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THE ORGANIZATIONAL CONTEXT OF SPECIALIZED CRAFT PRODUCTION IN EARLY MESOPOTAMIAN STATES

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INTRODUCTION: THE CONTEXT OF CRAFT SPECIALIZATION

Craft specialization is considered by most archaeologists to be a key factor in the political economy of complex societies. We define economic specialization as the investment of labor and capital towards the production of a particular good or service, such that a person produces *more* of that commodity and *less* of others than he/she consumes (Alchian & Allen 1969:204). Specialized production is, thus, the production of surpluses for exchange (Bates & Lees 1977, Costin 1991:4, Stein 1987:102-103). The fact that these exchanges can be either symmetric or asymmetric forces us to recognize that craft specialists operate within a social environment that they do not

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necessarily control. For this reason, researchers examining the organizational context of specialized craft production in early state societies have begun to shift away from primarily economic or adaptationist views toward models that also incorporate political factors (Brumfiel & Earle 1987, Clark & Parry 1990). In this perspective, it becomes essential to understand the degree to which elites and centralized institutions of complex societies controlled the raw materials, labor, and output of craft specialists.

Available evidence suggests that there is systematic variation in the organizational context of specialized production. Earle (1982) and others have emphasized this variation by making the distinction between independent and attached specialists. *Independent specialists* operate autonomously, producing goods or services in response to economic, social, or political demand from a variety of sources. The productive organization and decision-making strategies of independent producers conform closely to the efficiency-oriented behavioral expectations of economic models of craft specialization. In contrast, *attached specialists* are dependent on elites or centralized institutions, which provide attached specialists with raw materials, work facilities, and subsistence support in return for exclusive control over the goods and services produced. For this reason, the productive organization of attached specialists tends to be structured by political factors—the values, needs, and decision-making strategies of a small, highly restricted group of patrons—rather than by the aggregate effects of large-scale, multicentric demand.

Costin (1991:5-7) notes that there are qualitative differences between the nature or purpose of goods produced by attached versus independent specialists. Attached specialists generally produce high-prestige, valuable goods whose distributions are carefully controlled by elites because these products are considered "politically charged commodities" of crucial importance to core concerns of the state (Brumfiel & Earle 1987:5), such as taxation, warfare, public ritual, and the legitimization of centralized authority. By contrast, independent craft specialists usually produce widely distributed utilitarian goods. Given this relationship between the function/purpose of a product and the organization of its producers, one would expect to find a mix of attached and independent craft specialists in most, if not all complex societies.

By mapping contextual variation and diachronic change in the goods produced by attached versus independent specialists, we should be able to identify those products which were most important to the perpetuation of centralized elite institutions in early states. By the same token, we can use the patterning of independent craft production as a way to identify the *limits* of centralized authority—those spheres of value over which the state did not or could not exercise direct control. A comparison of the organization and circulation patterns for different goods and services can reveal both nodes of centralized power and relatively autonomous sectors of society. In short, the organizational context of craft production reflects both the institutional

structure of the state and the nature of the state's interaction with the broader, more heterogeneous society in which it functions.

In this essay, we examine the organizational context of craft production by comparing ceramic production at the urban center of Leilan (Syria) with the evidence for textile and metal production at other, contemporaneous Mesopotamian sites. Archaeological and textual data from the mid-third millennium B.C. state societies of Mesopotamia and North Syria provide a particularly useful case study on the political economy of craft specialization. Several researchers have suggested that specialized ceramic production in Mesopotamian city-states was administered by elite institutions such as the palace and temples. We suggest that the available evidence does not support this view of Mesopotamian political economy.

CERAMIC STANDARDIZATION AND CRAFT SPECIALIZATION AT LEILAN

Archaeologists attempting to investigate the organizational context of craft production in early state societies must deal with two main problems. First, they must be able to identify specialized craft production and distinguish it from household production in the archaeological record. Only after this has been done can they address the second problem—estimation of the degree to which specialized craft production was controlled by centralized institutions/elites.

