ON THE REASONS FOR SOCIAL EVOLUTION IN MESOAMERICA: INTENTIONS IN THE MODELS

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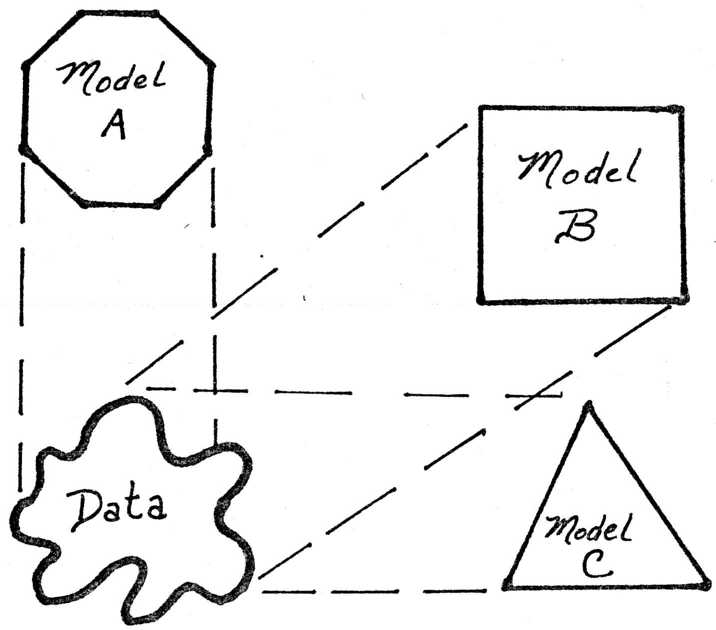
As proponents of the "new archeology" have repeatedly emphasized (e.g. Watson, Redman, LeBlanc 1971), the description of a series of events does not constitute an explanation of those events. In order to explain events, they must be placed against a theoretical model in terms of which the diverse elements of archeological fact can be seen as some kind of integrated whole. While such a recipe for explanation seems simple enough, problems arise in determining: 1) what model to use, and 2) the precise nature of correspondence between the raw data and the model (Fig. 1). These two points are interrelated and the choice of a model depends on how the raw data are first interpreted. In a sense, archeological "explanation" is separated from the archeological data by three discrete levels of interpretation or inference (Fig. 2):

1) prehistoric behavior is inferred from the archeological data
2) a model is chosen that "seems to fit" the behavioral situation
3) the specific bits of data are conceptually arranged according to the model

In other words, archeological interpretation is necessarily divorced from absolute objectivity. Because there is no overarching theoretical paradigm from which models can be generated that are effectively objective (or share the same biases), the archeologist must "select" a theoretical model which he "feels" is most appropriate to his particular situation.

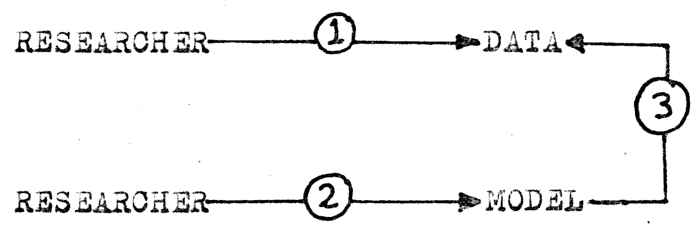
The plethora of conflicting theories for the origin of the state is testimony to this interpretive dilemma. Many of the differing "explanations" for complex societies constitute different interpretations of the same

Fig. 1



-Finding a model that fits the data.

Fig. 2



-The researcher is separated from the data by 3 levels of interpretation archeological data. In this paper I am concerned with one class of assumptions common to all models of social evolution -- namely, assumptions concerning human intentions. Whether explicitly or implicitly (and usually the latter), all theoretical attempts to model the process of social complexity make assumptions about what motivates man to action. I will discuss what some of these assumptions are, and what some of their implications are for understanding the prehistory of Mesoamerica, specifically the rise of the Olmec, Teotihuacan, and the Maya. I do not attempt to critically evaluate all aspects of the evolutionary models, nor do I follow them through all their stages. In fact, I avoid the phrase "origin of the state" precisely for this reason; I do not directly address the question of state origins. Instead my interest lies in _why_ social systems evolve at all, and what _causes_ are identified by different models to explain social evolution.

Ways of Classifying Evolutionary Models

Theories of social evolution are most commonly distinguished by whether they emphasize "conflicts" or "benefits." Service (1978) subdivides the former in terms of the social level at which the conflict occurs: individual, inter-societal, or intra-societal. On the benefits side (see Fig. 3), he uses the term "Integrative" to include all theories "stressing factors that counter the normal centrifugal forces that threaten societies" (Service 1978:27). These he divides into circumscription and organizational benefits.

Both Wright (1978) and Flannery (1972) group state origin theories along lines similar to Service's scheme, but with the important addition of a "mixed" category. Flannery uses the term "multivariant causality" to describe models distinct from "prime mover" theories; Wright's "synthetic" model is similar (Fig. 4 and Fig. 5).

Figure 3
(after Service 1978)

CONFLICT MODELS
- Individual
- Inter-societal
- Intra-societal

INTEGRATIVE MODELS
- Circumscription
- Organizational benefits

Figure 4
(after Flannery 1972)

- Irrigation
- Warfare
- Population Growth and Social Circumscription
- Trade and Symbiosis
- Other "prime movers"
- Multivariant Causality

Figure 5
(after Wright 1978)

- Managerial
- Internal Conflict
- External Conflict
- Synthetic

Figure 6
(after Adams and Culbert 1977)

- Ecological
- Diffusionary
- External Stimulus
- Demographic
- Trade
- Ideology

In Adams and Culbert's (1977) summary of models of social evolution that have been applied to Mesoamerica, all six of their categories (Fig. 6) are of the prime mover rather than the multivariant type. This is interesting because, with the exception of some environmental determinists (e.g. Hill 1977, Athens 1977), most proponents of these different models would agree that many causal factors are operating simultaneously. Rather than viewing a particular prime mover as operating in a vacuum, these models are usually tempered by the implicit premise "ceteris parabis."

