

# Building a New Biocultural Synthesis

## *Political-Economic Perspectives on Human Biology*

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## Chapter 5

# *Linking Political Economy and Human Biology: Lessons from North American Archaeology*

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Archaeologists, with a unique view of relationships between environment, society, and human biology over large units of space and time, like to emphasize the importance of their discipline for understanding the human condition. Archaeology thus can provide a long-term, historical perspective on human survival problems and the relative costs and benefits of different strategies (e.g., technoeconomic, organizational) for coping with those problems.

The study of health in prehistory has amply demonstrated its relevance to archaeology's goal of understanding the biocultural consequences of different survival strategies. The study of human remains is perhaps the best means available for identifying patterns of resource deprivation and differential activity within and between human groups, and hence relative social inequality. Because many important stressors leave indelible marks on human bone, bioarchaeology can potentially circumvent some of the difficult problems with inferring social inequality from other lines of archaeological evidence such as house size variation, inter-household wealth differentials, settlement hierarchies, and so on (e.g., see White 1985; Reid and Whittlesey 1990).

As with any set of archaeological observations, however, the social meaning of documented variation (or lack thereof) in biological well-being for any given case is not transparent. Biological markers could be the product of many different processes, and we cannot always read straightforwardly from observable patterns in bioarchaeological data to political-economic reality. A variety of historically specific "contextual" factors—ecological, biological, political, economic, and cultural—affect human

health and thereby complicate bioarchaeological interpretation. Bioarchaeologists have long been aware of this multiplicity of causes and have recently engaged in stimulating debate about it (e.g., Wood et al. 1992; Goodman 1993).

From the perspective of this chapter, the recognition of complexity is as exciting as it is sobering. It is exciting because it is in the complications of real-world archaeological and bioarchaeological data—especially the incongruities between expected and observed patterns, or what Binford (1987) and Leone (1988) term *ambiguity*—that clues to novel organizational arrangements and alternative causal dynamics are to be found. The challenge in dealing with ambiguity so as to recognize novelty of process and cause, as bioarchaeologists have also pointed out, is to develop theory sensitive to the myriad contextual forces that shape human social life and biology, and to use multiple lines of evidence to evaluate that theory (see especially Goodman 1993).

This paper takes up the theoretical challenge from a Marxist, class-analytical perspective. This perspective takes human labor as the entry point to analysis of the social lives and biological well-being of humans. More pointedly, it sees the production and distribution of social labor as a useful entry point for integrating political economy and human biology.

The first part of the paper outlines the basic structure and organizing assumptions of a class-analytical Marxist theory. It specifies the kinds of social differences created by labor flows, the relationships between labor flows and other social processes, and the implications for understanding human health and nutritional patterns.

The second part examines case material from North American archaeology as a way to further develop theory and open new research directions. Material from the Mississippian Southeast and the Anasazi Southwest—two areas abundant in empirical ambiguity and interpretive uncertainty—is especially useful in this regard.

The conclusion summarizes the theoretical and methodological challenges facing bioarchaeological research in North America and beyond.

### Human Labor and Biology in Marxist Theory

The distinctiveness of Marxist theory lies in its focus on the varied forms and conditions under which surplus labor is appropriated and distributed in society. By surplus labor, I mean the time and energy expended beyond the amount required (termed *necessary labor*) to meet the subsistence

needs of individuals. That all societies produce surplus labor was one of Marx's key insights, and this basic idea has been developed in anthropology by, among others, Harris (1959), Wolf (1966), and Cook (1977). Surplus labor or its fruit (surplus product) is required to replace tools and other items used up in the production process; provide insurance against productive shortfalls; care for the sick, infirm, and other nonproducers; fund administrative positions; and satisfy common social and cultural needs (Cook 1977, 372).

