RECENT RESEARCH ON THE ♦9599
ORIGIN OF THE STATE

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To explain the origin of primary states—those which arise in a context of interacting prestate societies—has remained an objective of anthropologists since the publication of Morgan's *Ancient Society* (35) 100 years ago. It is a fundamental problem which, though it cannot have an ultimate solution, serves as a measure against which to evaluate the effectiveness of new perspectives and new methods. The centennial of Morgan's publication has not inspired comprehensive new explanatory theories or research insights, but it has been marked by a synthesis of past work, by provocative restatements of extant theoretical approaches, and by the testing of proposed explanations derived from these approaches utilizing new methods. This review begins with a commentary on a recent synthesis, discusses definitional problems, and assesses recent research on several cases of state development. In conclusion, it is argued that recent research has already obviated some of the positions taken in the synthesis and has clarified the directions which future theory-building and research must take.

A RECENT SYNTHESIS OF STATE ORIGINS

Let us begin with a consideration of *The Origins of the State and Civilization* by Service (44), not simply because it is the culmination of 40 years of a scholar's thought or because I consider it conceptually or methodologically successful. It is most important because its conclusions both summarize some conditions of early state emergence which all explanations must take into account, and exemplify some possible weaknesses of existing positions. Service focuses on the origins of "government." A government is defined as "a bureaucracy instituted to rule a populace by right of authority" (44, p. 10), a bureaucracy being a hierarchy of offices (44, p. 72). Government begins with the first institutionalization of centralized leadership in "chiefdoms." Societies in this evolutionary stage "have centralized direction, hierarchical status arrangements with an aristocratic ethos, but no formal legal apparatus of forceful repression" (44, p. 16). "This political power organized the economy . . .

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and it was a redistributive, an allocative system, not an acquisitive system . . ." (44, p. xiii). For Service, the origin of the state turns on the question of the use of force as an institutionalized sanction. However, "good government is not necessarily or evidently a repressive body since a responsible control of violence equals peace" (44, p. 307). Indeed, in his consideration of the archaeologically attested archaic civilizations, Service finds that state origin defined in terms of forceful repression is not evidenced in the existing data.

After considering many cases of the development of institutionalized government, both ethnohistoric and archaeological, Service presents a series of conclusions which he divides into positive and negative. His "negative conclusions" usefully emphasize some general conditions which all efforts to explain state origins must take into account (44, pp. 266–89).

1. Warfare as a motivation for cooperation and an eliminator or subjugator of less effective organizations is universal in human development and cannot by itself explain state emergence.
2. Intensification of production, and in particular irrigation agriculture, long precedes state emergence as a technique of local production units and only becomes a major focus of societal investment and higher political concern after state emergence.
3. Growth, particularly population growth, is an enabling or necessary condition of state emergence, but not a causative condition. (However, Service provides little argument or evidence in defense of this as a general point.)
4. Urbanism, considered as population nucleation, evidently follows state origin and is correlated with the pattern and intensity of warfare between existing states.
5. Class stratification and consequent repression to protect the privileged class is a construct not useful in consideration of state origins since the classes of early civilizations are governmentally rather than economically based and repression by a government to protect itself cannot be an explanation of that government's development.

Service's "positive conclusions" are a logical chain (44, pp. 290–308) beginning with the point that inequality is basic and even the simplest society periodically requires its more esteemed members to act as leaders. Leadership becomes a regular activity when it is linked to the pooling and redistribution of commodities. When the office of leader comes to be regularly filled, typically by inheritance, a chiefdom has emerged. If a state is anything more than this, it is a society in which coercion is used to correct chiefly failures. In the gradually developing archaic civilizations, the point of actual state emergence is not easily definable, as befits its relative unimportance.

It would be fair to infer that, for Service, the origin of chiefdoms is the key problem. Indeed, many of the recently published or circulated short papers seem more relevant to this problem than to that of state emergence itself. While this is not a review of chiefly origins, one must commence with a consideration of some recent work on "complex" or developed chiefdoms and their operation. In contrast,

we must also consider what minimally constitutes a state and how these operate. This contrast will show that states can be recognized by many characteristics in addition to those related to coercion. Definitions based upon such other characteristics may be more useful in guiding research on state origins than is the classical definition adopted by Service. Only after such taxonomic discussions can we focus on ongoing research on evolutionary developments.

CHIEFDOMS AND STATES

In the static conceptualization of traditional anthropology, a complex chiefdom is recognized as a society with ranked classes in which membership is ascriptive. High offices are filled from the most prestigious class. However, if one is interested in change, he must define his phenomena in terms of processes through time. As our interest is in political evolution, we must look at that process which controls other processes: at the central decision-making or regulatory activity of the system of activities, rather than at groups, institutions, or roles. In this perspective a chiefdom can be recognized as a cultural development whose central decision-making activity is differentiated from, though it ultimately regulates, decision-making regarding local production and local social process; but is not itself internally differentiated. It is thus externally but not internally specialized (54, p. 267). Lacking internal specialization, any delegation of decision-making prerogatives is a complete delegation, and the subordinate decision-maker would be capable of independent action. The dominant strategy of decision-making with regard to lower level organization is that there should be only two levels of actual decision-making hierarchy—local and central—and that local units should handle as many of their own operations as possible, each placing few demands on the central regulator and thus allowing it to control a larger number of local units given its limited capacity or span of control. One way to do this is to adjust local unit territories so that all of them have access to most resources and there is little exchange between units (20). In practice, as a successful paramount consolidates broader control or as a declining paramount approaches his death, intermediate levels of hierarchy do operate. Through time one would expect cycling from two to three levels of actual hierarchy. The symbolized hierarchy of chiefly offices may recognize three or more levels of hierarchy; however, such should not be confused with the actual hierarchy of decision-making.