The differences between many of these models, and between the ensuing explanations, are subtle; a trade model may differ from an ecological model only in the relative weighting of some archeological fact. For example, the fact that basalt was imported from source X could be interpreted as 1) social relations with the people near X, or 2) the need for basalt in order to process food. Certainly the ecological model does not deny that the basalt was probably traded, nor does the trade model deny it was used for subsistence. In this case, the selection of an ecological model or a trade model hinges on the archeologist's interpretation of the "intent" of the trade. Were they hungry?(ecological model) or just trying to be sociable? (trade model). If the latter, what was their aim in being sociable? Did they have traditional (emotional) ties to the group at X, or did they see X as a good source of cheap basalt which they could then trade with Y for jade?

A simple interpretation of intent, or more usually, as assumption of intent, at the model-building level can have far-reaching consequences at the level of specific interpretations of the data. Thus, Sanders, who developed an ecological model to explain Teotihuacan's growth (1968, passim), adopts the same set of interpretive assumptions to explain a quite different set of archeological facts from the Maya area (1977). Likewise, Rathje's trade model, first developed as an explanation of the Maya rise (1971) was also seen as a suitable model for the different archeological facts of the Olmec (1972). Theoretical models are selected to conform not so much to the peculiarities of the archeological data, as to the archeologist's prior assumptions about human intentions.

In order to make this point more clearly, a simple typology of human intentions will be used as a reference against which we can consider the kinds of motivations attributed to the prehistoric actors by various models of Mesoamerican social development. The three kinds of man defined by the Russian mystic G.I. Gurdjieff will serve as this typology of intentions. As a mystic, Gurdjieff was concerned with universal qualities of man, and in this respect, his observations serve us better than traditional psychological typologies that have been developed primarily for western subjects. Gurdjieff divided man into three types according to his dominant intentions or functions (Ouspensky 1949:71-72):

1) Man Number One - physical man; "the moving and the instinctive functions constantly outweigh the emotional and the thinking functions."

2) Man Number Two - emotional man; "the emotional functions outweigh all others."

3) Man Number Three - intellectual man; "the man of reason, who goes into everything from theories, from mental considerations."

This typology deals with the primary intentions which motivate men to action. As such, it provides a means of formalizing the different premises implicit in models of social evolution. In the following section, Meso-American models are discussed in terms of these three types of human intention: physical, emotional, and intellectual.

MODELS FOR PHYSICAL MAN

When behavior is motivated by physical concerns, "the moving and the instinctive functions constantly outweigh the emotional and the thinking functions" (Ouspensky 1949:71). The purest form of this behavior would be a simple stimulus/response situation, but such an analogy can be misleading. There is no assumption of "mindless" behavior in these physical models of social evolution. Indeed, some models assume the opposite -- man is seen as an all-knowing purveyor of his environment who can discern the most efficient subsistence strategy. The common denominator of all physical models is not the extent to which man is capable of thought, but rather that all his actions are directed toward his physical needs.

There are two general types of physical models: ecological models, which see man responding to the natural environment, and conflict models, which see man responding to his neighbors. In both cases, society requires a stimulus to which it can respond. Without it, no change is possible. Hill (1977:76) aptly summarizes this position:

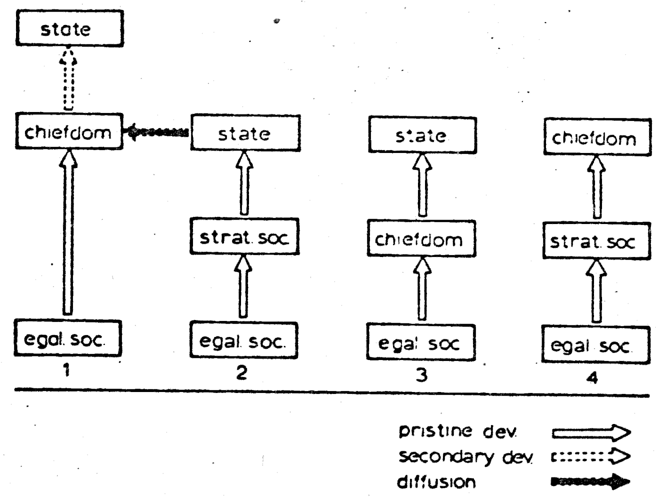
> If a system is in equilibrium, it will remain so unless inputs (or lack of inputs) from outside the system disturb the equilibrium. Of course, the individuals in a social system may consciously realize that change is necessary, but the reason the change is necessary lies in the relationship of the system with its environment.

Ecology at Teotihuacan and Beyond

Sanders (1968, 1976, 1977b) uses an ecological model to account for the rise of the Teotihuacan state in the Valley of Mexico. In an early version (1968), Sanders applies Wittfogel's irrigation theory to the Teotihuacan case, emphasizing the integrative effects of the planning, construction, and maintenance of a water system. This process, and the effects of regional trade, constitute the two main causes of Teotihuacan's development. In a later model (Logan and Sanders 1976), both these causes are related to the prior environmental fact of uneven resource distribution (diversity). It is diversity that accounts for, and in fact necessitates, trade (to even out resources) and allows for irrigation. Indeed, with a certain type of diversity and with a growing and circumscribed population, societies are left with little choice: "when a society increases in size over time and this expansion is ongoing, locally contained, and adequately supported, then that society must develop more complex features of subsistence, economic exchange, and political integration" (Logan and Sanders 1976:32). Since population growth is assumed in this model, social development is entirely dependent on environmental conditions.

In a more recent version of this same general model (Sanders and Webster 1978), population growth is seen as affecting only the rate of change but not its direction, thus sidestepping the issue of population growth as a cause or effect of social evolution (see Cowgill 1975). What the 1978 model consists of, then, is a set of purely environmental features which are proposed as "the main factors that condition the variability of cultural evolution" (Sanders and Webster 1978:298). These are: 1) agricultural risk, 2) environmental diversity, and 3) environmental productivity ("subsistence products"). Each is defined in gross quantitative terms (e.g. high vs. low) and applied to the Mesoamerican data whereby four alternative trajectories are distinguished (Fig. 7).