Arrangements for mobilizing social labor vary widely in form. A vast literature examines these variations (e.g., Marx 1964; Hindess and Hirst 1975; Wessman 1981; Wolf 1982; contributors to Seddon 1978 and Kahn and Llobera 1981). Among the forms of the labor process that have been defined are the communal, tributary, and capitalist. Each form of surplus production is broadly governed by different social relationships: by kinship relations in the communal form; by political-jural relations in the tributary form; and by the marketing of human labor power in the capitalist form. In Marxist theory, any single organizational entity (e.g., a society, a community, a household) can contain one or more ways of producing surplus labor.

Because the organization of social labor governs activity patterns and the allocation of goods and services in society, it directly affects biological well-being. Extrapolating from Huss-Ashmore and Johnston (1985, 497–98), labor relations

1. determine the division between necessary and surplus labor or, in other words, between the "caloric minimum" required for the reproduction of individuals and the labor required for reproducing aggregates of individuals;
2. influence decisions about production strategies (including choice of strategy and the intensity of work) for meeting caloric minima and the variety of social demands for surplus. This in turn can place differential mechanical stresses on individuals;
3. govern consumption patterns within social units such as households; i.e., how resources are distributed, in what amounts, and to whom. This can disproportionately benefit some individuals and discriminate against others, often along lines of gender and age.

Understanding the social dynamic inherent in different forms of labor appropriation and its biological consequences requires theory that

addresses difference at the level of individual human agents. Marx recognized that the process of producing and distributing surplus labor inevitably created such differences. Specifically, it sorted people into producers, appropriators, distributors, and recipients of surplus labor. For Marx, these differences defined positions in a set of *class* processes (1967). That is, Marx defined class as an individual's position in a *relationship* of surplus labor flow. This is in contrast to non-Marxist definitions of class as the differential possession of wealth, property, power, or some combination thereof (Resnick and Wolff 1986).<sup>1</sup>

The Marxist economists Resnick and Wolff (1987, 109–63) further clarify the nature of these labor relationships by breaking down the class process into two different, but closely connected kinds of surplus flow. One kind of flow is the initial production and appropriation of surplus labor. This can be termed the *fundamental* class process. Using conventional Marxist categories, we can distinguish communal, tributary, and capitalist forms of the fundamental class process. Producers and appropriators of surplus within each form are thus the fundamental classes in society—they occupy fundamental class positions.<sup>2</sup>

The second kind of surplus flow is the *subsumed* class process. This refers to the distribution of surplus labor by the appropriators to specific individuals who provide the political, economic, and cultural conditions that allow a particular fundamental class process—or multiple fundamental class processes—to exist. Such individuals may include people who make decisions about the allocation of labor to productive tasks; who regulate the distribution of necessary factors of production (e.g., tools and land); who distribute the surplus product to nonproducers; and who help create forms of consciousness among producers that are compatible with particular productive relationships. Distributors and recipients of surplus labor are thus the subsumed classes in society and occupy subsumed class positions. A number of different subsumed classes can exist in society, which in turn place a variety of drains on appropriated surplus.<sup>3</sup>

In Marxist theory, fundamental and subsumed class processes provide the conditions of each other's existence. Other conditions of existence are provided by a host of *nonclass* social processes. These nonclass processes do not involve flows of surplus labor, but rather other kinds of interactions that affect the production and distribution of surplus. For example, various kinds of power/authority relations can affect who is placed in what class position(s) and how they perform their roles. The nature and status of social exchange relationships (e.g., the existence of various forms of

debt and obligation) can influence decisions about the conduct and intensity of household labor appropriation. Traffic in cultural meanings—meanings that shape the self and social consciousness of producers—can affect the willingness of people to participate in particular class (and other nonclass) processes. Nonclass processes are thus as important as class processes for understanding social production and reproduction. People confront each other not only in these nonclass relationships, but also in the rules that govern access to, and control over, nonclass social positions and practices. Some of these rules and practices are, as mentioned, provided and reinforced by the activities of subsumed classes.

