Craft Goods Specialization and Prestige Goods Exchange in Philippine Chiefdoms of the Fifteenth and Sixteenth Centuries

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AS OUTLINED BY Earle (1987a:294–297) and others (such as Brumfiel and Earle 1987; Frankenstein and Rowlands 1978; Renfrew and Shennan 1982), control over the distribution of prestige goods—whether obtained through foreign trade or produced locally by attached specialists—is the primary material means whereby a sociopolitical elite is able to maintain and expand its political power in chiefdoms. Prestige goods serve as potent symbols of social rank and political authority in the context of status rivalry; they also represent bankable stores of "wealth" that can be strategically distributed to establish the critical alliances necessary for political centralization. Key to the operation of such a prestige goods system is chiefly control over access to foreign luxury goods: through strategic location along major trade routes, the establishment of exclusionary social contexts for prestige goods exchange, and direct administration of internal systems for amassing exportable goods.

In this paper, I examine the operation of one such "prestige goods" economy involving luxury goods trade between Philippine chiefdoms and the mainland Asian complex societies beginning in the tenth century A.D. and intensifying in the fifteenth–sixteenth centuries just before Spanish contact. Specifically, I use archaeological and ethnohistoric data to demonstrate that chiefly participation in this foreign luxury goods trade was strongly linked to centralized control of a complex intraregional system of production, exchange, and resource mobilization. I show that exchanges of staple goods from upland to lowland, between complexly organized lowland agriculturalists and adjacent upland tribally organized swidden-ing societies, have a long history in the Philippines. However, I argue that centralized administration of these exchange systems by regionally powerful lowland chiefs is a relatively recent development in response to foreign demands for raw materials that were controlled by interior populations. One of the ways in which lowland chiefs may have facilitated and controlled this lowland-upland trade is through the support of full-time pottery producers at the chiefly coastal center who manufactured wares for exchange into upland areas.

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The present study focuses on earthenware pottery from archaeological excavations and surface survey in the Bais Region of the central Philippines, the locus of a small-scale chiefdom in the late first to mid-second millennium A.D. Technological and morphological studies indicate that lowland-produced earthenwares varied from region to region before the tenth-century advent of foreign luxury goods trade, becoming more standardized in the mid-second millennium. This is interpreted as indicating a shift in pottery production modes from dispersed household production to full-time specialist production. This changing organization of pottery production may be linked to lowland chiefly strategies for control of upland raw material procurement and enhanced participation in foreign trade.

PREHISPANIC CHIEFDOMS IN THE PHILIPPINES: THE ARCHAEOLOGICAL AND ETHNOHISTORIC EVIDENCE

Ethnohistoric sources (Alcina 1688; Loarca 1582; Morga 1609; Plasencia 1589; San Buenaventura 1613; see also Keesing 1962; Scott 1980, 1984) suggest that at the time of European contact, the coastlines of most of the major Philippine islands (as well as some regions of the interior) were dotted with numerous politically complex, regionally centralized societies with well-developed systems of social stratification (Fig. 1). As in "chiefdoms" known ethnohistorically and archaeologically elsewhere in the world (Carneiro 1981; Creamer and Haas 1985; Earle 1987*a*; Johnson and Earle 1987), members of the chiefly class played a central role in administering a complex regional economy. They controlled agricultural livelihood through restrictive land tenure, mobilized surplus through a formalized system of tribute exactions, amassed wealth through sponsorship of "attached" specialists and by raiding or trading expeditions for sources of prestige goods, and used this "material fund of power" for political alliance building (Junker 1990*a*, 1990*b*). In addition to mobilizing resources from lowland agriculturalists under their direct political sovereignty, Philippine chiefs also appear to have played a significant role in facilitating exchanges between the lowlanders and interior tribal swiddening societies and hunter-gatherers, who were ethnically and linguistically distinct from the lowlanders. While a portion of this upland-lowland trade involved mundane domestic goods of little direct interest to the chiefly elite (such as lowland fish, rice, and manufactured goods for upland forest products and raw materials), some interior resources, such as metal ore, were directly tied to prestige goods production and/or luxury goods procurement through trade. This fact necessitated direct chiefly intervention in this trade (Junker 1990*a*:193–324, 1990*b*:177–178).

Chinese texts (Scott 1984; Wang 1958; Wu 1959) and archaeological data from Philippine sites (Beyer 1964; Fox 1964, 1967; Hutterer 1977; Tenazas 1968) document the beginnings of intensive long-distance trade between Philippine chiefdoms and China (as well as state-level polities of Mainland Southeast Asia) by the tenth century A.D. (Fig. 2). This trade reached its height in terms of volume and interpolity trade competition in the fifteenth–sixteenth centuries (Hall 1985; Hall and Whitmore 1976; Junker 1991; Ts'ao 1962). The ethnohistoric evidence suggests that Philippine chiefs were primarily interested in obtaining luxury goods, such as porcelains, silks, magnetite mirrors, and gold jewelry, from their Chinese trade sources (Blair and Robertson 1903–1909:3:75–76; Scott 1984; Wu 1959). Furthermore, both the ethnohistoric and archaeological data point to the "status-

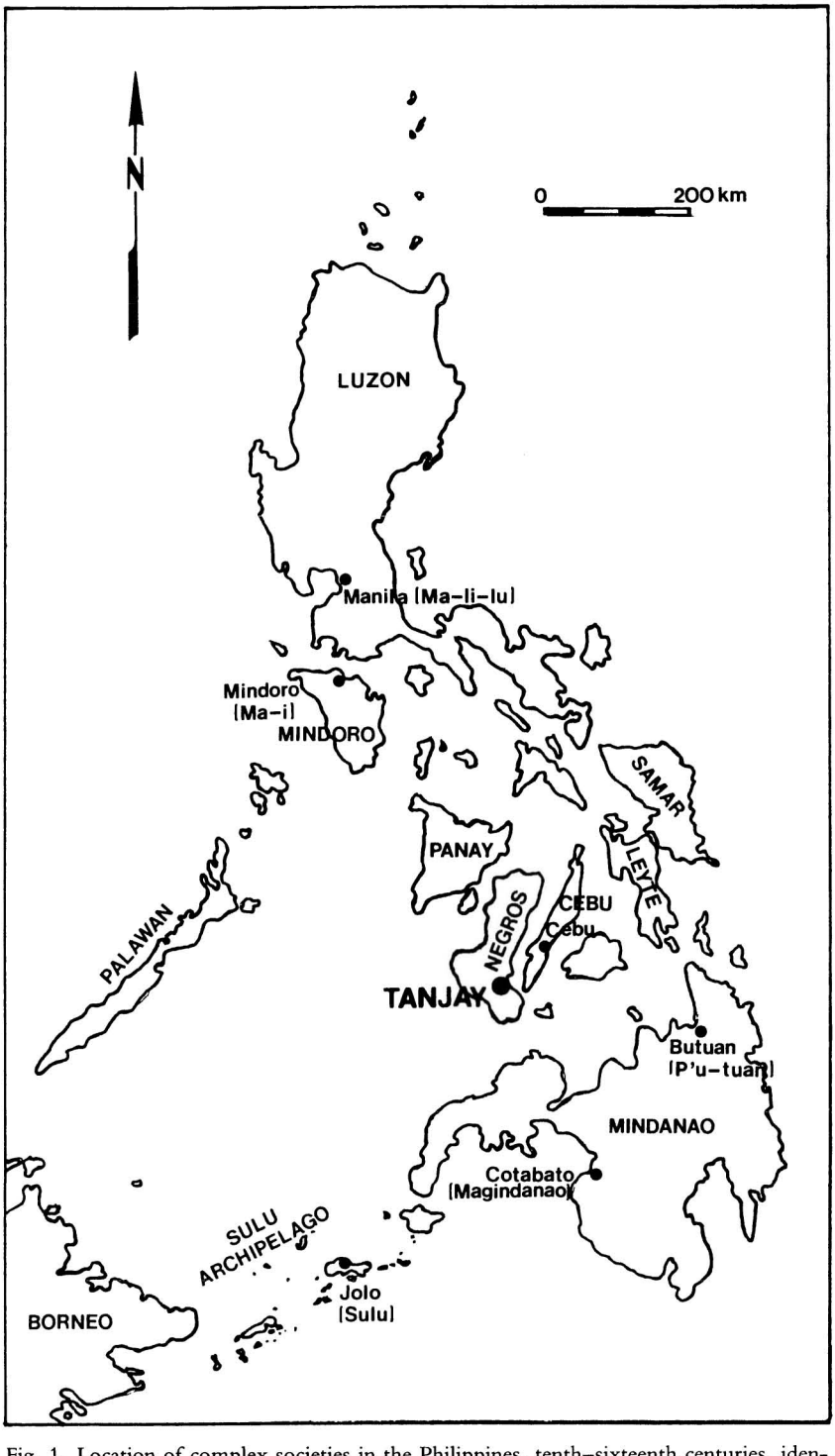

Fig. 1. Location of complex societies in the Philippines, tenth–sixteenth centuries, identified most frequently in Chinese and Spanish texts. Also shown is the location of the small-scale chiefdom at Tanjay, Bais Region, Negros Oriental.