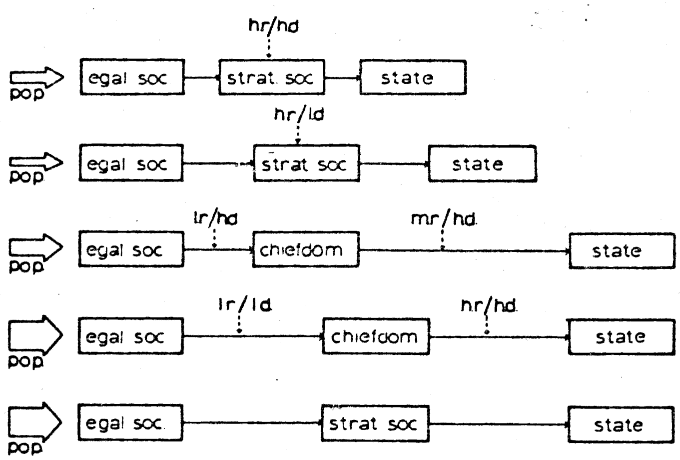
Despite Sanders and Webster's (1978:301) claim that "the Mesoamerican evolutionary sequences...conform more fully to, and are explained more satisfactorily by, our proposed model..." (emphasis added), no explicit consideration is given to the intentions of the prehistoric agriculturalists



Evolutionary trajectories.

Two views of evolutionary trajectories FIGURE 7

(after Sanders and Webster 1978)



Multilineal systemic model with ecological variables controlling various evolutionary trajectories. Population growth is assumed throughout each sequence but is not itself necessarily directly deterministic of tempos or limits of evolution; its importance is greater in some trajectories than in others. *l* = low; *h* = high; *m* = medium; *r* = risk; *d* = diversity.

who, we are asked to believe, acted in accordance with an ecological model. Each regional sequence (e.g. the Valley of Mexico, the Maya Lowlands) is "explained" by first predicting an evolutionary trajectory based on the three variables of risk, diversity, and productivity and then demonstrating that the archeologically known sequence matches the original prediction. Sanders and Webster could be criticized for confusing explanation with correlation, but I think it would be more accurate to criticize their "explication." What they have neglected to explicitly state is an assumption regarding human intention which, I suspect, seems patently obvious to them, i.e., human actions are primarily re-actions to physical stimuli. Thus, by identifying the changes in environmental stimuli over time, human social evolution can be both correlated with and explained by the environment.

Certainly this is an extreme view but I do not believe I have overstated it. For example, Sanders (1977:239) notes that during both the Cuanalan phase and the Patlachique phase in the Teotihuacan Valley, there is a predilection for residence in the upper elevations of 2300-2600 m, but settlement patterns change in the lower elevations. In the Patlachique phase, there is "an enormous expansion of population in the vicinity of and within the alluvial plain," and a new urban population of 20,000 to 40,000 appears. Sanders (1977:240) raises "the question of the why and the how of this shift..." and suggests that "the location plus the large size of the population can most reasonably be explained by the inception of some form of intensive cultivation at this time." And the development of intensive cultivation is a conditioned response to high-risk environments where "the stimulus to more intensive methods of low-risk cultivation is high..." (Sanders and Webster 1978:298). In effect, man had no choice but to build the mighty city of Teotihuacan.

A different kind of ecological approach is suggested by Rathje in his trade model (Rathje 1971, 1972, 1977). Rathje starts from the assumption that commodities not available in the Olmec or Maya lowlands (salt, obsidian, basalt) were needed at the household level. "As lowland settlements developed further and further from resource areas, trade relations became extended" (Rathje 1972:386). This stimulated the development of a social organization that could insure a supply of resources.

Rathje's model can be viewed as a second order ecological model. In the first order, the environment stimulates man to action (trade); in the second order, trade stimulates more trade and ultimately it is the need to organize this trade which results in an overall social evoluation. In arguing that the <u>lack</u> of resources should stimulate social organizational complexity, this model contradicts (or complements) that of Sanders and Webster which is based on a resource surplus. When viewed in terms of what kinds of human intentions are involved, however, the two models are very similar. Because Rathje's model is based on what he considers to be "basic" resources, his actors <u>must</u> obtain them.

Rathje (1977:378-380) distinguishes two trading thresholds in the development of Maya centers. The first is the appearance of Floral Park ceramics originating in Salvador. These wares are significant because "they opened a new type of resource demand at ceremonial, and perhaps even at household, levels." The second is contact with Teotihuacan commodities and the development of the "Barbie-Doll cult complex." The effect of entering into the wider network of Teotihuacan trade was to give the Maya "a handle on many other resource areas." To Rathje, these two trade networks are significant because of the economic growth each precipitates, but not because of any ideas or concepts that might accompany this trade. The Maya were reacting only to the material stimuli of their economic environment. Therefore, while this model is more complex than a purely ecological one, it relies on the same physical intentions to motivate social evolution.

Conflict in the Maya Lowlands

Warfare as a mechanism for social complexity plays various roles in the evolutionary models that recognize it as a factor. Fried (1967) argues that warfare can be effective only in stratified societies, while Carneiro (1978:209) believes warfare is important at any level of complexity but "only when human numbers begin to press hard against the carrying capacity of the land." Webster (1977:347), who sees warfare everywhere, cites an ethnographic report that the Maori would rather fight over second growth lands than switch their attention to nearby virgin forests.

