

# Uruk Mesopotamia & Its Neighbors

*Cross-Cultural Interactions  
in the Era of State Formations*

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## 4

### Cultural Action in the Uruk World

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This chapter is an effort to introduce a broader perspective on the larger cultural system of the fourth millennium B.C. in the Tigris-Euphrates-Karun watershed, both the plains of Mesopotamia proper and the valleys of the foothills and the Zagros and Anti-Taurus Mountains. It is stimulated by the challenges laid down in Guillermo Algaze's *The Uruk World System* (1993) and related writings. In Algaze's conception, complex societies emerge in the Lower Mesopotamian plain early in the fourth millennium B.C. The large and socially differentiated populations of this heartland, needing materials scarce on the alluvium but available in the Taurus and Zagros Mountains and the plateau lands beyond, placed enclaves in Upper Mesopotamia and outposts on the routes connecting these enclaves, drawing indigenous peoples of both the plains and the mountains into exchange relations. These relations led to prosperity and increased social complexity in the peripheries and emulation of Lower Mesopotamian styles in the indigenous communities. When southern Mesopotamia entered into a period of decline, exchange diminished, and northern Mesopotamian enclaves were abandoned. As a result, the dependent indigenous

societies declined in prosperity and complexity. All Mesopotamianists are indebted to Algaze for proposing a comprehensive understanding that accounts for much of the evidence available in the 1980s and that has inspired much new research. Many critiques have been leveled against Algaze's construct, but none of the critics has proposed a construct that successfully accounts for the full range of evidence.

The critics have, however, pointed to many of the elements and relationships that must enter into a more comprehensive perspective. First, we have to consider the vast size of the network of communities. It includes not only southern Mesopotamia, but parts of southwestern Iran, the Persian Gulf, the valleys of the Zagros and the Iranian Plateau beyond, northern Mesopotamia, the valleys of the Taurus and Anti-Taurus and the Anatolian Plateau beyond, the Levant, and parts of Arabia as well. Second, we have to consider all kinds of resources used by these communities, both mundane agricultural, pastoral, and material resources as well as rare or exotic resources. Third, we have to consider all kinds of actors, individuals and groups, nomad and settled, ordinary villagers and townspeople and the leading elites. Fourth, we have to consider not only the peaceful movement and exchange of people and items, but also violent and destructive movements. Fifth and finally, the evolving relations between such elements and processes have to be understood in terms of the cultural conceptions of the participants.

For practical purposes, I begin this brief essay by breaking down the complex and largely seamless web of interrelationships into topics:

- the time-space framework,
- the natural environments and subsistence systems,
- the present state of knowledge of the population and social mass of the component regions of the Uruk world,
- material production and its organization and exchange, and
- issues of political organization and conflict.

After this, a dynamic succession of models is proposed as a challenge to future research. The treatment cannot be comprehensive, but it should encourage discussion.

Throughout this chapter, I break the continuous development of the Uruk period into "Early," "Middle," and "Late Uruk" spans, modifying the scheme proposed by Gregory Johnson (1973). The absolute dates, discussed in chapter 3, are still tentative. Because these concepts are used in various ways by different specialists, let me briefly define what I mean (see table 1.1).

- "Early Uruk" or "LC 2" (ca. 4150-3800 B.C.) is a time period in which differentiated ceramic assemblages were made on local wares, but in which such forms as round-hip (Coba) bowls and tapered beveled-rim bowls, neckless ledge-rim jars, high-band-rim jars, and expanded-rim jars occur widely. Long, straight spouts are distinctive appendages on jars in Lower Mesopotamia and adjacent subregions.
- "Middle Uruk" or "LC 3-4" (3800-3350 B.C.) is a time period in which the conventional beveled-rim bowl becomes common everywhere, and two regional ceramic traditions developed from local ceramics of the earlier fourth millennium B.C. In the south-east, in Lower Mesopotamia and southwestern Iran, a full range of small jars with straight or ledge rims and large jars with straight, expanded, and ledge rims were made on sand- or "grit"-tempered wares. These often have conical spouts and plain strap handles and are decorated with reserved slip, red slip, simple grooving, or simple crosshatch-incised bands. In the northwest, in Upper Mesopotamia, these forms occur on some sites, but a range of heavy bowls, open pots or "casseroles," and a range of jars, all with thickened rims and made on "chaff-faced" (probably dung-tempered) wares, predominated.
- "Late Uruk" or "LC 5" (ca. 3350-3100 B.C.) is a time period in which the extant forms in the sand-tempered tradition are supplemented by band-rim bottles and other jars with markedly drooping spouts, groove-and-oblique and complex crosshatch-incised decoration, and twist handles. While twisted handles may appear first in Lower Mesopotamia, or complex incising may appear first in Upper Mesopotamia, these variants spread throughout the Uruk world, and the coalescent Late Uruk sand-tempered

ceramic assemblage seems to replace the chaff-faced tradition throughout the lowlands.