A variety of ethnographic and archaeological studies suggest that the goods produced in mass quantities by specialists can be recognized by their high degree of standardization (Balfet 1965:163; Rice 1981:220-221, 1991; Feinman et al. 1984:299; Sinopoli 1988:586). *Standardization* is defined as the relative degree of homogeneity or reduction in variability in the characteristics of an artifact or the process of achieving that relative homogeneity (Rice 1991:268). The underlying assumption is that a high degree of standardization or homogeneity in artifact dimensions reflects specialized mass production, while variation or relative heterogeneity is taken to indicate household production. Not all specialist-produced goods are standardized, however; luxury and high-status goods produced by attached specialists may be unique (Costin 1991:34). Nevertheless, virtually all standardized goods are made by specialists.

The standardization hypothesis suggests that specialized production of ceramics should be detectable in archaeological assemblages through standardization in: (1) raw material composition and manufacturing techniques (Rice 1981:223, 1991); (2) form, dimensions, and measurements (Balfet 1965:163, Sinopoli 1988); and (3) surface decoration (Hagstrum 1985). In this study, we use chemical composition data, instrumental neutron activation analysis (INAA), and measurements of standardization in vessel dimensions

to investigate the degree of centralized control over specialized ceramic manufacture at the urban center of Tell Leilan in northeast Syria during the mid-third millennium B.C.

State societies developed and spread throughout the dry-farming zone of northern Syria and northern Mesopotamia during the mid-third millennium B.C. By 2600-2500 B.C., settlements such as Chuera (Orthmann 1986), Mozan (Buccellati & Kelly-Buccellati 1988), Taya (Reade 1968, 1973), Tell al-Hawa (Wilkinson 1990), and Leilan (Weiss 1983, 1990, 1991; Weiss et al. 1990) had reached urban proportions of 40 ha or more (Figure 1). Tell Leilan is located in the Habur river headwaters region along the Wadi Jarrah, a perennial stream in the fertile northern part of the Habur plains in northeast Syria. By the mid-third millennium B.C., Leilan had grown to a size of more than 90 ha, becoming one of the largest urban centers in this part of the northern Mesopotamia (Weiss 1983, 1990, 1991; Weiss et al. 1990:47). Shortly afterwards, a massive fortification wall was constructed to protect the city (Weiss 1991). In the surrounding hinterlands, the regional settlement system shows signs of reorganization into a four-level site-size hierarchy from which the urban center of Leilan appears to have systematically extracted large-scale agricultural surpluses (Stein & Wattenmaker 1990, n.d.).

Subsequent to the urban expansion at Leilan, a major change in ceramic production took place (Senior n.d.; Weiss 1990:205-208, 217). In the earlier Leilan Period III (ca. 3200-2500 B.C.), about one quarter of all fine-ware vessels had been painstakingly decorated with elaborate incised, excised, or punctate designs (Schwartz 1985, 1988:42-51). In Period II (ca. 2500-2200 B.C.), after the initial urban expansion, decorated ceramics all but disappeared, to be replaced by "open simple rim," flat base, undecorated fine-wares (Schwartz 1988:40-42). By the later part of this period (Leilan IIb), these greenish "open simple rim" fine-ware bowls had become one of the most characteristic ceramic forms at Leilan and numerous other sites in northern Mesopotamia (e.g., Oates 1982:Fig. 1; Schwartz 1988:Fig. 28, 4-7; Weiss 1983:Fig. 10, 1-2).

