Ann Rev Anthropol 1987 16 279–308

CHIEFDOMS IN ARCHAEOLOGICAL AND ETHNOHISTORICAL PERSPECTIVE

Timothy K Earle

Department of Anthropology, University of California, Los Angeles, California 90024

The term chiefdom is used to characterize social complexity in stateless societies Despite pointed criticism of evolutionary typologies, the chiefdom and related formulations provide a framework for comparative studies of evolution aimed at understanding the development of central decision-making hierarchies and social inequalities Over the past 10 years, our understanding of chiefdoms has fundamentally changed as a result of substantial historical and archaeological studies Research has shifted away from schemes to classify societies as chiefdoms or not, towards considerations of the causes of the observed variability As the details of analysis have sharpened, the basic concerns with economy and adaptation have broadened to consider political and ideological matters This review seeks to capture an emerging consensus on the nature of chiefly societies and the causes of their evolution

CHIEFDOM AS AN EVOLUTIONARY TYPE

Chiefdoms are intermediate-level societies, providing an evolutionary bridge between acephalous societies and bureaucratic states (114) As the term is presently used, most view chiefdoms as political entities that organize regional populations in the thousands or tens of thousands (2) This organization is provided by a centralized hierarchy of leaders set off from the rest of the population Sociopolitical differentiation creates certain dynamics of competition, management, and control that underlie the eventual evolution of the state (23, 55, 84)

0084-6570/87/1015-0279$02 00

The original conception of chiefdoms and its historical development are discussed in recent reviews (23, 64, 212). Feinman & Neitzel (64) summarize the different formulations of intermediate-level societies and show how they relate to each other. The chiefdom type is considered quite variable and is subdivided by different schemes—theocratic, militaristic, and tropical forest chiefdoms (221), group oriented and individualizing chiefdoms (179), stratified and ranked societies (82, 196), paramountcies, ranked, and nonranked chieftains (228), and simple and complex chiefdoms (23, 55, 214, 243). Within Polynesia, Sahlins (191) recognized four levels of stratification, and Goldman (90) associated similar groupings with structural changes in status rivalry. The plethora of schemes would appear to confuse our present understanding (64).

Devastating criticism of the original formulation of chiefdom has made it something of a "dirty word" (71, 212). Part of the dissatisfaction stems from its place in the evolutionary typologies of the 1960s. Now many scholars assert that such typologies obscure both the variation within the types and the evolutionary changes between them, instead of classification we are exhorted to study process by investigating the relationships between variables broken down into specific dimensions of variability (9, 34, 51, 64, 133, 137, 141, 163, 164, 208, 234). Attempts to classify societies into the evolutionary types based on the diagnostic traits of the 1960s, sometimes called "check-list archaeology" (126), is seen as unproductive.

Along similar lines, the implied notion of progress through a unilinear sequence of stages is criticized as an outmoded version of 19th century evolutionism, without an adequate selective mechanism for change (51, 185, 238). The need is rather for specific studies of culture change and adaptive radiation (71, 121).

One would seem ready to conclude that the chiefdom and all evolutionary typologies have outlived their usefulness and should be jettisoned. But though the term chiefdom has lost favor, the concept is often retained with little more than a change of names (212). An evolutionary typology appears necessary to control for cross-cultural comparisons, and the type chiefdom is useful to define societies of generally similar scale and organization. Because societies at different scales confront different organizational problems and possess different properties and dynamics, such typologies are fundamental to selecting appropriate cases for comparison (244). Similarly, analogies used in archaeological interpretation must be evaluated for fit along several dimensions of similarities; comparability in evolutionary level would certainly be one of these dimensions.

In defense of the chiefdom, typology can be seen as fundamental to scientific inquiry; appropriateness of a typology can only be measured by the precision required in a particular study (212). In an early cross-cultural study

of stateless societies. Cohen & Schlegel (32) differentiated chiefdom-level societies on the basis of various traits Within chiefdoms significant patterning is evident in the cross-cultural work (47, 64, 234)

A final point of concern on the utility of the chiefdom concept centers on the relative importance of qualitative vs quantitative change The original chiefdom type as conceived by Service was certainly qualitatively different from tribes and states in its institutions and structuring principles Much of the attack on chiefdoms, however, stresses the need for continuous scales, as discussed above The most recent cross-cultural synthesis argues for continuous change (114)

Others instead see major qualitative change with the creation of new levels of decision-making (69) Within an organizational system, stresses build up quantitatively until they overwhelm the decision-making apparatus, at this point the system may collapse or develop a new decision-making level This position of quantitative into qualitative change is now broadly accepted (21, 34, 115, 212, 242) This implies a punctuated rather than a gradualist conception of cultural evolution

The very nature of selection may change with the evolution of chiefdoms In egalitarian societies, selection takes place at the individual and community level (162), in chiefdoms, since a broad intervillage political system has been created, selection may shift to this new level of integration (51, 212) The new scale of integration effected the competitive exclusion of simpler societies, chiefdoms may thus be rapidly selected for as they expand by exclusion and incorporation (22)

IMPORTANT AREA STUDIES FOR CHIEFDOMS

Service (199, 200) describes the world-wide distribution of chiefdoms Areas that dominated discussions include Polynesia, circum-Caribbean, American Southeast, and Europe

Oceania

The concept of chiefdom originally relied substantially on Polynesia (191, 192, 199) Polynesia with its rich historical and archaeological materials has continued its importance with recent syntheses (35, 90, 113, 121) and case studies (34, 55, 92, 108, 109, 113, 123, 124, 224) This work has been influential in our reinterpretation of the role of demography (33, 34, 35, 121), intensification with irrigation (56, 119, 121), redistribution (54), status rivalry (55, 90, 121), prestige goods exchange (83, 122), and ideology (58, 160) The work in Polynesia still leads our understanding of chiefdoms, although increasingly the uniqueness of the Polynesian material is mentioned Recently Polynesian studies use archaeology to investigate long-term culture change (34, 121, 219)

In Micronesia, comparable work includes cross-cultural comparisons of the relationships between population, polity size, and social complexity (35, 36), and studies of competition (94, 140) and exchange as a response to high risk in the subsistence economy (1, 111)

In Melanesia, studies of leadership and incipient chiefdoms provide critical evidence for the continuity between Big-Man systems and chiefdoms (43, 136) Sahlins (192) used Melanesian ethnography in contrast to Polynesia to create his ideal types Big-Man systems were said to be highly competitive, charismatic leaders achieve leadership through calculated manipulation of interpersonal relationships, thus creating a highly dynamic political landscape In contrast, chiefdoms were said to be structured political systems in which an individual's rank is ascribed by his genealogical position A person comes to power by ascending to the proper office accorded his rank As has been shown for both Polynesia and Melanesia, ascribed and achieved statuses are never alternatives (43) Rather in Melanesia, rules of succession clearly exist (43), and in Polynesia competition for office was characteristic of many cases (90, 224) Terrell's (229) analysis of the spatial organization of Big-Man systems shows a definite settlement pattern hierarchy. a pattern generally thought to indicate political centrality

Work on exchange in Melanesia also has been extensive The tie between exchange and emerging inequality is discussed for the Trobriands (19, 57). equally important are the conditions under which extensive exchange does not result in inequality (2, 112) Spriggs (213) discusses Friedman's (83) model of prestige goods exchanges as it relates to island chiefdoms in Melanesia

Circum-Caribbean and Lowland Amazonia

The circum-Caribbean chiefdoms provide case material of extensive interpolity contacts that existed over a broad arena Work includes historical (41, 99, 100, 102) and archaeological studies (37, 46, 137, 210)

The work of Helms (99) on Panamanian chiefdoms has been particularly influential Noting that many chiefdoms were involved in long-distance exchange of special objects, she argues that chiefs competed for esoteric knowledge derived from afar Access to such special goods documents foreign relations that search out this knowledge of supernatural powers

Using historical material from Colombia. Carneiro (24) has elaborated his earlier argument with respect to the role of warfare in the evolution of chiefdoms (21, 22) Evidence for warfare is well documented (46, 137, 186)

Another question of considerable interest is whether the poverty of tropical forest soils limits the development of complex society (143) Along the Amazon and Orinoco rivers, the chiefdoms were originally thought to result from immigration into the region by already complex societies, however, chiefdoms apparently developed here following the introduction of maize agriculture and a shift to intensive farming of the alluvial soils (186)

Within Central America considerable variation exists in the level of sociopolitical development Several studies evaluate the evolutionary status of these societies For the Miskito, kingship is said to result from the middleman role played for the British by existing chiefs (41) These chiefs ("kings") were hereditary, a major criterion of Sahlins's chiefdom, and adopted the term king from the British These "kings" can perhaps better be seen as a political myth used to legitimize weak leadership (102), no evidence for offices with real power exists to substantiate the titles The Miskito were more likely organized by rivalrous Big Men, a conclusion that fits well with the small scale of their polities The role of borrowed terminology to legitimize political position is critical to recognize in historical studies

Archaeologically, a recent, sophisticated trait list is used to differentiate chiefdoms and tribal systems in two regions—Central Panama and the Gulf of Nicoya (37)

North America

Historic and prehistoric cultures of North America provide a wide range in social complexity which is ideal for studies of chiefdoms Both historical and ethnographic materials have been used in recent cross-cultural work (64, 234)

The main work on chiefdoms has focused on the archaeological evidence of Mississippian societies, recently reviewed (209, 217) Little doubt exists that these are chiefdoms, although they exhibit important variability in time and space Most relevant work has dealt with settlement pattern and burial information The settlement data from several large projects are rich for studying variation in population density, settlement hierarchy, and population aggregation (4, 129, 147, 149, 207) The settlement hierarchy is clearly distinguished by one to three levels of central places recognized by size, population, and investment in monumental construction At times of maximal regional integration, much of the population resided in scattered hamlets (151, 158), with a breakdown in the integration, population aggregated into defensive settlements (149) Steponaitis (214) analyzed the distribution of settlements around the impressive center of Moundville to illustrate how settlement placement may be a response to the energetics of tribute collection