#### TIME

The span in years of Uruk civilization was much longer than anyone thought even a few years ago. With the calibration of the radiocarbon chronology, and the wide use of thorough sample pretreatment on suites of samples, the evidence now indicates that the Uruk civilization endured for more than a millennium, from before 4100 until after 3100 B.C. (Evin 1995; Wright and Rupley, this volume). Setting aside the earlier span of local cultural developments and considering what is termed in this synthesis the Middle and Late Uruk periods (LC 3-5), the time of intense cultural interaction throughout much of the Tigris-Euphrates basin and beyond lasted for more than seven centuries, from before 3800 until after 3100 B.C.

In terms of human reproduction and socialization, this is at least 35 generations. In political terms, allowing an average of ten years for paramount political tenure in a world of relatively short life spans, this was at least 70 political generations. This is a time span equivalent to the period from the Crusades to the First World War. In terms closer in time and space to the Uruk world, this is the span from Ur-Nanshe of Lagash to Hammurabi of Babylon. The practical import of this is that there was sufficient time for many different phases of political and economic integration and disintegration during the long flourishing of Uruk civilization.

#### DISTANCE

Similarly, we now know that the Uruk world was much larger and more diverse than we previously thought. For more than half a century, it has been known that Late Predynastic lapis lazuli in Egypt was probably transported at least 4,000 kilometers from northeastern Afghanistan (Hermann 1968). Such valuables could have moved through linked spheres of exchange without Egyptians being aware of the people of the Hindu Kush, and vice versa. The actual limits within which people interacted (as indicated by the movement of skilled workers, discussed below), probably with some knowledge of each other

(indicated by toponyms and by the earliest geographical sign lists, discussed by Nissen), extended from central Iran on the east to the Mediterranean on the west, from the Taurus on the northwest to the head of the gulf on the southeast, a distance of 1,500 kilometers. At 25 kilometers per day, over tracks sometimes mountainous and difficult, sometimes level and easy, an intrepid traveler on foot could go from the high valleys of Fars to the Levantine coast in little more than 60 days. From Ubad times if not before, however, travel in Southwest Asia on one route would have been easier. From the Taurus toward lower Mesopotamia, travel by raft on the Tigris or Euphrates would enable one to cover 1,000 kilometers in only 20 days and with substantial cargo. By the Middle Uruk period, however, another means of travel, the donkey, had spread from the Levant, as demonstrated by the well-dated and firmly identified remains from Tell Rubeidheh in the middle Diyala valley (Payne 1988). A rider on a donkey could cover 45 kilometers a day. More important, however, is that donkeys can be organized into pack trains. One person on foot with several donkeys could move substantial loads. Thus, beasts of burden enabled families with their goods, craft workers with their tools, and traders with their wares to move throughout Southwest Asia much more easily than before.

Even with this increased facility in travel, it would be difficult to exert enduring control over settlements more than a day or two apart. At any time, the Uruk world probably contained scores if not hundreds of discrete polities, of different scales and organized in different ways.

#### BIOME

For several decades, it was assumed that the only major changes in natural conditions in Southwest Asia since the Holocene were those resulting from unwise cultivation and overgrazing. However, it has become increasingly apparent that there have been interrelated changes in climate, geological processes, vegetation, and potential for agriculture and herding throughout Southwest Asia during the Holocene. It is necessary to outline the general environmental conditions during the fourth millennium, while emphasizing that the immediate challenge for farmers and pastoralists has always been coping with intense and unpredictable variations in water supplies and crop yields and pasturage from year to year.

Current evidence indicates that climatic processes were somewhat different in the northwestern versus the southeastern portions of the Uruk world. The pollen evidence from the northwestern zone—the Taurus and northern Zagros Mountains and the Syro-Anatolian foothills and lowlands of Upper Mesopotamia, the region affected by air masses moving from the west and north—indicates that the Middle Holocene, from sometime before the sixth millennium until the early third millennium B.C., had a more lush vegetation with a denser oak forest in the mountains (Kuzucuglu and Roberts 1997) and a heavier grass cover on a more extensive belt of steppe lands. To be sure, there were, within this span, periods of decreased rainfall (Hole 1997), which probably affected farmers and herders. In general, however, farmers in the Levant and Upper Mesopotamia could have exploited larger dry farming areas more reliably than in later times (Rosen 1989, 1997). The limited pollen evidence from the southeastern zone—the southern Zagros Mountains and the plains of Lower Mesopotamia affected by monsoons from the Indian Ocean—indicates that the Middle Holocene, from sometime in the seventh millennium until the mid-fourth millennium B.C., had a more lush vegetation with a denser oak forest in the mountains (Van Zeist and Bottema 1977) and grassy steppes where open deserts exist today (al-Moslimany 1994). After this time, the southeastern zone became less humid, and the climate more like today's. If in general there was increased rainfall in the Tigris-Euphrates watershed, it is not necessary to propose that the large earlier fourth millennium channel documented by Adams (1981:16-18, 61-63) on the lower alluvial plain was caused by a joining of the Tigris and Euphrates channels. The great magnitude of floods, implied by meander belt width, could have been a result of greater rainfall and larger floods. Uruk farmers would have benefited from greater rainfall (and thus less need for irrigation) but could have suffered from more devastating floods, particularly on the lower alluvium of the Euphrates, where floods tend to arrive around the time of harvest, when more water is not needed. Increased rainfall and ponded floodwaters, however, would have yielded better pasture, and herders would have been able to keep flocks closer to villages. Indeed, long-distance transhumant pastoralism may not have been the preferred strategy that it became in later Holocene times.