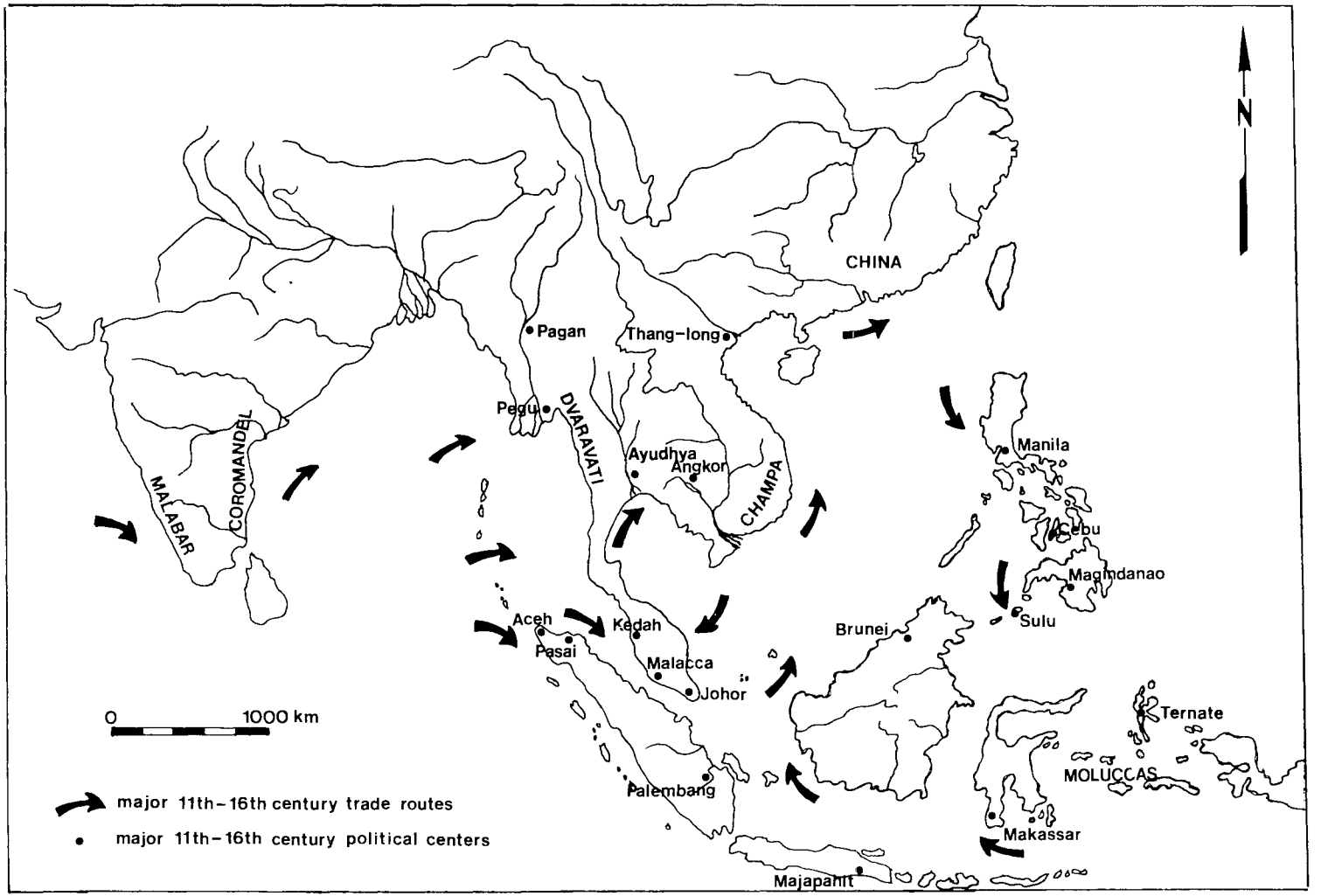

Fig. 2. Major political centers and maritime trade routes in Southeast Asia, eleventh–sixteenth centuries.

symboling" function of these goods in Philippine chiefdoms. They are commonly recorded as bodily ornaments for the elite (Blair and Robertson 1903–1909:2:140, 223; Colin 1660:160–163; Morga 1609:270–271; Pigafetta 1521:46, 50–51, 58, 64; Rodriguez 1565:126). They are also frequently found as accompaniments to high status burials (Blair and Robertson 1903–1909:2:139, 3:199; sixteenth-century Boxer manuscript in Jocano 1975:209, 233; Chirino 1604:134–135; Colin 1604:173; Loarca 1582:88; see also Fox and Legaspi 1977; Legaspi 1974; Locsin and Locsin 1967; Peralta and Salazar 1974). They were present as objects of wealth in the households of the hereditary elite (Blair and Robertson 1903–1909:3:102–103; Cole 1913; Ileto 1971:37–38; Junker et al. 1992; Spoehr 1973:79–102). They are also found in other contexts of competitive rank display. This foreign prestige goods trade is directly linked to internal upland-lowland exchange systems, since the primary exportable goods for Philippine chiefs in the Chinese luxury goods trade were interior forest products, such as metal ore, forest hardwoods, and resins, which had to be obtained through these internal networks of exchange.

Although the historic sources present a rich corpus of data on contact-period complex societies in the Philippines, there has been surprisingly little archaeological research on the political, social, and economic organization of these societies; the nature of their exchange interactions with less complex societies; how these systems developed over time; and their significance for general anthropological discourse on "chiefdoms." As a preliminary attempt to address these issues, extensive regional settlement studies and archaeological excavations have been carried out over the last decade within the 315 km^2 Bais Region of Negros Oriental in the Central Philippines (Fig. 3) (Hutterer 1981; Hutterer and Macdonald 1979, 1982; Junker 1990*a*, 1990*b*, 1991; Junker et al. 1992; Macdonald 1982). The Bais Region was the historically known locus of a small-scale maritime, trade-oriented chiefdom at the time of Spanish contact, centered at the coastal site of Tanjay (Larkin 1978; Legaspi 1565; Martinez Cuesta 1974). Ethnohistoric sources suggest that the region was occupied not only by the politically complex and socially stratified lowland Visayan population, but also, in the sixteenth century, by ethnically and linguistically distinct upland, tribally organized swidden agriculturalists (Bukidnon, Magahat and other groups). Also present were mobile hunter-gatherers (Ata) who were loosely integrated into the political and economic structure of the lowland chiefdom through a complex set of mutually beneficial exchanges (Oracion 1960, 1961, 1964; Rahmann 1973).

Regional settlement survey in both the lowlands and adjacent upland areas, using a combination of probability sampling and full coverage strategies (Hutterer and Macdonald 1979, 1982; Macdonald 1982; Junker 1990*a*, 1990*b*), has been used to chronicle a thousand-year period of complex society development in the Bais lowland. Occupation of the Bais Region has been archaeologically attested to the second millennium B.C. (Hutterer 1982, Junker 1990*a*). Adequate surface settlement data for reconstructing regional settlement patterns, however, exist only for the more recent prehistoric and historic cultural phases: (1) the A.D. 500–1000 *Aguilar Phase*; (2) the 1100–1400 *Santiago Phase*; and (3) the 1400–1600 *Osmena Phase*. Only the Aguilar Phase and Osmena Phase sites yield adequate samples of surface-collected earthenware for statistical comparisons of morphological and technological variability. Thus, the present discussion focuses on the archaeological evidence for Bais lowland sociopolitical organization in these two cultural phases.

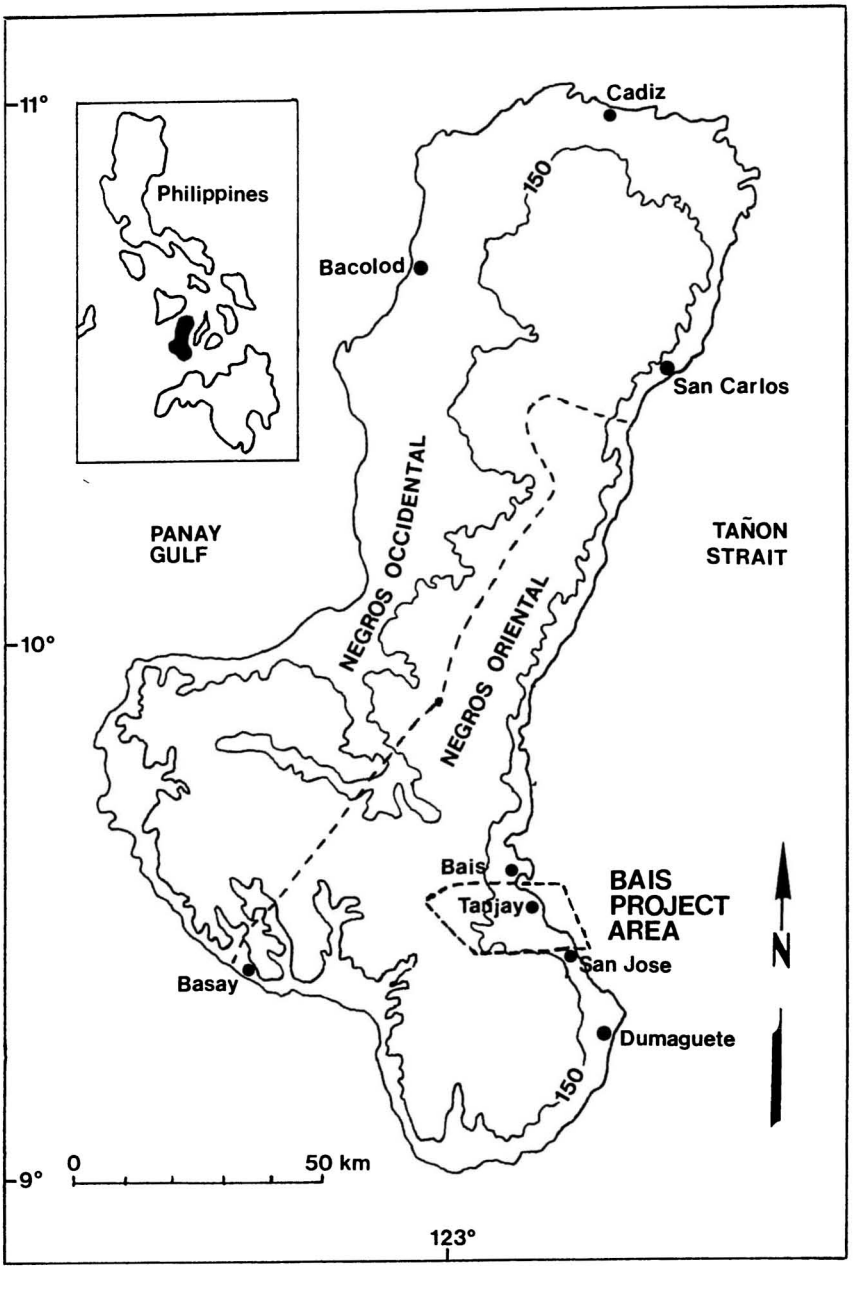

Fig. 3. Location of Bais Region on Negros Oriental in the Central Philippines.

(Readers are referred to Junker [1990*a*, 1990*b*] for a more detailed examination of regional settlement systems over the entire Bais Region sequence.)

As shown in the regional settlement map and site rank-size plot for the earliest Aguilar Phase (Figs. 4, 5), a simple two-level regional settlement hierarchy centered on the coastal site of Tanjay was present in the Bais Region by the late first millennium A.D., before long-distance trade contacts with Mainland Asian states. Extensive archaeological excavations at the 5–7 ha site of Tanjay (Junker 1990*a*, 1992) yielded little direct evidence for the social rank and wealth differentials materially recorded in later phases of occupation at the presumed chiefly center of Tanjay (see below). There is some evidence, however, that locally manufactured prestige goods, including decorated earthenwares and metal objects, were being produced at the site in this period and were flowing differentially to large lowland villages upriver from Tanjay. Regression analysis of locational variables and site size as predictors of the presence of these goods at Aguilar Phase sites demonstrated that the relative position of a site in the regional settlement hierarchy, rather than its distance from the production center, determined luxury goods access on a regional scale (Junker 1990*b*). This consistency of regional distribution patterns of metal and decorated earthenware with restricted-access prestige goods exchange, as well as the comparatively large size of the coastal center at Tanjay, suggests the presence of an emerging complex society in the Bais Region before the tenth century.

