satisfaction, and/or quality of life are too diffuse, and he or she would be quite happy just to undertake the more tangible task of stimulating the economy and providing jobs (or reviewing projected impacts in these economic areas). However, the same policy maker who stipulates employment as the "bottom line" may be very interested in social or psychological data which suggest that local residents will not get or will not take jobs in a proposed new activity unless certain mitigating actions are taken.

While psychological variables might conceivably affect a vast range of outcomes which are of pragmatic concern, this section will touch upon four nonpsychological "bottom lines" suggested to be of particularly frequent and intense interest:

- (1) overall community response and project acceptance;
- (2) various economic outcomes;
- (3) induced land use changes; and
- (4) political consequences.

Although it is very possible that the practical market for psychological input to SIA rests more in these areas than in any of the areas

where psychological variables are themselves seen as the "bottom line," the following discussions will tend to be briefer than those in the previous chapter. This is for the simple reason that there is less directly relevant literature to comment upon. As is probably the case for most other types of social scientists, psychologists have usually been more interested in the phenomena of their own discipline as the ultimate "bottom line" than in viewing their topic of study as determinants of outcomes in other domains. However, it is to be hoped that applied social and community psychologists will concentrate on such topics more in the future.

Community Response/Project Acceptance

To a large extent, community acceptance of a proposed project (with attendant political implications for project approval) is an appropriate research topic more during the planning and site selection stages than during the EIS stage. That is, the ideal planning process would have considered community sentiment as a key political determinant in deciding whether or not to move forward with a project long before an EIS/SIA is required. (For that reason, this subject is also considered in the following section of this chapter, in the "Planning Activities" portion of the discussion of "Nonpredictive Action Roles.")

On the other hand, ideal planning processes are rarely implemented. Or definitions of "ideal" may differ, and psycho-political factors may not count in a more technically-oriented preliminary planning process.

Or technical considerations may narrow the choice of possible sites down to one or two locations, so that psychological and political factors must assume a secondary role in site selection.

Whatever the reason, many projects enter the EIS stage with sufficient indications of controversy that the issue of overall community response and acceptance is a major concern. Community acceptance might of course be regarded as a psychological "bottom line" itself; if so, it is probably a more significant psychological dependent variable than any which were actually discussed in the foregoing chapter. However, it is the suspicion of this author that community acceptance is more commonly regarded by decision makers as a crucial societal and political impact than as an individual psychological outcome, and that decision-makers' questions to psychologists would most often focus upon the psychological determinants of community acceptance.

There are three basic methods for forecasting likely extent of acceptance or resistance. Sample surveys are the most straightforward and require no scholarly psychological input, but budgetary and/or political considerations sometimes rule out surveys. More importantly for predicting later community attitudes, there is the very real risk that present attitudes may change, particularly if a project is unfamiliar to people when the survey is taken but thereafter generates controversy and extensive media coverage. If a survey is taken before the community has had much exposure to the project concept, its greatest value may be one suggested earlier in this chapter: determining the

major needs; current or recent issues which could affect perceptions; and direct responses to questions about factors that will affect future opinions.

The second method, psychological theory, is cheapest but riskiest. Attitude theory is too often based on laboratory experiments which focus on "general principles" which ignore the different concerns raised by different project proposals. For example, two types of federal projects with high controversy potential are nuclear power plant construction and implementation of road pricing programs (i.e., converting "freeways" to "tollways" in order to reduce traffic congestion). In the case of road pricing, the important psychological factors seem to involve issues of perceived personal freedom and attachment to one's car (Higgins, 1981); for nuclear power plants, crucial psychological determinants of support or opposition are more likely to involve perceived likelihood and desirability of physical risk, economic benefits, and social disruption (Lounsbury, Sundstrom, Schuller, Mattingly & DeVault, 1977).

On the other hand, less abstract psychological concepts and principles may provide some common-sense guidelines for making informed guesses about likely community reaction. For example, sociological research into rural residents' attitudes toward proposed industrial development has produced good evidence that attitudes can be predicted in part by the simple perception of whether development will or will not bring personal benefit to the individual (Maurer & Napier, 1981; Rudzitis, 1982-83). As humdrum a "theory" as this may seem to many

psychologists--who often would really prefer the human psyche to be a little bit more complex and in need of study by certified experts--it may exemplify the level of psychological theorizing which will prove most useful to this task. Even here, however, there are grounds for pause, since it has been shown that some types of people are more likely than others to base their support or opposition for a project on "rational" perceptions of personal benefits or cost (Lounsbury, Sundstrom, & Shields, 1979).

The third method is a looser one, merging theory and observation--ecological inferences about the "fit" of given project characteristics with given community characteristics. Such inferences might be heavily data-based, relying heavily on quantitative information about historical associations between community attributes and acceptance or rejection of proposed project types. (See Byrne & Sucov, 1977, for a nuclear power plant example.) On the other hand, they might be typical SIA "scenarios," which are basically expert evaluations of the compatibility of a certain project with the subject community's social psychological attributes. While such judgments are usually the domain of the sociologist, they also constitute a potential entry point for the community psychologist to the SIA process.

Economic Outcomes

Numerous economic outcomes are likely to assume the role of "bottom-line" variables under various circumstances. To local government,

one of the most obvious of these would be the cost of government services. Catalano (1975) has recommended involvement of community mental health specialists in the EIS review process, to help predict fiscal impacts on mental health services through increased demand. Some of this demand might be due to simple population growth, but certain types of social change could produce increased mental health problems disproportionate to population growth--e.g., resort development exposing isolated rural residents to new values and standards (Guntern, 1978) or the reverse problem of social isolation encountered by outsiders moving to small communities experiencing economic booms (Albrecht, 1978). Psychological factors can also have indirect influence on the costs and nature of other government services--e.g., the effects of differential consumer preferences on housing programs (Hempel & Tucker, 1979).

When the change proponent responsible for preparing an EIS/SIA is a private company, such a client may also have a very great interest in social or psychological factors affecting corporate profitability. The public-sector analogue would involve implications for local tax revenue. One example of a social psychological syndrome with profound implications for profitability is comprised of the personal psychological and family problems (combined with inadequacy of housing and government services) faced by many workers in mining/energy "boomtown" areas:

...a reduction in industrial productivity and reliability accompanied the decline of life. Increases in turnover rates and absenteeism were common. Productivity in existing mines, measured by how much was produced per man per shift, dropped 25 to 40 percent within a 12-month period. (Gilmore, 1978, p. 105)

The issue of financial compensation for negative impacts is most frequently a matter for debate among different levels of government-- i.e., how can national governments repay states/provinces (or states/provinces repay municipal governments) for increased services and infrastructure costs associated with offshore drilling, nuclear power plant construction, or other industrial activities generally considered to benefit an entire region or country (Burkhead, 1977; Albrecht, 1978; Chickering, 1981)? However, there have also been suggestions among policy scientists that private individuals should receive monetary compensation (either direct payments or reductions in taxes or utility bills) for having to live in the vicinity of necessary but noxious land uses such as power generating plants, airports, prisons, etc. (O'Hare, 1977). In all probability, any such compensation to individuals would be based on conservative legal principles, meaning uniform levels of compensation to all individuals within certain judicially-determined zones of proximity. But an interesting long-term challenge to applied psychological research would be development of techniques to predict varying degrees of subjective impact as a basis for varying levels of compensation payments. This would be even dimly practical only for small populations (i.e., immediate neighbors of some problematic facility), and the research principles would no doubt overlap with those involved in the previously discussed task of analyzing differential vulnerability to stress.

Psychological variables affecting national or regional development would be of extreme interest to most governmental decision makers,

although these might play only an infrequent role in the North American EIS/SIA process. McClelland's (1961) well-known work on "need for achievement" in relationship to national development provides a prototype which might sometimes have parallels for local Canadian or U.S. communities whose drives for regional economic development are affected by differing ethnic or subcultural values.

The distributive issue of resident share of economic benefits from developments which generate immigration is a politically touchy concern, sometimes forming the very crux of an SIA for decision makers and sometimes representing the last topic which government authorities or change proponents want to bring out into the open. In reviewing available evidence on economic mobility from rural energy developments, Murdock & Leistritz (1979) found that new residents had higher rates of upward mobility than longtime residents. "At the same time, however, these data suggest that rates of stability are higher and rates of downward mobility lower for longtime residents in currently developing areas than for similar residents in other types of communities" (p. 267)--i.e., longtime residents in boomtowns do not fare as well economically as newcomers, but they fare better than their cousins in similar rural areas where decline is the alternative to development.

Psychological factors can be very important determinants of the distribution of economic benefits. For example, Little & Lovejoy (1977) found that employment benefits for current residents from a proposed Utah power generation project would not be as great as anticipated, in

good part because the jobs simply did not match resident interests or self-images. Weber (1979) has pointed out that resident support for such projects may often be based on a desire by parents to provide a local employment base so that grown children will not move away in search of work. The wishes of the older generation usually have more political power, but in such cases these wishes are based on certain assumptions about the goals and expectations of the younger generation. Measurement of actual goals and expectations could be crucial for some situations (to see whether the jobs would actually be taken by local youth), and this could be a service provided by psychologists.

Induced Land Use Changes

Especially when a proposed change would result in substantial population growth, certain "bottom-line" questions of interest to planners could include: Where will the new population settle? What types of residential developments will they generate? Where will they go for shopping and services?

While economic factors, physical constraints, and government policies all would play major parts in answering these questions, so might psychological variables. For example, energy developments in sparsely-populated western areas are often centered on work sites physically outside any one municipality or village, so that new residents might choose to live in any of several surrounding communities. The classic gravity model usually provides a moderately good rough-cut prediction

of population distribution, but post-facto observation of actual population growth patterns in such areas shows that predictions based on the gravity model need to be supplemented by information about newcomer preferences for amenities, social interaction, ideal distance from workplace, etc. (Murdock & Leistritz, 1979.) Environmental psychologists can assist here through their research into the varying appeals which specific residential attributes hold for different types of people (Salling & Harvey, 1981).

Although it may safely be assumed that most newcomers and oldtimers alike in American prefer single-family housing if it is available, it can be vital for planners to predict which types of residents will most readily shift their preferences to higher-density developments under various financial or proxemic scenarios (Malecki, 1978). In regard to providing new commercial development for small communities facing population growth, residents of some such areas seem to prefer shopping in distant metropolitan areas, so that it is perhaps not necessary to increase amenities in proportion to population growth (Longbrake & Geyler, 1979). This land use decision thus calls for a behavioral/psychological, as well as an economic, analysis.

Political Consequences

Political consequences of approving a highly unpopular project would be obvious to elected decision makers, and these would not require psychological analysis. However, long-term shifts in political control

may not be so apparent either to decision makers or the current public, especially when the proposed project is popular among present residents. Little (1977) has pointed out that political control in energy "boomtowns" has often shifted to newcomers, not only because of their numbers and administrative skills, but also because of a psychological backlash among longtime-resident voters against the "short-sighted" local government leaders who failed to manage the social and physical problems with rapid economic and population growth. Longtime residents thus may join newcomers in a spirit of "throw the rascals out," electing newcomers in the process.

Another political issue associated with energy boomtowns is the loss of local autonomy due to increased economic ties with the federal government, corporations based in distant cities, and outside consumers and markets. This can lead to a sense of resentment and frustration with the "immense forces dictating our future, leaving us with little to say about it" (Pearce, 1980, p. C-3). Cortese has written extensively on this topic in regard to energy development in rural areas (Cortese, 1979b, 1980; Cortese & Jones, 1977), and Noronha (1979) has summarized a number of articles making the same point in regard to major resort and recreational development. However, it should be noted that determinants of such alleged loss of control are more likely to be political and economic rather than psychological in nature, except to the extent that foreknowledge of the upcoming situation can play a mediating role.