Burial pattern data have also been used to study status differentiation in Mississippian Society Ranking at Moundville was based on the differential distribution of special objects, high-status burials were restricted to the immediate vicinity of the site's mounds (157, 159) Brown (16) contrasts the rigid status system seen in the burial practice of Spiro-Phase Caddon with the more open systems of the Harland-Phase Caddon

Stylistically, Mississippian Culture is associated with the Southern Cult, a unifying elite iconography manipulated by a emerging ruling sector (15) Over considerable distances, similar styles link up the status-defining artifacts

of interacting polities, although considerable variability exists locally in the expression of this set of special artifacts (153) Chiefly polities appear to have created broad provinces of peer-polity interaction (42)

An analogous pan-regional pattern of interaction existed earlier during the Hopewellian period Struever & Houart (222) analyze the Hopewellian interaction sphere as involving "regional transaction centers" with substantial mound groups Elites at these centers are seen as acting as redistributors of prestige goods that included objects of native copper, galena, meteoric iron, obsidian, and mica Although the settlement hierarchy, planned layout of centers, and the central flow of prestige objects would seem to suggest a chiefdom organization, Ford (76) argues for a lineage-based society with Big Men "manipulating nonessential economic resources for influence and power in keeping with their kinship responsibilities " Thus ended serious consideration of Hopewell as comprising chiefdoms (see 209) I feel that this assessment deserves reconsideration However, a recent analysis of Hopewellian interaction spheres interprets the society as basically egalitarian, increased subsistence risk made broad-scale interaction necessary to buffer the population (14) Following a revised adaptationist stance, "the stylistic standardization [of Hopewell] and imitations arose as part of the development of structure and symbolic redundancy in exchange relationships" (14) Burial data indicate a status gradient related to dynamic access to status positions (16)

Evidence from the site of Poverty Point might push the beginnings of chiefdoms in the Southeast back to 1500 BC (86), although this conclusion is not generally accepted (116) Evidence includes a settlement hierarchy, organized labor in mound construction, and specialization and exchange in special objects

While never explicit, reluctance to accept the complexity of Poverty Point may stem in part from its subsistence base on wild resources, but a reevaluation of complexity among hunter-gatherers is under way (146, 171, 231) For some time the fishers of the northwest coast have been recognized as having a ranked society, however, the lack of regional organization (50) makes many reserved in calling them chiefdoms (114, 218) Within groups, social hierarchies were carefully measured and evaluated according to genealogy, wealth, and prestige In part the social differentiation depended on control over social exchanges of wealth within and between communities (8) Other elements in social differentiation appear tied to ownership of capital technologies that include fish weirs and drying racks used in the intensive exploitation of anadromous fishes (114), and perhaps to the ownership of slaves obtained in war (190) The potlatch and the associated prestige economy have frequently been linked to management of a risky subsistence economy (3, 114, 156, 223) Other cases of social complexity among hunter-gatherers have been discussed for North America (97, 118)

The evolution of social complexity has received considerable attention in the American Southwest Ethnographically these cultures have been viewed as egalitarian, however, recent archaeology disputes this characterization Between AD 900 and 1200, Chaco Canyon became the center of a complex chiefdom characterized by large multistory pueblos, central ceremonial complexes, irrigation, and an extensive road system (117) In addition to the justly famous roads that document a regional organization, evidence for the complicated problem of labor organization in large pueblo construction has been described, for example, thousands of large trees were felled for beams and moved over 75 km in short-term construction episodes at Chetro Ketl (6) During the 14th century, aggregation of population into large settlements such as in the Chavez Pass appears to be associated with the development of social ranking and regional organization (232, 233) Recently this interpretation of social complexity in the Southwest has been questioned (110)

The chiefdom concept has recently been used to interpret the sociopolitical organization of early 17th century Iroquois (156a)

Europe

From the Neolithic up to the expansion of the Roman Empire, much of Europe was organized at a chiefdom level (177–180, 203) This allows anthropologists to view the dynamics of chiefdoms over several thousand years with different economies, patterns of regional interaction, and ideologies

Some of the earliest archaeological work on chiefdoms dealt with the megalithic cultures of Europe (177–79) The monuments themselves, such as the British henges (178), indicate considerable central direction of labor The monuments were often laid out along lunar and solar alignments, representing a symbolic use of the heavens (189) Somewhat unexpectedly, perhaps, these monuments were not associated with social differentiation in wealth in the burials, this has led to the notion of a "group-oriented chiefdom" (179) in which leaders served group rather than individual interests

The beginnings of social centralization and differentiation would seem to extend back into the Early Neolithic At this time the marked, although graded, differences in grave goods existed in Denmark (174) In England, causeway camps enclosed by sizeable earthworks served ceremonial functions during the Early Neolithic, impressive earthworks associated with the cursus monuments date to the Middle Neolithic (11, 12) By the Late Neolithic, as indicated by the broad uniformity in style in ceremonial ceramics and the similarities in layout of the henge monuments, regional interaction connected widely separate areas on the British Isles

During the Copper and Bronze Ages, some dramatic changes in social differentiation took place throughout Europe Whether in burials or hoards,

wealth in metal and other special objects became used to distinguish personal status (11, 131, 132, 173), leading to the label "individualized chiefdoms" (179) The cause of this change is under discussion Minimally it involves a shift in iconography as objects obtained from afar (as bronze and amber) or copied after foreign objects (the bell beakers) became the major status markers (125–127, 188, 204, 205).

During the Iron Age, population aggregated in hill forts, often of considerable size Evidence for regional organization is based on a settlement hierarchy, considerable storage was also concentrated at these settlements (39). At least some argument can be made for a simplification of society, reflected in a lack of wealth differentiation in the burials; alternatively, a change in the nature of competition resulting from a nonexpanding economy may simply have changed the use of display in the burial ritual (176) The development of social stratification in certain areas of Europe has been linked to economic ties with the complex societies of the Mediterranean world, which may have received both slaves and mercenaries from central Europe at this time (13, 26, 237) The relations with the civilized world have been interpreted from the perspective of world systems theory (79) The chiefdom organization in Celtic Europe has been synthesized from historical accounts (38)

Following the collapse of the Roman Empire and the associated demographic collapse, the European world reverts to a chiefdom level of organization (7, 106) Through the Dark Ages, the evolutionary changes that took place offer a dramatic case of the development of states out of chiefdoms (114, 175) Colonized from Scandinavia at this time, Iceland was a stratified society in which the linkages between status competition, wealth display, and external trade have been clearly described (52)

Precursors to States

The evolutionary conception of chiefdoms is that they precede and presage the evolution of state societies (23, 55) To evaluate this proposition, the prehistory of the core areas of state formation is critically important.

In Mesoamerica, prestate societies have been extensively studied for the Formative period (63, 70, 73, 104, 195) The Olmec culture, often viewed as Mesoamerica's first civilization and the foundation for all later developments, probably comprised complex chiefdoms (53, 58, 195) The settlement pattern is dominated by several independent centers that contain planned mound complexes, monumental art, and elite residences (49, 53, 98) Construction required major expenditures of labor, specialist craftsmen, and central design The description of the Olmec as a "theocratic state" by some emphasizes the religious basis of central authority (49, 98); however, this assessment really

emphasizes the general nature of the leadership that characterizes complex chiefdoms (55, 58, 243)

In the Olmec the basis of social differentiation appears to have been control over fertile alluvial land (30), and over long-distance trade in prestige goods that included jade and jet mirrors (44, 58, 67, 70) Elsewhere in Mesoamerica, a variety of chiefdom-level societies developed largely independently of the Olmec. and then became linked up through long-distance exchange involving both material objects and esoteric knowledge represented iconographically (44, 58, 67, 95, 104) The dramatic Olmec style demarcated the local elites (93, 172) and empowered sacred architecture (93)

In an influential paper on cultural evolution, Sanders & Webster (196) argue that the chiefdom concept should be kept analytically separate from stratified societies that are the characteristic precursors to state development The Olmec developed in the tropical forest environment where population density was comparatively low so that large-scale polities were necessarily extensive, this situation contrasts to the Valley of Mexico where a much higher population density dependent on irrigation permitted the same scale of society in a much smaller territory (53) The different environmental conditions, economies, and patterns of regional interaction create divergent opportunities for development

Following state formation in Mesoamerica, chiefdoms appear to continue at the margins Linked by trade into the core areas, these cases, such as Kaminaljuyu, offer contrasting patterns of social development (144)

Outside of Mesoamerica, less is known of the development of chiefdoms prior to pristine state formation In the Andes. the Formative period appears to follow a similar trajectory to Mesoamerica, although rarely discussed in evolutionary terms (128, 138) Local chiefdoms, identified by monumental construction and a settlement hierarchy. developed on the coast and in the highlands, and then became linked together with an iconography commonly described as Chavin The initial development of chiefdom-like societies took place on the coast in the Late Preceramic period (2500–1800 BC), possibly based on a maritime (non-agricultural) economy (150), or alternatively on floodwater farming with maize (240) The elaboration of monumental architecture and evidence for social differentiation in the burials date to the Initial period when population moved inland and became dependent on irrigated farming (128, 166) The impressive ceremonial complex at Caballo Muerto, with monumental construtuion and art, precise architectual symmetry, and restricted access to sacred areas, illustrates these Initial period developments (166)

In Mesopotamia, the 'Ubaid and Uruk can probably be associated with chiefdoms Wright (243) argues that Susa was a complex chiefdom on the basis that it had monumental construction and a generalized hierarchy of

decision-makers, Hole (107) notes the emphasis on religion there and the lack of economic differentiation in the burials

Africa

Despite the potentially useful historical and archaeological data base on stateless society in Africa (77, 142), little work has been done on chiefdoms there because of a long-standing avoidance of evolutionary concepts by British social anthropologists In their famous review of African political systems, Fortes & Evans-Pritchard (78) dispute potential evolutionary interpretations of political complexity Stevenson (220), however, shows that their work failed to consider historical changes, and argues for an evolutionary relationship between population density and political complexity Taylor (228) provides an important comparative study of chiefdoms using African societies Netting (155) emphasizes the importance of dispute settlement in the development of African chiefs

DEFINING CHARACTERISTICS OF CHIEFDOMS

The main defining characteristics of chiefdoms are scale of integration, centrality of decision-making, and stratification Each should not be thought of as a quality that can be said to be present or absent, but as a set of interrelated variables