A largely unrelated environmental change affected the head of the gulf and the lowest part of the alluvium during the fourth millennium B.C. Postglacial melting of the ice caps raised sea level in the gulf above its present mean position during the fifth millennium (Larsen 1983), and higher sea level must have flooded the still undeveloped channel system of the Tigris, Euphrates, and Karun with brackish water, as is rightly emphasized by Nissen (1988:56), creating a mosaic of shifting channels, natural levees, and marshes (Sanlaville 1989).

While there is a need for much additional geoarchaeological and paleoenvironmental research—not only the study of local landscape patterns but of actual year-to-year variation, which can be gained from the dendrochronological or malacological records—it is a near certainty that resource structure and resource productivity of the component subregions of Greater Mesopotamia during the fourth millennium were very different from those of our era.

## PEOPLE

The precise accounting of people remains among the more difficult tasks faced by regional archaeologists (Kramer 1980; Postgate 1994). This task is even harder for Uruk specialists, because we have almost no information from cemeteries. However, there are primarily two kinds of questions that demand precise estimates, those involving the approach of human population to the limits of subsistence productivity (Boserup 1965) and those involving the estimation of potential surplus production, and thus potential tribute, for particular areas (Steponaitis 1982). For other questions, general estimates of absolute numbers will suffice, and the key issue is often the number of elemental social units involved (Johnson 1987a:111).

For regional studies, a primary question is that of the number of communities occupied at any one time. The most promising approach to estimating the average number of settlements occupied at any point during a given period is that proposed by Dewar (1991) and now applied to several areas of Greater Mesopotamia (Neely and Wright 1994; Pollock 1999:55-72, this volume). Wherever they have been applied—and so far, this has been attempted only in Lower Mesopotamia and the foothill plains of southwestern Iran—these methods have resulted in a lowered estimate for the number of occupied settlements,

Taurus Mountains, for example at Korucutepe (Van Zist 1978) and at Fatmal-Kalecik (Van Zeist 1998), do wheat seeds predominate. However, burned seeds are frequently those found in dung burned as fuel and may tell us more about the diet of sheep and goats than of people (N. Miller 1984). A high density of wheat rachises from threshing at Sharafabad (Wright, Redding, and Miller 1980) and the predominance of wheat phytoliths at Kazane (A. M. Rosen, University College London, personal communication 1994) demonstrates that wheat may have been more important than the carbonized seeds indicate. A number of sites produced lentils and peas, important as a protein source. Grapes, figs, olives, and flax are also reported.

Paleoethnozoological studies must also take into account preservation and sampling bias in excavation. Sharafabad, Farukhabad, Godin, Abu Salabikh, Rubeidheh, Qseir, Hassek Höyük, Hacinebi, Kazane, Arslantepe, Yarım Höyük, and Fatmal-Kalecik have reported studies. The broad contrast between some sites with strong proportions of sheep and goat, others with strong proportions of pig and cow (emphasized by Stein and Nicola 1996), and yet others with more hunted animals (emphasized by Zeder 1994) argues for varying articulations between cultivators, herders, and hunters, or varying cultural preferences in diet. The taphonomic issue of the deposition of larger mammal bones on the edges of sites where we have been less likely to excavate must be addressed before the variation in the occurrences of cow remains can be resolved. Pollock raises the intriguing point that the increase in sheep and goat bone in food remains during the fourth millennium may be an epiphenomenon of the increased use of hair and wool in Uruk economies (Pollock 1999:106-10). Discussion of "cultural preference" raises the intertwined issues of food preferences that arise from social status and wealth discussed in detail for Anshan, a center of the post-Uruk times, by Zeder (1991) versus preferences that express ethnicity, recently discussed for Hacinebi by Stein (1999:71-72, 139-148, and this volume). Certainly, as Emberling (1997) shows, ethnicity will arise as a social strategy whenever states dominate weaker communities. The possibility, however, of high social status attached to cuisine with certain kinds of meat butchery and cooking and certain grain preparations has not been comprehensively addressed for any fourth millennium site.

## MATERIAL

It is often said that Lower Mesopotamia lacks any resources other than mud, water, and human labor. Strictly speaking, this may be true, but it is surprising how many useful resources can be found within a few days travel of alluvial Mesopotamia.