Recognizing the potential for variable linkages between class and non-class social processes is as important as recognizing individual human agency. This is especially crucial for understanding ambiguity in archaeological contexts, as I suspect that much ambiguity is created by novel combinations of class and nonclass processes. Marxist theory recognizes that any given fundamental class process can be sustained by a variety of non-class processes. Some of these combinations may be counterintuitive. Communal forms of surplus appropriation, for example, do not require full *equality* of access to resources (Patterson 1991; Keene 1991; Lee 1992). What matters is the maintenance of some measure of *guaranteed* access to socially determined portions of necessary and surplus labor, or what Rosenberg (1990, cited in Lee 1992, 40) terms *entitlements*. Neither does communalism require the absence of formal, even institutionalized social hierarchy; what matters is the specific relationship between hierarchy and surplus appropriation (Resnick and Wolff 1988, 27–28). In short, communalism can be compatible with a variety of socially regulated forms of economic and political inequality as might be archaeologically indicated by house size variation, specialized craft production, prestige goods exchange, and settlement hierarchies, provided that most surplus labor is communally appropriated and access to social entitlements is guaranteed.

This Marxist analytical framework thus expects complexity in the social relations that organize labor flows at *all* ranges of societal scale, from kin-communal formations to industrial capitalist formations. Individuals are expected to participate in a variety of class and nonclass processes in both domestic and wider public spheres. In addition, they are expected to participate in a variety of class and nonclass struggles over labor flow and its various conditions of existence. Fundamental classes can struggle over the amounts of necessary and surplus labor produced in society, and over the form surplus labor takes (i.e., whether in goods, ser-

vices, or some combination of the two). Subsumed classes can struggle with fundamental producers and also among themselves over the size and allocation of shares of appropriated surplus. Finally, people differentially positioned in nonclass processes can struggle over power relations, various economic conditions (e.g., how labor is divided and exchange regulated), and the cultural meanings that sustain fundamental and subsumed class processes. The precise character of these struggles and their outcome depends on the form of surplus appropriation and other local circumstances—making prediction difficult but not impossible.

Marxist theory thus eschews "classless" models of society that homogenize social labor processes and positions, as well as simple "two-class" models that oppose exploitative elites to subordinate commoners. Instead, individuals can have varied social positions, roles, and sources of support. Individuals can be producers of surplus labor at some institutional "sites" in society (e.g., field or workplace) but extractors at others (e.g., within households). Similarly, "elites" may be extractors of surplus (as in tributary formations), subsumed recipients of surplus who lack direct control over labor (as in communal formations), or both. The variable and problematic positions of individuals within class and nonclass processes create a mosaic of tensions, strategies and impulses to change which in turn can affect individual physiologies.

Finally, Marxist theory does not expect any particular form of surplus production to have necessary biological correlates or consequences, given the potential for variation in labor's nonclass conditions of existence and other historical factors. Class divisions may not lead to health and nutritional differences among people, if other complicating factors intervene. By the same token, health and nutritional differences may not necessarily reflect class divisions. I can imagine a scenario for communal formations in which economic goods and ritual items (i.e., prestige goods) have broadly equivalent cultural values and are reciprocally exchanged for each other, resulting in health differences between the exchanging parties without exploitation of one by the other. Such "unequal" exchanges could even become institutionalized as a way to create a complementarity of groups in a wider, integrated regional network. In this scenario, cultural factors intervene to create differing health profiles in the context of basically communal relations of production.

On the assumption that different political economies are not necessarily associated with specific patterns of biological advantage and deprivation, research must be contextual, with biological patterns viewed in the

context of local cultures and histories. In the next section I examine case material from prehistoric North America as way to further develop a Marxist theory for understanding biocultural relationships in prehistory.

### Class and Health in Prehistory: North American Cases

North American prehistory is a good place to explore organizational variation, including the complex relationships between social labor and human biology. Empirical research on prehistoric cultural and biological patterns attests to the diverse experiences of indigenous populations. These patterns challenge traditional interpretive models and suggest alternative political economies and causal dynamics.