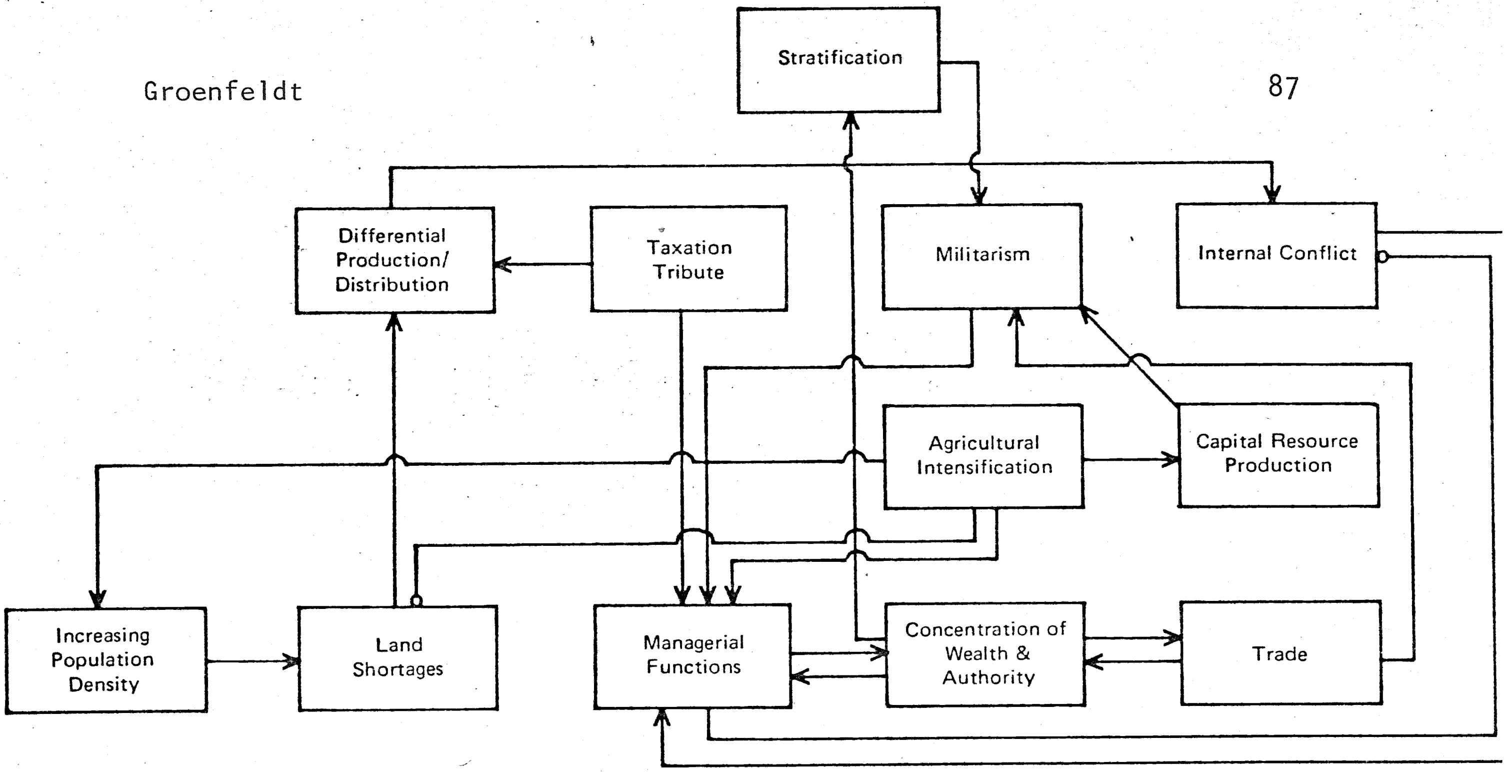
Despite disagreement as to when warfare operates and what its effects are, there seems to be a general (albeit silent) consensus as to why societies fight each other. The answer, in brief, is that men, and especially groups of men , compete over scarce resources. The basic assumption is that man's actions are motivated by physical intentions, i.e., the fulfillment of physical needs and wants. Here again this view of "physical man" is considered to be so obvious that to explicitly state it as as assumption would be superfluous. Indeed, Carneiro (1978:208) expresses surprise that anthropologists don't make more use of biological models: "Curiously enough, the principle of competitive exclusion, now recognized as a major factor in organic evolution, is scarcely alluded to by anthropologists."

Warfare models have been applied to Mesoamerica by Webster (1977) and by Webb (1973, 1975). Both models rely mostly on environmental factors to get the ball rolling and then add varying amounts of warfare (and in Webb's model, trade) to come up with a complex social system.

Webster's model was developed specifically for the Maya and consists of three general "states" of development (Fig. 8). State 1 applies to the period of migration into the Maya lowlands before 400 B.C. This is seen as a gradual filling-in period during which large-scale conflicts can be avoided simply by moving. By 400 B.C., the area is mostly filled (State 2). Continued population pressure, which Webster assumes, leads to economic stress. Because of social circumscription, there are only two options to relieve the stress: 1) intensify food production, and 2) acquire more land through warfare. Both options lead to the same end of increased socio-political integration which in turn presents new possibilities (Webster 1977:347-348). The "winners" in this model are the ones with the most effective organization which in turn is the result of fortuitous environmental factors. (If your ancestors picked a spot that was conducive to later intensification, and hence could support a larger population, your chances of military success are increased.) Thus, Webster's model is based on concepts analogous to the biological principles of pre-adaptation (luck), adaptation (organization), and competitive exclusion (success).

Webster (1977)360) points to the Preclassic "organizational centers" -- especially Tikal -- as manifestations of success at the State 2 level. The same factors of agricultural intensification and warfare are seen as precipitating: 1) highly ranked kin groups, 2) theocratic controls to thwart rival elites (see Webster 1975), and 3) the concentration of wealth during the Late Classic (State 3).

Webb's (1973, 1975) model is similar in its essential points but has some different emphases. Following Palerm's classification of agricultural land into poor, fair, and good, Webb suggests corresponding population densities of low, medium and high. Societies then evolve at different



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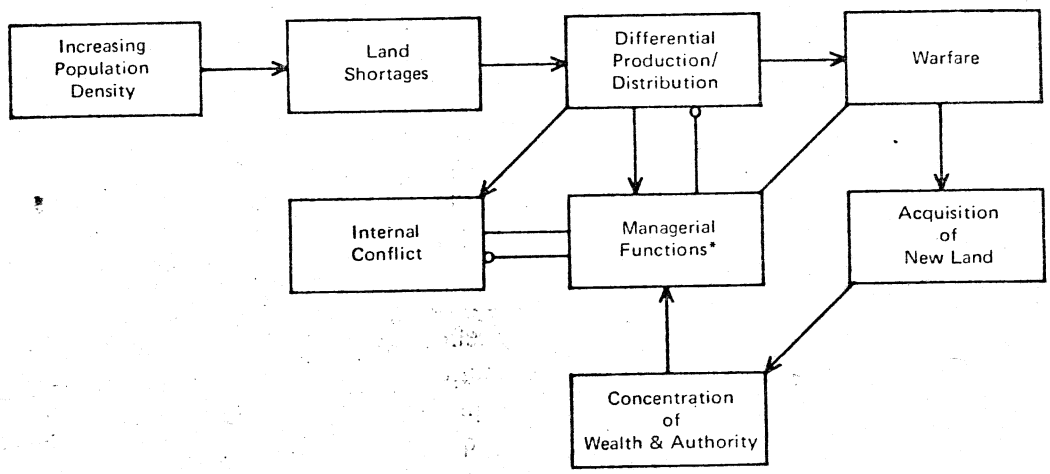
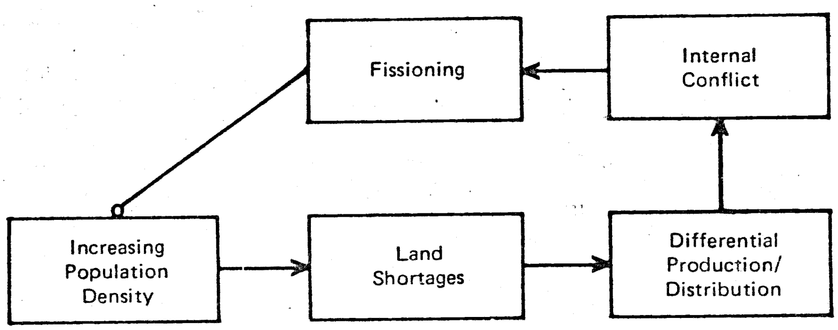
State 3