NONPREDICTIVE ACTION ROLES

While the focus of this dissertation has been on the linear model of SIA and the predictive function therein, there are other models and there are nonpredictive functions to which psychology or psychologists could make some contributions. Some of these are still close to scholarly forms of study, while others are clearly at the action and advocacy ends of the spectrum.

Four categories of nonpredictive roles, all still somewhat related to the SIA concept, may be discussed for the policy-making process: (1) planning activities; (2) process and negotiation roles; (3) post-implementation social impact management; and (4) miscellaneous functions.

Planning Activities

Ideally, the EIS/SIA process is part of the planning function--i.e., an activity which helps to clarify various objectives and selects the possible means to achieve them. Unfortunately, in practice an EIS is often at best a disclosure document, at worst a justification document. Planning tends to precede EIS's and SIA's. There are several early planning stages where psychology could make a more substantial contribution than it usually has. To the extent these are actually dealt with in EIS's, the discussion in Chapter VI has essentially covered them. The purpose of this present brief discussion is simply to reiterate and

emphasize those potential contributions, even if they may be needed prior to the formulation of an impact statement. However, one key change in perspective will be apparent here. For project planning, the EIS-style tension between project advocacy and neutral evaluation is generally not present; for better or worse, project planners are almost always advocates, and the goal is to avoid the sort of pitfalls which could block project approval by decision makers and/or render its operational stage ineffective.

Three major planning activities which could benefit from psychological input are (1) barrier identification; (2) site screening; and (3) project design. These are "nonpredictive" in the sense that an EIS-style forecast is not involved, but there is still a strong element of prediction for more functional purposes in these tasks.

Barrier identification and site screening may usefully be discussed together for this psychological perspective. That is because the primary (although not the only) potential psychological element in both activities is identical: the early anticipation of intense, politically effective public opposition.

The idea of "barrier identification" essentially boils down to listing potential roadblocks to a project or policy. Community opposition, whether based upon accurate or inaccurate understanding of proposal characteristics and impacts, is one of the most important of all potential barriers. While it is most often considered at the

site-specific level, the introduction of an entirely new technology or economic activity may engender a certain degree of resistance from any community in a given region and must therefore be considered at the proto-planning level--e.g., the State of Hawaii's assessment of "non-technical barriers" to alternate energy developments in rural areas (Matteson & Rae Associates, 1981).

The process of "site screening" or "site selection" involves careful review of numerous potential project sites and selection of the best single site (or, in a multiple-stage selection process, the initial screening out of poor sites) according to preselected criteria. Local government planners searching for the best sites for public facilities such as sewer treatment plants, highways, or sanitary landfills have perhaps the longest track record of grappling with site selection and with the key underlying decision problem: deciding what criteria should be used to make the final decision about where to locate the project. Early attempts at systematic formulations in the governmental and planning literature tended to emphasize simple efficiency considerations (Teitz, 1968). However, as the concepts of "environmental impact" and "social impact" gained wider currency, the emphasis shifted to analysis of the differential vulnerability of candidate sites to negative impacts (United States Department of Transportation, 1976; Stoloff & Kemmerer, 1978). The major thrust has still been to rely solely upon objective, technical indicators. For example, in proposing a schema to classify western counties into "high risk," "medium risk," and "low

risk" categories for coal mining, Baldwin, Metzger, & Stenejhem (1978) suggest the use of just four variables:

These four empirical measures are: (a) the population size of the county at the time of impact; (b) the density of population in the county and surrounding areas; (c) the proximity (in miles) to the nearest regional trade center; and (d) the existing relationship between basic and secondary employment. (Baldwin et. al., 1978, p. 463)

However, increasing incidences of strong community opposition have made this political factor increasingly important as a potential "barrier" to project implementation, either at the conceptual level or at the site-specific level (William & Massa, 1983). This has been particularly often dramatized in the case of nuclear power plant construction, where the complexities of siting decisions have long been recognized (Muntzing, 1976). As in the case of many other alternate energy programs, nuclear programs often involve federal encouragement and a positive regulatory atmosphere in order to achieve national goals, but strong local resistance due to the potential dire localized impacts. While the United States Supreme Court has ruled that the federal government has ultimate authority over the radiological safety aspects of nuclear regulation, it also reserved to the separate states various other rights relevant to regulation and siting decisions--a decision which increases the political clout of affected local communities (Cooper, 1981).

As suggested in the earlier discussion of community acceptance, psychologists have basically three tools for gauging the extent of likely support or opposition:

- o Sample surveys have been used to estimate residents' attitudes toward, as well as anticipated impacts from, projects such as nuclear power plants (Lounsbury, Sundstrom, Schuller, Mattingly, & DeVault, 1977). General population surveys often must be augmented by leadership surveys to ensure that organized groups are not following a separate agenda.
- o Psychological theory arguably can, even in the absence of survey results (because of budgetary or secrecy considerations), give some idea of the likely response. Clearly, the most appropriate body of theory would be the risk assessment research discussed in Chapter V (Cole & Withey, 1981; Slovic, Fischhoff, & Lichtenstein, 1982; Otway & Thomas, 1982). An important related theme from the stress research literature might be Lazarus' work on appraisal of "threat" (Lazarus, 1970, 1974, 1982).
- o Ecological inferences about the "fit" of project characteristics with community characteristics may be less scholarly in the ultimate sense but more intellectually acceptable to project decision makers. Whereas psychological risk theory would tend to predict similar responses from all communities, the ecological inference process demands examination of different candidate sites. Previously noted methods for examining such basic aspects as population and proximity to major trade centers could be supplemented with data on psychographics (if survey results can be generated or obtained) or observational studies of differing lifestyles (Banz, 1976).

Practically speaking, community-oriented psychologists may make the greatest contributions by stressing their abilities at the art of melding together evidence from all of these three "scientific" approaches to produce an intuitively defensible bottom-line conclusion.

The idea that EIS's, with their social impact components, should be primarily for site selection purposes is an old one with government facility planners but tends to keep re-emerging as a bold new concept in the scholarly impact assessment literature (White, 1982). While the community acceptance element has growing importance for this process, we may briefly note one entirely different area in which psychologists could make a contribution in the formal EIS approach to site selection. This has to do with assisting in the process of assigning decision weights to the various criteria for site selection. That is, when it is determined that a project would impact positively on Variable 1 and negatively on Variable 2 at Site A, but negatively on Variable 1 and positively on Variable 2 at Site B--which variable is deemed the more important? This question was once relegated to "staff" (where technocrats decided) and is now often put out to "the political process" (where organized interest groups and/or elected officials decide). But it would surely be of some value to the political process to know about the decision weights which might be assigned by the man in the street. Psychometric techniques embodied in survey such as those discussed in the first section of this chapter could shed some light on this issue.

Project design is the final planning activity to which psychologists might have useful input. It will be discussed here extremely briefly-- not because research literature is lacking on the topic, but rather because it is so abundant that it is futile to attempt to summarize it here in any way. Most of the field of environmental psychology (which owes almost as much to the discipline of architecture as to that of psychology) would have to be cited and reviewed.

In Chapter VI, it was noted that psychological knowledge about the behavioral or psychic consequences of special building design features could be utilized in social impact assessments for projects consisting primarily of a central building, but that this knowledge could be much more appropriately employed into the planning and design stage. Obviously, then, all the fields of inquiry noted in Chapter VI would still be relevant at this stage. Additionally, some bodies of research literature which would be of infrequent use to any form of psycho-architectural SIA might nevertheless be employed at this design stage-- e.g., explorations into microcosmic aspects of interior design known to have behavioral effects for residential dwellers (Wiesenthal & Tubiana, 1981) or office occupants (Wineman, 1982); design of lobby maps, signs, and other "way-finding" cues (Weisman, 1981; Levine, 1982); and general knowledge of perceived architectural quality based on post-occupancy surveys (Marans & Spreckelmeyer, 1982).

Process and Negotiation Roles

Psychologists can assume a variety of process and negotiation roles (or assist those who have the lead in such roles). In a rough spectrum from Total Advocacy to Total Neutrality, the major roles would include (1) project public relations; (2) organizing community resistance; (3) facilitating community involvement or dialogue; and (4) mediation.

Project public relations of course assumes a dedication to the objective of winning approval for the proposal and maintaining the good graces of the local community. While many psychologists consider activities such as public relations or advertising to be the converse of respectable social science, the fact remains that few other professions exist which are so clearly "applied psychology" in their nature. As a columnist in the Public relations quarterly recently commented, "It seems inevitable that public relations consultants will become the catalysts between social scientists and management in application of new knowledge" (Leffingwell, 1983, p. 12).

Public issues and public affairs represent the fastest growing component of the public relations industry, shifting the nature of P.R. increasingly further away from generation of the classic "media event" (Rigg, 1982). For proposed projects facing approval or rejection in the government policy making process, carefully planned and executed public relations programs can be the difference between life and death. Even government sponsoring agencies have begun to recognize the value of

"managing" community acceptance (Luke, 1980). The psychologist whose personal or professional allegiance is to such a project can serve it well by extending the previously discussed knowledge about predicting public response to actively changing (or maintaining) that opinion.

In many cases, public relations efforts simply involve traditional political techniques of infiltrating the local power structure (c.f., Cumberland, 1978; Wehr, 1980). Major institutions which advocate controversial proposals still hold a wary attitude toward direct dialogue with organized citizen groups or in open forums, but there is evidence of tentative acceptance of this approach when the project advocate feels armed with sufficient consulting expertise to offset the "home court" advantage of citizen activists (Duksik, 1981). Community-oriented psychologists can help provide strategy in either situation.

Organizing community opposition is the equally nonobjective flip side of the "action" or "advocate" coin. The assumption here is that community resistance to Big Business or Big Government is probably justified, and psychologists (or other social scientists) may have particular skills to lend to the underdog public in its battle against the superior forces of organized project proponents.

This type of assumption is generally more respectable among academicians, particularly community psychologists (c.f., Miller, 1969; Davis, 1982) who are ideologically committed to the concept of "giving away" psychology to the community. For some social scientists, this has

simply meant sharing results of studies on the dynamics and effectiveness of citizen groups (Perlman, 1976; Gittel, 1980). However, certain psychologists of late have accepted the concept that the mandate of applied community psychology extends to direct organizational and issue-relevant educational activities in grass-roots community settings (Chavis, Stucky, & Wandersman, 1983).

As discussed in greater detail back in Chapter III, a number of writers have espoused the view that the main contribution which social scientists can make to impact assessment is to promote community awareness and provide technical resources for citizen groups (Francis, 1975; Runyan, 1977; Boothroyd, 1978; Bowles, 1981; Melser, 1983). Whether psychologists have any skills or resources which would be of more value than those of, say, sociologists or political scientists is a debatable matter, although organizational psychologists could certainly lay claim to a special expertise. At any rate, there is no reason to feel that psychologists have any less to contribute than other scientists, although there is a clear need to recognize the differences in values and communication styles which can interfere with citizen groups' effective use of psychological research knowledge (Chavis et. al, 1983).