How might higher level decision-making regulate those local unit problems beyond the capacities of the local regulators? No general study either theoretical or empirical has been done, but there are some provocative case studies. In one case in Hawaii, Peebles & Kus (38) have argued that the general condition of local production is signaled by the flow from local units of materials and craft goods useful for elite display (Figure 1). As food production is intensified, as in response to increased population, fewer craft materials and goods can be produced and the decreased flow will signal the difficulties before they become critical for the sphere of subsistence production. The goods are redistributed by the paramount to other members of the ranking class. If the amount redistributed is seen to decrease, either
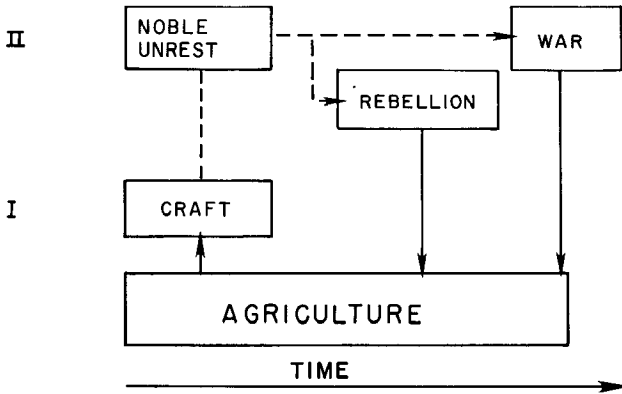
Figure 1   A diagram of an aspect of regulation in a Hawaiian chiefdom. The dotted lines represent the movement of information between spatially discrete activities, while the solid lines represent movement of material or labor.

the members of this class may foment a rebellion to replace the paramount or he may pursue a war in order to acquire more resources. Thus in this analysis goods redistribution is an element in second-level regulation. Regardless of the action pursued and of its success or failure, the indirect result will be similar: a reduction of population of both commoners and of troublesome nobility and some adjustment of the relation between consumers and production.

This analysis has several interesting features. First, the participants in this regulatory system probably did not cognize that chiefly political activity was ultimately triggered, via the flow of certain goods, by problems at the local level, and that this activity would result in a solution for these problems. Insofar as the regulatory system is thus hidden, the participants cannot falsify information or otherwise tamper with it (40). Second, the flow of goods is a result of production secondary to sustenance production for local needs. As such it transmits information in simplified form derived from the local or primary regulatory process. However, the impact of chiefly activity, insofar as population is lost or resources are increased, is directly on local unit production, rather than first on the local decision-making process and then on production. Third and parenthetically, note that the central decision-maker does not regulate a "redistributional economy" in the strict sense, pooling sustenance resources and provisioning local units. Whatever the importance of such redistribution in simple chiefdoms and in more complex states, what is termed "redistribution" in complex chiefdoms is extraction or mobilization of sustaining resources involving minimal central decision-making (21).

To this point, the complex chiefdom has been presented in isolation. Such may exist on favored islands, but they do not seem to develop into states until they are drawn into a larger system. Our concern is with networks of chiefdoms regulated by warfare and alliance. Most ethnographically reported chiefdoms seem to be involved in constant warfare. In contrast, archaeologically documented cases—

traditionally termed "cults" (8) but more recently viewed as "interaction spheres" (13)—may represent networks with more emphasis on alliance than on warfare.

Now let us turn to states. If in examining the traditional definitions of states one looks beyond ephemeral corrective mechanisms such as institutionalized coercion or law, one finds frequent reference to "specialized government." This static conceptualization can be phrased in terms of processes through time. In contrast to a developed chiefdom, a state can be recognized as a cultural development with a centralized decision-making process which is both externally specialized with regard to the local processes which it regulates, and internally specialized in that the central process is divisible into separate activities which can be performed in different places at different times. Aspects of decision-making can be delegated with minimal fear that subordinate elements in the hierarchy will engage in effective independent action. Indeed, the dominant political strategy in higher-order decision-making is to encourage as much hierarchy and segmentation as possible in order to create contexts of organic solidarity. This organizational strategy is reinforced by a complementary lower-order decision-making strategy of insuring supporting resources by attacking or undermining equivalent, or if possible higher-order, decision-makers. With the wealth of regulatory capacity in a state development, the control of many local units and the administration of exchange economies or redistribution from pools of sustenance products is not difficult. Indeed, the specialization of production activities, in essence "urbanism" (52, pp. 1–6), is merely an expected extension of the specialization of the strategy of central decision-making to local processes. Given the pervasiveness of state regulatory structures, one would expect the short-term fluctuation in the number of levels of hierarchy characteristic of chiefdoms to be less pronounced. In any development's history, as the opposed strategies of lower- and higher-order relation interact, an almost continual increase in hierarchical complexity would be expected.

