

Technological Chickens and Informational Eggs: Cogeneration to Breed Communication

Katherine Watson
Coastline Community College
Fountain Valley, California, USA
bizarrerie@aol.com

Abstract: A paradox exists in online learning: While the technologies that are used to deliver educational data exhibit features of uncompromising, rectilinear “hard architecture”, learning is a “soft” phenomenon. But simple ways exist to help educators adapt the digital hardness of technology to the often analogical soft architecture of worldwide information. Offshore ideas in information science, including freely available systems from around the world, provide alternatives to the standard course-in-a-box or ready-made learning materials. And sociologist, psychiatrists, and architects offer useful ideas as well. These globally oriented, “sociopetal” systems are customizable to individual learners’ needs and may open their minds to new ways of seeing the world.

“Digital technologies are transforming the nature and intent of thinking and creativity, blurring the relationships between matter and data, between the real and the virtual, and between the organic and the inorganic, leading us into an unstable territory from which rich, innovative forms are emerging” (Mandour, 2004). It is evident that learning, a prime example of living, growing, organic processes, can be facilitated and enhanced through the assistance of the digital. And “hard”, tight, hierarchical, institutional control over access and course design must be balanced against the need to transmit informational and cultural dynamism, if the digitally-designed Internet is to serve as an aid, rather than as an obstacle, to the unrestricted acquisition of understanding. Convenient for the designer and the manager to keep clean and in order, any kind of mechanistic “hard architecture”, as it has been defined by psychologist Robert Sommer (1974), is “oppressive to the human spirit”; characterized by “tight spaces” and “role-bound, top-down” institutional domination, such immutable structure tends to stifle creativity as it limits human options.

In his *Tight Spaces*, Sommer points out that the hierarchical, rectilinear nature of much institutional architecture tends to foster linear thinking, failing to generate anything novel; classrooms that are box-shaped do not lend themselves to much “thinking outside the box.” And as Seymour Papert (1998:4) has noted with regard to the dynamics of most traditional rectilinear learning spaces, “teacher-centered classrooms are not models of real-world applications”.

But, as Papert has added, the new age of technology is now provoking a sociocultural, educational “megachange”, a shift from what has been termed the “teaching paradigm” to a new “learning paradigm”, in which the dynamic can replace the static, where the

teacher can be a mentor rather than a stentorian sage, and where learners may be empowered to control their own progress, to communicate among themselves, to engage in the discovery of how fields of study "nest" and interact. As the aforementioned architect Mandour (2004:195) states, this change in thinking is not just about technological tools but about their role and effect on forms of thinking. Papert cites the technology age as one in which machines can be used for two purposes: They can be exploited purely as tools for testing or rote exercises, on the one hand, and they can on the other hand serve as the nexus of information and construction, the vinculum linking data and interpretation.

Although, as O'Banion (1999) has noted, "technology has been a powerful change agent", Sommer has warned that one of the major costs of any type of hard architecture, whether it be that of rectilinear buildings or that of the linear thinking that binds most educational institutions to rigid systematicity, is "the difficulty in renovating it to meet changing needs". Thus, if educational institutions are to take full advantage of technology, they must make a complete commitment to organizational overhaul, an absolute acceptance of the need to change from the stolid "teaching paradigm" to the dynamic "learning paradigm", with an awareness of all that this will entail. "New pedagogy," as Swiss educator Philippe Perrenoud (1997) has said, is one that is free of hierarchy, free of constraint, and in continuous flux: "The world has changed," says Perrenoud, "and you?"

As Connor (2004) has pointed out, many modern architectural structures "lasso" space, encapsulating air, stifling thought rather than generating it. Like other architects, Connor calls this hard architectural phenomenon "unsocial" and "sociofugal", evidence of unalterable, external decision-making, or scission; while the space is enclosed, decisions about the space are radiated outward. Connor proposes an alternative, softening, "sociopetal" notion of dynamism, in which sound and light interplay with structure, so that flexible polymorphism might result.

In the world of Internet-delivered learning objects, "hard architecture" takes the form of templates, what Connor calls "single plans, which can be rendered all at once, as an act of decision" (2004:2). Courses in a box, extra-institutional administrative systems, and inflexible formats demonstrate the sociofugal in online learning. And the notion of hard architecture extends beyond format and space into the realm of time. Although information flows in a kind of analog way, varying continuously, institutional hard architecture would pin it down, encapsulate it, demarcate it, schedule it.