Scale of Integration

Chiefdoms are probably best defined as regionally organized societies with a centralized decision-making hierarchy coordinating activities among several village communities (23, 55, 69, 114, 199) Polities vary in size from simple chiefdoms integrating populations of perhaps a thousand to complex chiefdoms with populations in the tens of thousands (214) Many of the societies used by Feinman & Neitzel (64) have been called chiefdoms because of hereditary ranking, however, their small sizes, often below a thousand, would perhaps make it best to consider them as variants on the local-group level (114)

Generally it can be shown that increased polity size correlates with increasing political complexity (20) For Polynesia, Sahlins (191) demonstrated a good relationship between "productivity" and sociopolitical complexity, his measure of productivity was primarily the size of the redistributive network, a good indicator of polity size (80) Subsequent research supports this relationship between polity size and complexity (35, 36, 64, 121, 234) This correlation is said to derive from scale problems in decision-making (115) and the increased energy flow centrally channeled from the larger population (55)

Related factors that intervene are population density and its spatial concen-

tration Population density affects the cost of integration and control at any specified scale (234) Therefore the different territorial size for societies at the same scale may result in quite different trajectories (53, 85) Population concentration has been represented as the percentage of an area's population living at the largest settlement (48) Chiefdoms apparently represent a continuum in the concentration of population (195, 207) from dipersed hamlets with centers (55, 151) to concentrated populations in urban-like settlements (38, 39, 149) Drennan (48) compares the different trajectories in three areas of Mesoamerica with different population dispersion patterns

To estimate polity size requires an estimation of population within a recognized territory Although measurement of population can be difficult, it has been reviewed elsewhere (197), here I concentrate on determining territorial extent of polities The simplest procedure is to divide up space around central places using Thiessen polygons (178, 180) Lower-ranked settlements are assigned to centers on the basis of proximity, and boundaries are often visible as buffer zones of low settlement density (34, 53, 178) For purposes of administration, tribute collection, and control, settlements can be expected to cluster towards the centers (214) Political boundaries were sometimes marked by physical features such as the earthen reaves of Dartmoor (74, 75)

Centrality of Decision-Making and Coordination

As introduced above, the number of levels in the decision-making hierarchy is strongly correlated with the polity size and its spatial distribution Most simply stated, as polity scale increases, the number of decisions required by any node increases until it exceeds an individual's personal capacity to make decisions and requires an expansion in the hierarchy of decision-makers (69, 115, 160, 212, 242) In chiefdoms the number of levels in the hierarchy corresponds with the scale of the polity, although the exact relationship is affected by intervening variables (34–36) The chiefly hierarchy is set apart as specialized leadership but internally it is undifferentiated as to function Chiefdoms thus are highly generalized leadership systems in which the different levels have similar duties, such that they are potentially independent (5, 55, 212, 242) As a result, any delegation of authority is potentially complete, effectively setting an upper limit on the physical size of chiefdoms The regional organization would seem to be highly unstable

By whatever means, the chiefs are central directors, and centrality is the clearest indicator of chiefdoms (178, 181, 183) A settlement hierarchy is perhaps the most frequently used indicator of chiefdoms (37, 86, 97, 135, 160) Because of the intense competition that characterizes prestate societies, in order to be politically viable, smaller settlements within a region must be subservient to larger settlements, for any region the central settlements of competing polities should be of approximately similar sizes

The labor invested in the monumental construction at the centers is used as a measure of the group size that is organized centrally (98, 160, 166, 178), it measures the surplus mobilized (170) Some, however, dispute the significance of such calculations because comparatively simple organizations are thought able to build substantial monuments by small labor expenditures over long time frames (62, 76, 154) The time span of construction is important because small groups over long times can produce the same total investment as large crews over short periods The number of building episodes of a monument helps estimate the size of the labor crews used (166)

Perhaps equally important to the labor invested in construction is the degree of planning evidenced At centers such as the Olmec site of La Venta, an overall plan for the central monuments is unambiguous evidence of both the continuity and centrality in labor organization (49) Related analysis at centers can also include studies of the functional differentiation and restricted access in public buildings (45, 72, 166)

Stratification

Attempts to separate ranking (structural differentiation) from stratification (economic differentiation) are common (82). however, many now argue that these are best conceived of as a continuum Political differentiation cannot be strictly symbolic but must derive from economic control (235) It is hard to imagine chiefs as the centers of redistributional systems without this being reflected in real economic advantage (170) Political and economic differentiation must thus be linked to economic differentiation Chiefs are an incipient aristocracy with advantages in wealth and lifestyle (90) The notion of chiefdoms as highly structured status systems unrelated to competition for economically based power appears to be unfounded

Stratification can be thought of in qualitative terms, in which a segment of society is distinguished by rank and status Using historical material Sahlins (191) and Cordy (34. 36) identify what they see as discrete levels in social hierarchy To some measure this may be possible archaeologically by identifying specific symbols of status that cross-cut other dimensions of achieved status (160) The elaboration of clear status markers correlates well with other measures of social complexity (64)

Alternatively, stratification can be measured in terms of differential access to goods indicative of differential control over the economy Burials have been used frequently to measure social and economic differentiation (29, 173, 174, 202, 203. 225–227, 239) Analyses of wealth distribution in burials typically make least-effort assumptions about human ritual behavior (16), the energy invested in the burials is thus thought to reflect fairly closely the economic position of the dead individuals

Problems with such assumptions have often been noted It is now generally accepted that no isomorphic relationship exists between interred wealth and

socioeconomic status "The trap lies in identifying and correlating directly the actors' concept of these groups, the distinctions and associations made in the emic system, with the interest groups identified by analysis of the political and economic structures" (10) A dialectic exists between social status and economic position with "the misrepresentation of power in rank " (10) In essence, an ideology of hierarchy as represented in distinguished burials may derive from economic relationships but comes to take on a dynamic of its own not necessarily related to immediate economic relations (120) Two periods of similar social differentiation can thus have different burial practices With expanding economies and flexible social hierarchies in northern Europe, active competition for advantage was manifest in large offerings in burials, however, during periods of economic contraction, competition was less manifest and burials were not as differentiated in wealth (176) The simple expectations of contrast between egalitarian and hierarchical societies mask the variability seen archaeologically (187) An obvious problem is that only single ritual events, or at least related events, are represented, and competition through wealth display and consumption need not necessarily be concerned

A more reasonable differentiation of wealth and social inequality can be made with an analysis of energy invested in residential housing (141, 164, 169) Chiefs can be differentiated cross-culturally by the size, construction, and location of their houses (64) "Architecture is built by social groups it can be expected to reflect the number, type, and interconnection between such groups as well as their wealth" (34) In essence, housing involves a daily use and display function much more likely to represent economic and political relationships than burials Measurement of size and energy invested in housing has been used to delimit the development of social stratification in Hawaii (34) Elite housing can also be identified by the concentration of special goods including foreign objects (61, 70)

Health status also measures differential access to economic resources that translates into differential survival and reproductive success (170) Preliminary osteological work (96, 159, 161) indicates differences in diet and health between elites and commoners in chiefdoms Surprisingly perhaps in one comparative study the differences between elites and commoners was greatest in simpler chiefdoms in which the scale of integration is less, the established regional peace of complex chiefdoms appears to benefit the health of all (96)

THE ECONOMIC BASES OF CHIEFDOMS

Virtually all those attempting to understand the evolution of chiefdoms stress the importance of the society's economic foundations The chiefdom was viewed originally as an economically centralized organization, a "redistribu-

tional society" in fact (199) The precise linkages between economic and political centralization are debated The first debate has been over the relative importance of management and control as the economic foundation for chiefly societies (201) Of those emphasizing control, the presently favored position, a second debate is over whether control derives primarily from staple production or wealth distribution

Management

In his influential definition of chiefdoms. Service (199) argued that the regional organization and central management of chiefdoms resulted from sedentarization in ecologically diverse regions that caused local community specialization, exchange in staple products, regional intradependency, and the development of regional chiefs to coordinate the central exchange (redistribution) of the local specialities and to maintain the regional peace on which the economy and society depended This model of chiefdoms was apparently based on Polynesia where high environmental diversity and redistribution were found together (191) Service's elegant argument was a mainstay for the ecological functionalism of the 1960s, and it was frequently cited as a basic trait of chiefdoms (86. 178. 195)

On close examination, however. the systems of redistribution were shown not to handle staple distribution between communities, because the communities themselves were highly generalized and largely self-sufficient in staple goods (54. 55, 66) In retrospect this finding should not perhaps have been surprising Initially the notion of redistribution was put forward by substantivists (165) to show that the same economic activity (staple exchange) could be handled by various mechanisms according to the institutional framework of the society Redistribution is. however, an unlikely candidate for staple exchange Given logistical problems, it is unlikely that chiefs could ever have acted to organize staple production and distribute local products Redistributional ceremonies take place too infrequently, only a few times a year, to handle the daily consumption needs of households Rather, in those chiefdoms with redistribution. it served as a system of finance, a means to mobilize staple goods to provide for public feasts and to feed chiefs' attendants (54) The notion of chiefdoms as an interpendendent set of specialized communities has been dismissed (54, 64. 160), Peebles & Kus (160) even suggest that generalized community economies characterize chiefdoms

An alternative managerial theory for the evolution of chiefdoms emphasizes the role of chiefs in the construction and repair of irrigation complexes (82, 199) Wittfogel (241) used Hawaii as a central case in his theory on the hydraulic basis for the evolution of the state As used in the 1960s. the hydraulic theory presented a simple adaptational linkage—in dry environments, agricultural intensification caused by population growth necessitated

the development of irrigation, which in turn required central management by chiefs (55)

The link between irrigation and chiefdoms was never emphasized because most historic chiefdoms did not use irrigation Reanalysis of the Hawaiian case reaffirmed the linkage of irrigation to chiefly development but largely dismissed the managerial aspect of the theory (55, 56, 92, 119) Few now favor a managerial theory of irrigation, although occasional reference is made to the managerial needs of intensive agriculture (186, 233). Spriggs (213) notes that the larger irrigation systems once in place required a regional polity to maintain the peace necessary for their operation