Facilitating community involvement or dialogue can involve many of the same activities and short-term objectives as either project public relations or community organization, but the tone here is more "neutral" or "objective." Those who see SIA as being properly a process (rather

than a product) believe that facilitation of community input, with no attempt to guide the direction of that input, should be the core function of social impact assessment (e.g., Dale & Kennedy, 1981).

Because the overt nature of such activities does not involve clear advocacy, it has been both explicitly and implicitly suggested that they may be successfully carried out on behalf of a project proponent by a consultant or agency staff member (FUND, 1978; Preister & Kent, 1981). The United States Army Corps of Engineers is a prime example of a government agency which has spearheaded numerous different types of public involvement efforts, allowing accumulation of knowledge about the comparative effectiveness of various techniques (Ragan, 1975).

Even the more conventional predictive or "linear model" of EIS's and SIA's has featured increasing emphasis on citizen involvement in recent years. Revised CEQ regulations for implementing NEPA mandate public involvement (or at least public notice) through steps such as scoping, early integration with other planning activities, and publishing records of decision (Creighton, Chalmers, & Branch, 1980). The scoping process is a particularly crucial point of public interface, and a number of structured or semi-structured techniques can be adapted from the social sciences to ensure that EIS/SIA study areas focus on topics of prime concern to affected residents (Myers, 1978). Even the most ardent champions of the "hard data" approach to EIS's believe that early citizen input will help ensure that data are collected on appropriate subjects:

Active public participation programs encourage practitioners to utilize the most appropriate methods and techniques in environmental impact studies. In fact, public participation undergirds all elements in the framework for environmental impact studies. Appropriate public participation techniques should be selected based on the objectives of the public participation effort, the potential publics to be involved, and the communication characteristics of individual techniques relative to objectives and publics... (Canter, 1982, p. 10)

The communication or "packaging" of draft EIS/SIA findings to affected residents is a crucial and too-often neglected aspect of public involvement. Excellence in scientific research and logical estimates of impact are futile exercises if the conclusions cannot be meaningfully summarized and imparted to those in the political decision-making process. Two of the more thorough treatments of this topic are by Johnston (1977), who emphasizes clarity of structure and additional detail for topics with great political significance, and McMahan (1978), who concentrates on the need for multi-media communication devices in order to convey study results to all elements of the public. D'Amore & Rittenberg (1978) view public involvement in a wider perspective than just commenting on the EIS, but they also emphasize the need for employing more than just one communication medium or technique:

...no single vehicle for participation (e.g., submission of briefs) will adequately reflect or capture the abilities, interests or "preparedness" of the different publics in communities to participate. Each segment of the community should be approached to participate in a manner most comfortable to them. This will require a variety of approaches with such diversity as: Informal group discussions, "mini-conferences," personal interviews, kiosks in shopping malls, "drop-in" information centres, etc. (D'Amore & Rittenberg, 1978, p. 29)

The present author is not particularly sanguine about the unique gifts of psychologists, compared to other social scientists, for communicating research results in a manner which is clear and comprehensible to the general public. However, the interest among community psychologists in identifying and studying social networks (Turkat, 1980; D'Augelli & Ehrlich, 1982) conceivably could be put to some practical use in a broad public involvement program, particularly in those cases where it is suspected that the clearly visible community organizations do not necessarily reflect the concerns or views of a "silent majority." Such knowledge of communication networks has been used in the past to disseminate knowledge of technological innovations within communities (Darley, 1977-78) and could certainly be applied to the impact assessment process as well.

Mediation, as was explained in Chapter IV, involves the response of neutral third parties to a mutual request for negotiating assistance from both sets of adversaries, usually in cases where an impasse has been reached and where neither side feels sufficiently confident of ultimate victory to chance a political or legal solution. While there has been some attention to the concept of early "conflict avoidance" in mediation circles, the usual focus is on "conflict resolution"--i.e., situations in which the battle lines have long been drawn. The mediator relies on personal communication skills to help the opposing sides work out a voluntary agreement. The mediator does not impose concepts, nor play an enforcement role, nor offer personal judgments about the wisdom of any agreement to which he/she played the midwife. Some have viewed

this sort of role as problematic in its passivity and lack of formal accountability (Susskind, 1981a). However, there are clear and interesting parallels between the environmental mediator's responsibilities and required skills and those of the clinical psychologist, who often indirectly coaxes individuals or families to work out new agreements in their social environments.

"Environmental mediation" (a term broadly used to apply to the sort of public policy disputes which emerge in EIS-type situations, including socioeconomic conflict) is in fact just one facet of a broad national quest for alternatives to the litigative mindset which has clogged American courts with lawsuits and brought them to a near standstill (Gest, Solorzano, Shapiro, & Doan, 1982). Many civil cases involve the sort of disputes among families, neighbors, or community interest groups with which the fledgling Neighborhood Justice Center program--usually funded by charitable grants and local judicial systems--attempts to deal. The Dispute Resolution Act approved by the U.S. Congress in 1980 provides \$11 million dollars each year for four years for the legal establishment to seek its own way to reduce dependence on litigation. It has been suggested that this may be akin to hiring the wolf pack as consultants to study the problem of sheep predation and that social scientists should become more actively involved in the overall dispute resolution field (Saari, 1981).¹⁷

In fact, university-based social scientists (most often political scientists or, to a lesser extent, sociologists) have been in the

forefront of developing special programs to mediate "environmental" disputes (Cormick, 1976; Cormick & Patton, 1980; Wehr, 1980; Lake, 1980; Susskind, 1982), although important contributions have also been made by private consultants in the field (O'Connor, 1978; Carpenter & Kennedy, 1980), and by national foundation officials (Kunde & Berry, 1981; Berry, Kunde, & Moore, 1982). (Many of the academic projects were actually originally initiated by grants from major foundations a decade or so ago.)

Much of the "how-to" literature generated by full- or part-time mediation practitioners focuses on process stages. For example, Susskind & Weinstein (1980-81) see environmental mediation as a nine-step process: (1) identifying parties with a stake in the outcome of a dispute; (2) ensuring that groups or interests that have a stake in the outcome are represented; (3) narrowing the agenda and confronting fundamentally different values and assumptions; (4) generating a sufficient number of alternatives or options; (5) agreeing on the boundaries and time horizon for analysis; (6) weighting, scaling, and amalgamating judgments about costs and benefits; (7) determining fair compensation and possible compensatory actions; (8) implementing the bargains that are made; and (9) holding the parties to their commitments.

However, the actual practice of mediation--whether of public policy disputes or family quarrels--is an art which demands clinical skills and expertise. In this regard, those portions of the literature which

emphasize communication skills such as "active listening" (Moore, 1981) are equally pertinent. As a field, psychology is part science and part art. The emphasis in this dissertation has been on the social science component of psychology. However, clinical psychology--individual therapy efforts with disturbed people--depends heavily on personal arts and abilities. The psychologist interested in social impact assessment and related policy questions may be viewed as holding a clinical bent, but applied to a wider level than just the individual. Most of the roles and activities discussed in this dissertation involve the use of research skills to satisfy that clinical instinct, but active involvement in environmental mediation would represent a straightforward and natural application of the therapeutic skills associated with the term "psychologist" in the public mind. From a pure marketing viewpoint, the psychologist who hangs out his or her shingle as a mediator would seem to have a substantial advantage over competitors with backgrounds in fields like political science, planning, or management analysis.

Alternatively, the research psychologist could contribute to a small but growing body of social science literature on the underpinnings of conflict resolution in small group settings. However, this falls in the "Academic Support" category which is the subject of the next major section of this chapter, following the remaining discussion of other "Nonpredictive Action Roles."

Post-Implementation Social Impact Management

The management of social impact--maximizing opportunities for positive goals and minimizing the occurrence of undesired conditions--is by its nature an ongoing set of activities which can benefit greatly from the preliminary research input and impact studies of social scientists. However, psychologists conceivably could assume a more active role in social impact management than simple preliminary consultant roles. Once the proposed project has been implemented, the truly challenging task is to meet and manage problematic impacts, whether or not they have been accurately predicted.

The three components of social impact management in which psychologists might participate to one degree or another include (1) carrying out mitigations; (2) monitoring activities; and (3) maintaining communication flow. All of these implicitly assume that the project (or set of projects) in question are extensive in duration and scale of impact. "Social impact management" is a concept which logically applies to communities undergoing dramatic transformations, not simply coping with a new sewage treatment plant or similar facility requiring an EIS.

Carrying out mitigations means the actual conduct of programs designed to reduce (or, in some instances, compensate for) problems caused by the overall project. According to the NEPA model of environmental impact assessment, the EIS process itself is to include the planning and design of mitigations, and the courts have held that local government

agencies have the right to require such mitigations as conditions for project approval (Ulasewicz, 1982).

The concept of "mitigation" sometimes extends to compensating negatively affected residents, either through direct monetary payments (O'Hare, 1977) or through the more complicated and indirect trade-off agreements which are often the object of compromises arrived at through mediation (Susskind, 1982). Examples of the latter might include such diverse actions as preferential hiring and training; provision of some low-income housing in an otherwise high-priced residential development; donations of land or other nonmonetary resources; government agreement to couple an undesired public facility with a more desirable one (e.g., a neighborhood park); etc.

Equally or more often, though, "mitigation" refers to actions or programs intended to ameliorate particular problems caused by the project in question--for example, providing permanent or temporary employee housing to reduce housing shortages attributable directly to influx of new employees in an energy "boomtown" situation. The latter type of development has produced such severe and characteristic local impacts (at least in regard to tangible concerns such as housing and local government infrastructure) that the federal government and a number of Western states have established special mitigation programs to assist affected communities (Murdock & Leistritz, 1979, Chapter 11). However, such programs tend to be carefully restricted to provision of funds for specified actions--housing assistance, new highway construction, emergency school expansions, etc.

Wider-ranging mitigations are usually the products of negotiation between local government and project developers--or they may simply reflect the belated, unanticipated, but necessary response of local agencies to problems which become apparent only after the project has been implemented. Thus, municipal or county governments are the most frequent sponsors or promoters of mitigative programs. Sometimes local governments may develop an interest in the idea of systematically managing and mitigating impacts not because of one major source of socioeconomic transformation looming on the horizon but because of repeated experience with multiple controversies emerging from a period of rapid growth and development--e.g., the Honolulu City and County's interest in a "social impact management system" after a flurry of citizen protests over various new resort and residential proposals in the late 1970's (FUND Pacific Associates, 1980). This proposal is aimed at reducing psychological impacts (feelings of "bad surprises" and non-involvement in decision making) by calling for earlier communication between developers and affected residents. More often, local government will adapt a more limited "management system" in which the object is to predict increased demands on government facilities and services through computerized models which forecast the extent of strain generated by immigration and infrastructure requirements (Edelston, 1978; Murdock & Leistritz, 1980; Leistritz & Chase, 1982).

Corporate involvement in mitigation of privately-funded project impacts often comes only in response to local government pressure, but

this is sometimes due to a suspicion in the private sector that local officials are seizing the opportunity to force a developer to solve problems unrelated to the actual project (Fradkin, 1977). West (1978), after discussions with a number of corporate officials involved in rural western energy projects, concluded that the most important factor encouraging private-sector willingness to participate in mitigative actions was the self-interest factor of increasing worker productivity and reducing turnover:

To compete successfully for experienced, efficient workers, an energy company needs to provide both for adequate working conditions and for homes in pleasant settings. The productivity/turnover payoff provides the single strongest motivation for corporate efforts to protect environmental quality and to help manage the growth that their plants stimulate. (West, 1978, p. 132)

West lists nine other factors which also stimulate corporate willingness to assist: (1) if there is a recognition that mitigation is actually needed for the community to absorb the impacts; (2) if extremely adverse impacts will occur in the absence of mitigations; (3) if mitigations will minimize expensive delays in construction timetables; (4) if there is a limited amount of citizen opposition to the project (not so much that the community seems intractable, not so little that it can be ignored); (5) if the community seems resourceful and inclined to help itself; (6) if mitigation prospects appear good; (7) if the facility has an expected life of several decades; (8) if local public services and facilities are not seriously deficient prior to project construction (to ease the fear of government exploitation of developers); (9) if discrimination against the company by local government is not anticipated.