Does higher-order decision-making in states regulate local processes in a different way than in chiefdoms? There are, as before, no general studies either theoretical or otherwise and few case studies in the world of primitive states. Most anthropological studies focus on roles and their relationships rather than actual activities, regulatory or otherwise. Let us take as an example a single activity—irrigation canal construction—in the state of Larsa on a branch of the Euphrates River in the reign of King Sumuel, about 1880 B.C. This regulatory system is known to us through the study of a fragmentary archive by Walters (48). These cuneiform documents detail the relations between one Nur-Sin, an administrator close to the king, and Lu-igisa, one of his several assistants in charge of canal construction and maintenance, as well as letters to the latter from one Išar-Kubi, a higher level inspector of canal work. Such a study of the "waste paper" of administration directly documents actual activities, though interpretation is fraught with philological and historical difficulties. While Walters' study has such difficulties, it may be more interesting to anthropologists than other examples of administration because of its focus on irrigation. Canal construction—or reconstruction—begins with a survey and estimate of the amount of earth to be moved by the Inspector (Figure 2). Using set formulae, information condensed from centuries of experience with canals in
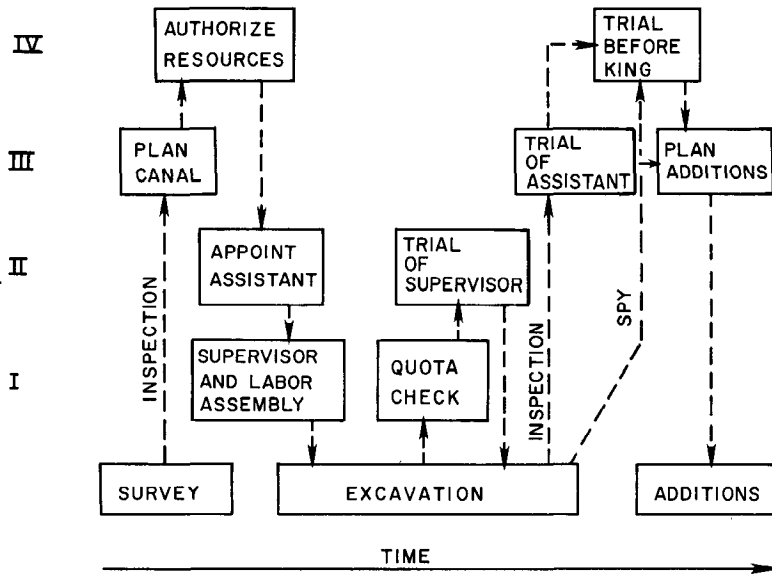
IV   AUTHORIZE RESOURCES   TRIAL BEFORE KING

III   PLAN CANAL   TRIAL OF ASSISTANT   PLAN ADDITIONS

II   APPOINT ASSISTANT   TRIAL OF SUPERVISOR   INSPECTION   SPY

I   INSPECTION   SUPERVISOR AND LABOR ASSEMBLY   QUOTA CHECK   INSPECTION

SURVEY   EXCAVATION   ADDITIONS

TIME

Figure 2   A diagram of the regulation of canal construction in the state of Larsa.

Mesopotamia, he estimates the man-days required and the resources, either grain or silver to buy grain, needed to sustain the workers. The Inspector then authorizes the Administrator to draw the resources and appoint one of the assistants to organize the job. The Assistant assembles the laborers, sometimes with the help of what seems to be an outside labor broker, and the actual work supervisors, the agents of first level regulation. Work quotas are assigned and actual progress is monitored frequently. If necessary, the Assistant requests that the Administrator use his police powers to bring supervisors before the Assistant for trial, an aspect of second level regulation. As work nears completion, the Assistant reports progress to the Inspector. The Inspector checks the actual work and either approves, asks that more be done, or asks the Administrator that the Assistant be brought to trial, these all being elements in third level regulation. After checking for himself, the Administrator can hear the case or carry the dispute before the King for fourth level regulation. The King seems to receive private information on actual work of this sort from a traveling judge. If the schedule has not been met, one of these trials will specify who must provide further support for more workers to finish the job.

This single area of state operation is different in a number of striking ways from the chiefly example previously outlined. First, the information on the activity from planning to completion and at all levels of regulation is public between two or more of the participants, and falsification is advantageous to some participants. Higher-order regulators attempted to detect falsification and distortion by taking information from both lower-order regulators and from independent sources and cross-checking the two. Second, except in the case of the initial survey, higher-order

regulators use summary information from both lower-order regulators and their own brief inspections. Their decisions take the form of changing the actual assistant-in-charge, or of alloting fines which are to be used as resources to do more work, or both. Thus summary information is handed down to lower-order regulators, but there is no evidence of direct control of the basic work of canal construction. Third, regulation three steps removed from the work seems to involve the complementary activities of two figures: the Administrator does not officially inspect the assistants and canal work supervisors, and the Inspector does not have police powers to bring people to trial. Neither can work without the other, and either would find it difficult to abuse canal work for personal ends. The two figures can be thought of as the victims of the dominant political strategy of creating specialization in order to minimize the autonomy of subordinates. In opposition to this higher strategy, these figures and their subordinates follow the complementary strategy of attacking equivalent figures in related segments, as illustrated by the bad personal relations between Nur-Sin, the Administrator, and Išar-Kubi, the Inspector. The fact that the former seems to control the specialized police apparatus which the latter must request casts some light on the "monopoly of force". Both chiefdom and state ruling apparatuses can bring coercive force, though by no means a monopoly thereof, to bear on activities; however, in states there are specific types of force which can be used only by certain officials.