Warfare is an additional problem identified as requiring the central management of chiefs Warfare is certainly a general characteristic of chiefdoms (23, 24) As discussed by Carneiro (21), competition over land caused by population growth would put a premium on centrality—i e only the strong (the centrally organized) survive (22) Intense warfare characterizing stateless societies may favor regional chiefdoms, which make the warfare more predictable and less devastating to local populations (216) Alternatively, since labor (not land) is the limiting factor to production in early hierarchical societies (65), warfare may switch from confrontations aimed at grasping new lands to wars of conquest geared to capture new populations (55)

The only managerial theory to retain broad support has been the suggestion that chiefs handle risks caused by intensification Malinowski (139) referred to chiefs as tribal bankers, who handle risks for their supporters In the American Bottoms, a shift to maize agriculture on the alluvial soils probably increased productivity at the same time that it increased the vulnerability of fields to flood damage Chiefs may have then provided critical storage and distribution functions to support periodically disrupted populations (154, 160, 216) Similar arguments have been proposed for the inter-island exchange in Micronesia (111), for Hopewellian exchange (14), for Hawaiian irrigation (55), and for intensive agriculture, aggregated settlement, and regional exchange in the American Southwest (134, 232, 233) Although logically attractive, the failure of other managerial theories makes me doubtful of the value of risk as a causal factor Although storage, for example, may serve to buffer households against risks, its centralization by chiefs serves little clear advantage to households and would seem rather to show a co-option by the chiefs as part of a developing system of finance (40)

This point about storage suggests a more general issue Intensification and related changes in the subsistence economy do create problems requiring management, but low-level management would seem in most instances best for the local population Such management can be expected to be responsive to the needs of the population in contrast to a distant, regional chiefly

hierarchy that would be more inaccessible and unaccountable for their actions

Control

The alternative theories used to explain the evolution of chiefdoms emphasize the way elites emerge by controlling the economy Control derives from differential access to productive resources (82) and/or to exchanged wealth, both of which permit the channeling of energy flows (170) and control over labor (84, 188) In this light, the evolution of social complexity is seen as dependent on the mobilization and use of surpluses to finance the emerging elites and their associated institutions The process underlying the progressive centralization of energy flows would appear linked inexorably to the competitive dynamics of chiefdoms (55, 84) Emerging leadership, limited to a small fraction of the population, carries advantages of respect, reproductive success, and increased living standards Competition for the positions of leadership requires a maximizing economic ethic, the coming to and retention of leadership require the careful marshalling of support derived from prestige and the implied differential access on which it is based (55, 114) Arguably, all societies have elements of interpersonal domination (194) such that the key to developing stratification is how such domination can be sustained The nature of the economy would appear to be the basis of this control, but a debate exists as to its exact nature

Control over staple production, as the first option, would be based on ownership of and restricted access to productive resources, most importantly land Such control is manifest as a system of staple finance (40, 60) Food is mobilized from commoner producers as a rent for land made available to them The Hawaiian "redistributional" economy illustrates well how this was accomplished (55) Land was owned by the paramount chief by right of conquest The land was then allocated to the high chiefs as their income estates Commoners received use-rights to small subsistence plots in return for their work on lands producing for the chiefs' incomes The food thus collected fed the chiefs' households, specialists attached to the chiefs, and all those working for the chiefs Such mobilization was a simple and direct means to support a nonproducing sector of the society

But how is the ownership on which this control rests developed? The key would appear to be the productive dominance of limited lands that could be held and defended by an emerging elite (68, 170) This domination would appear to be an outcome of particular environmental conditions and the way they are developed and used The best examples of how this can happen are those chiefdoms that depend on irrigation In southeast Spain, the dry environment and its development with irrigation during the Copper and Bronze Ages permitted the growth of social stratification based on the control over the

highly productive irrigable land (28, 87–89) In Polynesia a general trend exists between intensification and the development of social complexity (121) The prehistory of the Hawaiian islands illustrates clearly how intensification resulted in increasing economic control and social stratification (55, 108, 114, 121) Following initial colonization, population grew and spread through the islands, initially emphasizing marine resources but gradually shifting towards cultivation of the uplands The farming of the uplands resulted in the degradation of this fragile resource and the alluviation of the valley floors (cf 213) Influenced by these human-induced environmental changes, chiefs promoted a rapid shift to irrigated agriculture on the new alluvial soils as a means to maximize their competitive position (55) The irrigated soils were but a small fraction of the agricultural soils on the island, and their development made ownership feasible

Economic control through resource ownership may also help explain other examples of chiefly development not based on irrigation Coe (30) argues that the Olmec chiefdoms depended on ownership of the highly productive natural levee soils, the fertility of which was maintained by annual river flooding The circum-Caribbean (137) and Amazonian (186) chiefdoms were based on the intensive farming of alluvial bottoms, as were the Mississippian chiefdoms (151) Carneiro's (21) argument that chiefdoms depend on circumscription is an early statement of this principle The aggregation of population accompanying intensification, and competition for the most productive land, simplify the control of labor on which mobilization can be based

The payment of staples into the chiefs as part of mobilization is frequ mentioned in historical and ethnographic accounts, which permits estimation of the rent charged in chiefdoms (55. 215) Archaeologi evidence of mobilization is most frequently the distribution of central stores (60), generally it can be argued that above-ground (visible) storage was associated with the political economy in contrast to the hidden household stores of the subsistence economy (114) Steponaitis (214, 215) presents creative ways to investigate the mobilization of staple goods by examining the distribution of settlements and their relationships to productive resources

Viz cybějící obilnice v centrech

An alternative means to control staple production may involve elites in the manufacture of productive technology Trobriand chiefs supported the importation of stone and its manufacture into working axes needed for land clearance (114) During the Iron Age, the intensification of agriculture in Europe involved the use of a new iron technology, the manufacture and distribution of which may have offered opportunities for elite control (247) Although we do not know their use, the production of obsidian tools was concentrated in elite households at Kaminaljuyu (144) Specialized ceramic production could also be controlled by ownership of limited clay resources (184) Evidence from elsewhere, however, would tend to suggest that

specialization of productive tools was not a standard correlate of chiefdoms or even early states (18, 154)

Control over the distribution of prestige goods is the second option as a means for centralizing power in chiefdoms. Such objects of wealth and prestige are found in acephalous societies as well as chiefdoms and states (40, 57). They act in social exchanges (such as bride wealth and death payments), as stores of value convertible into food, and as symbols of prestige and authority. Friedman & Rowlands (84) develop a clear model of the role that wealth distribution plays in the political centralization of chiefdom-level societies. Through the distribution of wealth, labor becomes controlled by creating relationships of marriage, friendship, and alliance. This model has been applied to the European chiefdoms of the Iron Age (79) and the Bronze Age (125–127). Rowlands (188) sets it up as an alternative to Gilman's (87) model emphasizing direct control over production. Vivid examples of the use of wealth in chiefdoms include the gold adornment of Panamanian chiefs (101) and the competitive display and gifting of European objects in Iceland (52).

The reasons for developing systems of wealth exchanges in the first place may be several. The role of wealth as a store of value and the significance of regional exchange webs as a buffer against unstable food production have been mentioned. Alternatively such broad-scale exchanges involving wealth may be seen as part of broad network of interaction among elites involved in status rivalry, alliance formation, and exchanges of esoteric knowledge (58, 67, 99, 182). Where chiefdoms develop on the margins of more complex societies, the role of wealth in core-periphery relationships of domination and extraction has been discussed (79, 188, 232).

The simple existence of valuable exchanges does not in itself result in social complexity. The key is how control over wealth distribution is exercised. Since exchanges are largely external to the community and thus beyond normal social networks, participation is effectively limited to lineage heads or chiefs (67, 84). The creation of spheres of exchange can be seen in this light as an attempt to exclude others from direct participation (57, 84). The technology of the trade can also limit the possible participation; chiefs existed on the Trobriand Islands because of their marginal position in the Kula exchange, which made large trading canoes a necessity (19). Because construction of such canoes required large expenditures of labor, they were owned only by the chiefs. "Gateway communities" situated astride constricted exchange paths provide other opportunities for elite control of long-distance trade (103).

A further and perhaps surer means of control of wealth involves the support and management of its manufacture. Specialist craftsmen, attached directly to elite patrons, can be involved in the manufacture of wealth used in social

exchanges and political payments (18, 59) The presence of craft specialists for elites has been noted historically and archaeologically (18, 25, 55, 127, 152, 154, 245, 246) However, the role of craft specialization in economic control probably provided only limited opportunities in chiefdoms In the Iberian and Mississippian chiefdoms, for example, specialization was only weakly developed and was not under close elite control except as it involved production of special and rare objects (88, 152, 154, 167, 168, 245, 246)

Since the basis of control in wealth distribution lay largely outside the chiefdom economy, it must be understood in the broader regional context of peer-polity interaction (182) and core-periphery relations (84) This means that the chiefdoms constructed on wealth-flows were inherently unstable, and the relatively dramatic cycles of growth and decline of European chiefdoms may reflect this pattern The chiefdoms of southeast Spain, which were based on control of staple production, contrast with the chiefdoms of Portugal, which were based on the distribution of wealth (88) Based on these alternative means of control it may be possible to conceive two developmental lines for chiefdoms with quite different dynamics, although actual cases combine both mechanisms of finance to some degree (40)

A third mechanism of control in chiefdoms is the force of a strong warrior elite The role of warfare in the evoluton of chiefdoms seems undeniable (22, 23, 94, 235) Feinman & Neitzel (64) found that leadership in war was a common function of chiefs Historically chiefs derive power from their leadership—conquered lands, plunder, and captives were theirs to use and distribute (130, 147 198) In fact, conquest warfare can be viewed as one option in a chief's strategy to extend his income base (55) Archaeologically the tie between warfare and chiefdoms is often apparent in defensive settlements (39, 61, 129, 130, 148), weapons of war (11, 127, 137), and in an iconography of war (49, 137) Control over trade and manufacture of weapons can offer a basis of power (91), and the power of the warrior elite is likely to extend into general leadership (130, 198)