The predominant opportunity for psychologists to take part in post-implementation mitigation activities lies in the mental health field, and the major mental health need appears to rise in cases of extensive rapid change and social fractionalization typified by the "boomtown" syndrome. Much of the boomtown case study literature refers to resistance and alienation among longtime residents but more active cases of emotional disturbance and utilization of professionals among newcomers, who are often much more isolated from friends and family (Fradkin, 1977). Unfortunately, little of the boomtown literature focuses on mental health consequences in any depth, instead just throwing in some caseload figures or anecdotal references to establish that mental health problems are indeed part of the social disruption mosaic. One of the few extensive examinations of boomtown mental health consequences has been carried out by Robert Weisz (1979), coordinator of Campbell County programs for the Northern Wyoming Mental Health Center. Weisz makes the important point that pre-existing mental health delivery systems, like most human service agencies, can be severely strained by boomtown situations. Caseloads increase much more rapidly than agency funding and resources; rapid personnel turnover and recruitment problems are commonplace; and past or potential clientele are unlikely to band together to lobby with local government for increased agency funding. Thus, mitigative "opportunities" for psychological mental health professionals may be blocked by the same factors which generate the increased need for professional services.

Mental health programs are most commonly directed at aiding the already-impaired. In circumstances such as boomtown developments, where stress responses are clearly tied to social and environmental factors, it seems particularly appropriate to approach many individual problems through group or individual "attribution therapy" (Davison & Valins, 1969), in which patients are encouraged to understand that their problems may correctly be attributed to societal forces rather than personal inadequacies (and, at the same time, are encouraged to take active responsibility for social action to correct the problems):

Attributing psychological difficulties to their actual social causes rather than to clients' personal dispositions is the direct opposite of the traditional treatment approach that deals with many clients as if their difficulties sprang from characterological flaws rather than from a constellation of social forces... Such a change in orientation may be demanded for psychological (as well as moral) reasons if the stresses induced by social forces are to be attenuated. Lest passivity ensue from portraying the individual as a helpless victim of economic and social circumstances beyond his or her control, it may be important to separate responsibility for the development or etiology of a problem from responsibility for the resolution of the problem. (Heller & Monahan, 1977, p. 184, original emphasis)

Thus, wives of construction workers sitting all day in makeshift trailer parks would, on the one hand, be encouraged to understand that their anomie tendencies are a natural consequence of their social situation and, on the other hand, be reinforced for either social organization to improve their human communication patterns or political organization to lobby for improved residential housing conditions.

The rapidly expanding field of community psychology generally places more emphasis on prevention of, rather than response to, mental

disorder. The concept of "primary prevention" (Caplan, 1964)--stopping mental disturbance before it begins, as opposed to "secondary prevention" (early detection and treatment) or "tertiary prevention" (reducing extent of existing disability)--is particularly compatible with the concept of mitigation in SIA. That is, it assumes some reason to be concerned and to take action in advance to reduce the incidence of mental health problems. One current body of literature which could be of assistance in planning prevention of mental health problems stemming from community change is the stress management literature. This includes such strategies as biofeedback and other relaxation techniques, but a particularly promising strain is the "stress inoculation" approach developed by Donald Meichenbaum and associates (Meichenbaum & Novaco, 1978; Meichenbaum & Jaremko, 1983; Meichenbaum & Cameron, 1983; Epstein, 1983). As the name suggests, strains from exposure to massive doses of real-life stressors are reduced through controlled exposure in advance to smaller measures of the threatening stimulus. To date, preventative stress inoculation has involved therapy with individuals involved in, or embarking on, stressful situations at the micro-level: surgery, military training, recovery from rape, etc. While the procedural details would have to go substantial alteration to become relevant to groups of people facing community transformation, at least some methodological trails have been blazed and basic principles identified:

- ...(1) increasing the predictability of stressful events,
- (2) fostering coping skills and plans for coping actions,
- (3) stimulating cognitive coping responses such as positive self-talk and reconceptualization of threats into nonthreatening terms, (4) encouraging attitudes of self-confidence and hope about a successful outcome with related expectations

that make for perceived control, and (5) building up commitment and a sense of personal responsibility for adhering to an adaptive course of action. (Janis, 1983, p. 94)

Some of the same opportunities and problems exist in regard to other precedents for primary prevention. Like psychology in general, community psychologists have usually thought in terms of individual life changes even when seeing those changes as a function of broader social changes. The idea that emotional disfunction on the part of numerous people represents a common social response to social change is perhaps more typical of the sociological approach to mental health (Goldstein, 1979; Eaton, 1980), but it is not that great an extension for the community psychologist to make. For example, the community psychology concept of "milestone intervention," based on the early work of Bloom (1968b), focuses on building individual competence in the face of upcoming normal developmental stresses such as graduation, birth of a child, retirement, or other typical "milestones." This concept could easily be expanded to the area of community change--building strength and resources of community members to cope with foreseeable community "milestones" in times of social change.

In the previous chapter, it was suggested that identification of groups particularly vulnerable to stress or other negative impacts represents an especially important dimension of predictive activity for psychologists in SIA formulation. Clearly, follow-up mitigative action directed at groups which have been identified would be of equal or greater importance. In this regard, outreach efforts utilizing

"natural" social networks represents an important trend in all forms of human service delivery, not just mental health systems (c.f., Sarason, Carroll, Maton, Cohen, & Lorentz, 1977). However, community psychologists have been particularly intrigued by the role of such networks in "help-seeking" behavior (Gourash, 1978; Young, Giles, & Plantz, 1982) and potential primary prevention efforts (Turkat, 1980; Birkel & Repucci, 1983). The identification of "natural helpers" within such networks, and the provision of limited additional training in therapeutic methods to such individuals, has been instituted on an experimental basis (D'Augelli & Ehrlich, 1982). This would seem to represent a particularly promising and appropriate alternative to traditional reactive, clinic-based mental health programs in times of foreseeable social stress.

Impact monitoring activities constitute the second component of social impact management programs. Psychologists' potential involvement here would more likely be in something more akin to a research role (i.e., measurement and recording) than to a therapeutic action role, although the detection of need through monitoring would presumably lead to an action response. As discussed in Chapter IV, post-implementation monitoring has been proposed as the basis of more careful and scientific study of the social impact process (Burdge & Johnson, 1978; Soderstrom, 1981), although such a system carries with it inevitable etiological problems in that detection of negative impacts (project-related or otherwise) often leads to mitigative response and confounding of what

would otherwise be the "true" consequent full impact pattern. But in the social impact management context, no such dilemma occurs. The purpose of monitoring is not (except incidentally) to produce scientific knowledge; it is to provide an "early warning system" of developing problems so that they can be managed.

On a secondary level, data from government monitoring efforts are intended to improve the accuracy of EIS's to a certain extent (Marcus, 1979) and to compare intended or predicted outcomes with actual ones in a process somewhat analogous to program evaluation:

By incorporating results and comparisons into the definition, monitoring takes on many of the characteristics of evaluation. For many agencies, this type of monitoring is exactly what is referred to as "evaluation." However, in monitoring the aim is not to determine whether observed events associated with a project are actually caused by the project nor to identify which aspects of a project caused failure or success. The role of monitoring is to document whether the events that constitute success actually do occur, not why they occur. (Waller, Kemp, Scanlon, Tolson, & Wholey, 1976, pp. 7-8)

However, it should be noted that the foregoing quotation applies to a conception of monitoring which is in the process of evolving from a focus on intended effects (i.e., program objectives) to both intended and unintended impacts.

Some of the more ambitious conceptual proposals for combined monitoring/mitigation systems have involved accumulation of a great variety of social data, including, though not necessarily emphasizing, perceptual and mental health impacts (Olsen & Merwin, 1977; Finsterbusch,

1978; Olshansky, 1981). In practice, though, most monitoring systems track only "hard" information--e.g., employment, taxes, basic government service caseloads--suited to the sophisticated computerized quantitative models developed in a number of western states (Leistritz & Chase, 1982). However, at least some proposed monitoring and mitigation systems--such as that for Greene County, New York, site of three potential major energy-related construction projects (Fred C. Hart Associates Inc., 1979)--also feature attitudinal surveys as a regular monitoring component, and these at least open the door for psychological data accumulation.

A few of the major monitoring programs for which published information and/or project design does include "soft" social information include Canada's Revelstoke Canyon Dam hydroelectric project monitoring, which includes ongoing checks of mental health caseloads (Kopas, 1980); New Zealand's extensive monitoring of physical, economic, and social impacts--including self concept and family cohesion--of a 1,000MW thermal power station (Fookes, 1980, 1981); and the five-state Old West Regional Commission area (Nebraska, North Dakota, South Dakota, Montana, and Wyoming) "Socioeconomic Longitudinal Monitoring Project," which featured several surveys including attitudinal and satisfaction items (Watts, Thompson, & Blevins, 1976). Also, the federal Bureau of Land Management has undertaken an extensive study of the "Social Effects of the Federal Coal Management Program in the West" which is more wide-ranging than a simple monitoring program but which does include the

longitudinal collection of data in various locations (Branch, 1981; Mountain West Research Inc., 1980, 1981).

On a more conventionally academic psychological note, Rosen & Voorhees-Rosen (1978) initiated a longitudinal survey study of Shetland Islanders' reactions to North Sea oil developments. The study design focuses almost exclusively on individual stress and mental health, including aggregate figures on social disruption (psychiatric morbidity, suicide, crime, etc.) and individual survey responses to a life events questionnaire, a general health questionnaire, and an attitude scale for measuring attitudes toward the oil developments. At the moment, the Rosen & Voorhees-Rosen represents the major existing blueprint for a psychological impact monitoring project, although it is surely subject to some criticism on both etiological grounds (the study design does not specifically provide for sorting out causes of observed impacts, although the islands' remoteness tend to suggest that few other causal factors will be at work) and on "fairness" grounds (other than the data on attitudes toward development, there are no provisions for measuring economic or other positive impacts which some might feel would compensate for short-term transition syndromes). Ideally, psychological impact monitoring would be one component of a more extensive data gathering operation, and Rosen & Voorhees-Rosen illustrate how that component might well be structured.