The archaeological evidence from the Osmena Phase suggests significant political and economic transformations in the Bais Region polity just before European contact. These changes involved the evolution of a more organizationally complex and territorially expansive chiefdom in conjunction with greater participation in foreign luxury goods trade. The coastal center of Tanjay grew to two or three times its former size and emerged as the focal point of a strongly "primate" dendritic settlement system (Figs. 5, 6). Strong centralized control of the flow of tribute and trade resources from the interior to the coast is suggested by the presence of large upriver secondary centers that were both more numerous and larger than those of the preceding period. Most significantly, these secondary centers are shown through spatial analyses to have been strategically located at regular intervals along the Tanjay River (Junker 1990*a*:842–860; Junker 1991). Regression analyses of the regional distribution of probable prestige goods (including imported Mainland Asian porcelains, decorated and slipped earthenware, and metal goods) show a differential distribution, as in the Aguilar Phase, of these wealth objects to large secondary and tertiary centers upriver from Tanjay, where second-tier chiefs in an expanding political hierarchy may have resided.

Excavations at the chiefly center of Tanjay revealed strong patterns of status-related differences in burial practices, domestic architecture, household wealth, and subsistence in this period. Several large, stockaded chiefly residences were identified from posthole patterns and other archaeological features recovered at the site. They were found to have been furnished with a rich array of both foreign porcelains and locally manufactured status goods (such as decorated and slipped earthenware, metal objects, and paste beads). These "elite" houses contrasted sharply with the small, unstockaded houses recorded in a spatially distinct "nonelite" residential sector of the site. The nonelite houses had statistically significant reductions in both the quality and quantity of household luxury goods (Junker 1990*a*:663–691;

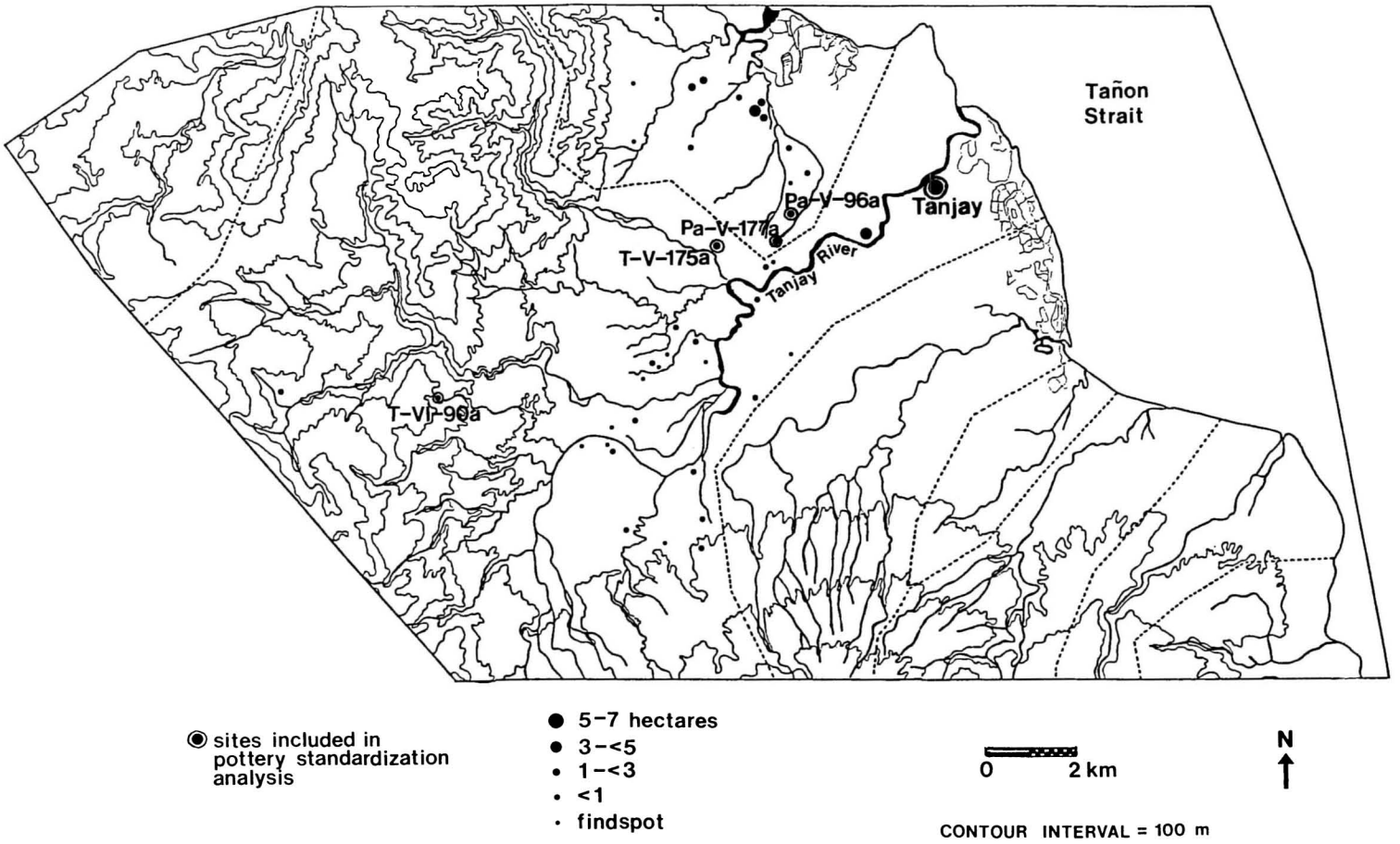

Fig. 4. Settlements recorded in regional surface survey in the Bais Region dated to the Aguilar Phase (A.D. 500–1000). Named and numbered sites yielded earthenware (Aguilar Spotted Buff Ware) included in the pottery standardization analyses.

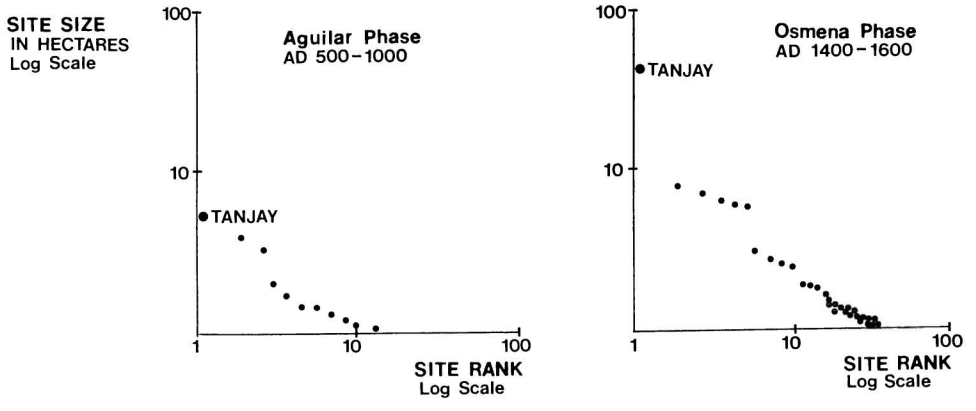

Fig. 5. Rank-size plots of sites for the Aguilar Phase and Osmena Phase recovered in the regional survey for the Bais Region, Negros Oriental, Philippines.

Junker et al. 1992). In addition, an analysis of faunal remains in household midden deposits showed clear differential access to high quality protein sources in the elite residential zone, as well as possible faunal indicators of elite participation in ethnohistorically known "competitive feasting" (Junker et al. 1992). Of relevance to the examination of craft production and distribution systems is the first direct archaeological evidence for iron production (in the form of iron slag) and earthenware pottery production (in the form of baked clay nodules and pottery debris, in association with an extensive burnt area that may represent an open firing zone) in close proximity to the elite residential zone.

The increasing social stratification and political complexity of the Bais Region chiefdom in the fifteenth and sixteenth centuries appear to be linked to participation in long-distance maritime luxury goods trade with China and other Mainland Asian states. This is evidenced archaeologically by a more than twofold increase in the densities of imported porcelains at Tanjay and other Bais Region sites of this period (Junker 1990*a*:558–582, 1991). Significant external competition with other coastal Philippine chiefdoms for control of this expanding foreign luxury goods trade is evidenced at Tanjay in a "mass burial" of beheaded and otherwise violently dispatched people (Junker 1990*a*:585–619), consistent with ethnohistoric reports of massive interpolity coastal raiding in the sixteenth-century Philippines (Chirino 1604:305–308; Morga 1609:82; Pigafetta 1521:68–70; see Junker 1990*a*:182–185).

INTERNAL EXCHANGE SYSTEMS AND THEIR SIGNIFICANCE IN STRATEGIES FOR FOREIGN PRESTIGE GOODS TRADE IN PHILIPPINE CHIEFDOMS

Recent archaeological research in the Bais Region thus suggests that chiefdoms have been part of the Philippine sociopolitical landscape for at least a thousand years before European contact (Junker 1990*a*, 1990*b*). Beginning around the tenth century and intensifying just before Spanish colonization, these chiefdoms became involved in a long-distance prestige goods trade with the Chinese and other Mainland Asian states, and there is evidence for an intensification of competitive interactions between these polities. The Philippines in the early second millennium