Two geographical areas, the Mississippian Southeast and the Anasazi Southwest, are particularly interesting because of their potential to inform on alternative organizational possibilities. In this section I consider bioarchaeological patterns in each area and their broader social meaning, as understood through Marxist theory. Although it is difficult to provide conclusive interpretations given limitations of theory and data, some preliminary ideas can be sketched that raise new research questions and point the way to more exact interpretive models.

#### *Mississippian Southeast*

The traditional view of the Mississippian as a monolithic, homogeneous archaeological culture is currently yielding to one emphasizing a "mosaic" of regional variants and a diversity of developmental trajectories (Smith 1991, 168; see also Milner 1990, 21–23). Scholars have documented variation among Mississippians in the rate at which maize agriculture was adopted, in the uses to which early cultigens were put (whether economic or symbolic), and in the overall degree of agricultural dependence (Smith 1986; Rose, Marks, and Tieszen 1991). Variation has also been documented in rules of political succession, including combinations of ascription and achievement (Blakely 1977; Scarry 1992). Finally, differences have been mapped in the size, geographical scale, and developmental histories of political entities (Steponaitis 1991, 216).

The biological well-being of Mississippian peoples also appears to have varied considerably across time, space, and social context. At some major centers where social hierarchy appears well-established on architectural and mortuary evidence, biological differences between "elites" and

"commoners" are not significant. Powell (1991, 1992), for example, shows that general health at Moundville was not compromised by political hierarchization. The Moundville chiefs were neither significantly better nourished nor less disease-ridden than the working populace. Powell also shows that biological patterns at other Mississippian centers present a similarly mixed picture (1992, 48–49). The finding that elites appear not to have benefited much from their "empowered" status violates an expectation of the traditional two-class model for ranked societies and opens the door to alternative interpretive possibilities (Smith 1991, 169).

Interestingly, general health at some other Mississippian centers appears to have been *inferior* to that at peripheral settlements. Humpf (1992) shows that the protohistoric mound center of Little Egypt (northwest Georgia) had poorer health as measured by enamel hypoplasias, dental caries, stature, and longevity than the outlying and presumably subordinate nonmound towns of Etowah and King. Possible explanations for this include Little Egypt's greater population density, political inability to sustain tribute collection from outliers, and earlier contact with disease-carrying Europeans. However, the lessons of other pre- and protohistoric Mississippian centers (including Moundville, which was similarly aggregated yet whose denizens nonetheless enjoyed good health) suggests that a single factor is not responsible for Little Egypt's generally poor health profile. Rather, causation must have been more complex.

In other parts of the Mississippian world, peripheral populations were clearly hurting, in the sense of having greater disease loads (pathologies, lesions, anemias) and reduced longevity. These areas include Dickson Mounds in Illinois (Goodman et al. 1984; Goodman and Armelagos 1985; Goodman, this vol., chap. 6) and Averbuch in Tennessee (Eisenberg 1991). Data from these areas directly raise the issue of exploitation in the Mississippian world. Goodman and Armelagos suggest that populations living in the vicinity of Dickson were suffering from unequal long-distance exchange relationships with, if not tributary exploitation by, the greatest of Mississippian political centers, Cahokia. Eisenberg (1991, 86) hints that tributary relations directly enmeshed Averbuch. Milner (1990, 26–27), however, challenges the inference of large-scale tributary relations emanating from Cahokia. He suggests that Cahokian exploitation of the Dickson area would have been logistically difficult and thus impractical given the distances involved, and he also questions the notion on empirical grounds (see also Emerson 1991). If Milner is correct, then some other fac-

tor or factors must be responsible for the biological deprivation evident at Dickson and, conceivably, at Averbuch as well.<sup>4</sup>

In short, the Mississippian record potentially reveals interesting discrepancies between health patterns and other demographic, settlement, and architectural patterns. Biological and material variation within and between Mississippian polities precludes simple uncausal or universal explanations (Humpf 1992, 130; Smith 1991, 168). It is unclear what social organizations are indicated by the combined biological and cultural patterns, or what the factors creating nutritional deprivation were. However the patterns do, I think, undermine any simple, two-class model of chiefly elites and subordinate commoners (see also Milner 1991, 53–54, for a similar view). In my opinion they invite more nuanced models of how labor and resources flowed through Mississippian political economies.