To this point we have talked about states in isolation, but they, like chiefdoms, usually exist in networks of states. Among simple states these networks seem to be regulated by competition and alliance, as was briefly noted for chiefdoms. A difference is that developing state networks are periodically centralized into a single political unit incorporating most previously existing polities. Such polities, which may be termed "empires," have many interesting features, but they are not of direct concern in this review.

Finally, this definitional discussion raises several points relevant to Service's work and to any future attempt to explain state origins. First, networks of both complex chiefdoms and simple states can be viewed as systems with several levels of self-regulation theoretically capable of oscillating endlessly without increase in complexity. One cannot merely assume that chiefdoms will develop inevitably into states; one must isolate the conditions which destroy or transform chiefly mechanisms of regulation and generate new ones. Second, states differ from chiefdoms in many ways, among which I have noted regulatory pattern, regulatory strategy, hierarchical structure, and oscillation of hierarchical pattern in time. Many of these differences are archaeologically detectable, and there is no reason why the period of state origin in any particular historical sequence cannot be specified. Such is not an idle taxonomic exercise since if one cannot specify when the state begins, one cannot begin to reject explanatory hypotheses. Third, any proposed explanation of state emergence must account for not only a single change in coercive mechanism, but for a whole series of changes in a subsystem of variables, each differently related to changing variables in the large "environmental" context. The review of selected recent research on state origins will show that work has focused almost exclusively on these variables of the larger systemic context.

SOME RECENT RESEARCH

How many cases of the emergence of primary states—states which evolve in a context of interacting chiefdoms—occurred on this planet? The question is unanswerable, not because there are evidences of "lost civilizations" waiting to be discovered in unknown corners of the world, but because some of the familiar cases of state origin are not yet understood, even in the most minimal sense. For example, we do not know whether there were one, two, or more essentially independent centers of primary states emerging in Andean America; we know virtually nothing about the history of primary state emergence in West Africa, etc. Even were present understanding extended beyond the more intensively studied areas, comprehensive review would be beyond both the capacities of any one research worker and beyond the limitations of this short review.

Greater Mesopotamia is archaeologically unusual in that the administration of the economy is directly attested in the occurrence of unbaked clay sealings, counting devices, and (later in the development) of clay tablets with written information. Each such discarded item represents an administrative act. However, research has not focused on administration. Most workers have chosen the more general topics such as "urbanism" or "civilization" as an object of research. The origin of the state has been a neglected topic.

The state as I have defined it emerged in Greater Mesopotamia—the watersheds of the Tigris, Euphrates, and Karun Rivers—at the beginning of the Uruk Period approximately 3700 B.C., almost two millennia before the reign of Sumuel of Larsa. Mesopotamianists have long known that the Uruk or Early Protoliterate Period was one of fundamental change in art and architecture (27), but the political institutions were thought to be small-scale and theocratic, rather like those of chiefdoms (1, pp. ix–130; also 46, 50). State government was thought to have arisen about 2500 B.C. when recognizable dynasties of kings are recorded. This documentation, and the parallel archaeological documentation of palaces and tombs, is deceptive. It reflects the increasing versatility and political use of writing in the later Third Millennium B.C. and the widespread exposure of Third Millennium layers near the surfaces of town sites in southern Iraq. In fact, the study of the distribution of seals and sealed items on sites of both the Middle and Late Uruk in both northern Iraq, ancient Assyria (45), and southwestern Iran, ancient Elam (54, pp. 270–72), indicates that an administration controlled the movement of goods from production points to assembly points and thence to central points for aggregation and subsequent redistribution. In southwestern Iran where Middle Uruk Susa, a center of about 5000, dominated a population of 20,000 or more, we know that invoice records were sent to centers for checking and if necessary adjudication, and that some form of summary records were kept, presumably for the use of yet higher authorities. Thus above production there was regulation at least at the level of assembly, aggregation and adjudication, and planning by a higher authority, each step using summary information from that below. Conversely, there was redistribution of goods from these centers down to the level of production units through various channels (54, p. 272).

What social units did Uruk administrative networks control? Each had a major center in an agriculturally rich area, within which was a network of smaller administrative centers and production centers. Production in these networks was differently organized. For example, while some settlements seemed to be primarily concerned with agriculture and moved their products through central pools into redistribution networks, parts of central settlements were concerned with ceramics production and moved their products to agricultural settlements by nonredistributional means (28, pp. 107–29). The major centers, furthermore, controlled small centers in distant areas, some of which had special resources (53) and some of which were on important travel routes (51).

From what did Middle Uruk states arise? No more than four centuries earlier, Mesopotamia proper was occupied by communities of the later 'Ubaid Period. In southwestern Iran, during one of the most complex florescences of this period, the Susa A Phase of the Susiana Plain, a center of about 2000 people dominated an area with more than 10,000 inhabitants. The center was dominated by a solid brick platform on whose summit, 10 meters above the other surrounding residences, were a large and elaborate residence, a storage area, and a possible temple. Smaller versions of such residences on platforms are attested at a number of earlier and contemporary small sites. This pattern probably indicates a discrete class of ranking families. There were few if any settlements in the nearby valleys, and it is unlikely that Susa controlled areas beyond the limits of its plain. Within the plain we find evidence of the regulation of goods movement at both the large center and the smaller settlements; however, the same seals and seal impressions are found in both types of settlement, indicating only that goods storage and redistribution were locally authorized and carried out. At present there is no evidence of the administered movement of goods from smaller settlements to the center. At most there is one level of regulatory hierarchy above the level of production regulation itself. Since all excavated settlements exhibit evidence of agriculture, stone blade working, and fabric production, and most have evidence of pottery manufacture, there would be minimum need for movement of goods and minimum need for administration (54, p. 273).