Maintaining communication flows is the third and final component of social impact management. This is, in practice, merely a maintenance

and extension of the public input procedures which many SIA theorists strongly advocate for the planning and EIS/SIA development stages. But in projects involving the transformation of a community's socioeconomic structure, it can well be one of the most significant and useful activities:

Without any rational and acceptable way of checking out rumors and alleged information concerning further development and its potentially fateful social consequences for the locals, some very severe reactions set in. For example, many rumors begin to border on the fantastic, since they concern many things that are so distant from the locals' own experiences that they find it necessary to stretch their imaginations considerably. Also, continual exposure to grossly unsatisfactory sources of information regarding development and its ramifications, coupled with the roller coaster effects of rumors on the emotions of the locals, lead to such reactions as feelings of cynicism, hopelessness, and despair, and especially of being sacrificed so that the rest of the nation will not need to suffer any pains of withdrawal from its addiction to technologically produced energy. (Gold, 1979, pp. 122-123)

Again, the concept of social networking suggests itself as a way that community psychologists can contribute something more than a conventional media-oriented public relations approach to communications. For example, a "social resource management" system prepared for the National Forest Service's Rocky Mountain stations (Kent, Greiwe, Freeman, & Ryan, 1979) essentially focuses on the identification of informal communication networks and ways to tap into such networks by maintaining informal communication with key network informants. The social network approach to applied social science activity has perhaps been somewhat overworked and sometimes verges on the point of faddishness in scholarly thinking, but it has also proved itself as a solid

methodological approach for studying informal communication and the diffusion of information (Smith, 1980). And in urban environments, primary friendship networks represent the best theoretical alternative to the traditional gesellschaft construct for understanding informal social structure and communication patterns (Macionis, 1978).

Miscellaneous Functions

This discussion of potential nonpredictive action roles in SIA-type decision-making processes can quickly be rounded out by mention of a few miscellaneous roles and functions which have been suggested or exemplified in various scattered writings.

One of the earliest (and still one of the only) specific suggested roles for psychologists involves review of EIS's for mental health implications, particularly strains on the delivery system (Catalano & Monahan, 1975). Academic research groups have also been involved in review of EIS's (Culhane, 1975), and psychologists could seek out on-campus opportunities for such activities. (At the University of Hawaii, the Environmental Center is a clearinghouse for academic EIS review but--according to an informal personal communication from a Center executive--has avoided involvement of "soft" social science scholars such as psychologists for fear of jeopardizing the Center's reputation for research excellence with the larger State government.)

University-based social scientists could test the waters of SIA by responding to local government requests for voluntary, unfunded or

low-funded impact assessments for proposed projects which fall outside normal legal requirements for formal EIS's (McCoy, 1975).

Finally, some public policy decision-making processes for land use changes preparatory to major developments feature quasi-judicial mechanisms in which expert witnesses may be involved (sometimes for the specific purpose of commenting on the adequacy of EIS's and SIA's). Psychologists have long been accustomed to delivering expert witness testimony in regard to clinical matters (Brodsky & Robey, 1973) and have lately begun also to deliver testimony on a broader range of issues such as social issues, noise impacts, and general mental health consequences for an overall population rather than only for specific individuals (Loftus & Monahan, 1980). This may represent one of the most natural and appropriate roles in which university-based social, community, or environmental psychologists might first become involved in the sort of public policy issues with which SIA's are concerned.

SCHOLARLY SUPPORT ROLES

Many psychologists function in settings such as universities, which are more conducive to scholarly activities than to active practice of SIA or SIA-related activities. Ultimately, it may be argued, all scholarly activities in the social sciences should benefit public policy decisions of the type which concern EIS's and SIA's. However, some activities can be of particularly immediate benefit, and these are the focus of this chapter.

While these activities can be described and discussed in fairly short order, their importance should not be taken as proportional to the brevity of the text. Given the nature and traditions of the field, psychologists may well be able to contribute more to SIA as scholars than as practitioners--if there is an interest in the practical uses of research and a willingness to direct research or other scholarly activities toward the SIA situation.

Basically, scholarly support roles can be boiled down to two separate but complementary functions: adding to the SIA-relevant knowledge base and communicating the knowledge to practitioners.

Adding to the SIA-Relevant Knowledge Base

Adding to the knowledge base means research, and two very general types of research activities will be discussed here: (1) research on topics relevant to predictive aspects of SIA, and (2) research on SIA-relevant processes.

Research to support predictive SIA: Any basic academic or private research into psychological topics which might be examined in SIA's could be viewed as adding to the knowledge base. Presumably, at least some of the usual flood of research publications on stress, subjective quality of life, environmental perception, etc., might trickle into the hands of SIA practitioners. In this sense, all normal scholarly inquiry into the subjects discussed in Chapter VI constitutes an indirect contribution to SIA.

However, the research most directly relevant to SIA practitioners is that which documents actual impacts of, and at least tentatively establishes causal linkages with, the sort of socioeconomic or environmental interventions which are the focus of EIS's. The research which is most likely to be used by SIA practitioners is that which involves situations most clearly similar to the situation which the EIS is intended to address. Therefore, the focus of this passage will be on the potential involvement of psychologists (or other social scientists) in empirical or quasi-experimental analysis of historical project impacts. Six principles are suggested to improve both the quality and the utility of such research:

- (1) More multi-case time-series studies: Most of the existing historical social impact work has consisted of retrospective case studies of single communities. This has been particularly true of the "boomtown" literature, leading in part to the recent attacks on the validity of social scientists' sweeping conclusions that boomtown developments have nearly uniform negative social impact (Reynolds, Wilkinson, Thompson, & Ostresh, 1982; Wilkinson, Thompson, Reynolds, & Ostresh, 1982a, 1982b--see Chapter II discussion on "Energy and Boomtowns"). Many of the scholars who do urge a more rigorous and prospective approach to impact analysis still focus primarily on monitoring single projects with perhaps one or two matched control communities (Burdge & Johnson, 1977; Soderstrom, 1981),

despite the multiple validity problems which can arise from such monitoring programs (see closing portions of Chapter IV).

While methods have been developed which--in theory and if one is willing to accept a number of assumption--disentangle intervention effects from changes due to pre-existing trends or regression to the mean (Heimendinger & Laird, 1983), the fact remains that conclusions based on single-case studies are far better suited to the purpose of hypothesis generation than firm factual statement. There is too great a danger that, as may have happened in the boomtown literature, the original case studies were prompted by atypically severe problems.

A limited SIA approach concentrating on dangers and opportunities can cite case studies for this purpose as well, but the knowledge base and the purpose of impact assessment must ultimately advance to firmer conclusions.

A small body of literature is developing which relates changes in development-type factors over time to changes in various quantifiable social indicators of "quality of life." The results of such research will be disturbing to those who enter the SIA arena from an inner ideological anti-growth philosophy. Eberts (1979) has found population growth to be positively correlated with a number of socioeconomic wellbeing indicators. Brookshire & D'Arge (1980) present time-series figures which

contradict the proposition that boomtown development leads to increased crime. Wood (1983) examined 175 Canadian communities over various time periods and found both mental health admission and crime rates to be negatively associated with rapid population growth.

The most significant positive attribute of multi-case time-series prospective designs is that they permit analysis of covariates. Not only does this allow incorporation of control communities, but, more importantly, it can solve the major difficulty with quasi-experimental monitoring of impacts in single affected communities: alternative explanations due to other historical influences. If the nature of such influences can be estimated in advance, variables can be created to record their occurrence and extent. Also of great importance is the potential to analyze the differing effects of various project and/or community characteristics--a point which merits emphasis as a second key principle for future impact research.

- (2) More emphasis on the mediating role of project and/or community characteristics: A single-community case study in which, say, a new resort development is found to devastate a nearby agricultural community can easily lead to the conclusion that all resort developments will vitiate all nearby agricultural communities. Yet "resort developments" and "agricultural

communities" are both complex socioeconomic phenomena consisting of multiple characteristics. Of far more practical value than simplistic and morally-colored conclusions about inevitable project impacts would be analysis of the particular project characteristics (hiring policies? pay scales?) which brought about the observed changes, or identification of the particular community characteristics (lack of previous contact with outside world? latent dislike of farm work?) which rendered it vulnerable, or both.

Even in single-case studies, careful holistic analysis of the course of events can identify variables which can be managed for more positive outcomes in other settings. Even if multi-case studies established that resort developments usually (to date) harm nearby agricultural communities, understanding the particular causal linkages provides decision makers with some idea about whether they have a good chance to make their area the exception to the rule.

Multi-case studies are ultimately still required to confirm hypotheses about the causal roles of project or community characteristics. Surprisingly few studies in the social impact analysis literature attempt to pin down such variables. Murdock & Leistritz (1979) make such an attempt in regard to rural energy development projects in the West through secondary analysis of previous studies, although they are somewhat

limited by the number of these. Krannich (1981) is among the very few to test hypotheses about project characteristics as social impact determinants; his method, however, may be subject to some criticism, since his dependent variables consist of the perceptions and opinions of "community leaders" who are usually members of the power structure and likely to have benefitted disproportionately from energy facility construction. In a study somewhat more distantly related to SIA controversies, Herman (1982) examined the dominance of a major metropolitan area over outlying rural communities and found the benevolence of the relationship to be mediated by a number of characteristics of the smaller communities.

While the number of potential project and community characteristics which merit study is abundant, a few would seem to have special importance due to the "conventional wisdom" which has developed about them--e.g., the rapidity of construction and/or population growth, the rigidity of the community's pre-project social structure, the nature and extent of anticipated personal benefits on the part of the populace, and the degree of advance warning and involvement accorded to affected residents (although the latter items might be considered "process" research topics).

- (3) Special emphasis on identifying "winners" and "losers": The question of "Who gains and who loses?" is a common one in SIA

theoretical publications, but actual case studies have quite often dealt only in aggregate statistics at the communitywide level, ignoring distributive issues. Some group distinctions are obvious and politically significant, such as differential impacts on longtime residents versus newcomers (Graeber, 1974; Fliegel, Sofranko, & Glasgow, 1981). In other cases, the task may be more empirical, featuring an active search for "winners" and "losers" when the characteristics are not obvious in advance.

With their background in attending to individual differences, psychologists may be of value to social impact analysis teams in remembering to carry out this task and in the process of identifying vulnerable groups. Even if aggregate-level statistics indicate the community as a whole has benefitted or suffered from a particular project, the social impact task is to trace the extent of, and reasons for, any inequities which may have occurred.

- (4) For surveys which generate psychological data, emphasis on prospective, repeated-measure, general population designs:

The "post-test only" retrospective survey suffers from numerous threats to validity, particularly inability to detect change from pre-existing conditions. The admonition to gather data on the general population may seem unnecessarily self-apparent,

but numerous social scientists in this field have contented themselves with "leadership surveys" for cost reasons (c.f. Dietz & Ray, 1977; Krannich, 1981). Surveys of community group leaders and/or power brokers have value in and of themselves, but it is dangerous to assume the results typify those that would be obtained from the community at large. An alternative special population which is usually inexpensive to survey and which--debatably--might be more representative of the general population would be high school seniors (Rudzitiz, 1982-83), although this would not often allow repeated measures over a multi-year period with the same respondents.

The value of obtaining repeated measures from the same respondents is strangely unrecognized in the social impact analysis literature (although this may be a result of the even greater cost of multiple surveys over time and of attempting to maintain a respondent identity/address file). However, in psychology, some of the most valuable findings from the major mental health and quality of life studies have involved the analysis of change as a function of intervening life events (Bradburn, 1969; Rodgers & Converse, 1975; Veroff, Douvan, & Kulka, 1981; Atkinson, 1982.) Psychologists conducting repeated-measure surveys must, however, balance problems of respondent mortality and expense with the contaminating effect of deliberate misinformation shown to be a problem with

self-aware "panel studies" when respondents know they will be re-contacted and that their replies will affect policy decisions. The ideal compromise is to re-contact respondents once or twice after the passage of time without having told them previously that their opinions and life events would be monitored.

- (5) When possible, extend study period sufficiently to judge duration of impact: In the boomtown debate, it has been suggested (Albrecht, 1982) that the social impacts of sudden urbanization may be severe but transitory. However, the permanence of social effects would clearly be a matter of great interest to both the general public and decision makers in weighing the pros and cons of a proposed project.