It is clear that online educational hard architecture has certain institutional advantages. For instance, consistency of course design offers a level of comfort, as well as a school "signature"; students will feel at home at a home page that looks the same for each course they take at an institution, and they will recognize page features so that they can expedite their progress; rather than spending time trying to figure out what the requirements are or how navigate an online course, students using clear templates can locate materials in a predictable place. Progress can be recorded and scheduled, with assignments made available and quizzes offered according to scheduled needs. Moreover, extra-institutional

administration often offers technical assistance around the clock; robust stability furnishes fail-safe systems that schools frequently cannot afford.

But when hard architecture is made to box ideas in, human thought will quite naturally rebel; sociopolitical history is peppered with examples of revolutions against the rigid. In discussing his notions of multiple intelligences, Howard Gardner (1983) notes that only two of the seven common styles of human thinking are generally valued in all schools everywhere; tradition-bound pedagogical theory petrifies pupils' minds from their earliest days, with only the logical/mathematical and the linguistic granted rewards. Spatial, musical, intrapersonal, interpersonal, and kinesthetic aptitudes are rarely fostered or rewarded, often left to wither away in the young learner; these "alternative" modes of intellectual practice are hardly even examined. Indeed, even though the computers of our "megachange era" offer sound cards and twenty-four-hour access to words and images from everywhere, they transmit data digitally onto a hard, rectilinearly arrayed monitor. Mandour (2004: 196) remarks, "...the user has become increasingly static; as human cognizance and transience reach around the planetary surface via telecommunications networks, we remain relatively fixed to our points of interface-our workstations, televisions and fax machines." Clearly, the full benefits of continuous, analog access to everything from everywhere have not yet been sounded out.

Learners can and must take control of their educational experiences in an epoch when schools have concluded: "Ideally, schools are places that foster each student's individuality of interest, learning style, and ambition" (Worthington, 2005), and when the Internet has been cited as "a powerful source of information and ideas for better tailoring classroom experiences to individual student needs, preferences, and interests" (Worthington, 2005). Interestingly, this last is a testament to the fact that the apparently "hard", digitally-based 'Net can help us to handle the masses of analog information that wash over us in the modern world.

Notably and exemplarily, learners online at Coastline Community College have been able to improve cultural, written, and grammatical fluency in French by taking control of their own 'Net surfing experiences, using the francophone information sources made available to them to reconstruct their awareness of the world around them, usually in a "soft" sociopetal way. Unlike the traditional learners that Papert and Sommer sympathize with, those who must proceed in a tightly controlled, orderly, lock-step pattern, the adult learners of French at Coastline may decide their own rate and quality of progress. They have discovered how to circumvent the usual pedagogical constraints and to loosen their linguistic bonds by taking advantage of what is offered them through innumerable genuine francophone sources, as they personalize their passage through cyberspace.

Coastline's online "French Topics" students are exemplifying at least two principal features of the beneficial effects of new technology upon learning, particularly language learning, even as they continue to encounter certain vestiges of hard institutional blockage to their smooth progress. On the one hand, the freedom to surf however, whenever, and wherever they can/wish empowers students to take charge of their learning and to enrich their learning experiences, even as it stimulates rapid progress in

linguistic development. With direction and control pointed inward, toward class group members, a stimulating sociopetal interactivity transpires. And on the other hand, continuous access to the thousands of authentic francophone materials made available anew each day guarantees a truly boundless, analog, dynamic flow of novel *realia* (authentic people, objects, and events) impossible to match in a traditional classroom.

When Coastline Community College students enroll for their online "French Topics" course, they are advised that all their course materials are available online and that these materials are in French. Their course homepages are custom-designed for them with the help of college Webmasters and without a course-in-a-box template; quasi-mirrors have been designed with Lycos's free "course builder" (<http://www.lycos.com>), with Lycos France/Multimania's connection to Bertelsmann permitting free international publishing and communicability (<http://hebergement.lycos.fr/consumer/>) and with Open Source "e-formation" labs Anema and Thot offering materials and evaluations (<http://www.anemalab.org> and <http://thot.cursus.edu/>). In addition, outside links and MS Word file course assignments are housed in a specially designed area of *Classe Branchée*, a completely-francophone site freely available through the Canadian Office de la Langue française (<http://www.classebranchee.com>). Students are given the option to surf the course sites to see whether they will be able to respond to demands or not. Coastline online French courses are advertised in European and African francophone networks to invite the E-interested to participate.