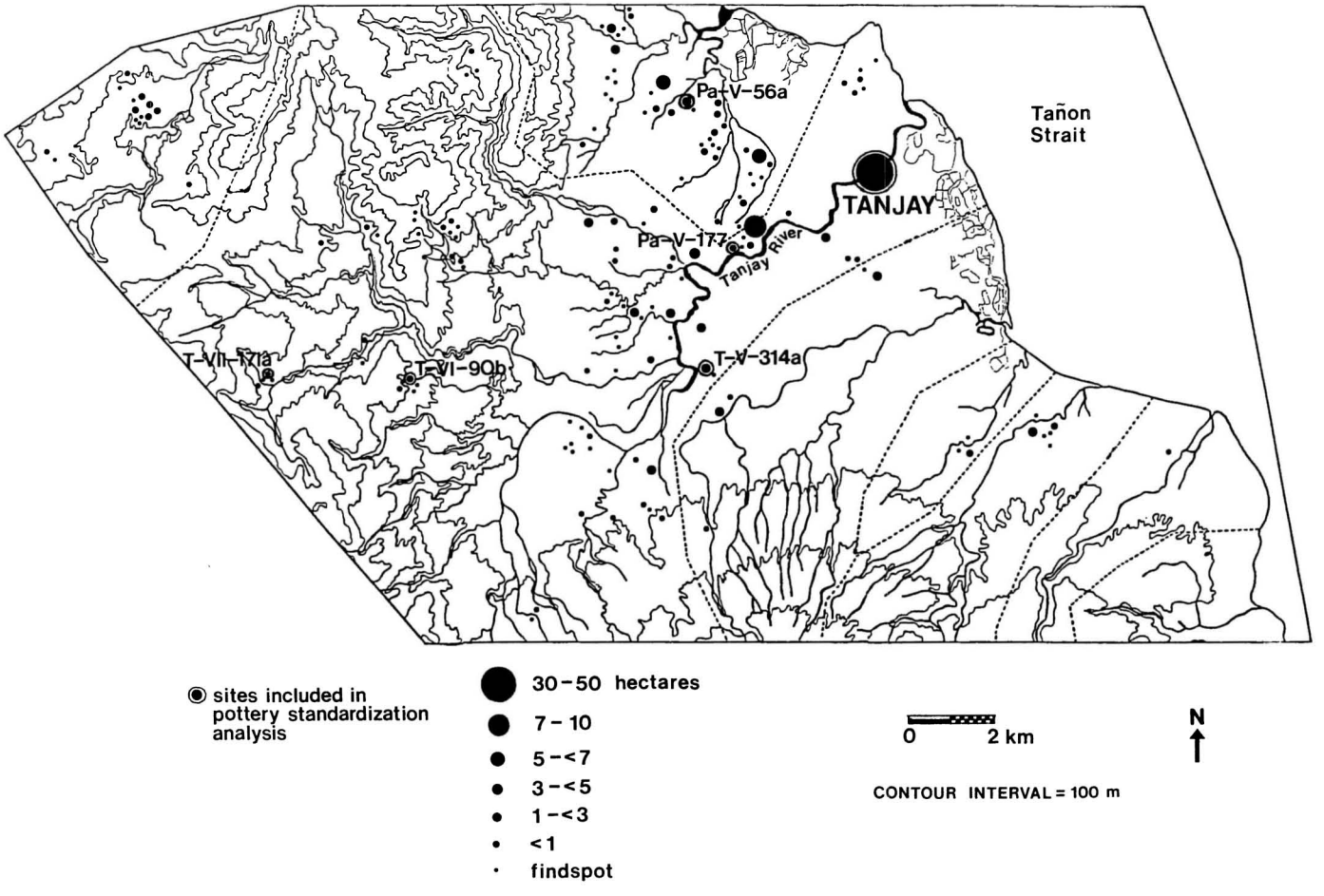

Fig. 6. Settlements recorded in regional surface survey in the Bais Region dated to the Osmena Phase (A.D. 1400–1600). Named and numbered sites yielded earthenware (Tanjay Red Ware) included in the pottery standardization analyses.

appears to have strong parallels with other ethnographically documented and archaeologically recorded chiefly societies engaged in competitive luxury goods exchange involving manipulation and display of exotic symbols already associated with high status and political authority among a foreign elite (Coquery-Vidrovich 1968; Flannery 1968; Frankenstein and Rowlands 1978; Friedman 1975, 1981; Gray and Birmingham 1970; Meillassoux 1971; Wheatley 1975). This trade appears to have been tied to systems of political "finance" through the amassing and circulation of foreign-produced status goods in what Frankenstein and Rowlands (1978) and others have referred to as a prestige goods economy.

On the Chinese side of the long-distance trade equation, Chinese and Spanish records suggest that the foreign traders were primarily interested in obtaining Philippine raw materials, such as tropical hardwoods, gold ore, abaca, beeswax, and pearls. These materials were used in the manufacture of their own luxury goods, culinary delicacies (such as birds' nests, spices, and trepang), and other exotic items that had status-validating functions in their own society (Alvarado 1548:68–69; Artieda 1569:205; Legaspi 1567:238; Maldonado 1575:299; Morga 1609:301; Sande 1576:74, 1577:99; see also Wang 1958; Wheatley 1959). Significantly, many of these desired Philippine exports were *interior forest products*—commodities that the coastal lowland Philippine chiefs did not control directly but had to amass through internal exchange and resource mobilization systems involving ethnically distinct interior tribal societies and/or mobile hunting-gathering bands that were not under the direct political hegemony of the lowland chiefs. This contrasts strongly with other prestige goods exchange systems, such as those of Iron Age Europe (Champion and Champion 1986; Frankenstein and Rowlands 1978; Haselgrove 1982; Wells 1980), where exportable products were concentrated primarily through chiefly tribute mobilization systems that encompassed individuals and groups who were strongly integrated both politically and economically into the chiefly society.

Ethnohistoric and archaeological evidence suggests that the mechanisms and organizational infrastructure for exchanges between ethnically, linguistically, socially, politically, and economically diverse Philippine lowland and upland populations were strongly developed even before participation in the Chinese luxury goods trade. Contact-period Spanish records (Artieda 1573:202; Colin 1660:151; Loarca 1582:115, 121; Sande 1576:68–69; also Keesing 1962:121, 135, 139; and Scott 1982:181–185), early ethnographic accounts (Conklin 1949, 1957:153; Schlegel 1979:105–109), and archaeological evidence for periods even earlier than the second millennium A.D. (Hutterer 1974; Junker 1990*a*) all attest to the operation of "symbiotic" exchange relations between coastal lowland and upland interior populations in many regions of the Philippines. The exchange systems appear to have been related to intraregional ecological diversity and involved the movement of mundane subsistence and household products. These systems of upland-lowland exchange are best illustrated by the Tiruray, a swidden-cultivating tribal population inhabiting the uplands south of the Pulangi River in south central Mindanao, who were loosely integrated into the politically complex lowland Magindanao maritime trading polity in the fourteen–nineteenth centuries through institutionalized trade pacts between lowland *datus* (chiefs) and upland political leaders.

The Tiruray depended on lowland exchange for procurement of critical household goods (including textiles, iron tools, earthenware pottery, and coastal-processed salt) and nondomestic luxury goods (including metal weaponry, brass

boxes, gongs, and metal jewelry) to be used in bridewealth payments, for status display, for warfare, and for ritual purposes. In exchange, forest products collected by the Tiruray were exported to the lowland as critical trade commodities for the Magindanao chieftains to market at the coastal trading port to Sulu middlemen or directly to Chinese merchants, for eventual use as raw materials in the manufacture of Chinese prestige goods. Tiruray settlement mobility and the rugged interior terrain prevented a strategy of lowland military incursion, direct political control of interior populations, and direct access to upland forest products. Instead, the uninterrupted flow of the valuable forest trade commodities from hinterland to coast was assured through the establishment and maintenance of individually contracted, economically beneficial political alliances between particular lowland *datus* and upland district leaders. These relations were formalized through a ritual oath-taking ceremony, which ended with the bestowal of honorific Magindanao political titles on the local Tiruray chieftains. The assignment of "royal" or "chiefly" titles to local leaders and formal recognition of their local sovereignty was a strategy followed by the Sulu state to the west as well as other maritime trading polities of Island Southeast Asia (Gullick 1965:125–127; Hall 1985:1–20, 218–219, 234; Miksic 1984; Wolters 1971:13–14). This was one means of manipulating local symbolic systems to incorporate the concept of prestige and power emanating from the state or chiefly center, creating a fiction of regional political integration from the reality of local autonomy. Similar institutionalized trade alliances between lowland maritime, trade-oriented complex societies and upland swiddeners and hunter-gatherers are recorded ethnohistorically for the Hanunoo with lowland Mindoro chiefdoms (Conklin 1957:153), the Manuvu with the upper valley Magindanao (Manuel 1973:218–219, 343–344), the Tagbanuwa shifting cultivators of Palawan with the coastal "Moro" populations (C. Warren 1977:233, 240; see also Conklin 1949 and Fox 1954). Such alliances may be inferred for upland Tinguian and Apayao with the coastal Ilocos Sur and Ilocos Norte populations (see Keesing 1962:121, 135, 139).

Although the archaeological evidence suggests considerable time depth for this type of symbiotic lowland-upland exchange, I hypothesize that lowland Philippine chiefs would have intensified this upland-lowland exchange with increased participation in maritime prestige goods trade with the Chinese after the tenth century. To compete successfully with adjacent Philippine polities for access to foreign porcelains and other exotic prestige goods, chiefs may have pursued two strategies: the intensification of coastal raiding activities aimed at disrupting the participation of competitors in foreign prestige goods trade, and the reorganization of internal systems of production and networks of exchange to obtain more exportable goods from interior tribal societies.

In previous works (Junker 1990*a*, 1991), I used archaeological data from the Bais Region to demonstrate the operation of *both* of these strategies during the fifteenth and sixteenth centuries, the period of most intense Mainland Asian–Philippine luxury goods trading. A mass grave of the fifteenth or sixteenth century, showing evidence for violent deaths and possible "trophy head" taking at the chiefly center of Tanjay, was used to support ethnohistoric evidence for increased interpolity coastal raiding just before European contact. Analysis of changing regional settlement patterns in the Bais Region from c. A.D. 500 to Spanish contact further demonstrated a shift from relatively "random" spacing of upriver secondary "cen-

ters" in the Aguilar (500–1000) and Santiago (1100–1400) phases to relatively even spacing of these centers along the Tanjay River by the fifteenth–sixteenth centuries. These locational changes were interpreted as reflecting the development of increasingly efficient systems for moving resources between interior and coastal populations, with secondary centers strategically located for greater lowland elite control over this critical interior trade.

THE NATURE OF SPECIALIZATION IN PHILIPPINE CHIEFDOMS: "ATTACHED" VS. "INDEPENDENT" SPECIALISTS

In discussing the role of specialization in the political economies of lowland Philippine chiefdoms, it is necessary to distinguish production modes associated with providing prestige goods to the chiefly elite for political alliance building and direct consumption from the volume production of more mundane goods, such as domestic earthenware, as part of a generally intensified upland-lowland exchange. Early European documents indicate that one of the craft production modes characteristic of Philippine complex societies in the contact period involved what Earle (Brumfiel and Earle 1987; Earle 1987*b*) refers to as "attached specialists." These were specialists working under direct chiefly patronage who engaged in full-time production of politically charged commodities used in chiefly wealth display and alliance building. Although ethnohistoric sources have yielded little information about earthenware pottery production modes in particular, there are numerous references to chiefly sponsorship of goldsmiths, silversmiths, ironsmiths, pearl divers, carpenters, textile manufacturers, and other artisans who produced prestige goods in sixteenth- and seventeenth-century polities, such as Sulu, Magindanao, Manila, and Cebu (Alcina 1688:104; Blair and Robertson 1903–1909:3:102–103; Boxer manuscript, in Jocano 1975:197, 229; Dampier 1697:227; Morga 1609, in Garcia 1979:292–293; see also J. Warren 1982 for a discussion of Sulu craft specialists; Echevarria 1974 and Fenner 1985:18–19 for a discussion of Cebu textile production). That Philippine chiefs provided facilities and material support to specialists, such as metallurgists, in return for exclusive access to their status-conferring goods is supported by early Spanish accounts, such as Miguel Legaspi's late sixteenth-century description of Soliman of Manila's chiefly compound (in Blair and Robertson 1903–1909:3:102–103). Legaspi describes the chiefly house compound, before it was destroyed by the Spanish, as including adjacent workshops within which metallurgists produced copper and iron weaponry in large volume for chiefly consumption and trade.