The matter takes on particular significance for studies of mental health impacts. Because studies relating mental health to events in the background socioeconomic environment have generally focused on admission rates (c.f., Brennan, 1973; Catalano & Dooley, 1983--see discussion, Chapter VI), what little attention given to the question of permanence has usually involved the issue of whether elevations in incidence rates were sustained for long after the antecedent (and presumed causal) events. This is an important question, but it needs to be supplemented by another question about the

permanence of mental health impact: do the individual cases attributed to the causative factor remain active for a shorter or longer period of time than average? This would of course be mediated by the symptomatology involved. From the mental health professional's perspective, the type and duration of disability represents at least as significant a psychological impact as do broad prevalence rates.

(6) A focus on psychological determinants of other "bottom lines":

There seems to be little danger that research psychologists will neglect analysis of "bottom lines" of a psychological nature--e.g., mental health, perceptions of wellbeing, etc. But the degree of importance and validity accorded these by decision makers will surely continue to vary greatly. On the other hand, knowledge about the psychological determinants of other "bottom lines" such as property values (Dornbusch, 1975) or project acceptance (Maurer & Napier, 1981) will have a guaranteed and near-universal audience. Research psychologists may ultimately increase the significance of all psychological factors in the decision-making process more rapidly by providing better information about the intervening psychological variables which are already of concern to participants in that process.

"Process" research: "Process" approaches to SIA essentially focus on one or more aspects of the interfaces among project proponents,

consultants, government permitting agencies, and the several levels of the "general public" (e.g., organized interest groups and the general population). Broadly speaking, then, supporting research for this area would be research on interpersonal communication and problem-solving. This has been one of the major threads in traditional social psychology for decades, and such classic research topics as opinion change, small group dynamics, and leadership studies would all be of indirect relevance to SIA-type public decision-making processes.

However, it may be suggested that two research topics of particularly direct relevance are (1) studies of the psychological effects of involvement in decision making, and (2) conflict resolution research.

The dynamics of citizen participation in decision making have long been a primary research topic for sociologists and political scientists but have been little examined by psychologists. This is probably because of the laboratory orientation of most research psychologists. Experimental studies on artificially assembled "groups" are not without value, but they lack the important contextual variables which must be analyzed to answer some of the process-related research questions which have been raised in the SIA literature--e.g., in regard to highways:

Do programs which emphasize public participation in decision making cushion adverse social impacts? Do such programs attenuate or exacerbate public opposition to highways? Are all segments of the community fairly represented or just the power elite and "influentials?" (Llewellyn, 1974, p. 105)

Another hypothesis which begs substantiation is the occasional suggestion that a participation program may bring diverse factions together,

but "at the same time it exacerbates long-standing differences" (Van Zele, 1976). Also of crucial importance as research hypotheses are the ideas that issues have different "stages" requiring different communication processes (Berg, 1982) and that community opposition to change can be minimized not always by full-scale involvement, but simply by acclimating people to the project by early information efforts and/or just giving people the feeling they have an opportunity to talk and be heard (d'Amore & Rittenberg, 1978; Dale & Kennedy, 1981).

Few such questions can be researched through laboratory experiments. Empirical field studies are required. Some of the major survey research studies on subjective wellbeing (e.g., Andrews & Withey, 1976; Campbell, Converse, & Rodgers, 1976) have touched upon this topic in an indirect way by measuring the extent to which satisfaction with, or participation in, community organizations is related to overall life satisfaction. (The relationship has generally been quite low.) But the SIA concern is on attitudes toward a particular project proposal and/or reduction in later psychological impacts as a function of information, involvement, etc. This must be researched through naturalistic, case-study methods--preferably multi-case studies to permit analysis of the differential effects of various approaches to citizen participation. Given the growing concern over the power of local citizen groups to stop projects which are considered of benefit to the wider society (Randle, 1981), the topic of community involvement and participation must be viewed as one of the most promising and fertile areas for psychological research.

The second research topic suggested to be of great importance is a closely-related one: conflict resolution. Much of the growing research literature on mediation and negotiation is of a case study nature (Lake, 1980; Gulliver, 1979; Susskind, 1981b; Talbot, 1981). However, it would appear that experimental laboratory studies may be of greater value in this area. Certainly there is a rich tradition in social psychology of studying conflict resolution through experimental methods (Deutsch, 1973; Druckman, 1977; Rubin, 1980), and a body of theory based on economic choice and game theory (Young, 1975), exchange relationships in mediation (Wall, 1981), and utility analysis in two-party bargaining (Raiffa, 1982) has consequently emerged.

At the same time, social psychological research on dispute resolution has also featured more emphasis on field studies (Johnston & Pruitt, 1972; Sheppard & Vidmar, 1982). Together, these social psychological approaches to research on conflict resolution have cut across a wide variety of applied topics--collective bargaining, citizen-police disputes, international conflict, etc. While much of the original research emphasis was solely on the factors which produced satisfaction with the outcomes of dispute intervention procedures, more recent research has concentrated on factors producing satisfaction with the effectiveness of the procedures (Lind, Kurtz, Musante, Walker, & Thibaut, 1980; Lissak & Sheppard, 1983), a focus which may be of greater import to SIA-type situations. However, the burgeoning social psychological literature on conflict resolution actually contains very little

in the way of attention to community-level disputes over social or environmental consequences of proposed public facilities or major private economic developments. Again, this represents a highly promising field for researchers who care to see their results have imminent practical application. And in this case, the gap from past research topics to those of direct relevance to process-model SIA is a small one indeed.

Communicating the SIA-Relevant Knowledge Base

The two communication channels available to scholarly psychologists are (1) teaching and (2) publication, especially of reference materials.

Teaching social impact assessment is, to the author's knowledge, an unfamiliar and untried activity in academic psychology departments, although the suggestion was first made nearly a decade ago that it might be done (Catalano, Simmons, & Stokols, 1975). Academic sociologists, however, have long been teaching the topic and have published various curriculum materials through the American Sociological Association. The SIA field is of course broader than any one discipline, and SIA professionals are beginning to debate the best approaches and settings for communicating methods and theory in various university departments (Lerner, in press).

Within psychology, one question might be the subdiscipline in which students might most profitably be taught about SIA--e.g., social psychology, community psychology, or environmental psychology? This author

would suggest that, while students from at least these three subdisciplines could all benefit from a course in SIA, the best divisional "home" for psychological SIA courses would be in community psychology. Environmental psychology represents an important segment of potential psychological contributions to SIA, but only a segment. Social psychology departments at most universities have such a traditional focus on laboratory-oriented, experimental, basic research that the empirical and applied character of SIA may seem too dissonant. (On the other hand, for those departments in which social psychologists are seeking to establish a new and more applied identity for the field, SIA could represent a logical vehicle toward that end.) Community psychology by its very nature is oriented toward the real-life settings of concern to SIA, and it is in many ways a cross-disciplinary endeavor incorporating knowledge from social and environmental (as well as clinical) psychology. The one danger in locating SIA courses in community psychology is the possibility of overemphasis on mental health impacts. By the same token, attention to SIA within the field of community psychology could help that subdiscipline expand its focus to multiple other psychological topics besides wellbeing and mental health.

Publishing research relevant to SIA is of course implied in the conduct of that research. However, the most directly valuable publication activities could well be the production of reference materials for SIA practitioners--i.e., summaries of the pertinent psychological knowledge in a form which is most useful for the very practical and applied

context in which social impact assessment takes place. This is very possibly the most crucial imaginable immediate activity which will dictate whether psychology is incorporated to any extent in SIA. If a handbook of psychological impact can be produced which provides comprehensible and meaningful information to SIA practitioners, such impacts will almost automatically be considered in future assessments. If no central reference source on psychological impact is available, the whole subject matter will probably continue to be ignored.

There are several dimensions to be considered when designing such a reference source:

- o Organization--Materials can be arranged by (1) impact topics (e.g., mental health, satisfaction, etc.) or (2) project type (sewage treatment plant, resort development, etc.). A third possible organizing criterion might be project characteristic (size, amount of induced immigration, etc.), since many psychological impacts are indirect results which are mediated by such characteristics. Organization by characteristics can reflect nesting within organization by project type or--if the reference is limited to only one project type (say, psychological impacts of highway construction)--it could be the sole organizing principle. While psychologists are perhaps more inclined to organize their thinking by the psychological impact topic, SIA practitioners are in the position of asking "What will be the effects

of this type of project?" Therefore, it seems probable that organization by type of project and/or characteristic would be the more useful.

- o Format--The two most common formats have involved (1) summaries of various historical case studies (which lends itself far more to organization by project type than by impact topic) or (2) literature overviews (which can be used to all the foregoing types of organization). The selection of format type will largely be dictated by underlying purposes and ideologies, such as may be implied in consideration of the third dimension...
- o Extent of Generalized Conclusions--At one extreme, a reference source can simply be a bibliography listing and perhaps summarizing relevant studies, but not attempting to draw general conclusions. At the other extreme, inferences can be drawn from the available evidence which result in strong statements of principle about likely impacts (and/or crucial characteristics mediating impact). The first extreme risks failure on the criterion of utility; the reason why a handbook is desired by impact assessment practitioners is to save time in drawing conclusions about probable impacts, not to encourage the consumption of dozens or hundreds of hours in library research time looking up all the listed references. The second extreme risks damage to the credibility of social sciences. While many people might be

grateful for clearcut normative statements ("Highway bypass construction in urban areas tends to destroy neighborhood social cohesion") in a reference source, overly sweeping and simplistic conclusions can certainly lead to challenge and the discreditation of the reference. Most authors will attempt to find a middle ground between the two extremes, but there will be disagreements as to where the best balance point falls.

Existing SIA reference materials suggest the foregoing three dimensions are often associated, since many of the references fall into a conservative, public-agency-sponsored mold characterized by project-type organization, case study summaries, and few if any general conclusions (c.f., Shields, 1974; Bascom, Cooper, Howell, Makrides, & Rabe, 1975; Hitchcock, 1977) at one end of the spectrum, while many others--especially those of an unsponsored, more scholarly origin--are characterized by impact-type organization, literature review, and willingness to make at least a few strong general statements about usual outcomes (Finsterbusch, 1980; Noronha, 1977/1979).

Several SIA scholars have suggested systematic approaches to the production of such reference sources, although their purposes have differed. Shields (1977) is relatively more interested in SIA as social science, and he suggests organizing literature review conclusions in such a way as to facilitate "grounded theory construction." That is, strongly-stated generalizations based on a number of case studies are

treated as theories "grounded" in empirical evidence...but the major purpose of these statements is as hypotheses for further research, not reference statements for impact statements. Because the nature of the scientific research paradigm involves a search for absolute knowledge, the conclusions, while subject to future verification, are tentatively considered facts.

By contrast, Finsterbusch & Hamilton (1978) also suggest the derivation of clear conclusions from the available literature, but these are considered tendencies which are subject to management and modification in the decision making process:

...we propose standard information modules (SIM) and standard scenarios as methods for enhancing the utility of literature reviews for policy research...