Stacked kiln wasters of overfired fine-ware bowls are found almost everywhere in the southern portion of the Leilan lower town, showing the scale at which this mass production took place. A group of four large waster stacks, each consisting of at least 50-65 fused fine-ware bowls, was found in the Operation 3 excavations in the Leilan lower town (Akkermans 1990). Analysis of the wasters provides a rare opportunity to look at a single "production event" in which we know that the bowls in the fused stack were all mass produced and fired at the same time in one workshop. The degree of standardization in this production event serves as a baseline for comparison with the more usual archaeological sample of typologically identical fine-ware bowl sherds from domestic refuse contexts elsewhere at Leilan. Here, we compare the standardization evidence in fine-ware bowls and wasters from two different areas of Tell Leilan as a way to examine the degree of centralization in ceramic

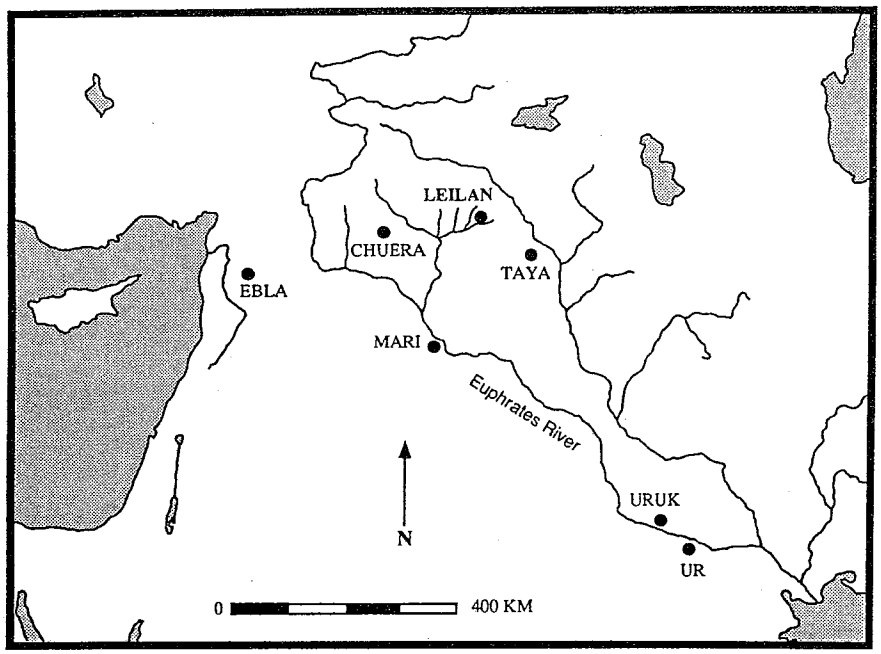

Figure 1. The Near East, Showing Selected Third Millennium Urban Centers in Mesopotamia and North Syria

manufacture at this urban center. The results of both compositional and metric analyses of the Leilan ceramics suggest that pottery production was a noncentralized activity, carried out by multiple workshops of independent craft specialists.

Instrumental neutron activation analysis (INAA) of the wasters and other fine-ware bowls provides an index of standardization in ceramic manufacture at Leilan. Neutron activation is a highly precise analytical technique which identifies sources where ceramics were manufactured by determining the elemental composition of the constituent clays in each sherd sampled (see, e.g., Bishop et al. 1982). Since each clay source has a distinctive elemental composition, the activation data can then be used to reconstruct patterns of ceramic production, exchange, and consumption. The analysis was conducted at the Conservation Analytical Laboratory/Smithsonian Institution's Neutron Activation Analysis Facility using the Research Reactor at the National Institute of Standards and Technology. (For a detailed description of sample preparation and analytical procedures, see Blackman et al. 1993.) Compositional analysis of 18 bowls in the waster-stack shows a remarkably high degree of homogeneity in the chemical composition of their constituent clays (Table 1).