In the case of the Bais Region chiefdom, full-time attached specialists seem to have worked at Tanjay to produce finely decorated earthenwares and metal objects, at least by the fifteenth–sixteenth centuries. Their presence is inferred from archaeological evidence for metal and ceramic workshops in the chiefly center's elite residential zone. In addition, previous regional artifact distribution studies, discussed above, suggest that these types of goods (identified as probable status goods through their high labor costs and difficult-to-procure raw materials) were moving primarily from the chiefly center at Tanjay to upriver secondary centers, indicating "exclusive" contexts of exchange characteristic of a prestige goods economy.

Here, I am suggesting that Philippine chiefs may have played a key role in full-

time specialist production on another level, involving goods outside the realm of prestige goods exchange. As noted above, both ethnohistoric and archaeological evidence indicate that one of the primary products traditionally moving from Philippine lowland populations to interior tribal groups in exchange for desired forest resources was earthenware pottery manufactured by lowland potters. Before the establishment of a direct link between internal upland-lowland exchange systems and foreign prestige goods trade, lowland chiefs would have had little incentive to involve themselves as central administrators in the mundane production and exchange of domestic goods. This is consistent with recent theoretical and empirical work on the economies of chiefdoms (Earle 1977, 1978, 1987*a*, 1987*b*; Peebles and Kus 1977), which has demonstrated that chiefs rarely function as centralized "managers" coordinating the flow of basic raw materials, household goods, and foodstuffs within ecologically diverse environments (Rathje 1972; Service 1975). Instead, chiefs focus their efforts on the control of prestige goods production and distribution as a material "fund of power." Thus, before the rising significance of interior raw materials as exchangeable wealth in long-distance trade of prestige goods, coastal-interior trade may have involved dispersed household production of manufactured goods like ceramics by part-time lowland specialists and individually contracted reciprocal relations with interior trade partners.

Once control of at least a segment of this coastal-interior trade became critical to lowland Philippine chiefs' participation in long-distance maritime trade of luxury goods with the Chinese and to the expansion of their political economy, a reorganization of regional pottery production systems is likely to have occurred. This restructuring of lowland pottery production modes is hypothesized to have involved the emergence of full-time pottery specialists, a greater degree of regional centralization of production, and a larger role for the chiefly elite in controlling the manufacture and distribution of this important trade commodity. Unlike the production of luxury goods for direct elite consumption, this production of domestic earthenwares is not likely to have involved attached specialists directly supported by the chief. Instead, I suggest that the production system centered on what Earle and others refer to as "independent specialists." These were full-time potters who became concentrated at the chiefly center in response to efficiency considerations in the manufacture of a product whose demand volume had reached a critical level (Brumfiel and Earle 1987:5). Rather than supporting these pottery specialists directly through his exclusive patronage (providing raw materials, facilities, and subsistence support in exchange for exclusive access), the chief provided the demand and exchange contexts favoring large-scale centralized production. Earthenware pottery became a major export product in an exchange system that had evolved from small-scale independent upland-lowland trade to a well-organized trade lattice into the interior, constructed and controlled by lowland chiefs. Through their efforts to expand the geographic reach, intensity of interaction, and organizational efficiency of this lowland-upland trade, and to bring it more directly into their sphere of control, lowland chiefs created the conditions for a transformation in production modes of key intraregional export goods, such as pottery.

Actual exchanges between representatives of the lowland elite and upland tribal populations are thus likely to have involved two material components: prestige goods desired for status display by upland political leaders (manufactured by lowland attached specialists or obtained in foreign trade), and mundane household

products, which upland populations required for daily subsistence activities but could not manufacture themselves (produced by lowland independent specialists). Similar to the ethnohistorically known Magindanao-Tiruray exchange, discussed above, prehispanic lowland chiefs are likely to have coerced the participation of interior groups in these exchanges by presenting upland tribal leaders with prestige goods (such as imported porcelains, metal weaponry, elaborately decorated earthenwares, and fine textiles) and nonmaterial symbols, such as status-conferring titles, within the context of formal exchange partnerships. Trade involving utilitarian goods (such as domestic earthenware, simple textiles, and lowland agricultural products) likely accompanied, and was facilitated by, these politically charged exchanges of valuables between lowland and upland political leaders.

Parallels can be drawn with other geographically extensive, and frequently interethnic, status goods exchange systems, such as the historic Melanesian "*kula* ring" (Brookfield and Hart 1971; Leach 1983; Weiner 1987) and precolonial West African chiefly trade networks (Ekholm 1977; Meillassoux 1971; Rowlands 1987). In the well-known Melanesian interisland trade system, the establishment of vast networks of exchange partners for the circulation of *kula* valuables was not only significant in local status competition, but also created wider social ties for interisland trade in foodstuffs and domestic goods. In addition, as discussed in more detail below, the expanded scale of interaction beyond the local community may have introduced economies of scale. This would have favored the development of regionally specialized production of certain utilitarian goods, such as pottery, even in the absence of significant interisland resource differences. Similarly, in early West African kingdoms, such as the Cameroon, regional specialization and interregional trade in palm oil, salt, pottery, and other utilitarian goods were structured and constrained by networks of prestige goods exchange and social alliance. These networks involved a large sector of the population, but people participated in them differentially according to sociopolitical rank. In both these cases, formalized gift exchanges played a dual role: first, materially symboling social status differences and political power asymmetries between participating individuals; and second, providing the social and ritual milieu for vigorous commerce in mundane household goods between members of "specialist" communities.

While ethnographic attention in the Melanesian case has primarily focused on the manufacture and distribution of objects like shell valuables (the "status" component of *kula* ring exchange), recent archaeological work by Irwin (1983) has demonstrated that significant transformations of domestic goods production accompanied the late prehistoric emergence of long-distance status goods exchange. Through technological studies of pottery "standardization" on Mailu Island (along the western margin of the Melanesian exchange networks), Irwin documented a shift from dispersed, part-time household production of highly heterogeneous ceramics to full-time specialist production of homogeneous ware at a limited number of centers. Most significantly, this transformation of production modes is contemporaneous with the burgeoning of the *kula* maritime exchange system in the last 500 years of western Melanesian history, and it may be linked to the economic efficiencies of centralized production within an expanded network of social interaction.

Similarly, in the European Iron Age, archaeological evidence points to full-time specialist production of iron at a limited number of centers, even though iron ore

was plentiful and iron appears to have been used primarily in the production of utilitarian tools rather than status goods (Geselowitz 1988; Wells 1980). Centralization of iron production may be seen as being at least partially associated with an expanding demand for central and western European iron by Mediterranean states; control of iron production would have been a key factor in Iron Age chiefs' access to Mediterranean luxury goods in a burgeoning long-distance prestige goods trade. This and the preceding cases suggest that long-distance, formalized gift exchange may in some cases provide the expanding interaction system and critical demand levels necessary for greater regional economic specialization.

This is not to say that there is a causal relationship between expanding networks of long-distance prestige goods trade and the emergence of more specialized internal production systems. Rather, the two systems of production and exchange are closely articulated and must be examined in tandem. I do not suggest that the transition to greater sociopolitical complexity, and associated changes in systems of sumptuary goods production, consumption, and exchange, will *in all cases* have a demonstrable impact on domestic goods production and distribution systems. Archaeological studies of the economies of a range of complex societies, including the Aztec empire (Brumfiel 1987), Maya polities (Rice 1987), and Hawaiian chiefdoms (Earle 1987*b*), have shown that full-time specialization in prestige goods production develops rapidly, while part-time household production modes persist in the realm of utilitarian goods. What may be the key factor favoring the transition to specialist production of certain nonstatus goods—in the Philippine case, as well as in those of the European Iron Age chiefdoms and precolonial West African kingdoms—is the extraordinary reliance on long-distance, interethnic trade rather than local production to obtain the wealth necessary for political power building in these societies.

SPECIALIZATION IN PREHISTORIC COMPLEX SOCIETIES: ARCHAEOLOGICAL APPROACHES TO INDENTIFYING PRODUCTION AND DISTRIBUTION MODES

Several ethnographic and archaeological studies have suggested that specialized ceramic production by a limited number of closely associated full-time craftsmen at a single center or at a series of nearby centers generally results in a more homogeneous product, due to the high rate of interaction among potters, an expanded scale and rate of production, and the frequent introduction of standardizing technologies, such as turntables and molds (Balfet 1965; Benco 1986; Feinman et al. 1981; Hagstrum 1985; Irwin 1983; Longacre et al. 1988; Rathje 1975; Renfrew 1973; Rice 1981; Van der Leeuw 1976; Wright 1983). Archaeologists have attempted to measure the degree of standardization involved in the pottery-manufacturing process through analysis of several variables. These include morphological elements, such as vessel rim diameters, thickness, and height, indicative of control over vessel forming (Benco 1986; Longacre et al. 1988; Underhill 1991); elements of decoration or surface finishing indicative of standardized execution (Hagstrum 1985; Wright 1983); and evidence for uniform control over firing, such as paste color and hardness (Irwin 1983; Rice 1981).

Of direct relevance to the issue of full-time specialist ceramic production in complex societies of the Philippines in the contact period is an ethnoarchaeological

study by Longacre, Kvamme, and Kobayashi (1988), in which they examined technological indicators of pottery-manufacturing systems in two contemporary Philippine societies with differing production modes. One of these was the Kalinga, a tribally organized society of intensive rice agriculturalists inhabiting scattered small-scale villages in the mountainous interior of north-central Luzon (Barton 1949; Dozier 1966, 1967). The Kalinga potters, who have been the subject of intensive ethnoarchaeological study for more than a decade (Graves 1981; Longacre 1981; Stark 1991), traditionally engage in household pottery manufacture by part-time producers. The Kalinga artisans were contrasted with a group of full-time specialists who were concentrated in the "neighborhood" of Paradijon in a small city on the Bicol peninsula of southeastern Luzon. These specialist potters mass-produced handmade earthenware for an urban market. In their study, Longacre and his colleagues (1988) analyzed more than 400 contemporary cooking vessels from these two distinct production contexts, predicting that the ceramic products of the full-time specialists from Paradijon should manifest a higher degree of "standardization" than those of the part-time Kalinga potters.

Rim diameters of complete vessels were measured, the coefficient of variation (standard deviation/mean) was calculated for each distinct functional type, and the coefficients were compared for vessels produced by full-time specialists and those manufactured by part-time household potters. A low coefficient of variation (little dispersion around the mean) was interpreted as indicating a comparatively high degree of standardization; conversely, a relatively high coefficient of variation was seen as indicating substantial diversity in vessel forming. Longacre and his colleagues (1988) found that cooking pots manufactured by full-time specialists were indeed significantly more uniform than those produced by part-time household potters (Fig. 7).

Previous geological studies carried out in the Bais Region of Negros Oriental (Schwab 1983) indicated extreme local variation in both clay composition and volcanic sands as potential tempering material. This suggests that not only attributes of vessel forming but also ceramic raw materials should reflect the degree of standardization, and hence the organizational features, of domestic pottery production. Dispersed household production of earthenware should be materially apparent in extreme local variation in the raw material content of archaeologically recovered sherds and in a high level of diversity in morphological indicators, such as rim diameter and sherd thickness. In contrast, "centralized" production by a small number of craftsmen working in close association at a limited number of manufacturing centers should be manifested in a technologically homogeneous and morphologically standardized product.