Standard information modules (SIM's) organize past findings into descriptions of the general patterns resulting from recurring types of events (e.g., a new highway). The SIM should also identify major exceptions to the general patterns and the conditions under which the exceptions are likely. The standard scenario (SS) identifies a typical sequence of events in specified circumstances and the major exceptions. SIM's and SS's often overlap. (Finsterbusch & Hamilton, 1978, pp. 92-93)

Their examples of SIM's include conclusions about forced relocation from highway projects such as "relocatees tend to upgrade their housing and more renters tend to become owners than owners become renters" and "elderly relocatees do not make new friends easily and may remain relatively isolated socially in their new neighborhoods for the rest of their lives" (loc. cit., p. 93). SS's might paint a more holistic picture--that is, a complete scenario--of all expected impacts from a given type of project for a given type of community.

If psychologists become more involved in social impact analysis and generate a sufficient number of case studies or other types of empirical data, they will also eventually be able to produce handbooks based on historical observation. (Indeed, it would not be totally impossible now to cull existing literature for allusions to psychological impacts, although the measurement and documentation of such impacts may be a source of dissatisfaction to psychologists.)

At present, however, many psychologists might feel it more appropriate to attempt to summarize for SIA practitioners those findings and principles which might be wrung from the academic research literature. This is a more challenging task, since such research was often conducted more with academic theory-testing than with public policy implications in mind. The academic research process, particularly in the social sciences, often seems to glory more in the refutation of existing knowledge than in its confirmation, so that few reliable conclusions or principles can be offered that would meet with consensus in the overall scholarly community. Furthermore, of course, existing literature lends itself to organization by impact topic, when it has been suggested that the need is for a reference source organized by project type or characteristic. Finally, psychological scholars have been versed in an academic publication style which discourages the sort of straightforward declarative single-sentence conclusion which the nonpsychological SIA practitioner would often be seeking in a standard reference work.

Nevertheless, much of the research literature from environmental and community psychology could be organized and summarized with a view to

SIA. To a certain extent, the demonstration of this was the purpose, in part, of the latter half of Chapter VI, although this discussion of psychological impact from physical or economic change lacked two characteristics which would make it valuable as a reference for SIA practitioners: organization by project type and pithy conclusions. Preparing such a psychological SIA handbook would require a fairly major shift in the usual perspective of the psychological scholar, particularly in regard to considering multiple effects of a single cause, rather than considering the relative importance of multiple independent variables for predicting a single dependent variable. There is no reason to think that such a shift is impossible to make, nor that it would be bad for research psychology as a whole to make. Indeed, the production of SIA reference materials will require psychologists to reflect very carefully on the relationship between their research activities in the "social sciences" and the "social knowledge needs" of society as it attempts to manage change and development. If anything, the exercise should be beneficial to psychology.

VIII. CONCLUDING COMMENTS

These few final pages have two major purposes: (1) to review and emphasize certain themes which have pervaded the dissertation, and (2) to nominate social impact assessment, in its broadest sense, as an appropriate focal concern for the subdiscipline of community psychology in particular.

A REPRISE OF SOME BASIC THEMES

Five particular themes in this dissertation--often explicit but sometimes just implicit--would seem to warrant a final airing:

- o The most important role for psychological knowledge in SIA is to provide a human "bottom line" to social impact assessment.
- o Social impact assessment is a predictive activity.
- o To be more relevant to social impact assessment (or local policy decision making of any kind), there is a need for more psychological studies at the community macro-level.
- o To be more relevant to SIA, psychological research should focus more on the effects of change vs. those of long-prevailing conditions.
- o Psychology would benefit from more consideration of alternative outcomes, rather than measuring only one dependent variable at a time.

Psychological Variables as "Bottom Lines"

The argument which has been advanced in this dissertation is that "So what?" is a very legitimate question for a decision maker or project proponent or member of the public to advance in the course of impact

assessment. So many social phenomena can be nominated for consideration in the EIS/SIA situation that information overload is a real danger (assuming that some definite conclusions could be drawn about all the elements of a sociopsychological "laundry list," which is a dubious assumption at best). In the final analysis, there is no absolute or objective answer to "So what?" Questions about significance and import can be answered only with respect to the values, needs, and goals which characterize the particular individuals or the particular community involved. (Hence the recommendation in Chapter VII to base social impact assessment in large part on local needs assessment data.) Psychologists or other social scientists have every right to a view that some favored topic of study--locus of control, need for affiliation, etc.--is a fascinating "bottom line" in its own right, but they must also acknowledge the right of policy makers or the public to disagree.

It has been suggested that certain psychological variables--e.g., lifestyles, stress, environmental values--may sometimes provide a human "bottom line" to impact assessments which are intrinsically meaningful to certain decision makers and/or certain communities. (In the case of life satisfaction/happiness or community satisfaction, a slightly different view was suggested: psychological knowledge in these areas can help to attach a human value or weight to forecasts about other types of social impacts.) It would be inappropriate in a concluding chapter not to underscore the tentative spirit in which this suggestion is offered. EIS prime contractors, reviewers, or decision makers are under no

obligation to believe that, say, alienation is an important or valid area for impact assessment. The psychological variables nominated and discussed in Chapter VI were posited as more likely to win public and decision-maker interest than many others--but only in some places, for some projects, under some conditions. They represent opportunities for psychology in SIA, not mandates.

Still, once it is understood that the proposition is not motivated by starry-eyed enthusiasm, the basic contention also merits some positive support. It is a simple fact that most social impact assessments today give little attention to the individual's perspective. There is an implicit acceptance of the idea that "Society" (or, a little more intimately, "The Community") is some sort of huge, dimly conscious super-organism which must be assessed at a level beyond the reach and understanding of the average human, who is, after all, but an individual cell in the larger social beast. There is truth of a sort in this conception, and this dissertation is in no way intended to argue for the elimination of sociological or economic perspectives. But it is intended to argue that social phenomena operate on multiple levels at once, and that policy assessments are incomplete without reference to the individual level as well. And when the question is posed as to what will be the "human cost" and the "human benefit" of a proposed project, the answer will surely be incomplete without reference to psychological variables.

Predictive Focus of SIA

The idea that psychologists should focus on SIA primarily as a predictive activity is another theme which has been punctuated with qualifications, reservations, and outright ambivalence in this dissertation. It has been tentatively accepted because (1) those who think of psychology as a social science--and this represents the majority of psychological researchers--are perhaps most challenged and excited by the predictive thrust of SIA; and (2) SIA exists today primarily because of NEPA or other laws calling for EIS-style assessments, and these are clearly predictive (or at least anticipatory) in their mandate.

But a review of the crucial bodies of literature has found few areas in which psychologists would be warranted in making firm predictions about social impacts. Psychological knowledge has not progressed that far in most cases.

Two alternative approaches have been suggested. One is to use psychological research literature for the anticipatory purpose of pointing out areas of important potential consequence--opportunities and dangers. The other, related idea is to de-emphasize prediction in favor of social impact management (i.e., the process approach to SIA). Social scientists are used to thinking that prediction is a prerequisite for control, but this is not always necessarily so. Even an imperfect understanding of social or psychological principles can reduce our odds of an undesired outcome and increase our odds of obtaining desired ones.

Taking a more management-oriented but still groping approach to SIA does not mean the abandonment of scholarly research. In fact, it would probably require far more consideration than has been given in this dissertation to certain very basic psychological concepts, such as personal control vs. helplessness (Seligman, 1975) or adaptation level theory (Helson, 1964; Appley, 1971).

In the long run, the goals of precise prediction and exact (rather than rough) management will probably always be goals of social science. For the "science"-minded psychological researcher, SIA represents a fascinating challenge. But the opportunities in strictly predictive SIA are probably more for the psychological researcher than the practitioner at present.

Need for Community-Level Studies

This has been a theme which bears no hedging. Much of the psychological research literature concerns individuals in micro-social situations: behavior in elevators, immediate family relationships, entry into specific stressful situations such as surgery. Virtually all the experimental laboratory work falls in this "micro-social" category, as does much research conducted in such "field settings" as college dormitory rooms. Some of the exceptions go very far in the other direction--stress from acculturation or modernization, for example. Very little psychological research has focused on the sort of neighborhood or community change studied in SIA, such as the impact of a new highway

bypass, construction of the first high-rise apartment building in a residential area, or the establishment of a major new industry and land use in a rural area.

The implications of this call for research attention to psychological processes and outcomes at the neighborhood/community level are perhaps most profound at the methodological level. Psychologists are trained to analyze experimental data through analysis of variance and/or to develop psychometric scales and then factor analyze the results. But studies of community-wide change demand different methodologies. Time-series analysis of existing records of aggregate-level community data requires more knowledge of trend techniques and of the logic of dealing with alternative hypotheses for explaining results of such "natural experiments" (Donald Campbell, 1969; Campbell & Stanley, 1966; Catalano, 1981). Psychometric studies can no longer be based primarily on "convenience samples" (i.e., the proverbial college sophomore) but on carefully selected probability samples of the general population. And studies of individual behavior must be more often based (to re-sound an old and familiar clarion call in psychology) more on unobtrusive measures and naturalistic approaches (Willems & Raush, 1969).

Finally, as social, community, and/or environmental psychologists gain experience with community-level studies, they must take care to climb out of the pit in which so many sociologists have been trapped: overlong dalliance with single-case studies. The case study is a fine technique for illustrating potentials and generating hypotheses. But to

test those hypotheses, data from multi-case studies are needed to answer the truly meaningful questions for social impact assessment: not will X happen? ...but, under what conditions will X be more or less likely?

Need for Studies of the Change Process Itself

The validity of existing ecological research in many of the psychological areas most relevant to SIA--proxemics, person-group interactions, stress--is often subject to challenge, because it is so frequently concerned with longstanding conditions rather than transitions. That is, one cannot be certain that an increase in neighborhood population density will cause the current residents to manifest the same psychological profile found in denizens of a Manhattan urban jungle which has sported tenement buildings for the past 50 years. Nor can crosssectional analyses of rural-urban differences in some psychological measures be taken as absolute proof that the present rural population of some area will be changed in the urban direction on that psychological dimension if the area is built up.

Psychologists are not without an appreciation of the need to study change. All laboratory experiments feature some "manipulation," but there is again the problem of external validity: are these manipulations equivalent to enduring change in the socioeconomic or physical fabric of a community? Some research topics include the word "change" in their identities--e.g., social change, life changes. But (as was just emphasized), there has yet to evolve a cohesive body of

psychological literature on community change. Furthermore, much of the life change literature is based on retrospective studies, and psychologists entering the community change field should begin as soon as possible to implement prospective designs. Retrospective studies do have a role to play, particularly in relating clearly stated theories about project characteristics to actual outcomes (Krannich, 1981); however, prospective designs are always stronger and safer.

Conceivably, this point has been overemphasized. It is perhaps possible to argue that cross-sectional studies of longstanding social conditions are perfectly applicable to SIA studies. The logic would be that of structuralism--as communities enter a new state and take on a new structure, consequences for individual community members would flow directly from the new social condition, and longtime residents would find themselves converted to a new psychological state (perhaps alienation or anomia) to parallel the new societal state. However, it is impossible not to concede that the change process itself is a variable in the social equation, as is the fact of a previous history. Research may indicate these variables are of little consequence, but the possibility simply cannot be ruled out in advance.

Need for Multi-Outcome Studies

The final point is actually one of the least stressed in this dissertation, yet nonetheless one of the most important: Psychological research must give much more attention to alternative, multiple outcomes

in the study of policy-relevant socio-psychological variables. The example stated earlier (Chapter VI) involved stress manifestations from life changes. Most study designs consider impact of life changes only on one dependent variable at a time (e.g., physical sickness, depression, psychiatric symptomatology, etc.). But the nature of human response is that it usually does, in fact, occur in the wake of almost any stimulus. A phlegmatic indifference to a stimulus is itself an interesting phenomenon, whether that stimulus is a laboratory-applied electric shock or the construction of a nuclear power plant in one's back yard. The issue for psychology is not whether people behave, but how they behave.