State 2 ⇨



State 1 ⇨

FIGURE 8

(after Webster 1977)

deviation amplifying influence ————

deviation counteracting influence ————o

rates depending on population pressure, and evolve to different heights depending on population potential. For example, Olmec civilization arose in an area of rich agricultural land, but was environmentally constrained from gaining a population large enough for state development (Webb 1973:382).

Webb introduces the factor of trade in an attempt to explain what in his view is a most difficult obstacle: the gap between a chiefdom and a state level. Webb (1975:157) considers chiefdoms to be "the natural end of social evolution" and states as being rather anomalous in the natural order of things. Advanced chiefdoms are almost invariably theocracies, while states (by Webb's definition) are always secular. The religion by which theocracies are held together is seen as a necessary substitute for real political power (Webb 1973:379). Trade is important because it is a means of accumulating wealth, thereby transforming religious power, based on belief, into political power, based on coercive force.

Such a process may have taken place in the Maya Late Classic. The spatial separateness of palaces and temples contrasts with the temple complexes of the Classic. The Hiatus, therefore, can be seen as a breakdown of the theocratic chiefdom and its transformation into a new order in which priestly and secular functions are distinct (Friedman and Rowlands 1977:232).

All the physical models discussed above have in common the view that man <u>reacts</u> to rather than <u>creates</u> his world. The points where these models differ concern which stimuli are most significant and to what degree they are significant. While all see environmental factors as logically (and temporally) prior to any others, additional factors (e.g. agricultural intensification, trade, warfare) enter in which serve to modify the original environmental constraints. Which of these are included in a given model is influenced by the geographic dimensions of its application. Sanders' model is an intra-regional one and describes man interacting directly with his environment. Webster's model deals with warfare between regions, while Rathje discusses trade among several regions.

Physical models constitute the most popular type of explanation in Mesoamerican archeology and for good reason; they offer a predictive capacity which other types of models do not. While I suggest that physical models do not adequately explain behavior, I cannot argue that they always fail to predict it. Certainly these models are indispensible to any kind of archeological explanation. But just as certainly they do not, in themselves, constitute a complete explanation.

MODELS FOR EMOTIONAL MAN

Man Number Two, in Gurdjieff's typology, is the "man with whom the emotional functions outweigh all others" (Ouspensky 1949:71). This type of man operates within the realm of feelings. The stimuli provided by the external environment do not yield the uniform and predictable reactions of Man Number One. Instead, environmental "facts" are creatively re-interpreted into new "facts" and it is these which form the basis for behavior. In Sahlins' (1976:209) words: "the action of nature unfolds in the terms of culture."

The intentions of emotional man are grounded in feelings rather than in material reality and his actions are directed toward emotional not physical concerns. Such a view of man seems diametrically opposed to the concept of "physical man" and the polemics of the mentalist/materialist debate would seem to support this conclusion. I think it would be more useful, however, to consider the emotional and physical aspects as levels of intention which cannot be logically opposed because they constitute completely different sets of logic.

In Levi-Strauss' (1963:275-277) terms, one is a "statistical model" which interprets prehistoric behavior according to an etic grid (materialism) while the other is a "mechanical model" which seeks to interpret prehistoric behavior according to the actor's perceptions (mentalism). Theoretically, a statistical model can predict <u>what</u> people will do, but it cannot explain <u>why</u> they do it. A mechanical model, on the other hand, can explain <u>why</u> people do things, but cannot predict <u>what</u> they might do next. Furthermore, the "why" of behavior is dependent on the immediate feelings of the actor. It comes as no surprise that, after a symposium on Maya civilization, Willey (1977:416) noted that "No one offered a formal model to explicate the role of ideology in the growth of Maya civilization, but it is difficult to look at the monuments and remains of this civilization without believing that this role must have been an important one."

A formal evolutionary model based primarily on emotional intentions would be misleading at best. Even with live informants, mechanical models must remain a theoretical idea. In spite of Willey's suggestion of the importance of ideology in Maya civilization, therefore, its role must remain hypothetical. The few attempts that have been made to incorporate emotional intentions into an evolutionary scheme have taken this rather cautious approach.

Millon's (1973:49) dissatisfaction with the ecological model for Teotihuacan's rise nicely illustrates the dilemma of evolutionary idealists. While intuitively distrustful of material explanations, he is unable to offer a firm alternative: "after the ecological setting of Teotihuacan is analyzed and evaluated, we are still faced with major interpretive problems ...these problems cannot and should not just be swept under an ecological carpet." "The rise of Teotihuacan, the economic center," he suggests "cannot be understood without reference to the simultaneous rise of Teotihuacan, the sacred center" (Millon 1973:49). Millon's idea that the city's later role as a pilgrimage center may have been instrumental in its rise is supported by Heyden's (1975) discovery that a natural cave exists directly beneath the Pyramid of the Sun. That the cave was ritually significant is suggested by the role of caves in Aztec cosmology, by the glyph for Teotihuacan, and by the imposing structure which covers it. In terms of evolutionary models, what is important is that the cave <u>might</u> have been a cause of the city's growth. The cave as symbol, rather than as a water source, might have stimulated pilgrims, trade, and settlement. One can readily see the logical extensions of such an ideological model to account not only for the growth of Teotihuacan but also for the spatial patterning of the barrios and the orientation of the city plan.