The evidence from both repeated intensive archaeological survey and limited excavation, upon which these contrasting presentations of state and prestate organization are based, was recovered by 1971 and was publicly available by 1973. These data allowed the rejection of "prime mover" explanations involving population growth and long range trade (54), though it must be emphasized that further investigation of such factors with new methods and new data sets is necessary. Research since that date has focused primarily on the further study of Middle and Late Uruk organization and secondarily upon hypotheses designed to explain the development of Uruk states. In southwestern Iran, more has been learned about the later Uruk as a result of continuing excavations at Susa by the Delégation Archéologique Française en Iran and of nearby sites by H. J. Kantor and P. Delougaz of the University of Chicago and UCLA, E. O. Negahban of the University of Tehran, and G. A. Johnson of the City University of New York (4–6). The preliminary announcements show that the types of sites, the internal arrangements of

activities on sites, and the economic and political relations between sites are even more complex than outlined above. In southern Iraq, recent survey by Adams of the University of Chicago has revealed an Uruk development on a short-lived channel of the Tigris. Documentation of this settlement system and the large late Uruk system around the city of Uruk itself (2) with the evidence of excavations is vital to our understanding of the first Mesopotamia state network, but it is likely that key sites will be destroyed by agro-industrial development before such work can be undertaken. In northern Iraq there has been no recently reported work. This remains the only region not covered by comparably intensive archaeological survey techniques, a sad fact which severely limits the uses to which the unparalleled excavation data from the area (45) may be put.

The systems evident during Middle and Late Uruk times must have arisen during the preceding Early Uruk Period, and the data needed to test hypotheses explaining their rise must be recovered from Early Uruk sites and preceding Terminal 'Ubaid or Terminal Susa A sites of the first half of the Fourth Millennium B.C. There is evidence that, at the beginning of this time, throughout the lowlands there was abandonment of the smaller valleys and decline in the total amount of settled population, and there is also widespread evidence of minor conflict (55). On the Susiana Plain only a few isolated centers including Susa survive, each with a few surrounding smaller settlements, the whole plain having a population of about 6000 people. Recent research indicates that during the Early Uruk Period Susa itself shrank and several small centers on the southern plain grew. The result is a closely spaced pattern of small centers and villages. Unfortunately, our evidence for administration consists of a few sealings and counters from a small settlement. The question of what factors operated during this period of disorganization and subsequent growth such that there was a transformation in the organization of regulatory activities cannot be answered with one tiny sample.

However, work has been undertaken on two possible factors. First the question of what happened to the people who abandoned the Late 'Ubaid and Late Susiana communities raises the possibility that they became transhumant pastoralists. Could an increase in the number of pastoralists appearing every winter in the lowlands put pressure on the regulatory institutions of the settled enclaves? Several archaeological programs directed at the early history of pastoralism are now being undertaken in the Zagros Mountains (36, 56) and the deserts to the south of the Euphrates (34). While no one has completely overcome the formidable problems of locating nomad sites and assessing their relative density, and while none of these programs are finished, no researcher has claimed increased evidence of pastoralists early in the Fourth Millennium. While pastoralists may be present, it is difficult to conceive of them as a major factor. Second, the change to more standardized and usually undecorated ceramics at the beginning of the Uruk raises the possibility that the centralization of craft production, whatever its stimulus, led to complementary specialization in other areas of production, and concomitant patterns of exchange created pressures for a transformation in the regulatory system. However, it is undeniable that we cannot comprehensively document one Early Uruk craft, from workshop evidence or otherwise, and we are not certain when the state emerged

during the Early Uruk Period, so the relations between these productive and regulatory subsystems remain unclear. There is a need for data from excavations on Early Uruk communities; without them one cannot even properly define the problem.

In summary, research has defined—though not as accurately as it could and must be defined—the period of state emergence in Greater Mesopotamia. Several simple propositions about one or a few variables acting upon the regulatory system have been tested; others are in the process of being investigated. Workers in this area now face the problem of constructing and testing possible explanations in which it is not the variables themselves but the interaction between a number of variables and their interaction with various elements of regulatory systems which are important. Progress in this area will require both more sophisticated theoretical constructs and more research, both in-depth research on Early Uruk systems and broader research to bring understanding of the different developing societies of the interregional network to an equivalent level throughout greater Mesopotamia.

In Mesoamerica, much useful evidence of political organization comes from carved stone monuments, many of which record events in the lives of rulers and the histories of politics. However, these are common only in a few areas and, since the administration of production is not directly attested by an administrative technology, the understanding of regulatory systems will require the patient application of standard archaeological techniques. This work will be facilitated by the fact that there is a direct historical continuity from Formative times until the Spanish conquest in much of Mesoamerica, and the ethnohistoric record provides useful hypotheses as to the uses of artifacts and the meaning of symbols.