Table 1. Instrumental Neutron Activation Analysis (INAA): Chemical Composition Data for Leilan IIb Stacked Fine-Ware Wasters ($n = 18$)[a]

	Chemical Composition												
Sample Number	*NA* (%)	*K* (%)	*CA* (%)	*SC* (*ppm*)	*CR* (*ppm*)	*FE* (%)	*CO* (*ppm*)	*ZN* (*ppm*)	*AS* (*ppm*)	*RB* (*ppm*)	*SR* (*ppm*)	*ZR* (*ppm*)	*SB* (*ppm*)
LSW130	0.586	1.560	13.00	17.3	345.9	5.20	31.3	115.1	10.59	93.3	468	152	0.902
LSW131	0.578	1.489	11.91	17.5	332.7	5.24	31.6	115.1	10.79	93.5	421	177	0.962
LSW132	0.583	1.469	12.39	17.7	335.0	5.28	31.7	114.0	11.40	96.4	459	200	1.002
LSW133	0.582	1.489	12.71	17.4	337.3	5.24	31.6	110.9	10.21	87.9	406	184	1.079
LSW134	0.605	1.542	12.11	17.5	342.8	5.25	31.3	115.9	9.93	82.8	481	166	1.002
LSW135	0.562	1.449	11.30	16.9	322.1	5.07	30.5	115.1	7.66	79.6	420	173	0.906
LSW136	0.594	1.710	12.59	17.3	332.7	5.19	31.3	110.9	9.12	91.0	452	197	0.853
LSW137	0.586	1.531	12.39	17.0	330.4	5.11	30.8	111.9	10.09	88.3	387	173	0.834
LSW138	0.589	1.671	12.50	16.9	331.9	5.07	30.6	118.0	8.57	87.7	419	188	0.918
LSW139	0.603	1.730	13.40	17.2	330.4	5.18	30.8	119.1	8.59	90.6	456	192	0.931
LSW140	0.594	1.549	13.09	17.1	332.7	5.16	30.8	111.9	9.86	90.6	528	223	0.984
LSW141	0.596	1.648	12.79	17.3	337.3	5.22	31.1	108.9	10.50	87.9	409	143	0.927
LSW142	0.581	1.570	12.71	17.1	327.3	5.18	31.0	114.0	9.93	89.7	370	199	0.916
LSW143	0.605	1.521	12.59	17.3	330.4	5.22	31.6	115.1	11.19	90.6	446	177	0.953
LSW144	0.561	1.611	13.30	17.4	332.7	5.22	31.5	114.0	9.95	89.5	369	197	0.791
LSW145	0.569	1.660	12.30	17.0	335.7	5.12	30.7	110.9	10.59	90.4	388	173	1.009
LSW146	0.579	1.500	12.30	17.3	352.4	5.18	31.3	111.9	11.80	86.3	336	181	1.002
LSW147	0.579	1.589	11.70	17.4	348.3	5.21	31.6	111.9	10.99	86.5	421	163	0.885
Mean	0.585	1.571	12.50	17.3	335.4	5.19	31.2	113.6	10.10	89.0	424	181	0.936
CV[b]	2.2	5.3	4.3	1.3	2.3	1.2	1.3	2.3	10.6	4.3	10.9	10.5	7.6