Unfortunately for Coastline enrollees and their instructor, however, online sign-ups and out-of-state participation pose problems. For instance, California's hardened traditionalist system of admission and registration requires in-state residency, as well as hard, hand-written signatures and cash, cheques, or credit cards for payment. And although an online form for registration has been made available at Coastline, its delivery to the College allows the student a scheduled telephone registration time only; signed paper documents must be presented before a student is officially accepted for any class. While online French courses at Coastline have a soft schedule, with no "due dates" or scheduled assignments, College late registrants must submit to a hard rule: They are not permitted access to the time-sensitive online registration form. Moreover, out-of-staters must pay non-resident tuition, and everyone enrolled in any course at the College, whether it be online or face-to-face, must pay a health fee. In an era of low enrollments and high-cost transportation, not to mention a worrisome trend against the learning of foreign languages, these obstacles to electronic engagement in French are frustratingly unnecessary.

Although Coastline has stated a desire to simplify course access by offering activities at a distance, the traditionalist, hard-architectural system of compartmentalizing responsibility for student information means that neither students nor faculty are served; Admissions does not transmit enrollment information to the Distance Learning Department until classes begin, and faculty members are the last ones to find out how to contact students. Document signatures and fee payments based upon students' "physical residence" are vestiges of a hard architecture established in the era of the traditional. Especially in a course aiming to attract linguistically, culturally, and geographically diverse members to a geographically unbounded *quartier* of cyberspace, these aspects of enrollment limit more than they liberate.

Following their enrollment, Coastline students and instructors communicate via telephone or FAX to find out one another's e-mail addresses. Then, the College's Distance Learning Department sends the course URL, along with a username/password combination to use for access to protected areas. Students are each sent a personal message from the instructor welcoming them to the course after this; they are given general guidelines on how to proceed.

Three principal options are available to Coastline "French Topics" students as they peruse their course materials at their own pace. Since the course grew out of an adjunct to the Annenberg-CPB (Corporation for Public Broadcasting) Project *French in Action* videolesson series, and since Coastline continues to use *FiA* as its primary text and ancillary materials, the "French Topics" course offers them two sets of *FiA*-related questions as primary course content. "Lessons Questions" ask basic queries about the action in the *FiA* program; when the young American Robert arrives at the airport in Paris, for instance, they are asked where he goes and by what means of transportation. Later, they are asked what he is doing in Burgundy when he was trying to find a suburb of Paris in a rented car. External Websites are embedded in all question sets; participation in free international news groups and access to live updates from everywhere have permitted Coastline's French instructor to keep materials fresh—live traffic reports and interactive maps from Bison Futé (<http://www.bison-fute.equipement.gouv.fr/>) and the latest news from Burgundy can inform answers (<http://www.cr-bourgogne.fr/>). Free online news sites generally offer mirrors in more than one language and are useful for references to events with which students are probably acquainted from the American press (e.g., <http://www.edicom.ch>, <http://www.reuters.fr>, <http://www.franglo.com>). Various airport sites offer online travel planning/ticketing services, and interactive guides permit navigation throughout France. Students surf the sites, download questions, and answer via e-mail to their instructor. Although the College's test-making software permits students to do quizzes online, essay questions are not interactive; the tendency toward exacting hard architecture makes it difficult to digitize the subjective, especially in a language other than English.

If Coastline online French language students wish to probe more deeply into the culture, the *mentalités*, and even the history of what they are asked to write about, they are invited to answer "Lesson Forum Questions", items only vaguely related to *FiA* that call for critical thinking and personal attitudes and experiences. They may divulge their own opinions about airports, make airline reservations online, or take a virtual cruise through vineyards; they may try to plot a route through real-time traffic or comment on the comparative superiority/inferiority of various modes of transportation. And if students decide that questions from both the "Lessons" set and the "Lesson Forum" set pique their interest, they are welcome to answer some of each, navigating the course in yet a third way.