A Synthesis of the Economic Bases

The two materialist perspectives on the evolution of chiefdoms emphasize different driving forces—the managerial theories stress the system-serving functions of the chiefs, the control theories stress the exploitative capabilities of chiefs A recent blending of the two perspectives shows how problems of survival create needs for leadership and, at the same time, opportunities for control (114) To understand the evolution of chiefdoms is thus to understand a balancing of interests between a dependent population and an emerging aristocracy As systems of stratification evolved, the aristocracy manipulated the economic and political relationships so as to increase dependency and balance the favor of the interests towards the elites However, it is essential to

recognize that up to the industrial revolution the primary limit to production appears to have been labor, and control over this labor required the ruling elites to retain consensus through respectability As I describe below, this was accomplished in part by an elaborate ideology to justify rule, however, it was also accomplished by the paternalism of the chiefs, which bound a population to them

IDEOLOGICAL BASES OF CHIEFDOMS

Chiefdoms are early stages of civilizations, and they are states of mind that create justifications for their existence (cf 81) Symbolism, cognition, and ideology have become of increasing interest within political anthropology and related studies in archaeology (31, 105, 145, 206) This trend is sensible and a necessary extension of the evolutionary theories elaborated since the 1950s The original adaptationist theories of cultural evolution had little need for ideological concerns because it was generally assumed that cultures were integrated wholes in which evolving leadership served broader systemic needs The generation of processualists coming of age in the 1970s, however, recognized the internal conflicts and exploitative aspects of society (17, 55, 148) The new view of chiefdoms emphasizes internal conflicts between communities, elite factions, and emergent classes Stability of such systems derives from a balance of interests (114), a monopoly of power (88), and a new ideology

Abner Cohen's (31) work on the symbols of power relations provides a starting point for this analysis As he saw it, economic and political power were intimately bound, and symbols functioned to articulate groups with conflicting interests Symbols, deeply rooted in the culture's conception of reality, served to naturalize the political relationships

A pervasive image is of the chiefdom's "theocratic" nature, an ideological conception of the societies themselves But "theocracy" refers to religious sanctions of leadership and not leadership by priests (236) In complex chiefdoms like Hawaii (55) and the Olmec (58), the chiefs were gods whose rule was part of a natural order Helms (100) describes chiefs as "sacred intermediaries between the ordered (civilized, moral') human society under their charge and the equally ordered cosmos " Many of the ceremonies of chiefdoms, such as the ritual astronomy of the British henges (189), extend the ritual actions of the leaders to the orders of the universe The careful order of the ritual landscape that characterizes chiefdoms held a clear message—chiefs rule not because of their power but because of their place in a sacredly chartered world order (58)

In my review of the chiefdom literature, the ideological elements (as seen in the iconography and the architectural planning of sacred spaces) were clear

The specific content of chiefly ideology was variable both from place to place and from time to time For example, S J Shennan (204) emphasizes how the change in chiefly order from the Megalithic to the Bell Beaker cultures represented a significant ideological change tied to a change in the social order Although any attempt to synthesize ideology in chiefdoms is premature, I would like to suggest three themes tied perhaps to different bases of control

First are the ceremonies of place associated with the creation of a sacred landscape with monumental constructions such as the henges and cursus monuments of Neolithic Britain (11, 178), the mound groups of the Mississippian (159), and the heiau temples of Hawaii (160) These are created sacred spaces in which chiefs acted as gods on earth connected to cosmic forces In Hawaii, the paramount chief portrayed the god Lono during the Makahiki ceremonies, as such he was responsible for the fertility of the lands and people under his direction (160) The created sacred landscape was the property of its creators, the chiefs Monumental construction thus probably asserts ownership, a point made for the European megaliths (12, 27, 180), in essence the monuments create a focus for a space that is bounded, a product of human action, and owned by the group's earthly gods, the chiefs (see 230) Perhaps not by chance, the corvée labor organized to construct the monuments is exactly what would be the due of the chiefs as owners of the group's resources

Second are the symbols of individual position within a society as seen most vividly in the burials For the assemblages of both the Bell Beaker and Bronze Age burials in Britain and Scandinavia, objects were identified with the outside in terms either of style or of foreign material (125–127, 204) These chiefdoms and those among the Olmec, Chavin, and Mississippian were associated with the broad interaction spheres In these situations, it may be suggested that power derives from the outside and involves the exchange of prestige goods Ultimately, however, not the objects themselves were important but the esoteric knowledge and power they embodied (99) The dichotomy observed in Bronze Age objects (male-female, individualized-standardized, foreign-local) (211) may reflect the competitive public arena of males vying for external power in contrast to the private arena of females Chiefs often emphasize their foreign origins (193), an assertion that serves to legitimize rule by a group set off and connected to a universal (rather than a local) order The broad searching out of marriages, although also serving an alliance function (67), served to establish ties to chiefly lines of divine power In Hawaii, the ruling families of the different island chiefdoms were interconnected by a "cosmopolitan outlook" (109)

Third are the symbols of warrior might represented in the burial assemblages of many chiefdoms (11, 137) These symbols of might, such as the

Bronze Age swords (127), tell of a military superiority that need not be used if it is acknowledged The Panamanian chiefdoms associated with the Cocle style illustrate well the use of warrior symbolism (137) Burials are accompanied by instruments of war and by elaborately decorated ceramics that emphasize animal depictions selected for their warlike characteristics of attack, ferocity, poisonousness, or protective hardness Rather than simply mirroring a warrior society, such symbols intimidate and thus smooth succession to power as a continuity of the natural world order of domination by the forceful (137)

It is important to emphasize that the three ideological motifs recognized for chiefdoms are in no sense alternatives In the Wessex chiefdoms, for example, the new ideology associated with personal burials gained local legitimacy by placing the burials in direct association with the earlier henge monuments (11) I only wish to suggest that the elaboration and emphasis of one theme over an other may reflect the different sources of power

This discussion leads naturally to a consideration of the primacy of variables in the explanation of chiefdoms Most dealing with ideology would still consider it as epiphenominal to the underlying economic forces, created to legitimize systems of domination (44, 58) But there is an alternative strain, especially tied to the cognitive archaeology of Hodder (105), that would suggest that ideology can take on a guiding role (145, 204) Logically it is possible to argue the primacy of either, and it would seem preferable to see the economic and ideological bases of chiefdoms as intertwined and developing together

CONCLUSIONS

The notion of an intermediate-level society as captured in chiefdoms has a continuing role in our studies of cultural evolution Our conception of chiefdoms from Service (199) has been transformed by a recognition of political and ideological bases that replace an earlier determinism with a new dynamism The variation in chiefdoms is considerable and the causes of their evolution are complicated, but the chiefdom represents a reasonable demarcation of variation for use in comparative studies

ACKNOWLEDGMENTS

I would like to thank K Biddick, R Carneiro, R D Drennan, G Feinman, R C Green, G J Gumerman, M Helms, J House, P Kirch, K Lightfoot, C Peebles, L Pinkerton, D R Snow, C Spencer, V Steponaitis, D G Sutton, and J Terrell for their gracious help in gathering the references on chiefdoms

Literature Cited

1 Alkire, W H 1965 Lamotrek atoll and inter-island socioeconomic ties *Ill Stud Anthropol* 5
2 Allen, J 1985 Comments on complexity and trade a view from Melanesia *Archaeol Oceania* 20 49–57
3 Ames, K M 1985 Hierarchies, stress, and logistic strategies among hunter gatherers in northwestern North America See Ref 171, pp 155–80
4 Bareis, C , Porter, J 1984 *American Bottoms Archaeology* Urbana Univ Ill Press
5 Barnes, G L 1987 The role of the *be* in the formation of the Yamato state See Ref 18, pp 86–101
6 Betancourt, J L , Dean, J S , Hull, H M 1986 Prehistoric long-distance transport of construction beams, Chaco Canyon, New Mexico *Am Antiq* 51 370–75
7 Biddick, K 1984 Archaeological approaches to Medieval Europe *Mediev Inst West Mich Univ Stud Mediev Cult* 18
8 Bishop, C 1983 Limiting access to limited goods the origins of stratification in interior British Columbia See Ref 231, pp 146–61
9 Blanton, R , Kowalewski, S , Feinman, G , Appel, J 1981 *Ancient Mesoamerica* Cambridge Cambridge Univ Press
10 Bloch, M 1977 The disconnection between power and rank as a process an outline of the development of kingdoms in central Madagascar In *The Evolution of Social Systems*, ed J Friedman and M Rowlands pp 303–40 London Duckworth
11 Bradley, R 1984 *The Social Foundations of Prehistoric Britain* London Harlow
12 Bradley, R 1986 The Dorset cursus the archaeology of the enigma *Group 12 Counc Brit Archaeol Wessex Lect* Ill
13 Brandt, R , Slofstra, J 1983 Roman and native in the Low Country *Brit Archaeol Rep Int Ser* 184
14 Braun, D P 1986 Midwestern Hopewellian exchange and supralocal interaction See Ref 182, pp 117–26
15 Brown, J A 1976 The southern cult reconsidered *Midcont J Archaeol* 1 115–35
16 Brown, J A 1981 The search for rank in prehistoric burials See Ref 29, 25–37
17 Brumfiel, E M 1980 Specialization, market exchange, and the Aztec state a view from Huexotla *Curr Anthropol* 21 459–78
18 Brumfiel, E M , Earle, T K 1987 *Specialization, Exchange, and Complex Societies* Cambridge Cambridge Univ Press
19 Burton, R 1975 Why do the Trobriands have chiefs? *Man* 10 544–58
20 Carneiro, R 1967 On the relationship between size of population and complexity of social organization *Southwest J Anthropol* 23 234–43
21 Carneiro, R 1970 A theory of the origin of the state *Science* 169 733–38
22 Carneiro, R 1978 Political expansion as an expression of the principle of competitive exclusion In *Origin of the State*, ed R Cohen, E Service, pp 205–23 Philadelphia ISHI
23 Carneiro, R 1981 The chiefdom as precursor of the state In *The Transition to Statehood in the New World*, ed G Jones, R Krautz, pp 37–79 Cambridge Cambridge Univ Press
24 Carneiro, R 1987 Chiefdom-level warfare as exemplified in Fiji and the Cauca valley In *The Anthropology of War*, ed J Haas Cambridge Cambridge Univ Press In press
25 Champion, S 1982 Exchange and ranking the case for coral See Ref 183, pp 67–73
26 Champion, T C , Megaw, J V S 1985 *Settlement and Society Aspects of West European Prehistory in the First Millennium B C* Leicester Leicester Univ Press
27 Chapman, R 1981 The emergence of formal disposal areas and the 'problem' of megalithic tombs in prehistoric Europe See Ref 29, pp 71–81
28 Chapman, R 1982 Autonomy, ranking and resources in Iberian prehistory See Ref 183, pp 46–51
29 Chapman, R , Kinnes, I , Randsborg, K 1981 *The Archaeology of Death* Cambridge Cambridge Univ Press
30 Coe, M 1974 Photogrammetry and the ecology of Olmec civilization In *Aerial Photography in Anthropology*, ed E Vogt, pp 1–13 Cambridge, Mass Harvard Univ Press
31 Cohen, A 1969 Political anthropology the analysis of the symbolism of power relationships *Man* 4 215–35
32 Cohen, R , Schlegel, A 1968 The tribe as a socio-political unit a cross-cultural examination In *Essays on the Problem of the Tribe, Proc 1967 Ann Meet Am*