Most recent research in Mesoamerica has focused on Early and earlier Middle Formative societies, which are widely recognized to have been chiefdoms (43), and on the developed states of the Classic Period, rather than on the interesting developments of the Late and Terminal Formative Periods. State emergence is indicated in the area by the rise everywhere of large centers dominating three or more subsidiary levels of settlement hierarchy. These centers characteristically have major secular architecture, and some have monuments indicating new and expansive forms of territorial control. For example, state emergence thus defined probably emerged in Oaxaca (26, pp. 215–19) about 300 B.C., during Late Formative times in the Valley of Mexico (19, 37), and highland Guatemala (42) about 100 B.C. during Terminal Formative times, and elsewhere during the early Classic Period after A.D. 200. In this review, I want to consider central Oaxaca for two reasons. First, there are a number of classes of evidence relating to administration. Second, much new analysis of this evidence, particularly of that relating to prestate societies, is assembled in a recent work edited by Flannery (23).

In central Oaxaca, by 100 B.C., the end of the Monte Alban I Period and the beginning of the Monte Alban II Period, the great center of Monte Alban on a high mountain top overlooking the three arms of the Valley of Oaxaca is well established (9, 16). The central ceremonial area and the various wards of the city are clearly differentiated. The overthrow of centers, some of which appear to be outside the Valley of Oaxaca (33), was commemorated by the erection of monuments in the central area. The city itself has massive defensive walls. Within each arm of the

valley there are large subsidiary centers with differentiated palaces, temples, and other buildings (26), smaller centers, and hamlets. Is this type of settlement hierarchy, architectural pattern, and pattern of monument construction definitive evidence that the Monte Alban II polity was a state? Insofar as three levels of hierarchy above the level of hamlets implies that paramount rulers were making decisions about other decision-makers, probably using summary information for both assessment and decision implementation, we can say that there must have been both internal and external specialization of the central regulatory subsystem by this time. However, one would prefer evidence of the actual hierarchy of regulation. Such will probably become available only when intermediate centers are excavated and the path of products from center to center are traced and associated with elite households and public buildings in the centers. In addition, the identification of particular elite families and the tracing of their members from place to place through the study of tombs may prove to be useful. At present, with data only on Monte Alban itself (9, 16) and from various small settlements (18, 23), it is not possible to pursue these types of study.

What did the Terminal Formative state control? Intensive archaeological survey of the valley is not yet complete, but from extrapolation of the completed surveys, the population of the whole valley by 100 B.C. must have been around 50,000 people (31, 47). For the first time in more than a millennium of village life in the valley, much of the population lived on the upper piedmont near streams useful for small scale canal irrigation, as opposed to the well irrigation of the main river alluvium (25). Whether or not there was some specialization in crops between these two parts of the valley, with more maize in the piedmont and other crops in the alluvium, is not certain. However, it is clear that the large population of Monte Alban itself, high on its rocky and poorly watered mountain, must have received food from the smaller valley settlements. Village craft specialization is revealed most outstandingly in the villages close to localized sources of clay and chert in the various arms of the valley. There is little evidence for craft specialists on Monte Alban itself. The degree to which such specialization in agriculture and craft would compromise the autonomy of the smaller settlements and the arms of the valley is not certain. Indeed, the positive evidence of Monte Alban's location and the iconography of its monuments could be taken to indicate that its rulers were far more concerned with conflict and conquest than with the administration of their state's economy.

From what did the early Oaxacan state arise? The recently defined Rosario Phase, which began a century or so before the founding of Monte Alban and 450 years before state florescence during the Monte Alban II Period, is not yet as well documented as the earlier and simpler chiefdom of the San José Phase. In comparison with Middle Formative chiefdoms elsewhere in Mesoamerica, for example in Veracruz, polities were small, incorporating perhaps 4000 people in one arm of the valley. There were two classes of settlements—hamlets and large nucleated villages in the standard Mesoamerican terminology, equivalent to the small villages and centers in Mesopotamia—in all of which there is evidence of elite residences and ritual activity. In the smallest hamlets there may be only a single elite household and limited evidence of household ritual (18). In others there may be a specially constructed

plaza with evidence of public ritual as well (26, pp. 211–13). In the largest center, there are large buildings on a massive platform in the center of the settlement, a precursor of Monte Alban itself (26, pp. 214–15). There are indications of the distribution of commodities such as obsidian from central pools to households, particularly elite households. If such distribution served regulatory functions, one would expect more obsidian available during stable periods and less during unstable periods. For example, slightly pre-Rosario Household Cluster LG-1, an elite household at the subsidiary hamlet of Fábrica San José, shows high obsidian to chert ratios during the earlier and later use phases; but during the middle use phase when the house was burned there was no obsidian (18, pp. 89, 206). While one burned house does not conclusively demonstrate a period of instability, the example does show that evidence of this sort can be recovered with careful excavation. If the distribution of obsidian obtained in interregional exchange rather than locally produced does provide regulatory information, then in contrast to the locally produced redistributed goods of Hawaii, obsidian conveyed information about conditions in the broader network of polities rather than in the local polity. Given that the Rosario Phase polities—there were perhaps three of them in the valley, one in each arm—had two or at most three levels of settlement hierarchy, that residential differentiation suggests elementary class stratification, and that there is minimal evidence of regulation in rituals and distributional networks, it is likely that this is a period of developed chiefdoms very much like the Susa A example presented in the discussion of Greater Mesopotamia. While the details of Rosario agriculture and craft have not been synthesized, several points indicate that there was little movement of goods from center to center. For example, settlements were focused on the rich alluvial terraces, and even if the center had 200 households, there was still enough alluvial land nearby to support more than twice the number of households (24). Direct mobilization of food for the center would not ordinarily have been necessary, and movements of goods to the center would probably have been restricted to certain clays (31) and stones (18) of local occurrence.