- There are woody trees in both the gallery thickets and levees of the rivers (poplar, date palm, and tamarisk) and of the steppes (acacia and jujube), though these are either structurally weak or do not grow to a robust size. However, in the fourth millennium B.C., oak, juniper, and other trees were available in the Zagros and Anti-Taurus front ranges, only two or three days travel from major populations.
- Fine-grained stones useful for making flakes and blades are found as pebbles in the wadis draining the southern desert and in the Pliocene deposits of the Zagros foothills, but their density is low. Mesopotamians were able to make substitutes of ceramic, for example "clay sickles" (Bencko 1992). However, concentrations of excellent fine mottled gray cherts and fine banded brown occur south of the Middle Euphrates in the Syrian Desert, and dense concentrations of medium-textured gray chert are found just northwest of Susa and northeast of Lower Mesopotamia (Wright ed. 1981:262-72). Both were imported to southern Mesopotamia in quantity during Uruk times (Pope and Pollock 1995).
- Bitumen, not only a useful adhesive but also essential for waterproofing boats and architectural elements, had three major source areas: Khuzistan, the Middle Euphrates, and the Middle Tigris (Marschner and Wright 1978; Conan and Deschesne 1996; Schwartz, Hollander, and Stein 1999). No major fourth millennium town was more than a few days from a bitumen source.
- Ground stone materials, cements, and other bulk materials could also be found not far from the alluvium.

In fact, the only class of utilitarian materials not found in quantity within a few days of the lowland plains was that of metal ores. It is debatable to what extent metal provided utilitarian items, as opposed to social luxuries, and what amounts were actually imported during the

fourth millennium. In contrast to the working and use of stone tools, which leave measurable by-products as each step of the process diminishes the material, metal could be infinitely recycled, and it is difficult to infer the quantity imported from what remains. Certainly Early Uruk metalworking is well documented in Syro-Anatolia (Özbal, Adriaens, and Earl 1999; Hauptmann et al. 1998), but the organization and magnitude of exchange are difficult to determine. It is better to assess the amount removed from mines and smelted, but this is not easy since ancient mines were massively exploited subsequently, and slag heaps are difficult to date (see, however, Yener, Özbal, and Kapitan 1989; Yener and Vandiver 1993).

Given the relative proximity of materials actually moved in bulk and discarded in quantity, the negotiating and coordinating of exchange would not be so difficult. Indeed, many of these resources could have been obtained by direct visits of procurement groups to sources, rather than by exchange. The small quantities of precious materials moved over greater distances must have been relatively easy to transport, and their movement could have been negotiated as gift exchanges between individuals and institutions. What kind of agents engaged in which kinds of procurement and how transactions were negotiated is discussed below.

### CRAFTS

The monotonous standardization over vast distances of later Uruk craft products is often noted, though rarely verified with detailed formal studies. Let us take a look at a few of the production activities requiring skills learned in long apprenticeships and special equipment.

- The potters' craft has produced countless tons of material for archaeological analysis, but only recently have archaeologists begun to look at this wealth of material as a craft product. It is critical to realize that this is not pottery produced in each individual household. Potters concentrated their activities in certain areas in larger settlements, such as Chogha Mish (Delougaz and Kantor 1996), Susa (Miroschedji 1976), Abu Salabikh (Pollock, Pope, and Coursey 1996), and Habuba Kabira (Sürenhagen 1974-75:45-50). Similarities in pottery do not imply "close cultural relations," but only close relations among a specialized

group of potters. Many ceramic items were simply produced by press-molding, for example the beveled-rim bowl, made in a mold (A. Miller 1981) or pressed by hand (Karlsbeck 1980). Others were made by slab construction, for example the trays and drains (Van der Leeuw 1994:275, 277-79). Many individuals doubtless had the skill to produce such items. Most vessels were built with patches and fillets on a simple turntable, with only the rim formed by rotary motion. This requires considerable skill, but the equipment—a few scrapers and cutting tools, a turntable perhaps made from a broken sherd—is minimal and easily replaced (Roux and Courty 1997; Van der Leeuw 1994:276, 279-90). Some jars, bottles, smaller bowls, and cups were actually thrown on a rotating wheel, sometimes in several parts bonded together later (Van der Leeuw 1994:276, 290-93). Large fast wheels suitable for throwing multiple vessels "off the hump" by a team of potters seem to have been rare until post-Uruk times. The skill required for wheel throwing is similar to that needed for hand building on a tournette, but a wheel is a bulky and valuable piece of equipment. Vessels of standard sizes and forms were produced at least in the southeast portion of the Uruk world, as demonstrated by the measurements of features of three common Late Uruk vessel types (table 4.2). The degree of standardization is astonishing. Most differences in color and so forth are probably related to the different clays used in each subregion (Wright, ed. 1981:187-88). The significantly lower neck height in Susiana bottles is apparently a local style feature, visually noticeable in the large semi-complete series recently illustrated from Chogha Mish (Delougaz and Kantor 1996). Unfortunately, it has not been possible to measure the same types of ceramics in unselected samples from Upper Mesopotamia. The available evidence suggests a continuous circulation of potters throughout the Uruk world. In spite of such circulation, some innovations developed in one area and spread only slowly to others. For example, the thickened rim bowl (the so-called hammerhead bowl) that developed in the local Post-Ubaid Late Chalcolithic pottery industries of Upper Mesopotamia appears in Lower Mesopotamia early in Middle Uruk (LC 3) times (Nissen 1970: tafel 87:37/4, 93:39/27,