Ethnol Soc , ed J Helm, pp 120–49 Seattle Univ Washington Press
33 Cordy, R 1974 Cultural adaptation and evolution in Hawaii a suggested new sequence *J Polynes Soc* 83 180–91
34 Cordy, R 1981 *A Study of Prehistoric Social Change in the Hawaiian Islands* New York Academic
35 Cordy, R 1985 Settlement patterns of complex societies in the Pacific *N Z J Archaeol* 7 159–82
36 Cordy, R 1986 Relationships between the extent of social stratification and population in Micronesian polities at European contact *Am Anthropol* 88 136–42
37 Creamer, W , Haas, J 1985 Tribes vs chiefdoms in Lower Central America *Am Antiq* 50 738–54
38 Crumley, C L 1974 Celtic social structure the generation of archaeologically testable hypotheses from literary evidence *Mus Archaeol Univ Mich Anthropol Pap* 54
39 Cunliffe, B W 1978 *Iron Age Communities in Britain* London Routledge and Kegan Paul
40 D'Altroy, T , Earle, T 1985 Staple finance, wealth finance, and storage in the Inca political economy *Curr Anthropol* 26 187–206
41 Dennis, P . Oliens, M 1984 Kingship among the Miskito *Am Ethnol* 11 718–37
42 DePratter, C 1983 *Late prehistoric and early historic chiefdoms in the southeastern United States* PhD thesis Univ Georgia
43 Douglas, B 1979 Rank, power, authority a reassessment of traditional leadership in South Pacific societies *J Pac Hist* 14 2–27
44 Drennan, R D 1976 Religion and social evolution in Formative Mesoamerica See Ref 70, pp 345–68
45 Drennan, R D 1983 Ritual and ceremonial development at the early village level See Ref 73, pp 46–50
46 Drennan, R D 1985 Regional archaeology in the Valle de la Plata, Colombia *Mus Anthropol Univ Mich Res Rep Archaeol* 11
47 Drennan, R D , Uribe, C A 1987 *Chiefdoms in the Americas* Landon, Md University Press of America
48 Drennan, R D 1987 Regional demography in chiefdoms See Ref 47, pp 307–24
49 Drucker, P 1981 On the nature of the Olmec polity In *The Olmec and Their Neighbors*, ed E Benson, pp 29–47 Washington, DC Dumbarton Oaks
50 Drucker, P 1983 Ecology and political organization on the Northwest coast of America See Ref 231, pp 86–96
51 Dunnell, R 1980 Evolutionary theory and archaeology *Adv Archaeol Meth Theory* 3 35–99
52 Durrenberger, E P 1986 *Chiefly consumption in commonwealth Iceland* Presented at Ann Meet Soc Econ Anthropol , 5th, Urbana
53 Earle, T 1976 A nearest-neighbor analysis of two Formative settlement systems See Ref 70, pp 196–223
54 Earle, T 1977 A reappraisal of redistribution complex Hawaiian chiefdoms In *Exchange Systems in Prehistory*, ed T Earle, J Ericson, pp 213–29 New York Academic
55 Earle, T 1978 Economic and social organization of a complex chiefdom the Halelea district, Kauai, Hawaii *Mus Anthropol Univ Mich Anthropol Pap* 63
56 Earle, T 1980 Prehistoric irrigation in the Hawaiian islands an evaluation of evolutionary significance *Archaeol Phys Anthropol Oceania* 15 1–28
57 Earle, T 1982 The ecology and politics of primitive valuables In *Culture and Ecology Eclectic Perspectives, Am Anthropol Assoc Spec Publ* 15, ed J Kennedy and E Edgerton, pp 65–83 Washington, DC Am Anthropol Assoc
58 Earle, T 1985 *Style and iconography as legitimization in complex chiefdoms* Presented at Style Conf , Minneapolis
59 Earle, T 1987 Specialization and the production of wealth Hawaiian chiefdoms and the Inka empire See Ref 18, pp 64–75
60 Earle, T , D'Altroy, T 1982 Storage facilities and state finance in the upper Mantaro valley, Peru In *Contexts for Prehistoric Exchange*, ed J Ericson, T Earle, pp 265–90 New York Academic
61 Earle, T , D'Altroy, T , Hastorf, C , Scott, C , Costin, C , Russell, G , Sandefur, E 1987 The impact of Inka conquest on the Wanka domestic economy *Inst Archaeol , UCLA Monogr* In press
62 Erasmus, C J 1965 Monument building some field experiments *Southwest J Anthropol* 21 277–301
63 Feinman, G , Kowalewski, S , Finsten, L , Blanton, R 1985 Long-term demographic change a perspective from the valley of Oaxaca, Mexico *J Field Archaeol* 12 333–62
64 Feinman, G , Neitzel, J 1984 Too many types an overview of sedentary prestate societies in the Americas *Adv Archaeol Meth Theory* 7 39–102

65 Feinman, G , Nichols, L 1987 Labor, surplus, and production a regional analysis of Formative Oaxaca socioeconomic organization In *Anthropological Research Papers*, ed G A Clark, S W Gaines Tempe Arizona State Univ Press In press
66 Finney, B R 1966 Resource distribution and social structure in Tahiti *Ethnology* 5 80–86
67 Flannery, K 1968 The Olmec and the valley of Oaxaca. a model for interregional interaction in Formative times In *Dumbarton Oaks Conference on the Olmec*, ed E Benson. pp 79–110 Washington, DC Dumbarton Oaks
68 Flannery, K 1969 Origins and ecological effects of early domestication in Iran and the Near East In *The Domestication and Exploitation of Plants and Animals*, ed P Ucko, C Dimbleby, pp 73–100 Chicago Aldine
69 Flannery, K 1972 The cultural evolution of civilizations *Ann Rev Ecol Syst* 3 399–426
70 Flannery, K 1976 *The Early Mesoamerican Village* New York Academic
71 Flannery. K 1983 Divergent evolution See Ref 73, pp 1–4
72 Flannery, K , Marcus, J 1976 Evolution of the public building In *Culture Change and Continuity*, ed C E Cleland, pp. 205–21 New York Academic
73 Flannery, K , Marcus, J 1983 *The Cloud People Diverent Evolution of the Zapotec and Mixtec civilization* New York. Academic
74 Fleming, A 1979 The Dartmoor reaves boundary patterns and behaviour patterns in the second millenium BC *Proc Devon Archaeol Soc* 37 115–30
75 Fleming, A 1982 Social boundaries and land boundaries See Ref 183. pp 52–55
76 Ford, R 1974 Northeastern archaeology past and future directions *Ann Rev Anthropol* 3 385–413
77 Forde, D , Kaberry, P M 1967 *West African Kingdoms in the Nineteenth Century* Oxford Oxford Univ Press
78 Fortes, M , Evans-Pritchard, E E 1940 *African Political Systems* Oxford Oxford Univ Press
79 Frankenstein, S , Rowlands, M J 1978 The internal structure and regional context of early Iron Age society in south-western Germany *Bull Inst Archaeol* 15 73–112
80 Freeman, J D 1961 Review of 'Social Stratfication in Polynesia,' by M D Sahlins *Man* 61 146–48
81 Freidel, D A 1981 Civilization as a state of mind the cultural evolution of the lowland Maya See Ref 23, pp 188–227
82 Fried, M 1967 *The Evolution of Political Society* New York Random House
83 Friedman, J 1981 Notes on structure and history in Oceania *Folk* 23 275–95
84 Friedman, J , Rowlands, M J 1977 Notes towards an epigenetic model of 'civilization ' In *The Evolution of Social Systems*, ed J Friedman, M Rowlands. pp 201–76 London Duckworth
85 Gamble, C 1982 Leadership and 'surplus' production See Ref 183, pp 100–5
86 Gibson, J L 1974 Poverty Point the first North American chiefdom *Archaeology* 27 97–105
87 Gilman, A 1981 The development of stratification in Bronze Age Europe *Curr Anthropol* 22 1–23
88 Gilman, A 1987 Unequal development in copper age Iberia See Ref 18. pp 22–29
89 Gilman, A , Thornes, J B 1984 *Land-use and Prehistory in South-East Spain* London Allen & Unwin
90 Goldman, I 1970 *Ancient Polynesian Society* Chicago Univ Chicago Press
91 Goody, J R 1971 *Technology, Tradition and the State in Africa* London Oxford Univ Press
92 Green, R C 1980 Makaha before 1880 A D Makaha Valley Historical Project Report 5 *Pac Anthropol Rec* 31
93 Grove, D 1984 *Chalcatzingo Excavations on the Olmec Frontier* London Thames and Hudson
94 Gumerman, G J 1986 The role of competition and cooperation in the evolution of island societies See Ref 122, pp 42–49
95 Harland, M 1979 An inquiry into the development of complex society at Chalcatzingo, Morelos. Mexico methods and results *Am Antiq* 44 471–93
96 Hatch, J W 1987 Mortuary indicators of organizational variability among the Southwestern U S chiefdoms See Ref 47
97 Hayden, B , Eldridge, M , Eldridge, A , Cannon, A 1985 Complex hunter-gatherers in the interior British Columbia See Ref 171, pp 181–99
98 Heizer, R 1960 Agriculture and the theocratic state in lowland southeastern Mexico *Am Antiq* 26 215–22
99 Helms, M 1979 *Ancient Panama* Austin Univ Texas Press
100 Helms, M 1981 Succession to high office in Pre-Columbian circum-Caribbean chiefdoms *Man* 15 718–31
101 Helms, M 1981 Precious metals and