One alternative model would view Mississippian polities as variants of complex communal formations, where surpluses are collectively produced and distributed in the context of nonclass political, economic, and cultural relations of variable (and still dimly perceived) form and complexity. In these models "elites" are subsumed recipients of communal surplus labor, rather than fundamental classes of tribute-takers. In other words, elites receive subsumed class shares of communal surplus labor in either service (e.g., agricultural field work—see Scarry 1992), goods (e.g., animal protein—see Welch 1991), or both, as compensation for brokering trade in prestige goods (which can be viewed as communal *ritual* entitlements necessary for legitimating initiations, marriages, and other important life transition events), redistributing people over the landscape, administering communal undertakings such as moundbuilding, and so on.

Ethnography provides a warrant for expecting these kinds of relationships. Harrison (1987) describes a regional system among tribal polities in Melanesia in which a variety of material values (e.g., yams, fish, shell) are exchanged for various ritual values (e.g., totems, spirits, myths, spells, initiatory sacra). Piot (1992) documents a similar movement of economic values against ritual values within a single society (the Kabre) in West Africa. Harrison shows how the Melanesian exchanges can benefit the purveyors of symbolic goods and lead to incipient social ranking, while Piot shows how the African exchanges create social differences that are in fact *necessary* for the maintenance of complementarity and interdependency (and hence a broad equality) among different communities in an integrated regional system. The general point here is that each ethnographic example

substantiates a complex relationship between tribal politics, economics, and ideology that conceivably can create health differences in the absence of fundamental class divisions.

Such complexity may also have characterized Mississippian social relationships, given the biological patterns discussed above and equivocal support for tributary models at even the most impressive Mississippian mound centers (e.g., see Welch's 1991 consideration of alternative models for Moundville). Populations in some areas (such as at Moundville) fared well under complex relationships of communality, while others (such as in the Dickson Mounds area), suffered. The key point is that the nutritional deprivation that existed in the Mississippian world may not have resulted from economic exploitation within the context of tributary relationships, but rather from historically specific sets of fundamentally communal class relations and their attending ideologies.

On this model of communal relations of production, tributary surpluses and class divisions are realized among Mississippians rarely if at all, and then only for the briefest periods of time. A look at even the most complex case of Mississippian development—Cahokia—suggests the plausibility of this model or some variant of it (Saitta 1994). Cahokia is generally interpreted as a tributary chiefdom (Dincauze and Hasenstab 1989; Peregrine 1991) although some suggest that it was a state (O'Brien 1992). Milner (1990) and Pauketat (1992), however, suggest that the Cahokia polity was more dynamic, unstable, and decentralized than usually supposed. Still, denying tribute and class divisions at Cahokia is difficult, especially during the Stirling Phase (A.D. 1050–1150). Tributary relations are perhaps most dramatically signaled by the famous Mound 72 retainer sacrifices (O'Brien 1992) and the stockading of the central elite precinct of the site (Pauketat 1992).