The contrasting presentations of prestate Rosario organization and developed state organization in Monte Alban II are drawn from the results of the ongoing research program of Flannery and his colleagues. While the scope and caliber of excavation data and analysis are unparalleled, any attempt to outline the processes critical in state emergence are hampered by the facts that most of the excavation has been concentrated on Rosario and earlier layers and features, and that the intensive archaeological survey of the Valley of Oaxaca is still in progress, while surveys of surrounding valleys are few. Thus estimates of population change must be imprecise and assessments of conflict based on settlement pattern configuration are not yet possible. In spite of these problems some changes can be outlined. With the end of the Rosario Phase, the one well-studied center was abandoned and the new valley-wide center of Monte Alban was founded. In spite of this political disjunction, the one portion of the valley in which Rosario sites were differentiated from preceding Guadalupe Phase sites shows that after a period of stability during these two phases, there was a population rise of about 400% during the early Monte Alban I Phase (31, pp. 38, 81–82). The new center is far above good soil and water,

its primary locational advantages being political rather than productive. From its inception the elite of the new center were raising monuments with portrayals of slain or sacrificed captives, presumably their enemies and probably an indication that they were involved in repeated conflicts (33). During this time there are abandonments at a number of the excavated sites in the valley, perhaps as a result of such disturbances. During Late Monte Alban I times there is a further 700% increase in estimated population, with expansion of the regional center itself and the founding of many surrounding small sites in what appears to be a planned settlement program (31, pp. 221–25). New elite funerary patterns became established (16), and future work will probably demonstrate that the elite residential patterns of the Monte Alban II Phase were becoming established at this time. All the Late Monte Alban I communities used a more standardized series of ceramics, suggesting that changes in craft specialization were occurring, but the necessary statistical and technical studies needed to demonstrate this have not yet been undertaken. All these demographic, social, and economic changes follow the disruption preceding the founding of Monte Alban, but none of the presently available data allows us to define the associated changes in regulatory process.

Even greater difficulties cloud the understanding of regulation in other cases of early state emergence in Mesoamerica such as the Valley of Mexico, Chiapas, and Highland Guatemala, where the exacting excavation techniques of the Oaxaca project have not yet been applied. Only in the relatively late but richly literate Petén Maya development is regulatory structure clearly evidenced and to some extent understood (32). Here, however, both the environment of the Petén and the type of archaeology that has been pursued conspire to cloud our understanding of exactly what is being regulated.

The lack of evidence has not deterred Mesoamericanists from making propositions about state origins. Mention of a few of these will suffice to illustrate the current state of progress. In a number of papers, Sanders (141), developing Wittfogel's ideas, suggests that military competition for limited agricultural resources impelled some elites to control, reorganize, and extend canal irrigation. Increased and more reliable production and more effective administration would give these elites competitive success which would promote further growth of irrigation and administration. However, the development of irrigation in Formative Mesoamerica is limited in extent and could have served this amplifying function in only a few cases. In a recent paper, Webster (49) raises the question of how a chief could escape the checks and balances inherent in chiefly redistribution, which he must do if he is to support a specialized administration. Building on ideas presented by Carneiro (15), he suggests that with competition under conditions of social circumscription, successful rulers who took control of local units outside their own kin networks would be able to extract resources from these marginal units while redistributing nothing in return. These resources could be used to build military and administrative forces and to further increase competitive advantages. While the importance of balanced redistribution in complex chiefdoms is arguable (21, 38), as previously noted, both this construct and that of Sanders usefully emphasize the importance of exogenous or uncontrolled resources in administrative transformations. Such

propositions are at present difficult to test; however, Brumfiel (11) has developed a method of estimating relative demands on a community's resources which may allow direct consideration of such problems.

In summary, as in Mesopotamia, the period of state emergence is well bracketed. However, in the two most intensely studied areas—the Valleys of Oaxaca and Mexico—the presently available evidence is not comparable. In the former, there is much community data derived from excavation, particularly on prestate communities, but regional surveys are still incomplete. In the latter area, regional data derived from surveys are superb, but there are very few detailed excavations on Late and Terminal Formative sites. Only when these and other areas of early Mesoamerican state formation are brought to equivalent levels of documentation will it be possible to use the data of the development of the network of Formative societies to test the forthcoming generation of theoretical constructs involving the interaction of many variables.

Some aspects of the two research cases upon which this review has focused are presented in Figure 3. There are a number of notable similarities between the two developments. In both, complex chiefdoms collapse and fragment, though only in the Mesopotamian case does this phase of collapse last long enough to appear as a demographic disturbance in the archaeological record. In both cases there is a close relationship between the changes in regulatory organization that mark the origin of the state and in the reorganization of certain crafts, though in neither is it conclusively demonstrable which has primacy. In both cases, within 200 years after state foundation there is territorial expansion of control into surrounding border regions. In both cases the political and economic organization of the initial complex chiefdom and the developed primary state seem broadly similar. Furthermore, other archaeologically known cases, such as the North Coast of Peru in the First Intermediate Period and most of the ethnohistorically known cases of actual state formation such as the Zulu of Southern Africa (12), the Baganda of East Africa (30), and the Merina of Central Madagascar (14, 17), none of which we are able to detail in this review, show very similar patterns of development. I cannot detect any consistent qualitative difference between the archaeologically known cases of primary state formation and the ethnohistorically known cases of the past few centuries. Thus the marked differences which Service sees between the "archaic civilizations" and the "modern primitive states" seem to me to result from the use in his study of an inadequate archaeological record (44, pp. 303–4). Any proposed explanation of primary state origins must account for the common elements in all known cases.