TABLE 4.2  
Late Uruk Ceramic Variation in Lower Mesopotamia

	Location	N	Mean	s.d.	Significant?
Strap handle Width (cm)	All areas	104	3.70	0.88	No
	Warka area	16	3.53	0.98	
	Farukhabad	12	3.74	0.93	
Thickness (cm)	Susa area	76	3.72	0.86	No
	All areas	104	1.00	0.22	
	Warka area	16	0.99	0.20	
	Farukhabad	12	0.99	0.33	
	Susa area	76	1.01	0.21	
Crosshatch-incised bands Shoulder thickness (cm)	All areas	72	0.82	0.14	P = .996
	Warka area	10	0.80	0.12	
	Farukhabad	11	0.70	0.13	
Diagonal line width (cm)	Susa area	51	0.86	0.12	No
	All areas	71	0.08	0.03	
	Warka area	9	0.07	0.03	
	Farukhabad	11	0.10	0.05	
	Susa area	51	0.08	0.03	
Diagonal line intersection angle (degrees)	All areas	72	77	19	P = .985
	Warka area	10	66	12	
	Farukhabad	11	93	23	
	Susa area	51	76	18	

99:39/14; Killick 1988: fig. 29-27, type 21; Wright, ed. 1981: fig. 47d). Its roots in northern traditions are indicated by the retention of a dung temper. Conversely, bowls with an exterior band rim first occur in earlier Middle Uruk times in the south on a sandy buff paste as an imitation of a band rim stone bowl (Nissen 1970: tafel 88:38/14, 93:39/28; Wright, ed. 1981: 158-59, figs. 46g, 77g-j). This bowl becomes common in northern Mesopotamia in later Middle Uruk (LC 4) times (Pollock and Coursey 1996) and is often red-slipped, unlike its stone antecedents.

• The builders' craft has received close attention from archaeological architects. Standardized brick sizes and bonding patterns are widespread. Differing levels of skill are indicated by the contrast between simple buildings and elaborate nondomestic buildings with niched facades. However, there are systematic variations in the canons of planning and construction. Some buildings, for

(Table 4.2 continued)

	Location	N	Mean	s.d.	Significant?
Bottle necks Rim diameter (cm)	All areas	37	5.08	0.72	No
	Warka area	14	5.21	0.59	
	Farukhabad	11	4.91	0.83	
Inner rim angle (degrees)	Susa area	12	5.08	0.79	No
	All areas	37	72	11	
	Warka area	14	75	7	
	Farukhabad	11	68	16	
	Susa area	12	70	8	
Rim top angle (degrees)	All areas	37	153	23	No
	Warka area	14	147	29	
	Farukhabad	11	155	18	
Rim height (cm)	Susa area	12	159	19	No
	All areas	37	1.47	0.60	
	Warka area	14	1.55	0.46	
	Farukhabad	11	1.11	0.58	
Space (neck) height (cm)	Susa area	12	1.66	0.70	P = .99
	All areas	33	1.22	0.50	
	Warka area	11	1.55	0.46	
	Farukhabad	11	1.37	0.42	
	Susa area	11	1.01	0.26	

Source: Adapted from the Farukhabad monograph (Wright ed. 1981: table 51).

Note: The samples used from the Warka region were collected by Adams and Nissen (1972) in 1966 and are curated at the Oriental Institute of the University of Chicago. Those from the Susa area were collected by G. A. Johnson (1973) in 1970-71. The significance test used is the Kruskal-Wallis non-parametric one-way analysis of variance (Seigel 1956:184-93). The difference in shoulder thickness on crosshatch-incised bands probably results from the presence of more small sherds in the screened Farukhabad samples in comparison with the surface-collected Warka and Susa region samples. The diagonal line intersection of crosshatch-incised bands is time regressive (Johnson 1973), and the difference may result from a different chronological span for the Farukhabad sample. The difference in space height (height of neck below the rim) of bottles, however, is apparently a regional stylistic difference.

example at Susa, are laid out in a linear unit of 65 centimeters (Wright 1998:184). Other buildings, for example those at Habuba Kabira, are laid out in units of both 62 centimeters, divisible into two units of 31 centimeters, and about 75 centimeters, divisible into three units of about 25 centimeters (Kohlmeier 1996). Detailed studies of the measurements of buildings at Jebel Aruda, Sheikh Hassan, and Hassek Höyük have yet to appear; however, their builders seem to have used similar units. This is an old specialization, with roots in the Ubaid (Kubba 1990), and it may already have given rise to diversified, guildlike corporate group-