As discussed above, in order to extract exchangeable resources from interior Philippine populations, the Tanjay chiefs may have reorganized lowland systems of pottery production to include at least some centralized, full-time specialist production of domestic earthenwares focused on the chiefly center and oriented toward providing the interior populations with a steady supply of high quality ceramics in exchange for exportable raw materials. If this is the case, then we would expect to observe a significant increase in the degree of standardization or homogeneity of Osmena Phase (c. A.D. 1400–1600) earthenwares compared to earlier phases of cultural development in the Bais Region. This would indicate volume production at the chiefly center of Tanjay or adjacent sites.

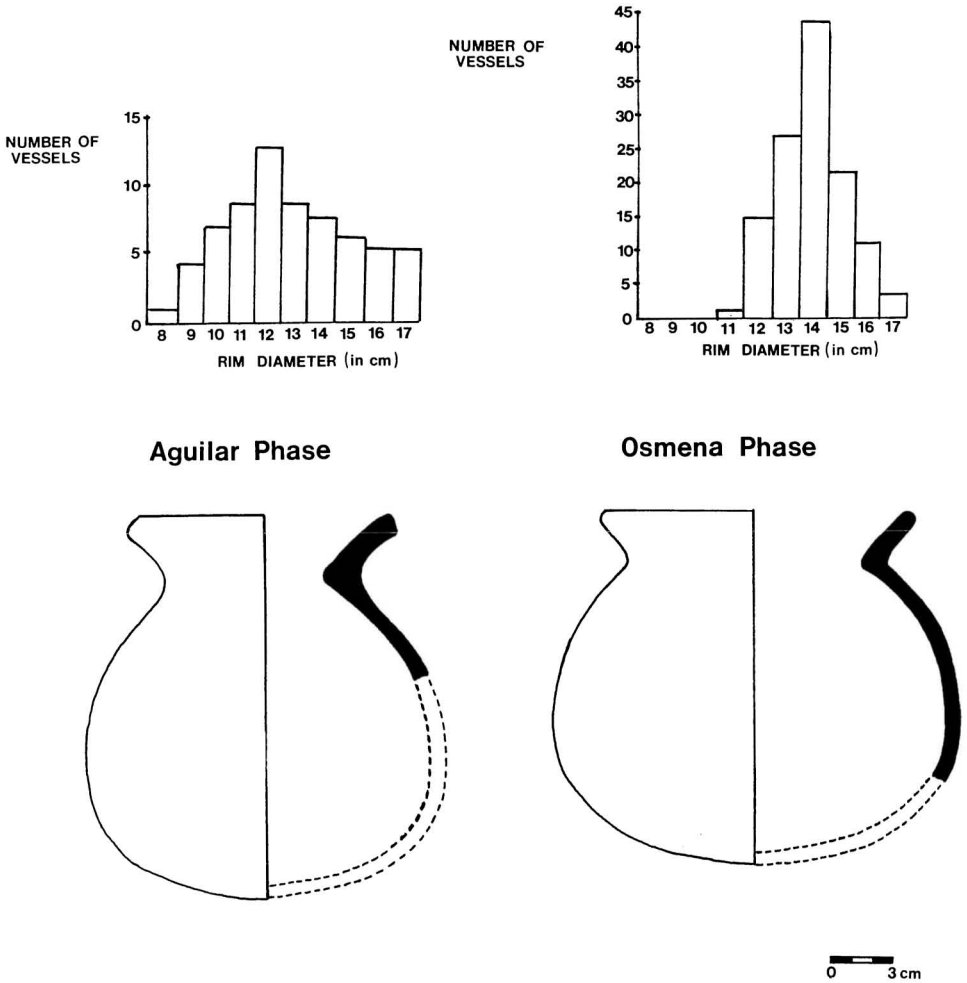

Fig. 7. Morphology of globular vessels from the Aguilar Phase (A.D. 500–1000) and Osmena Phase (A.D. 1400–1600) sites in the Bais Region that were included in the pottery standardization analyses. Also shown are histograms of rim diameter measurements for vessels included in the samples, showing a continuous rather than multimodal distribution.

THE ARCHAEOLOGICAL EVIDENCE FROM THE BAIS REGION: CHANGING POTTERY PRODUCTION STRATEGIES IN THE FIFTEENTH AND SIXTEENTH CENTURIES

Earthenware samples excavated from what appear to be habitation contexts at the site of Tanjay and from surface collections at contemporaneously dated sites in the Bais Region were compared for the Aguilar Phase (A.D. 500–1000) and Osmena Phase to determine whether regionally widespread ceramics for each cultural phase were relatively homogeneous or relatively heterogeneous in terms of selected technological and vessel-form attributes. Because the work of Longacre and colleagues (1988), Benco (1986), and others has shown that the ability to control for functional variation in vessels is particularly critical in assessing standardization in vessel

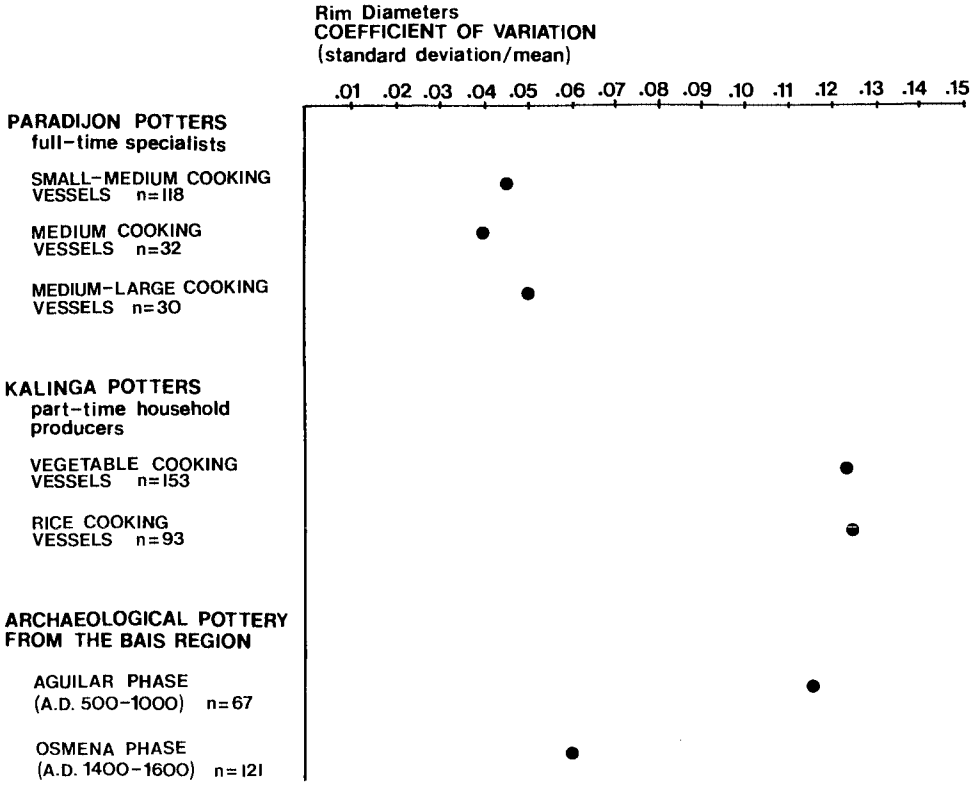

Fig. 8. Comparison of coefficients of variation for rim diameters of samples of Aguilar Phase and Osmena Phase globular cooking pots with contemporary domestic cooking vessels produced by Kalinga and Paradijon potters (analyzed by Longacre et al. 1988).

form, morphological measurements were restricted to vessel rims that were readily identifiable as fragments of common globular, everted-rim cooking pots.

In preliminary attempts to address this issue of changing pottery production modes and standardization in the Bais Region chiefdom, vessels from distinct morphological and functional classes were grouped together in the analysis of the Osmena Phase sample (Junker 1990*a*:719–737). This resulted in a pattern of extreme heterogeneity that was originally interpreted in terms of changing production factors (toward more dispersed household production) rather than diverse vessel size classes and functions. Longacre and colleagues (1988) have emphasized the difficulties of archaeological recognition of size classes and functional types that have cultural meaning in the prehistoric societies under study (that is, as "emic" categories). Lumping together of multiple vessel forms can result in a spuriously high index of variability. In the present analysis, a new Osmena Phase sample was assembled, eliminating any rims associated with vessels outside the "globular cooking pot" category[1] and increasing the general sample size for greater statistical significance. Within this general function and shape class of "globular cooking pot," rim diameter exhibited a unimodal distribution, indicating that the sample is likely to represent a single size category (Fig. 8).

The Aguilar Phase sample used in a previous preliminary study of pottery standardization (Junker 1990*a*:719–737) was also reevaluated in terms of the problems of mixed functional classes and sample size. Unlike the earlier Osmena Phase sample, the Aguilar Phase sample appeared to reliably represent a single functional class of globular cooking vessels with a unimodal size distribution (Fig. 8). While the statistical reliability of the regionwide indices of standardization could be increased by including additional surface-collected sites, *within-site* sample sizes are somewhat low for this period and could not be augmented without subsurface excavation of these Aguilar Phase sites.[2] As noted previously, the Santiago Phase (A.D. 1100–1400) sample was eliminated from the analysis due to generally small pottery sample sizes, leaving a temporal gap for which we do not yet have enough archaeological evidence to assess regional pottery production modes.

The present analysis of technological characteristics of the Bais Region earthenwares focuses on temper rather than paste analysis and is based on microscopic examination with a 20× binocular microscope. A program of thin-sectioning and petrographic studies of samples, geared toward more fine-grained temper and clay composition analysis, has only recently been initiated and is not yet complete. Furthermore, clay sources in the Bais Region have yet to be collected for raw material analysis and clay-sourcing studies. Both these operations should provide significant additional data to strengthen the technological analysis presented here and to further evaluate conclusions about pottery production modes.

In the Aguilar Phase, the earthenware pottery assemblage at Tanjay and other Bais Region sites is dominated by Aguilar Spotted Buff Ware, a buff-colored, rough-textured, unpolished earthenware with coarse-grained quartz temper and characteristic red hematite nodules spotting the surface. Morphological studies have shown that a high percentage of the vessels are simple globular cooking pots with rounded bottoms and undecorated everted rims; such vessels are likely to have functioned as rice-cooking pots in daily domestic contexts (Fig. 8). To address the question of centralized vs. dispersed household production modes, samples of Aguilar Spotted Buff Ware from four geographically dispersed Aguilar Phase sites were compared, in terms of specific technological and morphological characteristics, to a sample of this ware obtained in excavations at Tanjay. Three of the selected sites were located within the lowland zone (below 100 m elevation) of the Bais Region. These were Pa-V-96a, 3.7 km by river from Tanjay; Pa-V-177a, 4.9 km from Tanjay; and T-V-175a, 7.1 km from Tanjay. The fourth site, T-VI-90a, was located in the Bais Region uplands (at 100–200 m elevation) about 21.0 km from Tanjay (the sites are shown in Figure 4). While all of the earthenware from the surface-collected sites was included in the analysis, the Tanjay pottery sample had to be subsampled to create a sample roughly comparable in size to that obtained in the surface collections (a requirement for the application of Student's *t*-test).