politics metallurgical style as ideology in the Intermediate area and Peru *J Latin Am Lore* 7 215–38
102 Helms, M 1986 Of kings and context ethnohistorical interpretations of Miskito political structure and function *Am Ethnol* 13 506–23
103 Hirth, K 1978 Interregional trade and the formation of prehistoric gateway communities *Am Antiq* 43 35–45
104 Hirth, K 1984 *Trade and Exchange in Early Mesoamerica* Albuquerque Univ New Mexico Press
105 Hodder, I 1982 *Symbolic and Structural Archaeology* Cambridge Cambridge Univ Press
106 Hodges, R 1982 *Dark Age Economics* London Duckworth
107 Hole, F 1983 Symbols of religious and social organization at Susa In *The Hilly Flanks and Beyond*, ed T C Young, P E L Smith, P Mortensen, pp 315–34 Chicago Oriental Inst
108 Hommon, R J 1976 *The formation of primitive states in precontact Hawaii* PhD thesis Univ Arizona
109 Hommon, R J 1986 Social evolution in ancient Hawaii See Ref 122 pp 55–68
110 Hunter-Anderson, R L 1986 *Prehistoric Adaptation in the American Southwest* Cambridge Cambridge Univ Press
111 Hunter-Anderson, R L 1986 *An ecological approach to understanding interisland exchange and social ranking in the western Carolines* Presented at Ann Meet Soc Am Archaeol New Orleans
112 Irwin, G J 1978 The development of Mailu as a specialized trading and manufacturing centre in Papuan prehistory *Mankind* 11 49–57
113 Jennings, J 1979 *The Prehistory of Polynesia* Cambridge, Mass Harvard Univ Press
114 Johnson, A W, Earle, T 1987 *The Evolution of Human Society from Forager Group to Agrarian State* Stanford Stanford Univ Press
115 Johnson, G 1978 Information sources and the development of decision-making organizations In *Social Archaeology Beyond Subsistence and Dating* ed C Redman, M Berman, E Curtis, W Langhorne, N Versaggi J Wanser, pp 87–112 New York Academic
116 Johnson, J K 1980 Poverty Point period social organization in the Yazoo basin, Mississippi a preliminary consideration *La Archaeol* 6 253–84
117 Judge, W J 1983 *Chaco Canyon-San Juan Basin* Presented at Adv Sem Dynamics Southwest Prehist, Sch Am Res, Santa Fe
118 King, T 1978 Don't that beat the band? Nonegalitarian political organization in prehistoric central California See Ref 115, pp 225–48
119 Kirch, P V 1977 Valley agricultural systems in prehistoric Hawaii an archaeological consideration *Asian Perspect* 20 246–80
120 Kirch, P V 1980 Burial structures and societal ranking in Vava'u, Tonga *J Polynes Soc* 89 291–308
121 Kirch, P V 1984 *The Evolution of the Polynesian Chiefdoms* Cambridge Cambridge Univ Press
122 Kirch, P V 1986 *Island Societies Archaeological Approaches to Evolution and Transformation* Cambridge Cambridge Univ Press
123 Kirch, P V, Kelly, M 1975 Prehistory and ecology in a windward Hawaiian valley Halawa valley, Molokai *Pac Anthropol Rec* 24
124 Kirch, P V, Yen, D E 1982 Tikopia the prehistory and ecology of a Polynesian outlier *B P Bishop Mus Bull* 238
125 Kristiansen, K 1982 The formation of tribal systems in later European prehistory northern Europe 4000–500 B C In *Theory and Explanation in Archaeology*, ed C Renfrew, M J Rowlands, B A Segraves, pp 241–80 New York Academic
126 Kristiansen, K 1984 Ideology and material culture an archaeological perspective In *Marxist Perspectives in Archaeology*, ed M Spriggs, pp 72–100 Cambridge Cambridge Univ Press
127 Kristiansen, K 1987 From stone to bronze the evolution of social complexity in northern Europe, 2300–1200 B C See Ref 18, pp 30–51
128 Lanning, E 1967 *Peru before the Incas* Englewood Cliffs, NJ Prentice-Hall
129 Larson, L 1972 A functional consideration of warfare in the Southeast during the Mississippian period *Am Antiq* 37 383–92
130 LeBlanc, C S 1981 *Late prehispanic Huanca settlement pattern in the Yanamarca valley, Peru* PhD thesis UCLA
131 Levy, J 1979 Evidence of social stratification in Bronze Age Denmark *J Field Archaeol* 6 49–556
132 Levy, J 1982 Social and religious organization in Bronze Age Denmark *Brit Archaeol Rep Int Ser* 124
133 Lewis, H 1968 Typology and process in political evolution See Ref 32, pp 101–10
134 Lightfoot, K G 1983 Resource uncertainty and buffering strategies in an

arid, marginal environment In *Ecological Models in Economic Prehistory*, ed. G Bronitsky *Ariz S Univ Anthropol Pap* 29 189–218
135 Lightfoot, K G 1987 A consideration of complex societies in the American Southwest See Ref 47
136 Lilley, I 1985 Chiefs without chiefdoms comments on prehistoric sociopolitical organization in western Polynesia *Archaeol Oceania* 20 60–65
137 Linares, O 1977 Ecology and the arts in ancient Panama on the development of social rank and symbolism in the central provinces *Dumb Oaks Stud Pre-Columbian Art Archaeol* 17
138 Lumbreras, L G 1974 *The People and Cultures of Ancient Peru* Washington DC Smithsonian Inst
139 Malinowski, B 1935 *Coral Gardens and their Magic* London Allen & Unwin
140 Masse, W B , Snyder, D , Gumerman G 1984 Prehistoric and historic settlement in the Palau islands, Micronesia *N Z J Archaeol* 6 107–27
141 McGuire, R 1983 Breaking down cultural complexity inequality and heterogeneity *Adv Archaeol Method Theor* 6 91–142
142 McIntosh, S K , McIntosh, R J 1983 Current directions in West African prehistory *Ann Rev Anthropol* 12 215–58
143 Meggers, B 1954 Environmental limitation and the development of culture *Am Anthropol* 56 801–24
144 Michels, J W 1979 *The Kaminaljuyu Chiefdom* College Park Penn State Univ Press
145 Miller, D , Tilley, C 1984 *Ideology Power and Prehistory* Cambridge Cambridge Univ Press
146 Miller J , Eastman, C 1984 *The Tsimshian and Their Neighbors of the North Pacific Coast* Seattle Univ Wash Press
147 Milner G 1986 Mississippian period population density in the central Mississippi river valley *Am Antiq* 52 227–38
148 Moore, J A , Keene, A S 1983 *Archaeological Hammers and Theory* New York Academic
149 Morse D F , Morse, P A 1983 *Archaeology of the Central Mississippi Valley* New York Academic
150 Moseley, M 1975 *The Maritime Foundations of Andean Civilization* Menlo Park, Calif Cummings
151 Muller, J 1978 The Kincaid system Mississippian settlement in the environs of a large site See Ref 207 pp 269–92
152 Muller, J 1984 Mississippian specialization and salt *Am Antiq* 49 489–507
153 Muller, J 1984 *The Southern Cult* Presented at Cottonlandia Conf
154 Muller, J 1987 Salt, chert, and shell Mississippian exchange and economy See Ref 18, pp 10–21
155 Netting, R 1972 Sacred power and centralization aspects of political adaptation in Africa In *Population Growth Anthropological Perspectives* ed B Spooner, pp 219–44 Cambridge, Mass MIT
156 Netting, R 1977 *Cultural Ecology* Menlo Park Cummings
156a Noble, W C 1985 Tsouharissen's chiefdom an early historic 17th century neutral Iroquoian ranked society *Can J Archaeol* 9 131–46
157 Peebles, C S 1971 Moundville and surrounding sites some structural considerations of mortuary practice In *Approaches to the Social Dimensions of Mortuary Practice*, ed J A Brown *Mem Soc Am Archaeol* 25 68–91
158 Peebles, C S 1978 Determinants of settlement size and location in the Moundville phase See Ref 207, pp 369–416
159 Peebles, C S 1983 Moundville late prehistoric sociopolitical organization in the southeastern United States See Ref 231, pp 183–98
160 Peebles, C S , Kus, S M 1977 Some archaeological correlates of ranked society *Am Antiq* 42 421–48
161 Peebles, C S , Schoeniger, M J 1981 Notes on the relationship between social status and diet at Moundville *Southeast Archaeol Conf Bull* 24 96–97
162 Peoples, J 1982 Individual or group advantage? A reinterpretation of the Maring cycle *Curr Anthropol* 23 291–310
163 Plog, F 1977 Modeling economic exchange See Ref 54, pp 127–40
164 Plog, F , Upham, S 1983 The analysis of prehistoric political organization See Ref 231, pp 199–213
165 Polanyi K 1957 The economy as instituted process In *Trade and Market in the Early Empires*, ed K Polanyi, C Arensberg, H Pearson, pp 243–70 New York Free Press
166 Pozorski, T 1980 The Early Horizon site of Huaca de los Reyes societal implications *Am Antiq* 45 100–10
167 Prentice G 1983 Cottage industries concepts and implications *Midcont J Archaeol* 8 17–48
168 Prentice, G 1985 Economic differentiation among Mississippian farm-