- ings in which divergent traditions were passed from master to apprentice.
- Another activity that can be viewed as an Uruk craft was that of record keeping. Every adult in the fourth millennium world must have been familiar with the use of seals and must have recognized the designs of those important to them. The routine of preparing counting technology, the actual counting of items, the recording of numbers of items with counters, the sealing of items with stamp and/or cylinder seal impressions, and the checking of incoming sealed items—both their impressions and their counts—all required specialized knowledge. We should not think of the individuals who practiced these skills as “bureaucrats,” because there is no evidence of formal training, heritability, and nepotism among the record keepers, or social values protecting and exalting the skill. It is only with the first sign lists and practice texts at the very end of the Uruk period (LC 5) (Nissen 1988:80) that we can begin to detect prototypic bureaucracies. Nevertheless, the widespread use of similar counters, bullae, sealing practices, and (later) numbers and tablets argues for communication between record keepers throughout the Uruk world. The extent to which there were also local styles of seal use and of recording items (Frangipane and Palmieri 1983a, 1989; Frangipane 1993), as well as of seals (Pitman, this volume), and the extent to which there were patterns in the spread of innovations are subjects for future investigation.

That people actually conceived of the workers engaged in the activities noted above (and many others) as specified social categories or roles is indicated by the glyptic representations. Representations of record keepers (Pitman 1993) and potters (Sürenhagen 1974–75:91) have been explicitly discussed. Other occupations appear to be depicted as well. The canonization of the Standard Professions List in latest Uruk times (Nissen 1988:80–81) is an even more formalized indication of social categorization. A general point to keep in mind is that once a socially well-defined skill is established, its practitioners can move to wherever their services might be needed. One reason that they may do this is social, rather than economic. If skilled crafts have

emerged as social categories guarding craft secrets, there will be a motivation for endogamous marriage. Since there may be relatively few families skilled in a given craft in any one community, young people seeking partners may have to look to distant communities. The increasingly broad homogenization of Uruk material styles may simply be a result of the changing social organization of the crafts, facilitated by the greater transport capacities of donkeys (relative to humans on foot).

The mobility of workers does not imply wholesale migration of communities. The latter may have occurred, as is discussed below, but it must be demonstrated by showing that an entire community system that developed in one area is implanted in an area where it has no local roots.

#### EXCHANGE

The specialization of labor implies some form of exchange. Exchange involves the movement of items from one social unit to another and a balancing reciprocal movement of other items back to the first unit. In prehistoric studies, actual exchange cannot be proven, but co-varying reciprocal movement can be shown, particularly with increasingly available physical or chemical techniques for establishing the sources of raw materials and products. Some evidence for the transport of material over varying distances has been noted above. We must now specify the contexts of transport and the social relations of exchange, neither of which can be assumed to be homogeneous given the spans of time, the different participating polities, and the differing varieties of goods in the Uruk world. Archaeological demonstration that exchange involves either administered exchange with equivalencies fixed for periods of time or marketing with equivalencies fluctuating in accordance with supply and demand is possible but has not yet been undertaken.

In general, if agents act independently, seeking transactions to their greatest advantage, we can expect supplies from different sources to vary in quantity over time and space. If we can document reciprocal movement of goods with discarded durable manufacturing by-products and consumed items, we would expect a relative balance in the quantities of goods sent and received. On the local level, some of the stylistically distinct decorative styles on ceramics at Middle Uruk Sharabab appear to be related to different towns (Wright and



Johnson 1975: fig. 4e, f). This suggests that these rural people were independent agents, who could obtain some of their consumer goods from the sources more convenient to them. On the regional level, the Middle Uruk inhabitants of Farukhabad on the Deh Luran Plain (Wright, ed. 1981:182-84, 262-77), intermediate between the Susa and Nippur areas, prepared and exported substantial quantities of bitumen, local coarse chert, and (perhaps) fabrics, judging from increases in manufacturing by-products without comparable increases in consumption. In return, they received and discarded exotic cherts, metal items, and marine shell. The Deh Luran communities seem to have been independent agents in a larger economic network.

Conversely, if agents are bound by fixed relations, we expect supply from one source and in more uniform amounts. If we can document the movement of goods with durable traces, we may find evidence of extraction with very little reciprocity. On the local level, some of the stylistically distinct decorated ceramics at Late Uruk KS 54 on the southern Susiana appear to be in the style of only one town (Johnson and Wright 1986), as noted above. This suggests that these rural people could obtain some of their consumer goods from only one source. On the regional level, the Late Uruk (LC 5) period inhabitants of Farukhabad (Wright, ed. 1981:188, 262-77) exported even greater quantities of bitumen, local coarse chert, and fiber for fabric production than in Middle Uruk times, judging from increases in processing by-products without comparable increases in consumption. During this period, however, they received little in return. They seem to have been exploited dependents within a larger economic network, providing tribute to more powerful centers with little tangible return.

It will be interesting to see what statistical study of ceramics, stone debris, spinning and weaving gear, bitumen, metal slag, and other goods indicates about the social relations of exchange in other well-excavated sites such as Godin, Habuba Kabira, Jebel Aruda, Hacinebi, Hassek Höyük, and Arslantepe. If the actual densities are sufficiently well recorded to assess rates of discard, we may find that some of these sites participated in little or only local exchange, while others were in either bound tributary relations or more independent and open reciprocal relations of various types.