The selected attributes, as shown in Table 1, include several technological variables (the amount of temper relative to clay, the amount of quartz in the sand temper, and the size of the quartz grains) and two morphological variables (rim diameter and vessel thickness).[3] Student's *t*-tests were used to determine whether each sample could have been derived from the same underlying "population" as the sample from the hypothetical centralized production center at Tanjay. Coefficients of variation (standard deviation/mean) were used to measure the degree of "disper-

TABLE 1. COMPARISON OF SELECTED TECHNOLOGICAL AND MORPHOLOGICAL VARIABLES FOR SAMPLES OF AGUILAR SPOTTED BUFF WARE RECOVERED IN EXCAVATIONS AT TANJAY AND IN SURFACE COLLECTIONS AT AGUILAR PHASE (C. A.D. 500–1000) SITES IN THE BAIS REGION

	TANJAY	PA-V-96A	PA-V-177A	T-V-175A	T-VI-90A
Distance to Tanjay		3.7 km	4.9 km	7.1 km	21.0 km
Total number of sherds in sample	123	54	60	94	32
Total number of rims in sample	19	12	13	12	11
Ratio of quartz to other temper components	m= 0.70 (s = 0.12)	m= 0.74 (s = 0.14)	m= 0.54 (s = 0.12)	m= 0.64 (s = 0.15)	m= 0.58 (s = 0.16)
T-value		0.85	8.45**	2.25*	2.56*
Coefficient of variation (s/m)	0.17	0.19	0.22	0.23	0.28
Size of quartz grains (mm)	m= 0.02 (s = 0.003)	m= 0.02 (s = 0.004)	m= 0.03 (s = 0.005)	m= 0.03 (s = 0.004)	m= 0.03 (s = 0.002)
T-value		0.346	3.42**	3.73**	4.03**
Coefficient of variation (s/m)	0.15	0.20	0.17	0.13	0.07
Temper percentage	m= 25.4 (s = 3.1)	m= 24.6 (s = 1.7)	m= 14.2 (s = 1.2)	m= 19.8 (s = 0.9)	m= 20.1 (s = 4.5)
T-value		1.89	9.67**	7.64**	2.31*
Coefficient of variation (s/m)	0.12	0.07	0.08	0.05	0.22
Rim diameter (cm)	m= 12.4 (s = 1.0)	m= 11.6 (s = 1.1)	m= 14.9 (s = 1.8)	m= 11.1 (s = 1.5)	m= 14.8 (s = 1.2)
T-value		1.96*	2.98**	1.98*	3.42**
Coefficient of variation (s/m)	0.08	0.09	0.12	0.14	0.08
Vessel thickness	m= 0.61 (s = 0.14)	m= 0.56 (s = 0.16)	m= 0.64 (s = 0.11)	m= 0.72 (s = 0.10)	m= 0.76 (s = 0.04)
T-value		0.55	0.65	2.03*	3.42**
Coefficient of variation (s/m)	0.23	0.29	0.17	0.14	0.05

* *T*-value significant at 0.05 level.
** *T*-value significant at 0.01 level.

sion" of individual vessel values around the assemblage mean *for individual sites* to determine whether each site had relatively homogeneous ceramics and thus might represent the products of geographically distinct production locales. Finally, a coefficient of variation was calculated for the *combined samples from the five sites* to provide a single index of regional ceramic variability that might be compared for the two periods of study (the Aguilar and Osmena phases in the Bais Region) and might also be compared with the ethnoarchaeological results from Longacre's study of part-time household vs. full-time centralized pottery production.

As shown in Table 1, the t-tests comparing the pottery samples from the surface-collected Bais Region sites to the excavated pottery from the coastal regional center at Tanjay suggest that only the Aguilar Spotted Buff Ware from the site nearest to Tanjay (Pa-V-96a, about 3.7 km upriver) is similar enough in terms

of the selected technological and morphological variables to be statistically indistinguishable from the earthenware pottery at Tanjay. The domestic earthenware from the other Bais Region sites dated to the Aguilar Phase varies significantly with regard to pottery-tempering practices, the diameter of the vessel rims, and the thickness of the vessel body. Measurement of the "internal homogeneity" of pottery samples from individual sites using the coefficient of variation indicates that the earthenware vessels from individual sites tend to be relatively similar (that is, they have a comparatively low coefficient of variation), with the exception of the upland site (T-VI-90a). This site has a relatively heterogeneous assemblage of domestic cooking vessels, as shown in a comparatively high coefficient of variation.

Thus, the quantitative data on vessel form and technology for the Aguilar Phase earthenware cooking vessels suggest that there were numerous pottery-manufacturing locales in the Bais Region producing cooking vessels with broad similarities in morphology and raw material, but using measurably distinct tempering and forming conventions. This is consistent with localized production by a large number of part-time specialists manufacturing primarily for household consumption or possibly for consumption within a single settlement or immediately adjacent settlements. The high index of variability in pottery vessels at the sole upland site (T-VI-90a) included in the analysis for this phase may be indicative of the absence of pottery production activities among upland populations (whether tribal swiddening groups or forest hunter-gatherers) who traded for necessary household ceramics with a variety of lowland village producers. A coefficient of variation for the combined five-site sample, as a simple index for regional diversity in the Aguilar Phase pottery, supports this assumption of a relatively high level of regional heterogeneity in both vessel form and tempering practices (Table 1). When the coefficient of variation for rim diameter is compared to Longacre's index for the two groups of ethnographically studied Philippine potters (Fig. 7), the Aguilar Phase index is more consistent with that of the Kalinga part-time household producers than with that of the full-time pottery specialists.

For the Osmena Phase, analysis focused on Tanjay Red Ware, a fine polished red earthenware with occasional incised and impressed decoration. As the most geographically widespread earthenware pottery of the period, the production and distribution of Tanjay Red Ware could be traced on a regional level and compared to the similarly widespread Aguilar Spotted Buff Ware from the earlier period of complex society development in the Bais Region. Again, samples of this earthenware were selected from five geographically widespread Osmena Phase settlements upriver from Tanjay, which were known from surface collections. These included three lowland sites: Pa-V-177a, 4.9 km by river from Tanjay; Pa-V-56a, 6.5 km from Tanjay; and T-V-314a, 9.6 km from Tanjay. Also included were two upland sites, one at 100–200 m elevation (T-VI-90b, 21.1 km from Tanjay) and a second at about 400 m elevation (T-VII-171a, 24.2 km from Tanjay; Fig. 6).

The same technological and morphological variables were used as in the Aguilar Phase analysis (temper percentage, quartz-to-other-temper ratio, size of quartz grains, rim diameter, and vessel thickness), with the addition of variables related to the hornblende component of the temper (Table 2). Restricting the morphological analysis to the inferred general functional category of "globular, everted-rim cooking pots," Student's *t*-test and the coefficient of variation were used once again as

statistical measures of the relative degree of pottery standardization. As shown in Table 2, raw material composition and aspects of vessel forming appear to be remarkably standardized for Tanjay Red Ware regardless of its regional archaeological context. The *t*-tests comparing the earthenware from each individual site to the Tanjay Red Ware excavated at the coastal center of Tanjay showed no statistically significant differences in terms of either technological features (temper percentage and composition) or morphological features (rim diameter and vessel thickness). This was true even for the samples derived from upland sites more than 20 km from Tanjay. An exception was the lowland site Pa-V-56a, which yielded vessels with a coarser quartz sand temper than the other sites of this period. The coefficients of variation were relatively low for within-site comparisons, indicating a comparatively high degree of homogeneity in the earthenware from individual Osmena Phase sites. More significant is the finding that the coefficient of variation for the combined sample of six sites was relatively low for all the variables, showing significantly less variation and more standardization of production techniques in the Osmena Phase pottery than was true for the earlier Aguilar Phase in the Bais Region.

The regionwide coefficient of variation for rim diameters of the Tanjay Red Ware in the Osmena Phase ($s/m = 0.058$) was compared to Longacre's two ethnographic pottery samples. Unlike the earlier Aguilar Phase pottery, the Osmena Phase pottery corresponds more closely to the standardization index recorded for the Bicol town with full-time pottery specialists (Fig. 7). The significantly greater homogeneity of the Osmena Phase earthenware in terms of both technological and morphological attributes may indicate a shift in pottery production and distribution modes in the Bais Region polity by the mid-second millennium A.D. This changing system of production may have involved a shift from primarily localized, part-time household production of domestic earthenware at a large number of geographically dispersed sites to a more centralized production system in which a smaller number of full-time pottery specialists were working out of a limited number of manufacturing centers.

There is at least some archaeological evidence that the large coastal settlement of Tanjay may have been one such regional production center. Excavations of habitation areas dated to the fifteenth–sixteenth centuries have yielded evidence for both pottery and metal production at the site. At least some of the Tanjay Red Ware production was intended for trade into upland zones as well as for local consumption, according to the regional distribution of this pottery as mapped at Osmena Phase surface-collected sites. As shown in Figure 9, Tanjay Red Ware is found in significant quantities at upland sites of the fifteenth–sixteenth centuries up to 30 km from Tanjay. Thus, it was likely an important component of lowland export strategies in this period.