Olmec civilization would appear to be a prime target for ideological models, but such is not the case. Coe (1968:65) suggests seeking an explanation for the Olmec rise "more in the realm of ideas and institutions rather than in modes of production" and cites Willey's 1962 article in this regard, but no formal models have been proposed. Drennan (1976) discusses the role of Olmec religion but does so mostly in terms of its functional relations within the cultural system. His model, based largely on Rappaport's work, is useful for understanding the regulatory role of religion in a systems context but offers no causal explanations for the evolution of Olmec civilization.

The neglect of man's emotional aspect in models of social evolution is understandable; certainly it is a most difficult area for archeological investigation. But when considering the rise of the Olmec, Teothihuacan, and the Maya, it does seem odd that ritual activities which appear to have been so important to these ancient inhabitants should be treated so lightly by modern excavators.

MODELS FOR INTELLECTUAL MAN

Man Number Three is "the man of reason, who goes into everything from theories, from mental considerations" (Ouspensky 1949:71). The decisions made by Man Number Three are based neither on immediate physical gratification nor on emotional feelings. His behavior is calculated and fits some larger plan of action. Of the three types of man, "intellectual" man or "calculating" man enjoys the most personal freedom. He is not bound to the environment the way that physical man is, and he is not bound to traditional values the way emotional man is. Consequently, his behavior is the least patterned of the three types and perhaps the most difficult to model.

Service's (1975) concept of social leadership, legitimized through the benefits it can provide, forms a common denominator for models of this type. Service emphasizes the opportunities (benefits) provided by government. Adams (1974:255) focuses on the "goal-motivated behavior" of the individual. Where benefits and goals coincide, each level feeds the other, resulting in organizational growth (greater benefits).

In order to account for the variety of actions to which man's thoughts might lead him, these evolutionary models try to anticipate his thoughts by looking at major classes of stimuli or "information." Renfrew (1975:26-27) traces the evolution of hamlets to central places in terms of benefits stemming from informational stimuli. Seasonal ceremonies held at a "periodic central place" involve the exchange of information (e.g. planting schedules) which affect later action. The perceived benefits of this periodic organization serve as an inducement of maintaining a year-round information center, the central place. Both Renfrew (1975:27) and Johnson

(1977:492) suggest that population increase can lead to this same result: "increasing requirements for activity coordination among population units favor the development of specialized leadership to reduce the costs of information transfer involved in coordination."

Once central places are established, trade (and the accompanying information exchanges) becomes crucial to their eventual political unification. Renfrew (1975:24) identifies three kinds of information inherent in trade: 1) the commodity itself, 2) the commodity as part of a larger field of information (e.g. a writing system), and 3) verbal exchange. Here again the obvious benefits of this information exchange stimulate the development of a common center to expedite exchange, consequently inducing a new political order.

Flannery suggests that interaction of this type was operating between Oaxacan groups and the Gulf Coast Olmec during the Formative. Flannery (1968:107) stresses the point that "Olmec influence will appear most strong in those areas which were already most developed and already had status systems into which Olmec concepts could be most profitably fitted." Renfrew's view of trade as an information exchange offers an explanation for this. Information must be intelligible before it can take effect, and only with common socio-economic concerns, will the information accompanying trade be intelligible. This is not to imply that the information must be "correctly" understood. Any stimulus is important, even a misunderstood one. In fact, Flannery suggests that the Oaxacans and the Olmecs had quite different intentions toward trade; the former trying to enhance their status (intellectual man) and the latter obtaining ritual objects (emotional man).

Because of the difficulty in delineating the causal intentions of intellectual man, many models which incorporate decision-making variables do so in the context of a systems approach. By taking refuge in the interrelatedness of subsystems, the problem of causality is avoided. For example, Hirth (1978) discusses the evolution of Chalcatzingo to a "gateway community" having an institutionalized redistribution system, but he does so without suggesting that trade is either a cause or an effect of other changes. While such avoidance can reduce needless polemics, the use of a non-causal or omni-causal systems model really begs the question of how cultural systems evolve.

Certainly not all causes are of equal important in every situation. Rathje (1977:373) points to the need for a ranking of causes: "Given general systems processes, specific local factors must be weighted in terms of their effect on each other in order to generate the actual parameters of a culture's development and failure." Adams (1974:249) shares a related concern that the concept of "behavioristic gradualism" implied by many systems approaches is inappropriate for understanding the "protean character of social institutions like trade." Catastrophe theory may provde a means of modeling rapid change (Renfrew 1978) but the weighting of various human intentions will continue to pose serious problems.

The recognition of pre-meditated intentions as factors in both real behavior and theoretical models provides reasons for what otherwise would be an inexplicable course of events. Flannery's (1968) model of Oaxacan/Olmec trade is a good example of a behavioral explanation in cultural, as opposed to biological, terms. The key to his model is a hypothetical reconstruction of the <u>intentions</u> of the two trading groups.

By incorporating the notion of mindful intentions into an evolutionary model, no assumptions need be made that a given behavior is functionally adaptive. Instead, the model can deal with variations in behavior constrained, but not determined, by the environment. It is here that information flow becomes important in providing intellectual stimuli to physical action. Emotional intentions and emotional stimuli, of course, operate in very much the same way. The incorporation of either or both types of intention dramatically increases the behavioral possibilities, and it is not surprising that there are so few models in these two categories.

A REVIEW OF THE MODELS

As I have attempted to demonstrate in the preceding discussion, many models have yet to be formulated. There are more theoretically possible solutions to these archeological problems than have been suggested so far. In this section I will review the types of models that have been applied to each cultural area and discuss some other approaches that could be taken to explain the archeological data.

Gulf Coast Olmec

The poor data base for this area -- especially in terms of settlement patterns -- precludes the use of some models and limits the utility of most others. The two most recent physical models, those of Rathje (1972) and Sanders and Webster (1978) were both developed for other areas and fit the Olmec data rather uncomfortably. When Rathje proposed an Olmec application of his model, Laguna de los Cerros was not recognized as a major site. Its current status as a temporal and functional equal to San Lorenzo, and its location in the foothills of the Tuxtla Mountains (Bove 1978:6) effectively refute the notion of Olmec core/buffer zones in Rathje's original sense.

The absence of any formal models dealing with the emotional aspects of Olmec culture has already been noted, but can certainly be re-emphasized. If a model incorporating emotional feelings as causal factors is applicable anywhere, it is with the Olmec. Flannery (1968) proposes an intellectual model of Oaxacan/Olmec interaction. Similar models would be useful on an intra-regional level as well, but the data do not allow this at present.