## TRIBUTE

If there is some evidence for more balanced forms of exchange, there is also evidence that important economic sectors were administered as command economies, in which mass labor was organized and sustained with rations, and in which goods were exacted as tribute from producers. The evidence for this is multiple.

First, some towns are so closely surrounded by smaller communities that they themselves could not have subsisted with their own fields. This has been most carefully modeled for the Early and Middle Uruk (LC 2-4) period town of Susa (Johnson 1973:96-98, 137-39). Because Uruk land surfaces south and west of Uruk-Warka no longer exist and cannot be surveyed, a similar study cannot be done for the much larger city of Uruk-Warka. The apparently subsidiary 24 hectare Late Uruk (LC 5) period town of KS-125, 30 kilometers north of Uruk-Warka, had nearby villages on all sides (Adams and Nissen 1972) and would probably prove incapable of feeding itself with its own fields. Study of Tell al-Hawa, Brak, and other large centers on the Jazira in northern Mesopotamia (Wilkinson 1994) may indicate a similar situation. These towns, and no doubt others, must have obtained food from the rural settlements.

Second, there are communities without evidence of participation in balanced exchange and without evidence of detailed accounting of transactions, such as Late Uruk (LC 5) period KS-54 and Farukhabad noted above. It is reasonable to infer that their products were taken as tribute with little or no reciprocity.

Third, the mass-produced bowls—the earlier Coba bowls, the tapered rim bowls or “proto-beveled-rim” bowls, the true beveled-rim bowls, and the later conical cups and bowls—are still best understood as containers for rations in systems of mass labor, as Nissen has repeatedly argued with great elegance (see Nissen 1988:83-85 for a recent statement). Whether such rations were grain, gruel, groats, or bread, and whether these bowls were also used or reused in other ways, is beside the point. Their increased discard at the time of bountiful harvest at Sharafabad near Susa suggests that such labor had been used, among other ends, to bring in crops. The increased preparation of bullae in this year of bounty, coupled with the lack of finished and sealed bullae at Sharafabad, further implies that goods left the site accompanied by invoice records (Wright, Redding, and Miller 1981; Wright,

Redding, and Pollock 1989). Some portion of the all-important grain supply thus seems to have been under the control of administrative hierarchies. Whether animals were also taken as tribute remains to be demonstrated.

## CONTROL

Both administered economies and entrepreneurial economies require some level of political order to guarantee future action and transaction. Early Uruk information technologies seem to involve primarily the sealing of goods. Although counters that could aggregate and store numbers existed, it is not apparent how they were used. The appearance of the information-storing technology of the counters in sealed bullae during the Middle Uruk (LC 3-4) period implies the rise of information processing hierarchies that could control the movement of goods and information in space and time. Detailed studies of the quantities of such artifacts in different sites, the clays used to make them, and the styles of seals used to impress them, are giving us a more nuanced view of the processes of control in fourth millennium economies. In administered economies where the bullae could serve as invoices (Wright, Redding, and Miller 1981), this technology implies, at the least, four levels: aggregation, storage and/or transport, receipt and verification, and adjudication. In entrepreneurial economies where the bullae could mark agreements for future repayment (Le Brun and Vallat 1978), the use of bullae implies at least three levels: aggregation, loan and repayment, and adjudication. In addition, during the Middle Uruk (LC 3-4) period, objects with a single clear impression, which must have been used for identifying a messenger or authenticating a message, appear to have been sent over great distances (Blackman 1999). Many more analyses, however, are required to map the extent of the different types of activities implied by bullae and messenger sealings in various times and places.

Control of production, procurement, and distribution is only one aspect of control in the Uruk world. The iconography of the sealings and other representations show commanding figures in charge of ritual, judgment, battle, and other aspects of life (Schmandt-Besserat 1993). The larger residences of important people are known from sites such as Jebel Aruda (Van Driel and Van Driel-Murray 1979, 1983) and

Habuba Kabira (Strommenger 1980; Vallet 1997). What, beyond the elaboration of lifestyles and proclamation of their self-defined importance, did members of the fourth millennium elite do? Finding the durable evidence of how fourth millennium polities actually operated should be a priority. The range of enigmatic, nondomestic buildings from the Eanna IVa of Uruk, Gawra VIII, and Sheikh Hassan 6-10 may be the context of the core control activities in fourth millennium polities. Unfortunately, these well-maintained buildings had little associated contemporary debris, or at least little that has been reported. Rothman's useful restudies (Rothman 1994a, n.d., and this volume) of Gawra buildings and their contents give an indication of what can be learned if we persevere. Only when research teams diligently seek out the debris of activities performed in these buildings (wherever it was dumped), as the Arslantepe team has so impressively done (Frangipane and Palmieri 1983a, 1989; Frangipane 1997b), will we begin to understand the nuances of central control in its cultural context.