Nonetheless, these tributary relations were apparently short-lived and eventually truncated by popular resistance. It is interesting (and paradoxical for tribute models) that during the Stirling Phase "complexity" at Cahokia *increased* (i.e., political hierarchy deepened) as exchange in prestige goods *declined* (Pauketat 1992). If prestige goods had the status of communal ritual entitlements that moved against various economic values and labor, then their declining availability may have compromised the communal subsumed class incomes that sustained the Cahokian elites responsible for organizing long distance exchange. As a response, these communal subsumed classes may have begun to use their social position to foster exploitative (i.e., tributary) relations of production. Such relations

may have been sustained and legitimized by Ramey incised ceramics (Pauketat and Emerson 1991), the construction and use of Woodhenge as an "authoritative resource" (Smith 1992), and elite annexation and fortification of other previously communal spaces. That this effort was effectively resisted by primary producers during the Stirling Phase is perhaps indicated by demographic flight to northern areas (Emerson 1991); a shift from extramural to intramural storage at outlying farmsteads (Pauketat 1992), perhaps as a way to conceal household surpluses from tribute-takers; and the eventual reclamation of annexed elite spaces for a return to residential use (Pauketat 1992). If we add to this the observation that health at Cahokia was comparable to Moundville—meaning generally good (Milner 1991, 67)—then we strengthen the warrant for investigating Cahokia with alternative models of political economy.

#### *Anasazi Southwest*

Health patterns in the Anasazi Southwest offer a similar warrant for exploring novelty in prehistoric political economies and biocultural relationships. At present there is little agreement about the complexity of Anasazi societies or the processes by which they were organized. For some scholars, these polities were always basically egalitarian, while others recognize a spectrum of organizational forms ranging from egalitarian to politically centralized and class-divided (Lightfoot and Upham 1989). Available evidence for resolving the issue is ambiguous if not contradictory, and opposed models can often find equivalent measures of support.

Patterns of variation in health and nutrition are as equivocal as the cultural patterns. Nelson et al. (1994), however, provide a useful synthesis that imposes some order on the existing data. Their information crosscuts environments, time periods, and various "organizational states" of Anasazi populations (e.g., dispersed, aggregated, and centralized). Although the data are limited, Nelson et al. suggest that biological disruption is dependent neither on environmental marginality nor on time. There is better support for biological disruption being dependent on organizational state, with the politically autonomous "dispersed" populations faring better than what the authors view to be politically centralized, class-divided cases.

Interestingly, however, the latter do not belong to a distinct pattern. Health at politically centralized and presumably class-divided Chaco Canyon, for example, was only slightly more disrupted than health among

the dispersed settlements on Black Mesa. Nonetheless, the presumed tribute-taking elites at the great Chacoan towns (e.g., Pueblo Bonito) were healthier (in terms of fewer anemias and higher mean age at death) than nonelites living at the smaller Chacoan villages. The available data suggest to Nelson et al. that biological disruption in the Anasazi area resulted from a complex interaction of population density, environmental marginality, political economy, and unknown other factors.

I take the ambiguities noted by Nelson et al.—especially those characterizing their presumed politically centralized cases—as a warrant for exploring alternative models of Anasazi political economy. In keeping with the belief expressed for the Mississippian groups, I think that even the most “complex” of Anasazi politics can be modeled as variants of communal social formations. Substantiating communality is not a problem for the “dispersed” populations of Black Mesa and Arroyo Hondo, but it is a bit more difficult for areas like Chaco Canyon. However, there is still so much unknown about Chaco Canyon and especially the circumstances under which the Pueblo Bonito burial population was deposited (and archaeologically recovered) that perhaps we should not prematurely rule out the communal alternative.

For one thing, we cannot be certain that Pueblo Bonito was a distinct community with a full-time resident population of which the excavated burial population is a sample. That is, we cannot yet rule out the possibility that the Bonito burials were individuals drawn from a wider population that also included villagers. Chaco scholars have not eliminated the possibility that villagers were both the builders and the users of the great towns, and that they were also buried there. Several researchers have already built compelling cases in support of the Chacoan towns as seasonal aggregation sites rather than full-time residences (Windes 1984, 1987; Lekson et al. 1988).