Our understanding of Olmec civilization is still in its infancy. Sanders and Webster (1978) explain why San Lorenzo and La Venta are situated in river valleys (farming) and Flannery explains why they imported jade (status). In my opinion, little else about the Olmec has been adequately explained. Why, for instance, did they bury all those stone monuments?

Maya Lowlands

In comparison with the Olmec situation, Maya data are abundant. The eventual decipherment of Maya writing should also provide insights into behavioral intentions. Ecological models are hampered by conflicting views on the significance of raised fields and ramon nuts. As a result, variables of population size, subsistence stress and social circumscription cannot be easily controlled. Sanders' (1977a) comparison of soil types is a useful approach in identifying environmental constraints, although I do not consider his overall model to be explanatory. Rathje's model nicely fits the archeological data, but is based on some weak assumptions. As Sidrys and Andresen (1976) note, local limestone was commonly used for metates in the Peten, and granite from the Maya Mountains was only 72 km. distant, or a fourth of the distance to the nearest basalt source. Lack of basalt, therefore, can be considered a constraint, but not a determinant in a physical model for this area. Similarly, obsidian can hardly be considered a necessity when flint, a functional substitute, is available. Rathje's model would be stronger if based on intellectual or even emotional intentions rather than on physical ones.

Neither emotional models nor intellectual models are represented in the Maya repertoire. As noted earlier, Rathje (1977) explicitly denies any significant role to information exchange associated with Floral Park trade. The lack of emotional and intellectual models constitutes a significant gap in an understanding of Maya prehistory. Thus far, emotional intentions have been incorporated only in models of collapse. Webb (1973) attributes a crucial role to religious belief -- or in this case disbelief -- in the break-up of the Maya system. In his view a common belief held the theocracy together and the system failed because people lost their faith. Drennan (1976) calls this process "desanctification" and proposes a similar model for the Olmec collapse. One can only wonder that a force of such destructive power would not have an effect on the growth process as well.

Teotihuacan

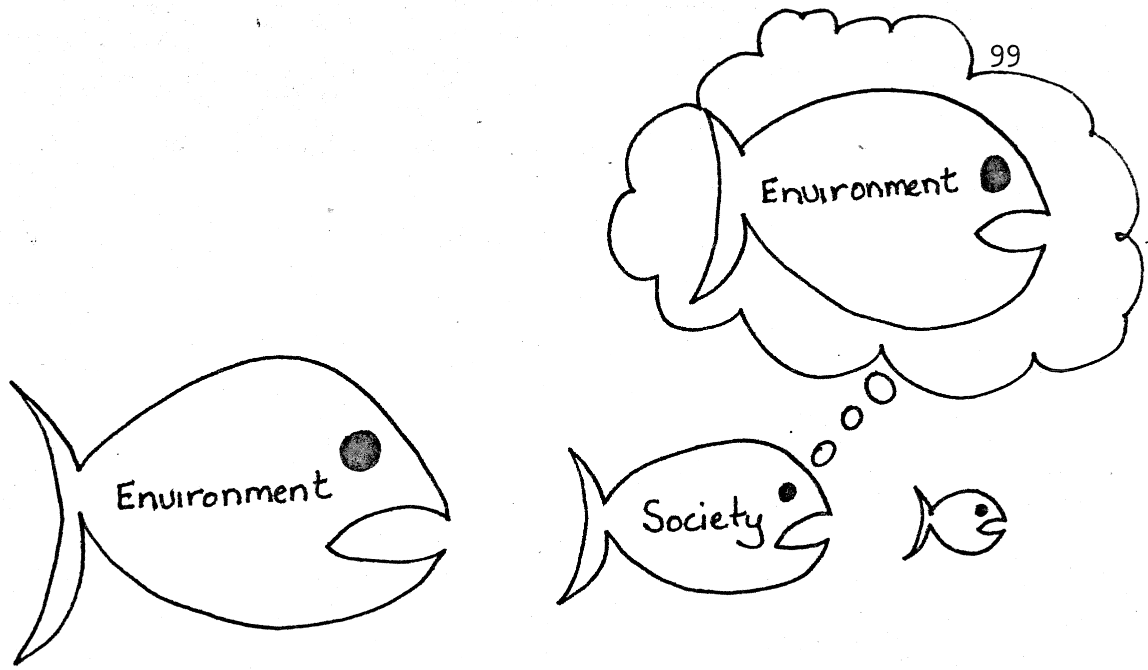
Archeologically, the Teotihuacan Valley and the entire Basin of Mexico are better known than any comparable region in Mesoamerica. With the exception of the area covered by Mexico City, the Basin has been thoroughly surveyed. The excellent data on settlement patterns is perhaps one reason that physcial models so dominate the theoretical landscape in this region. With separate settlement maps for each chronological phase, the patterned movement of sites throughout the Basin is readily apparent. It is tempting to call in ecological models to account for these settlement shifts much as a biologist uses the same models to explain the patterned behavior of bacteria in a Petri dish. In each case, an ecological model can often predict behavior, but whether it also explains that behavior depends on an assumption of human intention.

Millon (1973) proposes that ideology be considered in explaining Teotihuacan's rise, but no models incorporating any kind of emotional intention have yet been advanced. As noted above, the evidence that the city was a pilgrimage center might well be formalized into an emotional model of social evolution. The little emphasis on the role of information exchange in Teotihuacan's growth constitues another explanatory gap. The Olmecoid influence of Tlatilco and Cuicuilco was undoubtedly important to development elsewhere in the Basin. The Oaxacan barrio in Teotihuacan (Millon 1973) certainly represents foreign information that could be of significance to social evolution. Although these cultural influences are commonly referred to in the literature, they are not considered in any formal models. Indeed, it seems paradoxical that the most complex of Mesoamerica's early civilizations should be the subject of the simplest explanatory models.