In contrast, the results of the exercising of central control are quite evident. The construction of mud brick platforms and terraces at Early Uruk Eridu (Safar, Mustafa, and Lloyd 1981), Middle and Late Uruk Uruk-Warka, Middle Uruk Brak, and other sites required massed *corvée* labor. The massive wall of relatively modest Late Uruk Abu Salabikh (Pollock 1999:178; Pollock, Steele, and Pope 1991:63) was similarly demanding. The emplacement of a planned urban settlement at Late Uruk Habuba Kabira, with construction of its fortifications—a system of bastions and gates that would demand careful staffing in time of crisis—is unlikely to have been done without central planning and multilevel hierarchies for the control of labor.

## BREAKDOWN AND CONFLICT

Aggrandizing rulers with control over tribute and labor—over thousands of men and women in smaller states such as Middle Uruk period Susa, and over tens of thousands in larger states such as Uruk-Warka in the Late Uruk (LC 5) period—are likely to move against their neighbors. The walls noted above are indications that, at least by Late Uruk times, elites were planning to face such moves. Walls without evidence of actual attack and defense can be symbols of the capacity to control people. There is, however, evidence of actual breakdown and conflict.

Some of the best evidence of breakdown is in settlement pattern changes. Settlement evidence shows progressive abandonment of the foothill plains west of Susa in Middle Uruk (LC 4) times (Wright 1987:146–48). For the Susiana Plain, Johnson has made a cogent argument for the breakdown of the Middle Uruk state into two competing Late Uruk polities (Johnson 1973). Arguments for patterned abandonment require precise chronological assessments. Fine chronologies now exist for Upper Mesopotamia, but they have not yet been applied to the archaeological survey evidence. Once they are, interruptions in growth and actual abandonment will probably indicate breakdown at various periods in the Trans-Tigridian plains, the Khabur plain, and the Balikh and Euphrates valleys.

Direct evidence of settlement destruction at Gawra, Hassak Höyük, and other sites may be ambiguous, but the iconography of violence (Amiet 1972; Delougaz and Kantor 1996) leaves no doubt that rulers celebrated their victories with parades, the abuse of captives, and other all-too-familiar cruelties. It was perhaps in the context of military campaigns, whether as a result of deliberate stationing of outpost communities or the flight of communities seeking a better life far from areas of warfare (Johnson 1988–89; Schwartz, this volume), that sites ranging from such Early Uruk settlements as Sargarab in Deh Luran (Neely and Wright 1994) to Late Uruk enclaves such as Habuba Kabira (Strommenger 1980) were implanted.

#### THE URUK WORLD IN HISTORICAL PERSPECTIVE

The examples used above to exemplify various structures and processes are scattered in time and space. To attempt to view more than a millennium of cultural action in even the broadest developmental terms is premature. Nonetheless, there may be some value in proposing a series of dynamic models as bases for further discussion. These constructions are predicated on the assumption that, at the dawn of tyranny, the critical dynamic is that between would-be rulers and those whom they sought to dominate. In such systems, one cannot assume that political expansion was motivated by a desire for wealth in goods. On the contrary, the following constructions assume that wealth is acquired to manifest the control of people and to symbolize political dominance.

During the period from at least 4150 B.C. until about 3800 B.C., the proposed dynamic is one of widespread intraregional conflict and experimentation with new modes of political organization. Many smaller settlements and formerly inhabited areas are abandoned, and it is likely that the overall population of Greater Mesopotamia declines. Within each major area of productive agricultural soils, however, a number of evenly spaced centers of roughly the same size typically develop. This even spacing indicates rivalry and competition. Exceptional, emergent, large centers—centers such as Eridu, Brak, and others less well known were surprisingly large in this period—could expand rapidly, perhaps unifying their surrounding area and attacking areas in other subregions. This may be the context of experiments in which new strategies and technologies of control are developed, but they did not become widespread. Long-extant devices for the control of goods—seals, sealings, and simple counters—remain in use, and evidence for the sustenance of controlled labor is not yet common. There is little investment of symbolism on permanent objects, and such iconography of dominance as is known represents ancient themes. New and more stable modes of political control have not yet emerged. The acquisition of valuable goods is minimal, as befits a period in which politics and alliances are ephemeral. Materials commonly used in domestic contexts do move, however, perhaps via traditional mechanisms of direct procurement or reciprocal exchange.

From about 3800 B.C. until 3350 B.C., the dynamic is one of growth in all areas, competition and alliance between emergent regional states and epi-state polities, and the consolidation of organizational advances. Many smaller settlements are founded and formerly inhabited areas are reoccupied, and it is likely that the overall population of Greater Mesopotamia increased. Within major areas of agriculture, enduring settlement hierarchies develop. Emergent large centers expand and dominate their surrounding areas, bringing smaller centers, and large and small rural settlements of various types, into structured relations. More elaborate devices for the control of goods and information—sealed bullae and messenger sealings—come into use, and mass-produced “throwaway” vessels for the sustenance of controlled labor become very common. A new symbolism expressing different social and ritual orders is expressed on permanent objects, indicating the