Nor can we be sure that the Bonito burial population does not represent an accumulation of people from throughout the San Juan Basin who died just before or during periodic ceremonial aggregations (as envisioned by Judge 1989) and thus were accorded “status” treatment because of the timing and/or circumstances of their death rather than strictly because of their social position. If the Bonito burial population does sample individuals from a set of geographically dispersed and communally organized groups, this might explain why the Bonito burial population is not that different healthwise from the Black Mesa sample. One way to begin clarifying this issue might be to simulate what a burial population at a large aggregation site only periodically occupied under conditions like those

found in the northern Southwest should look like. We might also consider whether such a scenario could account for certain problems with the Bonito burial sample, such as its relatively small number of infants.

Finally, the contrast to human biology provided by other kinds of material patterns at Chaco—for example, the striking architectural “modularity” of both Chacoan towns and villages (Johnson 1989) and the presence of strong egalitarian themes in architectural patterns on both local and inter-local scales (Fritz 1978)—further suggests that Chaco is marching to the beat of a different drummer, organizationally speaking. Whereas the proposed claim for communality is unsubstantiated, so too are claims for social complexity on a conventional two-class model.

### Conclusion

I have argued that we need new theory for studying archaeological and bioarchaeological patterns so that complexity in prehistoric biocultural relationships can be better understood. Marxist theory strikes me as useful in this regard because, in contrast to conventional classless and two-class models of society, it problematizes labor flows and specifies the different ways that people can relate to these flows. At the same time, Marxist theory respects the relative autonomy of power relations and a variety of cultural processes in shaping class processes. This means that the form of class processes cannot be deduced from power relations (political hierarchy) or vice versa. It also means that biological patterns cannot be taken as a straightforward reflection of political economy (whether communal or noncommunal), because of intervening social and cultural (ideological) factors. The relative autonomy of social processes is what creates ambiguity in archaeological patterning, the stuff of which fresh insights about the past are made. By addressing the surplus labor process, its structural position in society, and the possibilities for variation in labor's conditions of existence, a class-analytical Marxism provides a basis for theorizing alternative organizational possibilities, impulses to change, and historical trajectories.

Bioarchaeological and other material patterns from prehistoric North America suggest complex relationships between political economy and human biology. As traditional two-class interpretive models do not always capture this complexity, I have suggested that models of communal society informed by class theory may prove useful for explaining patterns in the Mississippian Southeast and Anasazi Southwest. These models are, however, in need of greater theoretical development and empirical sub-

stantiation. The theoretical challenge is to more closely specify the precise relationship between flows of surplus, power, and meaning in each area; the extent to which communal and noncommunal class processes coexisted and how; and the potential for change under different historical and environmental circumstances. Development of such theory may help us better understand the complex interaction of population density, environmental marginality, political-economic processes, and other factors that affected human health in prehistory (Nelson et al. 1994).

The methodological challenge to future research is well put by Rathbun and Scurry: we need to rely on "empirical analyses of specific populations in their unique ecological and cultural settings" (1991, 164) rather than deductivist perspectives alone (see also Larsen and Ruff 1991, 111). The need for more fine-grained studies of intrapopulation health differences, especially as they relate to differential activity patterns among individuals (e.g., differences in degenerative joint disease), is also implicated by Marxist theory. Such variation is our best clue to the intensity and kinds of labors being performed by individuals. Studies of activity patterns and their relationship to health have a long history in bioarchaeology (e.g., see review of Bridges 1992). Much recent work usefully relates degenerative joint disease to different kinds of subsistence pursuits (e.g., Brock and Ruff 1988; Bridges 1991; Larsen and Ruff 1991). What is interesting in these studies is the amount of variability documented between sexes and across populations (Bridges 1992), variation that surely tips us off to different organizational arrangements.

Building from this work, it might also be fruitful to do more with the possible skeletal signatures of nonsubsistence related activities. I am thinking here of the interesting implication for the nature of status relationships that follows from the recognition of bony tumors in the ear cartilage of Middle Woodland central tomb males: namely, that status was tied to diving for pearl-bearing mussels (Streuver and Holton 1979). Long-distance running may have had a similar social function at certain times and places in the American Southwest, if recent findings about the nonutilitarian nature of Chacoan roads (i.e., their use as ceremonial raceways) are credible (see Roney 1992). Such an idea would certainly be testable with skeletal data. The more general point here, however, is that we will need attention to the skeletal signatures of both subsistence and nonsubsistence activities in order to achieve a better understanding of prehistoric class and nonclass relationships and their respective impacts on human biology.