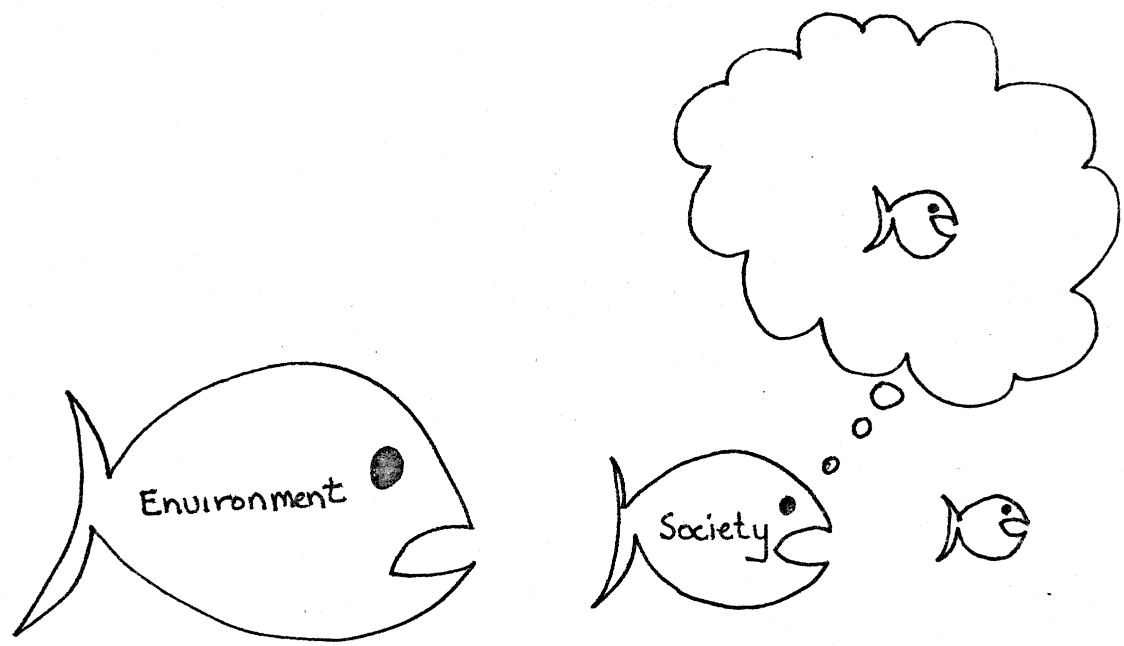
CONCLUSIONS

In this paper I have discussed how assumptions of human intention affect the way Mesoamerican prehistory is interpreted. In brief, I have suggested that archeologists are not unbiased when formulating models of social evolution. Because the data do not include human intentions, these are furnished by the archeologist and represent, in effect, his personal view of human nature. By classifying models according to the types of intention implicit in them, it becomes possible to control for these biases and better evaluate the processes of social evolution in Mesoamerica.

The three types of human intention outlined in this paper: physical, emotional, and intellectual, can also be considered in terms of external and internal forces. This is diagrammed in Figure 9. In physical models social systems respond to external environmental pressures. In both emotional



PHYSICAL MODELS:
Society flees from a threatening environment.



EMOTIONAL AND INTELLECTUAL MODELS:
Society pursues an internally defined goal.

FIGURE 9

and intellectual models, an internal concept motivates the social system and the environment merely restricts certain directions of movement.

In real situations, of course, both internal and external forces operate simultaneously and our study should be directed to the interrelations of these various forces. My objection to models such as that of Sanders and Webster (1978) is that they seek too many explanations from too few causes. Steward himself (1955:31) notes that, "Man enters the ecological scene... not merely as another organism which is related to other organisms in terms of his physical characteristics. He introduces the super-organic factor of culture which also affects and is affected by the total web of life." In order to understand cultural systems, therefore, we must look at more than simple physical relations and we must assume intentions beyond mere physical ones.

For an evolutionary model to have general applicability, it must be formulated in broad enough terms that it will not reject data for want of a category. How can emotional data, for instance, be included in a physical model? The "local population model" proposed by Friedman and Rowlands (1977:203) is a good example of the kind of general model I think is needed (Fig. 10). In this scheme, intentions of any type can affect the larger system, though physical intentions are considered to be usually dominant. Here the predictive capacity of a physical model is retained while the importance of emotional and intellectual factors is also recognized.

In applying such a general framework to real situations, an explicit recognition of human intention becomes crucial to making sense of the data. When particular events are considered anomalous in terms of one set of assumptions, the application of another set of assumptions might render those same events more comprehensible. For example, a model based on

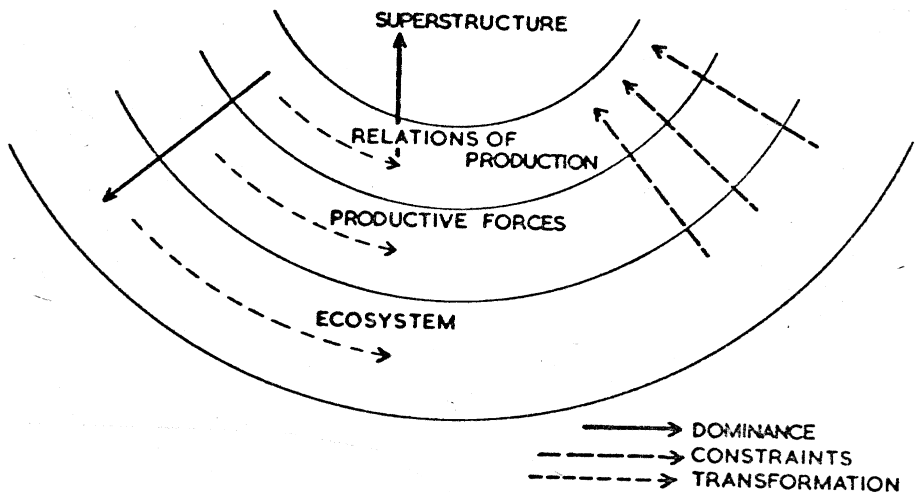

SUPERSTRUCTURE
RELATIONS OF
PRODUCTION
PRODUCTIVE FORCES
ECOSYSTEM
DOMINANCE
CONSTRAINTS
TRANSFORMATION

FIGURE 10

physical intentions cannot easily account for the unique character of Olmec civilization. A model based on emotional or intellectual intentions, however, could more readily account for the otherwise anomalous Olmec predilection for giant earth sculpture and buried monuments.

In order to better understand the behavior of prehistoric Meso-Americans we need models of all three types as well as models that combine types. Certainly Mesoamerican man had more than a single type of intention during his long period of social evolution. The models we use to explain his behavior must reflect the complexity of those intentions.

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