steads *Midcont J Archaeol* 10 77–122
169 Price, B 1978 Secondary state formation an explanatory model See Ref 22, pp 161–86
170 Price, B 1984 Competition, productive intensification, and ranked society speculations from evolutionary theory In *Warfare, Culture, and Environment*, ed R B Ferguson, pp 209–40 Orlando Academic
171 Price, T D , Brown, J A 1985 *Prehistoric Hunter-gatherers the Emergence of Cultural Complexity* Orlando Academic
172 Pyne. N 1976 The Fire-serpent and Were-jaguar in Formative Oaxaca a contingency table See Ref 70. pp 272–82
173 Randsborg. K 1974 Social stratification in early Bronze Age Denmark a study in the regulation of cultural systems *Praehist Z* 49 38–61
174 Randsborg, K 1975 Social dimensions of early Neolithic Denmark *Proc Prehist Soc* 41 105–18
175 Randsborg, K 1980 *The Viking Age in Denmark the Formation of the State* London Duckworth
176 Randsborg, K 1982 Rank, rights and resources an archaeological perspective from Denmark See Ref 183. pp 132–39
177 Renfrew. C 1973 *Before Civilisation the Radiocarbon Revolution and Prehistoric Europe* London J Cape
178 Renfrew, C 1973 Monument, mobilisation and social organization in neolithic Wessex In *The Explanation of Culture Change*. ed C Renfrew, pp 539–58 London Duckworth
179 Renfrew, C 1974 Beyond a subsistence economy, the evolution of social organization in prehistoric Europe In *Reconstructing Complex Societies*, ed C B Moore *Bull Am Sch Orient Res* 20 69–95
180 Renfrew, C 1976 Megaliths, territories and populations In *Acculturation and Continuity in Atlantic Europe*, ed S J DeLaet, pp 198–220 Bruges de Tempel
181 Renfrew, C 1982 Socio-economic change in ranked societies See Ref 183, pp 1–8
182 Renfrew, C , Cherry. J F 1986 *Peer Polity Interaction and Socio-political Change* Cambridge Cambridge Univ Press
183 Renfrew, C , Shennan, S J 1982 *Ranking, Resource and Exchange Aspects of the Archaeology of early European Society* Cambridge Cambridge Univ Press
184 Rice, P 1981 Evolution of specialized pottery production a trial model *Curr Anthropol* 22·219–40
185 Rindos, D 1985 Darwinian selection, symbolic variation, and the evolution of culture *Curr Anthropol* 26 65–88
186 Roosevelt, A 1980 *Parmana Prehistoric Maize and Manioc Subsistence along the Amazon and Orinoco* New York Academic
187 Rothschild, N 1979 Mortuary behavior and social organization at Indian Knoll and Dickson Mound *Am Antiq* 44 658–75
188 Rowlands, M J 1980 Kinship, alliance and exchange in the European Bronze Age In *Settlement and Society in British Later Bronze Age*, ed J C Barrett, R J Bradley, pp 15–55 *Brit Archaeol Rep* 83
189 Ruggles, C L N , Whittle, A W R 1981 Astronomy and society in Britain during the period 4000–1500 B C *Brit Archaeol Rep* 88
190 Ruyle, E 1973 Slavery, surplus, and stratification on the Northwest coast the ethnoenergetics of an incipient stratification *Curr Anthropol* 14 603–31
191 Sahlins, M D 1958 *Social Stratification in Polynesia* Seattle Univ Wash Press
192 Sahlins, M D 1963 Poor man, rich man, big man, chief political types in Melanesia and Polynesia *Comp Stud Soc Hist* 5 285–303
193 Sahlins, M D 1985 *Islands in Time* Chicago Univ Chicago Press
194 Sanders, W 1984 Pre-industrial demography and social evolution See Ref 243, pp 7–39
195 Sanders, W . Price, B 1968 *Mesoamerica the Evolution of a Civilization* New York Random House
196 Sanders, W , Webster, D 1978 Unilineality, multilineality, and the evolution of complex societies See Ref 115, pp 249–302
197 Schacht, R M 1984 The contemporaneity problem *Am Antiq* 49 678–95
198 Scott. C 1983 *The development of Wanka chiefdoms in the central highlands of Peru* Presented at Ann Meet Soc Am Archaeol
199 Service, E 1962 *Primitive Social Organization* New York Random House
200 Service, E 1975 *Origins of the State and Civilization* New York Norton
201 Service, E 1978 Classical and modern

theories of the origins of government See Ref 22, pp 21–34
202 Shennan, S 1975 The social organization at Branc *Antiquity* 49 279–88
203 Shennan, S 1982 From minimal to moderate ranking See Ref 183, pp 27–32
204 Shennan, S J 1982 Ideology, change and the European early Bronze Age See Ref 105, pp 155–61
205 Shennan, S J 1982 Exchange and ranking the role of amber in the earlier Bronze Age of Europe See Ref 183, pp 33–45
206 Shennan, S J 1987 Trends in the study of later European prehistory *Ann Rev Anthropol* 16 365–82
207 Smith, B D 1978 *Mississippian Settlement Pattern* New York Academic
208 Smith, B D 1982 Explanation in archaeology See Ref 125, pp 73–82
209 Smith, B D 1986 The archaeology of the Southeastern United States from Dalton to deSoto 10 500–500 B P In *Advances in World Archaeology*, ed F Wendorf A Close, 5 1–92 Orlando Academic
210 Snarskis, M 1987 The archaeological evidence for chiefdoms in eastern and central Costa Rica See Ref 47
211 Sorensen, M L S 1987 Material order and cultural classification the role of bronze objects in the transition from Bronze Age to Iron Age in Scandinavia In *Archaeology of Contextual Meaning* ed I Hodder, pp 90–101 Cambridge Cambridge Univ Press
212 Spencer, C S 1987 Rethinking the chiefdom See Ref 47
213 Spriggs, M 1986 Landscape land use and political transformation in southern Melanesia See Ref 122, pp 6–19
214 Steponaitis, V 1978 Locational theory and complex chiefdoms a Mississippian example See Ref 207, pp 417–53
215 Steponaitis, V 1981 Settlement hierarchies and political complexity in nonmarket societies the Formative period in the valley of Mexico *Am Anthropol* 83 320–63
216 Steponaitis, V 1983 *Ceramics Chronology and Community Pattern* New York Academic
217 Steponaitis, V 1986 Prehistoric archaeology in the southeastern United States, 1970–1985 *Ann Rev Anthropol* 15 363–404
218 Sterns, M 1984 Succession to chiefship in Haida society See Ref 146, pp 190–219
219 Stevenson, C 1986 The socio-political structure of the southern coastal area of Easter island, AD1300–1864 See Ref 122, pp 69–78
220 Stevenson, R F 1968 *Population and Political Systems in Tropical Africa* New York Columbia
221 Steward, J H, Faron, L C 1959 *Native Peoples of South America* New York McGraw-Hill
222 Struever, S, Houart, G 1972 An analysis of the Hopewell interaction sphere In *Social Exchange and Interaction*, ed E Wilmsen *Mus Anthropol Univ Mich Anthropol Pap* 46 47–79
223 Suttles, W 1968 Coping with abundance subsistence on the Northwest coast In *Man the Hunter*, ed R Lee, I DeVore, pp 56–68 Chicago Aldine
224 Sutton, D G 1987 *The origins and operation of the northern Maori chiefdom* Presented at Ann Meet Soc Am Archaeol, Toronto
225 Tainter, J 1973 The social correlates of mortuary patterning at Koloko, North Kona, Hawaii *Archaeol Physiol Anthropol Pac* 8 1–11
226 Tainter, J 1976 Spatial organization and social patterning in the Kaloko cemetary, North Kona, Hawaii *Archaeol Physiol Anthropol Pac* 11 91–105
227 Tainter, J, Cordy, R 1977 An archaeological analysis of social ranking and residence groups in prehistoric Hawaii *World Archaeol* 9 95–112
228 Taylor, D 1975 *Some locational aspects of middle-range hierarchical societies* PhD thesis CUNY
229 Terrell, J 1986 *Prehistory in the Pacific Islands* Cambridge Cambridge Univ Press
230 Tilley, C 1984 Ideology and the legitimization of power in the middle neolithic of southern Sweden See Ref 145, pp 111–46
231 Tooker, E 1983 The development of political organization in native North America *1979 Proc Am Ethnol Soc* Seattle Univ Washington Press
232 Upham, S 1982 *Politics and Power* New York Academic
233 Upham, S 1983 Intensification and exchange an evolutionary model of nonegalitarian socio-political organization for the prehistoric plateau Southwest See Ref 134, pp 219–45
234 Upham, S 1987 A theoretical consideration of middle range societies See Ref 47
235 Webster, D 1975 Warfare and the evolution of the state *Am Antiq* 40 464–70

236 Webster, D 1976 On theocracies *Am Anthropol* 78 812–28
237 Wells, P 1980 *Culture Contact and Culture Change Early Iron Age Europe and the Mediterranean World* Cambridge Cambridge Univ Press
238 Wenke, R 1981 Explaining the evolution of cultural complexity a review *Adv Archaeol Meth Theory* 4 79–127
239 Willems, W 1978 Burial analysis a new approach to an old problem *Ber Rijkdienst Oudheidkundig Bodemonderzock* 28 81–98
240 Wilson, D J 1981 Of maize and men a critique of the maritime hypothesis of state origins on the coast of Peru *Am Anthropol* 83 93–120
241 Wittfogel, K 1957 *Oriental Despotism* New Haven Yale Univ Press
242 Wright, H 1977 Recent research on the origin of the state *Ann Rev Anthropol* 6 379–97
243 Wright, H 1984 Prestate political formations In *On the Evolution of Complex Societies*, ed T Earle, pp 47–77 Malibu, Calif Undena
244 Wright, H 1984 Footnote 2 in 'Mesopotamian social evolution," by R McC Adams See Ref 243, p 120
245 Yerkes, R 1983 Microwear, microdrills, and Mississippian craft specialization *Am Antiq* 48 499–518
246 Yerkes, R W 1986 Licks, pans, and chiefs a comment on Mississippian specialization and salt *Am Antiq* 51 402–4
247 Zwelebil, M 1985 Iron age transformations in northern Russia and the northern Baltic In *Beyond Domestication in Prehistoric Europe*, ed C Gamble, G Barker, pp 147–80 Orlando Academic