What this means in practice is that single-outcome "operationalizations" of abstract constructs represent an excess of positivism. The idea of "strain" cannot be measured only by the extent of interpersonal aggression or only by the presence or absence of ulcers. First, there must be analysis of whether any of a broad range of "pathological" responses are observed (aggression OR ulcers OR other illness OR depression OR family dissolution OR mental illness, etc.), followed by an analysis of which ones developed under which conditions. For psychology to lend a human "bottom line" to SIA, it must be able to say something better than "Group X is 12 percent more likely than Group Y to exhibit a change in galvanic skin response to this particular stressor."

SIA AND COMMUNITY CHANGE AS A FOCUS FOR COMMUNITY PSYCHOLOGY

At the beginning of this dissertation, it was noted that sociologists have a long head start on psychologists in participating in SIA. Since the sort of interventions and projects assessed in EIS's tend to be organized at the broad social or economic level, rather than the personal micro-level, the participation by sociologists in the SIA process is an entirely appropriate matter. Perhaps, in many ways, even more appropriate than participation by psychologists.

But there are some types of psychologists whose traditional spheres of study bring them closer to the concerns of SIA. Usually, these would include environmental psychologists, social psychologists, and--most of all--community psychologists. Community psychologists are suggested as having a particular role to play in SIA because their research interests often involve a synthesis of social and environmental subject matter, while their level of activity at least nominally is identical to that usually studied in SIA's: the neighborhood or community.

Historically, community psychology has been concerned with various aspects of health, particularly mental health. It developed in large part as a result of the 1960's U.S. federal legislation which funded establishment of a series of community mental health centers across the nation. Community psychology differs from traditional clinical psychological approaches to mental health in several respects (Rappaport, 1977; McClure, Cannon, Belton, D'Ascoli, Sullivan, Allen, Connor, Stone, & McClure, 1980).

First, there is at least an ideological (if not always an actual) emphasis on seeing the root of mental health problems as residing in the socioeconomic or even physical environment rather than in the individual--i.e., a determination not to "blame the victim" for his/her emotional problems (Ryan, 1971). Second, there is a preference (again often more honored in terms of ideology than of actual performance) to make an intervention or "treatment" at the community level rather than at the traditional individual/family/small-group level. Third, there is a preference for "prevention" rather than after-the-fact "cures," although community psychologists have often had to content themselves with taking only "baby steps" toward primary prevention (Cowen, 1977)--i.e., the actual prevention of any psychopathological symptoms--and instead usually focus on secondary prevention, which is the early identification and treatment of incipient mental problems (Mann, 1978). Fourth, the preferred form of therapy usually involves strengthening existing competencies rather than attempting to make up for alleged personal "deficits" which have traditionally been blamed for the individual's problems:

Consequently, interventions that seek to prevent emotional disorders or to foster the development of effective coping strengths are preferred to interventions that attempt to remediate existing deficits of troubled individuals or groups. Deficit-oriented interventions are viewed [by community psychologists] as short-sighted, ineffective, and even detrimental to the intended beneficiaries because they ignore the contributions of social systems to the development and maintenance of emotional disorders. (McClure et. al., 1980, p. 1000)

Of these four distinguishing characteristics, perhaps the least often honored in practice is the mandate to intervene at the community

rather than the individual level, and the most honored has been the willingness to relegate fully-developed psychopathology cases to clinical therapists.

Given its orientation to intervention and mental health, community psychology is by its nature a form of action rather than of scientific study. Thus it technically has little applicability to predictive SIA (except to the extent that implementation of mitigations is considered an appropriate part of the linear SIA model) but virtually total applicability to the process or feedback model. However, in reality community psychology has substantial applicability even to predictive SIA, because it is necessary to be able to predict what types of environmental conditions or events generate stress. Research on such matters is the central focus of most community psychology journals and texts.

Like social psychology, community psychology has undergone something of an identity crisis in recent years. There have been numerous recommendations as to what its "proper focus" should be: mental health policy making (Kiesler, 1980); community organization among the lower-income and other disadvantaged groups (Rhoads & Raymond, 1981); social support network building (Gottlieb, 1983); and the transformation of stressful life experiences into positive growth experiences through the community mental health clinic setting (B. S. Dohrenwend, 1978a).

The suggestion being made here is a variation on the last proposition. Dohrenwend's focus, like that of most psychologists, was on

individuals undergoing scattered and independent life transitions. But the occasional occurrence of shared life transitions stemming from links with wider community transitions is a special case with special relevance and, presumably, appeal to community psychologists. SIA--in its broadest sense of process as well as prediction--is a logical vehicle for community psychologists to use for involvement at such junctures in a community's life.

It is not suggested that SIA be the only focus for community psychology, and perhaps it cannot even be a primary one. Community and neighborhood transitions triggering the EIS process are not a daily occurrence for any given residential or commercial area. But when such events do occur, they represent a strong invitation for the involvement of community psychologists. SIA's, particularly as conceived in this dissertation, represent a search for threats to individual wellbeing and a search as well for opportunities to further enhance that wellbeing. They are a multidisciplinary activity, requiring an understanding of the ecological interplay of cultural, economic, sociological, and physical forces in the environment with the individual person. It is suggested that this is exactly the sort of "crisis"--representing opportunity as well as problems--which Dohrenwend defined as the natural domain of community psychology.

FOOTNOTES

Chapter I

¹Robinson (1980, p. 16) notes that, "in an interesting display of professional imperialism," psychologists as well as sociologists and anthropologists at the First Canadian Symposium on SIA urged that SIA be modeled or defined in the framework of their particular discipline. Academicians from all three disciplines united in disdain of urban and regional planners because the planners "were perceived to lack a real (meaning historic, theoretical) discipline from which to operate."

Chapter II

²A third historical force emanating from the 1960's was the drive for increased citizen participation in public decision making. The citizen participation movement is now having increased influence on the shape and nature of SIA. However, environmental laws and social indicators are more related to SIA as a predictive "science," while the citizen participation movement has to do with a tendency (to be discussed further later) to transform SIA into a quasi-political process. Since the focus of this dissertation is on predictive SIA, the history of citizen participation movements will be omitted here.

³Technically, according to U.S. government terminology, "negative impact" signifies the lack of any impact. However, the more common public interpretation of the term "negative impact" would involve an undesired or harmful impact, and that is how the term will be used throughout this dissertation.

⁴Psychological stress among residents near Three Mile Island was far from a negligible concern. An official report of behavioral experts to the President's Commission on the Accident at Three Mile Island found high levels of fear and anxiety-related psychophysiological symptoms, although many of these effects subsided to baseline levels five months after the accident (Dohrenwend, Dohrenwend, Kasl, & Warheit, 1979). Other studies (Houts & Goldhaber, 1981; Davidson, Baum, & Collins, 1983) have found more enduring effects, related to distrust of authorities and a sense of lost control over their immediate environment. One telling behavioral indicator is that area residents have established their own radiation monitoring system (Gricar & Baratta, 1983).

FOOTNOTES
(Continued)

Chapter III

⁵It should be noted that these comments were made prior to issuance of the revised federal EIS guidelines by the United States Council on Environmental Quality (1979). The CEQ attempted to meet some of these objections by stressing the need for scientific method, by placing page limits on EIS's (although technical appendices are permitted), and by requiring a "plain English" writing style.

⁶The "scoping" stage in Figure 2, for simplicity's sake, is here presumed to include two other preliminary planning stages now stipulated by the Corps--"Problem Identification" and "Formulation of Alternatives." For a more detailed explication of these steps, see the Social impact assessment newsletter, 1980 (Jan-Feb), no. 49/50, p. 13.

Harter (1980, p. 4) points out some terminological problems with these stages: "The term 'assessment' is used both...in describing the entire process and also as one particular step within that process. The term 'evaluation' is placed in a step separate from and following 'assessment' even though these two are conceptually quite similar. In fact, conventionally the term 'evaluation' is used, as in 'evaluation research,' to refer to the follow-up step of appraisal which is here labeled 'monitoring.'" This is not the first time the federal government has used words differently from the rest of the country.

⁷Section 3(h) of Executive Order 11514, March 5, 1970, "Protection and Enhancement of Environmental Quality," as amended by Executive Order 11991, May 24, 1977.

⁸Cross-impact analysis, KSIM, and policy capture all involve complex statistical manipulations of probabilities or ratings provided by panels of "experts." For example, given experts' estimated individual probabilities for individual impact events, cross-impact analysis utilizes the principles of Bayesian statistics to calculate the conditional probabilities of any one impact, given the occurrence of one or more of the others. See Porter, Rossini, Carpenter, & Roper (1980) for an introduction to the mathematics, logic, and limitations of these three techniques. Generally, they have been little used in social impact assessment, although they are more popular in the field of technology assessment.

FOOTNOTES
(Continued)

Chapter IV

(None)

Chapter V

⁹Latane is not the only psychologist to suggest exponential and multiplicative models. Among others, Kessler (1979) takes this approach to estimating vulnerability to stress. However, Latane's use of the "social impact" term makes for a serendipitous connection.

¹⁰Some of the previously mentioned articles do make brief references to theories or concepts which are held to be of potential value for SIA. Catalano et. al. (1975) provide the most substantive of these in their discussion of "intersystem congruence" (from behavior setting theory) and possible stress deriving from lack of congruence between physical environment and psychological motivations or lifestyles.

¹¹At greater expense and at the risk of lower face validity, projective techniques could be employed. The more likely alternative, though, is some form of ethnographic research--e.g., participant observation. This leads to the usual concerns over interobserver reliability.

¹²Along with other sociological SIA writers, Fitzsimmons, Stuart, & Wolff do call for consideration of certain types of cultural norms and values. However, their perspective in doing so is to regard these "psychological" phenomena as common attributes of the entire community or culture, rather than to investigate variations among individuals or groups.

¹³This conclusion has been challenged by some researchers who present evidence for the importance of undesirability over simple degree of change in predicting stress reactions (Mueller, Edwards, & Yarvis, 1977; Ross & Mirowski, 1979; Suls & Mullen, 1981). In fact, as will be discussed further in the next chapter, this interpretation is now the favored one in the life changes literature.

FOOTNOTES
(Continued)

Chapter VI

¹⁴Table 4 maintains a distinction between "unconscious" values (considered the usual domain of the anthropologist because these are so widely inculcated throughout a culture that people are unaware of them until other cultural values are encountered), and "conscious" values (considered the domain of social psychologists because such values are part of individual or group self-demarcations within a wider culture).

¹⁵They also found (Ward & Russell, 1981) a stable but much more complex pattern of cognitive dimensions, with salience of each dimension proving highly sensitive to the "cognitive set" induced by experimenter cues as to which aspects of the environment should be attended to in the perceptual task.

¹⁶This is consistent with the findings of Zautra & Beier (1978), who concluded that poor social conditions exacerbated the effects of all types of life changes on psychological wellbeing.

Chapter VII

¹⁷On the other hand, it has also been suggested that mediation will, practically, be unworkable in multi-party environmental disputes (Baumol & Oates, 1975) and that a better approach would be reform of the legal system so that binding judicial decisions can be handed down earlier in what is now becoming an interminable legal process (Randle, 1981).

Chapter VIII

(None)

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