Coastline "French Topics" students are told at every turn that they may proceed as quickly or as slowly through their materials as they wish; they must adhere to no hard schedule assigned from the sociofugal "outside". Students may submit answers of any

length to questions in any order they wish, and they may submit as many draughts and re-writes as they wish. They are encouraged to write in as much French as they can muster, and if they have questions about words or structures, they are encouraged to ask. Free online dictionaries, encyclopedias, and thesauri are made available to them among the course *Ressources*, but simple e-mail queries to the instructor or postings to the asynchronous bulletin board may serve as well. Students who need free e-mail for the course are offered French-interfaced <http://www.voila.fr>, <http://www.caramail.fr>, and/or <http://www.genaisse.zzn.com> as options.

The kinds of electronic messages that Coastline students send give evidence that something besides logical, left-brain-centered vocabulary and grammar is being learned. The style that has been generated in these students' electronic writing is a hermaphrodite, something between what linguists call the "casual" or "vernacular" and the "careful". Students are attending to sentence structure and word formation in a way rarely evident in traditional classrooms teaching any language. They have free online access to dictionaries and grammar resources to help them in real time (*for the latter, cf.:* <http://www.laits.utexas.edu/tex/index.html>, and note that The University of Texas Austin offers free resources in a wide array of subjects, as well as a "World Lecture Hall" listing resources and courses from around the globe: <http://web.austin.utexas.edu/wlh/>), they strive to use the apt word in the proper context, and they exploit the instructional and personal functions of language as well as the purely representational, especially in their twice-weekly synchronous *babillard du soir* "live chat" sessions (*cf. http://www.chatzy.com for customizable free chat service*). But besides merely transmitting information, each student's e-mail messages and chat entries develop a kind of self-radiating, sociopetal, idiosyncratic style of information transmission enveloping the communication of data.

The "why" and the "how" of the hermaphroditic dialect that has become especially apparent in French live chat sessions demand deeper examination. Although it is generally accepted that the "multiple-sensory approach" is a successful means of presenting learning materials, engaging both the left and right cerebral hemispheres, no matter the content of those materials, so that varying learning styles may be accommodated in a sociopetal way, it may also be true that the colors, sounds, movements, and even key strokes that are part of online coursework facilitate and expedite the learning process. Indeed, the aforementioned Gardner would note that at least the kinesthetic, intrapersonal, and spatial must be exploited human-computer interaction, and online chat and e-mail require interpersonal activity as well. Animal behaviorists have recognized, and human behaviorists are coming to accept, that learning is more complete when more of the senses, as well as more of the brain's gray matter, become engaged (Wilson, 1975). In language learning, more native-like L2 (language being learned) skill could accrue to assiduous onliners because they have recourse to various different inputs and must use varying synaptic connections.

Mandour (2004:197) claims that the Information Age has required an exploitation of numerous "post-mechanical processes", in which spatial routines are being generated "for a world that is at once unfixed and fixed, here-there and there-here, dislocated and

located.” He calls this a softened architecture of contextualization, and Coastline’s online learners of language and culture have found that their coursework is provoking just the “phase-shift in perception” that Mandour cites as prefatory to more complete understanding of specific subject matter and of the multi-disciplinary contexts into which that subject matter fits..

Understanding how to individualize a learner’s experience while provoking a shared, multi-disciplinary-oriented, classroom-community must begin with an analysis of learning styles and *raisons d’être (là)*. That is, the online course participant studying any subject must be asked at the beginning of the course what his reasons are for signing up, what his hopes and/or expectations are, and if he has any preconceived notions about how he might achieve his goals. At Coastline, all Distance Learning students are asked to read and submit an online “Letter of Agreement” indicating that they have read and understood course requirements; Kolb’s learning styles inventory (1984), the Myers-Briggs Type Indicator (cf.:

http://www.advisorteam.com/temperament_sorter/register.asp?partid=1 for a free, simple introduction, useful to instructors in all fields), or other assessment tools may be used, but direct questions to adult students generally lead to usable data/responses. Instructors should keep in mind, of course, in any effort to specify learning styles or preferences that, as Gardner (1993) warns, “Every normal individual possesses varying degrees of each of these intelligences, but the ways in which intelligences combine and blend are as varied as the faces and the personalities of individuals.” Educators should also be aware that, as Schroeder (1993, 2004) has written, many of their own teaching/learning styles do not match the styles of their students; twenty-first century learners, says Schroeder, tend to be pragmatic concrete-active ones, seeking direct experience and a moderate to high degree of structure in all their courses, along with a linear approach; these learners differ from those of the past, who tended to be more abstract-reflective types, generally thought of as “artsy” or theoretical.