NEW DIRECTIONS IN THE CONSTRUCTION OF EXPLANATIONS

The review of definitional issues and of the two cases of ongoing research has raised repeatedly the need for better theoretical structures with which to guide future research. It would be gratifying to be able to close this essay with a synthesis of recent contributions toward a formal theory of state origins; unfortunately, progress has been fragmented at best. Most anthropologists involved in field research on state
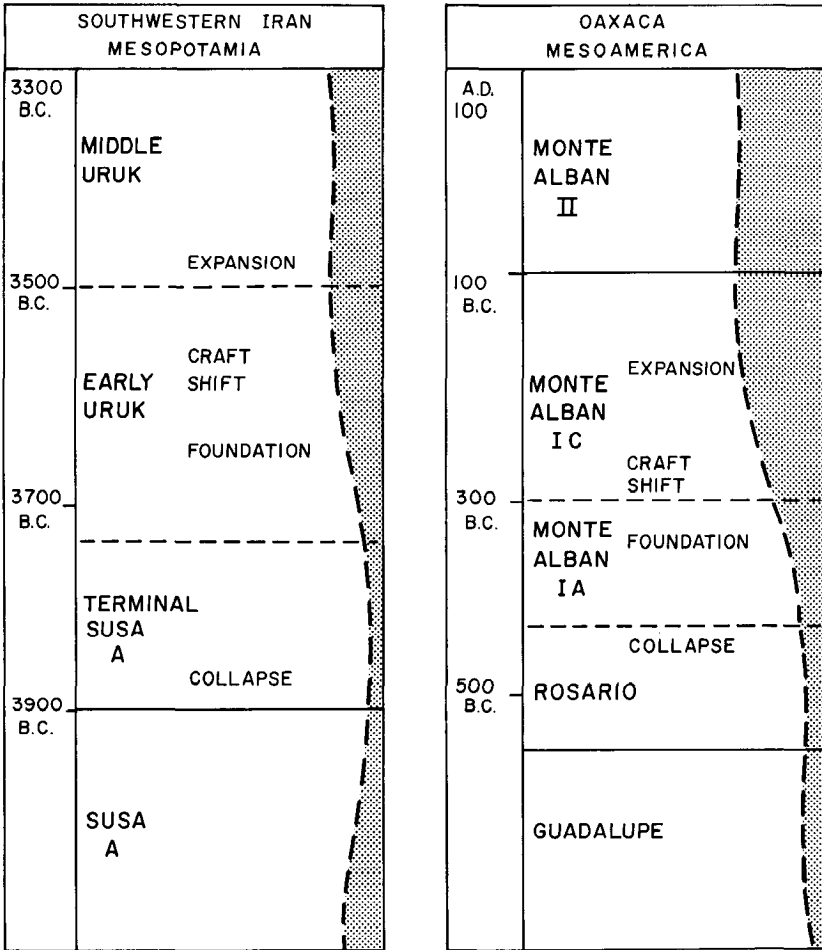
Figure 3 Comparative chronologies of Southwestern Iran and Oaxaca. The shaded area on the right side of each column provides a relative indication of population for the two areas. The indicated placement of the periods of the collapse of chiefdoms, the foundation of states, the shift in the organization of crafts, and the territorial expansion of the state is in both cases suggestive, not exact.

developments are aware of the complexities of the interacting processes. Many of those who are working with archaeologically documented cases attempt to utilize an explicitly systemic frame of reference following the outline proposed by Flannery (22) in his seminal review of early civilizations based on a paper by Rappaport (40). Many of the papers mentioned previously deal with innovative ways to estimate and understand changes in human population and thus in demand and available labor, with techniques for monitoring interregional movement of materials and explicating these movements as systems of exchange, and with approaches to other basic system flows. However, the problems of information flow and regulatory decision-making in networks of chiefdoms and states have received little attention.

There are innovative approaches both within and outside anthropology that deal with various aspects of these problems of which a few examples will suffice. The symbolic context of regulatory information and how this context could be transformed has been considered by several anthropologists (10). Aspects of regulatory pattern—how and in what form information on flows is obtained and how decisions are passed down and implemented—have been considered by cyberneticists and management analysts (7). Strategies for grouping or segmenting regulatory operation and resources are seemingly within the province of game theorists, though its most interesting aspect—n-person game theory—has been developed as a theory of collusion and alliance relevant to only a few aspects of our problem, and even it has been developed to the point where it elucidates conflict definition more than conflict strategies themselves (39). Mechanisms by which hierarchies of regulators can be built up have also been considered by cyberneticists. Studies by anthropologists have tested the proposition that the rate at which decisions must be made determines the number of levels of hierarchy (52), and they have developed the proposition, based upon Ashby's principle of requisite variety (3), that there is an optimally efficient number of subsidiaries under each higher-order regulator (29). Each such study provides another element which may in time be subsumed under a formal theory of the evolution of regulatory hierarchies. However, better understanding of decision-making subsystems to match our increasingly sophisticated understanding of demographic and productive subsystems will not in itself result in new or improved explanations of state origins. Such explanations will probably involve the interaction of these subsystems and the interaction of systems in networks of chiefdoms and states. Let us hope that such formulations, necessary as both a guide and a target for ongoing research, will soon be developed.

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