CONCLUSIONS: CHANGING PATTERNS OF PREHISTORIC POTTERY PRODUCTION AND COMPETITION FOR FOREIGN PRESTIGE GOODS TRADE

Archaeological evidence from the Bais Region of Negros Oriental in the Central Philippines demonstrates that complex societies have been part of the Philippine cultural mosaic since at least the late first millennium A.D. Both archaeological and ethnohistoric sources suggest that these chiefdoms were characterized by a

TABLE 2. COMPARISON OF SELECTED TECHNOLOGICAL AND MORPHOLOGICAL VARIABLES FOR SAMPLES OF TANJAY RED WARE RECOVERED IN EXCAVATIONS AT TANJAY AND IN SURFACE COLLECTIONS AT OSMENA PHASE (C. A.D. 1400–1600) SITES IN THE BAIS REGION

	TANJAY	PA-V-177A	PA-V-56A	T-V-314A	T-VI-90B	T-VII-171A
Distance to Tanjay		4.9 km	6.5 km	9.6 km	21.1 km	24.2 km
Total number of sherds in sample	225	272	136	55	48	56
Total number of rims in sample	34	26	18	14	12	17
Ratio of quartz to other temper components	m= 0.21 (s = 0.05)	m= 0.19 (s = 0.03)	m= 0.33 (s = 0.04)	m= 0.20 (s = 0.03)	m= 0.03 (s = 0.03)	m= 0.21 (s = 0.02)
T-value		0.72	2.85**	0.43	1.12	0.34
Coefficient of variation (s/m)	0.24	0.16	0.12	0.15	0.14	0.10
Size of quartz grains (mm)	m= 0.28 (s = 0.06)	m= 0.25 (s = 0.03)	m= 0.44 (s = 0.07)	m= 0.26 (s = 0.03)	m= 0.26 (s = 0.02)	m= 0.25 (s = 0.03)
T-value		1.34	4.58**	0.65	0.94	1.12
Coefficient of variation (s/m)	0.21	0.12	0.16	0.12	0.08	0.12
Ratio of Hornblende to other temper components	m= 0.51 (s = 0.06)	m= 0.53 (s = 0.04)	m= 0.48 (s = 0.06)	m= 0.50 (s = 0.04)	m= 0.52 (s = 0.03)	m= 0.48 (s = 0.05)
T-value		1.56	1.43	0.93	0.98	1.34
Coefficient of variation (s/m)	0.12	0.08	0.13	0.08	0.06	0.10
Size of hornblende grains (mm)	m= 0.26 (s = 0.06)	m= 0.25 (s = 0.05)	m= 0.23 (s = 0.04)	m= 0.24 (s = 0.04)	m= 0.25 (s = 0.04)	m= 0.27 (s = 0.03)
T-value		0.65	1.32	1.43	0.93	1.12
Coefficient of variation (s/m)	0.23	0.20	0.17	0.17	0.16	0.11
Temper percentage	m= 14.5 (s = 2.4)	m= 13.9 (s = 0.9)	m= 14.2 (s = 1.3)	m= 14.2 (s = 1.0)	m= 15.3 (s = 2.2)	m= 14.3 (s = 2.2)

T-value		0.93	0.64	0.69	1.03	0.34
Coefficient of variation (s/m)	0.17	0.06	0.09	0.07	0.14	0.15
Rim diameter (cm)	m= 13.9 (s = 0.7)	m= 14.2 (s = 0.9)	m= 13.9 (s = 1.0)	m= 13.8 (s = 0.04)	m= 14.0 (s = 0.8)	m= 14.0 (s = 0.5)
T-value		0.49	0.24	0.64	0.34	0.43
Coefficient of variation (s/m)	0.05	0.06	0.07	0.03	0.06	0.04
Vessel thickness (cm)	m= 0.69 (s = 0.11)	m= 0.70 (s = 0.09)	m= 0.67 (s = 0.05)	m= 0.65 (s = 0.10)	m= 0.65 (s = 0.06)	m= 0.54) (s = 0.08)
T-value		0.42	0.74	0.93	1.23	2.34*
Coefficient of variation (s/m)	0.16	0.13	0.07	0.15	0.09	0.15

* *T*-value significant at 0.05 level.
** *T*-value significant at 0.01 level.

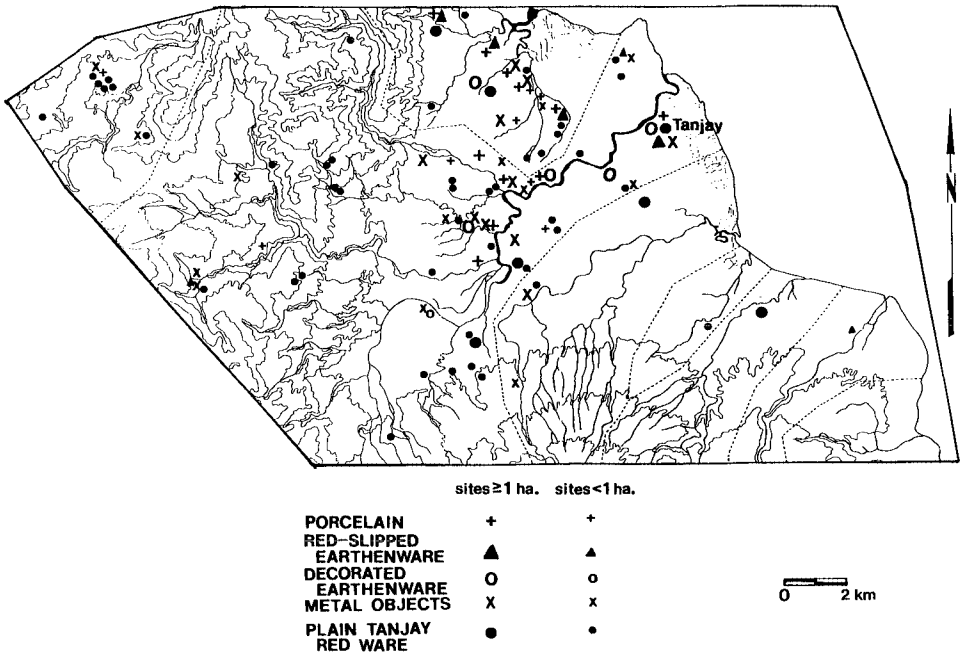

Fig. 9. Distribution of prestige goods and lowland-manufactured earthenware in the Bais Region during the Osmena Phase (A.D. 1400–1600).

complex series of interlinked exchange systems involving tribute mobilization (redistributive exchange) among lowland agriculturalists under direct political hegemony of the coastal chief; alliance-structured reciprocal exchanges of raw materials and subsistence goods between ethnically and linguistically distinct lowland complex societies and upland tribal societies; and elite prestige goods exchanges between chiefs of adjacent island polities. Both archaeological and ethnohistoric data show that by the tenth century Philippine chiefs had expanded the scope and material content of their prestige goods exchange system to include trade for foreign luxury goods, particularly Chinese porcelains. Chiefly participation in this long-distance luxury goods trade before the fifteenth century may not have had an immediate impact on internal exchange systems due to its relatively small volume and limited role in wealth production systems that were still oriented primarily toward consumption of locally manufactured status goods. However, the archaeologically and ethnohistorically documented intensification of this foreign prestige goods exchange and increasing interpolity competition for favored trade status in the fifteenth–sixteenth centuries may have required a reorganization of internal systems for amassing exportable resources.

Specifically, lowland chiefs are hypothesized to have seized a central role in the lowland-upland exchange systems, ensuring the coastward flow of exportable metal ores and forest products through alliances with upland political leaders, cemented by status goods exchange; through the strategic location of upriver collection centers; and through control of certain lowland exports, such as ceramics. Previous research on settlement patterns in the Bais Region has shown the emer-

gence of a more efficient "central place" patterning of upriver secondary centers in the fifteenth–sixteenth centuries, while distribution studies show that lowland status goods were increasingly part of lowland-upland trade systems in this period (Junker 1991).

In this study, I have attempted to trace the hypothesized transformation from dispersed household production of exportable lowland ceramics to centralized full-time specialization concentrated at the coastal chiefly center—a change in production modes that may be associated with attempts by lowland chiefs in this period to expand their control over lowland-upland trade. The ceramic analyses I have made *do* suggest a shift from dispersed household production of a diverse range of pottery in the Aguilar Phase to production of a highly standardized ware by the Osmena Phase, probably involving a limited number of specialists whose workshops were centered in and around the coastal settlement of Tanjay. Additional research still needs to be undertaken, particularly filling the data gap for the poorly documented period from the eleventh to the fourteenth century and applying more refined techniques to the critical raw material analysis. Still, the archaeological research in the Bais Region outlined here suggests some of the ways in which internal production and exchange systems in immediately precontact Philippine chiefdoms were affected by greater participation in external prestige goods trade. In addition, this analysis of the link between internal chiefly mobilization strategies and foreign trade presents the Philippine data as an additional case study for developing anthropological theory on the organization and functioning of prestige goods economies in complex societies.

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NOTES

1. Morphological analysis of the Bais Region pottery (including more than 1100 rims from more than 160 surface-collected sites dated between A.D. 500 and the post–sixteenth-century historic period,

and more than 800 rims from excavations at the coastal center at Tanjay) resulted in the identification of four general morphological/functional categories of earthenware pottery present in the Aguilar and Osmena phases: (1) everted-rim, constricted-neck, round-bottomed globular vessels, identified as probable cooking pots; (2) shallow everted-rim plates and bowls; (3) inverted-rim cups or bowls; and (4) large straight-walled vessels, possibly pottery stoves or funerary containers. The first category of vessels was included in this analysis.

2. All of the pottery included in the morphological and technological analyses was obtained through surface collections at selected sites, carried out as part of the general 1982 Bais Project regional survey. While excavations at several "secondary centers" upriver from the primary coastal center of Tanjay are planned for the future, at present there is no subsurface material available from these sites. Surface collections involved 100 percent sampling; that is, we collected all artifactual material that was visible on the surface, recorded exact two-dimensional coordinates, and constructed artifact density maps for each site. Until subsurface excavations are carried out, it is impossible to determine whether the surface materials accurately reflect subsurface assemblages. However, a comparison of surface and subsurface artifact assemblages and their spatial distributions at several Bais Region sites excavated in 1981 (the Turco and Sycip sites) indicates a strong correspondence between subsurface and surface remains in terms of both assemblage composition and the horizontal patterning of artifacts (Junker 1990*a*).
3. The technological variables were measured using a variety of methods that could be implemented in the field in the absence of more detailed materials analysis. The temper-clay ratio (temper percentage) and relative amount of quartz in the temper were estimated to the nearest 0.05 using a 20× gridded binocular microscope and a visual geological grain estimation chart (generally used by geologists to estimate the percentage contribution of various sediment components). The average size of various temper components was measured by using the microscope grid and taking the average of 10 temper grain measurements. Thin sections and petrographic analysis will be required for analyses of the clay component of the pottery, as well as to confirm patterns of temper variability observed with the binocular microscope.

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ABSTRACT

Archaeological evidence is used to examine changes in the organization of earthenware pottery production in lowland Philippine chiefdoms between the late first millennium A.D. and the time of European contact, and specifically how these internal production systems are related to chiefly strategies for enhanced participation in a growing foreign prestige goods trade. Ethnohistoric data are used to show that chiefly control of upland-lowland exchange systems involving ceramics and other lowland-manufactured goods became essential to obtaining interior resources for export to foreign traders. Key issues are the organization of lowland pottery production and the role of the lowland chiefly elite in facilitating specialist production. These aspects of Philippine chiefly economies are examined using regional archaeological data from one such coastal chiefdom centered in the Bais Region of Negros Oriental from A.D. 500 to the time of Spanish contact. Technological and morphological analyses of earthenware from Bais Region sites of the sixth–tenth centuries and fifteenth–sixteenth centuries A.D. indicate increasing standardization in lowland-manufactured pottery over time. This is interpreted in terms of a transition from part-time household production to full-time specialization concentrated at the coastal chiefly center of Tanjay and geared toward high volume production for expanded lowland-upland trade. KEYWORDS: Philippines, chiefdoms, specialization, trade, pottery.