In Coastline’s online French language and culture courses, students’ learning styles, if not preferences, seem to have been changing slightly over the thirteen years that courses have been offered. That is, since learning styles are at least to some degree culturally-based, and since French culture rewards the reflective mind, that of the logical thinker who would argue and meditate upon alternatives before moving on (Baudry, 2003), it might be hoped that the most thorough learning of French language and culture online would yield a shift from the American pragmatic to the francophone reflective. Random learning assessment surveys of the most persistent students, those who have remained with Coastline for at least six years, demonstrate this effect.

After a series of longitudinal analyses, Schroeder (2004) has concluded that the modern, twenty-first-century American student’s preference for the practical has led to increased enrollments in business, allied health, and pre-med. Instructors who teach subjects attracting such learners might wish to incorporate field experiences, case studies, and other well sequenced experiential learning exercises (cf. the Sloan Consortium’s selections at: <http://www.sloan-c.org/publications/jaln/index.asp>) into their coursework

while they incite a segue into the more reflective; truly sociopetal learning will profit from maximizing the educational alternatives.

Mandour (2004:199) reminds us that the virtual is not real, that online labs and online language are not the same as real ones, and that the real/actual and the virtual/imaginary “share space over co-terminous territories.” Vision and reasoning have cultural bases and varying virtual representations; if the hard sciences are to benefit from soft intellectual architecture, they must be seen in their cultural, human contexts, and if the soft sciences are to benefit from exactitude, numbers and statistics, geometry and pattern-finding can help. Indeed, if American learners of physics or chemistry or math can acquire more than simple subject-matter skill by using Net-delivered resources from other countries (cf. <http://www.chimix.com> and <http://www.universitysurf.net> for francophone-country-based free interdisciplinary materials, especially in science and math), then their scientific understanding will be enhanced. As the francophone educational service ThotCursus points out, the way we learn what we learn has much to do with our decision-making processes, our relationships with others and with the world, and our way of seeing the world (Judeau, 2005). In an era of expanding populations, increasingly fast communications, and dissolving national frontiers, not to mention Flash imagery and gaming tools that have been incorporated into online educational sites, we are rendering the sociopetal indispensable.

Organizations such as the United Nations *Institut de recherche pour le développement social* (IRDS), the French *Centre national de l'enseignement à distance* (CNED) and the pan-African *Réseau africain de formation à distance* (RESAFAD) are uniting to bring sophisticated adult engineering and math skills, not to mention sociopetal decision-making, from countries where technology has become a part of daily living to young school children in lands that have few roads, no information superhighways, but lots of ideas about how computers might be exploited for their “constructive nature” (Papert, 1998), their potential to serve as utilitarian devices that will free our minds and our imagination. Coastline Community College’s online French language and culture students are seeing in real time how, as Senegal’s Olivier Sagna has written in a report for the United Nations IRDS (2001), a retention of the kind of “fragmented and administration-based responsibility for information and communication technologies (ICT)” that characterizes institutions steeped in the sociofugal, hard architecture of compartmentalized responsibilities can lead directly to battles for control and to failures in coordination. When all decision-making is radiated outward into an administrative sea, the end-user who must act upon the decisions has little input, his power dissipating along with his imagination and desire. Ultimately, these difficulties risk impeding student progress, eroding student learning, and wearing away at the kind of creativity that computers can inspire to communicate across the curriculum, across the false institutional subdivisions of mathematics, science, history, art, and language. Sagna suggests that social and intellectual development be attended to as the ‘Net is incorporated into various cultures. It has become clear from Coastline Community College online French language students’ progress through a soft architectural space of the digital universe that it might be time for the micro-culture of the community college, that “crucible of change” as O’Banion calls it, to tear down its traditional architecture of the sociofugal and the

template-oriented, to seek points of sociopetal germination, of connection, of integration, escaping intransigence.

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