Health data are critical for gaining insight into organizational varia-

tion and the causes and consequences of organizational change in prehistory. Unless we have a more complex theory of political economy for accommodating these data, their full implications might be missed. Problematizing labor—as the key link between political economy and human biology—is a start toward a more complex theory. In so doing we can hope to explain the empirical ambiguity that confounds traditional interpretive models and thereby gain new insights into relationships between human culture and biology. The results of bioarchaeological work might then prove even more useful in anticipating the biological consequences of social and economic change across space and time.

#### NOTES

1. Marx was not always consistent in his definition of class. In *Capital* and the *Grundrisse*, Marx waffles between property, power, and surplus labor definitions of class. Definitions of class as differential access to property and power, however, existed long before Marx came on the scene, and they continue to inform non-Marxist analyses of social life (Resnick and Wolff 1986). The surplus labor definition thus provides the most distinctively Marxist understanding of the term. It also makes the term applicable to kin-based societies. Although a distinction exists in Marxist anthropology between "preclass" and "class" societies (e.g., see Spriggs 1984), it is not clear that Marx ever meant to exclude kin-based societies from class analysis. A full defense of the surplus labor conception of class and its applicability to kin-based societies cannot be elaborated here. Suffice it to say that this conception meets the need expressed by Bloch (1985) and others who argue that the Marxist tradition should retrieve a concept of class in order to redress the ecodeterminism and teleology that have found their way into theories of change for "preclass" societies.

2. In capitalism the fundamental classes are capitalist buyers of labor power and the wage-earning sellers of labor power (Marx 1973, 108). In tributary social formations the fundamental classes can include what we term "chiefs" (depending on circumstances) and commoners, or "feudal" lords and peasants. In communal societies, primary producers are both performers and appropriators of surplus labor; that is, appropriation is collective in form and producers fill dual class positions (Amariglio, Resnick, and Wolff 1988). Communal formations are thus the only ones that lack a class *division* in which primary producers have no say over either the amounts or conditions of surplus production and hence are exploited (Wessman 1981). The absence of exploitation does not diminish the utility of the class concept for understanding communal societies, however, as there are still differences to be understood as concerns the distribution and receipt of surplus labor—the subsumed class process (see text following). For a broadly similar way of conceptualizing these social differences see Terray (1975).

3. Landlords, moneylenders, and merchants function as subsumed classes in



capitalism (Resnick and Wolff 1986, 1987); Big Men, "chiefs" (again, depending on circumstances), and various ritual specialists can function as subsumed classes in kin-based, communal social formations (Gailey and Patterson 1988). As Keesing (1991) points out, however, anthropologists have tended to take a narrow view of leadership in kin-based societies, in turn masking important variations and complexities in what can be termed subsumed class structures. A challenge for Marxist theory is to identify these subsumed classes, how they function to reproduce the conditions of labor appropriation, and how they draw support via allocated shares of surplus labor.

4. Contra Milner, Little (1987) establishes the plausibility of long-distance canoe travel—and hence exploitative core-periphery relationships—in the American midcontinent. However, archaeological substantiation of long-distance exchange relationships between areas via canoe would not in itself establish the existence of exploitative class relationships (see preceding text). One mechanism that prehistoric tribute-takers could have used for sustaining class divisions and economic exploitation over long distances was actual travel to peripheral areas with warrior entourages to collect tribute and reassert core supremacy (see Smith and Hally 1992). This mechanism remains to be established for the Mississippian cases at issue here, however. Thus, in the absence of secure direct evidence for long-distance tributary relationships in the Mississippian world, it would seem advisable to entertain a variety of interpretive models.

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