Sample Number	Chemical Composition												
	CS (*ppm*)	*BA* (*ppm*)	*LA* (*ppm*)	*CE* (*ppm*)	*SM* (*ppm*)	*EU* (*ppm*)	*TB* (*ppm*)	*YB* (*ppm*)	*LU* (*ppm*)	*HF* (*ppm*)	*TA* (*ppm*)	*TH* (*ppm*)	*U* (*ppm*)
LSW130	4.4	413	37.5	69.8	6.40	1.36	1.009	2.99	0.451	5.68	1.21	9.5	2.00
LSW131	4.9	410	36.7	69.7	6.15	1.36	0.865	2.99	0.498	5.87	1.11	9.5	2.40
LSW132	4.7	357	37.3	70.8	6.31	1.37	0.897	3.04	0.458	5.74	1.17	9.6	2.29
LSW133	4.5	403	37.4	70.3	6.35	1.37	1.050	3.19	0.490	5.55	1.12	9.5	2.06
LSW134	4.5	375	37.2	68.9	6.21	1.35	0.867	3.56	0.473	5.81	1.27	9.7	1.98
LSW135	4.4	419	36.1	67.9	5.93	1.32	0.794	2.98	0.501	5.61	1.17	9.4	1.66
LSW136	4.4	526	36.8	69.3	6.21	1.34	1.059	3.22	0.459	5.65	1.27	9.4	2.03
LSW137	4.4	352	36.3	68.1	5.98	1.33	0.847	3.21	0.435	5.53	1.18	9.4	1.50
LSW138	4.3	373	35.8	67.1	6.08	1.31	0.955	2.99	0.470	5.47	1.09	9.4	2.13
LSW139	4.4	468	36.6	68.1	6.19	1.37	0.995	3.07	0.499	5.60	1.17	9.3	2.05
LSW140	4.4	459	37.2	69.2	6.27	1.35	0.904	3.21	0.501	5.70	1.17	9.5	1.29
LSW141	4.5	593	37.0	68.5	6.25	1.35	1.030	3.19	0.486	5.68	1.19	9.4	1.54
LSW142	4.4	372	36.6	67.9	6.19	1.34	0.940	3.27	0.475	5.53	1.13	9.3	1.93
LSW143	4.5	525	37.1	68.4	6.12	1.35	0.968	3.01	0.441	5.66	1.16	9.6	1.47
LSW144	4.4	365	36.8	68.4	6.18	1.36	0.957	3.30	0.431	5.60	1.16	9.5	1.75
LSW145	4.3	404	36.7	69.3	6.24	1.34	0.998	3.22	0.426	5.52	1.15	9.4	2.06
LSW146	4.5	497	37.1	69.5	6.19	1.37	0.933	2.96	0.513	5.75	1.27	9.6	2.17
LSW147	4.6	325	36.9	69.7	6.17	1.36	0.885	3.16	0.513	5.53	1.24	9.7	2.32
Mean	4.5	424	36.8	68.9	6.19	1.35	0.942	3.14	0.473	5.64	1.18	9.5	1.92
CV[b]	3.0	17.1	1.2	1.4	1.9	1.3	7.9	4.9	6.1	1.9	4.6	1.3	16.5

[a] Concentrations in Percent (%) or Parts per Million (ppm).
[b] CV = Coefficient of Variation

Table 2. Instrumental Neutron Activation Analysis (INAA): Chemical Composition Data for Leilan IIb Operation 4 Fine-Wares ($n = 22$)[a]

	Chemical Composition												
Sample Number	*NA* (%)	*K* (%)	*CA* (%)	*SC* (*ppm*)	*CR* (*ppm*)	*FE* (%)	*CO* (*ppm*)	*ZN* (*ppm*)	*AS* (*ppm*)	*RB* (*ppm*)	*SR* (*ppm*)	*ZR* (*ppm*)	*SB* (*ppm*)
LSP178	0.638	1.581	13.71	16.7	361.4	5.11	30.4	100.0	4.39	83.2	587	168	0.899
LSP179	1.040	0.622	14.79	16.0	316.2	4.90	29.2	103.0	11.30	19.9	931	149	0.893
LSP180	0.643	1.919	14.69	14.0	331.9	4.42	26.3	92.0	14.29	62.1	938	160	0.692
LSP181	0.600	1.531	15.10	15.7	319.2	4.80	27.3	83.0	8.45	60.1	643	142	0.942
LSP182	0.759	1.531	15.49	15.7	353.2	4.81	31.3	100.0	6.55	63.5	780	196	0.836
LSP183	0.682	1.581	12.91	16.8	361.4	5.07	31.9	106.9	7.69	79.8	501	167	1.050
LSP184	0.676	1.489	14.39	15.9	330.4	4.86	28.2	94.2	8.67	79.3	830	152	0.902
LSP185	0.638	1.489	15.21	16.2	361.4	4.98	29.7	94.8	7.53	86.9	617	169	0.796
LSP186	0.891	0.830	16.79	14.5	335.0	4.53	27.2	81.1	3.68	12.4	789	166	(n.d.)
LSP187	0.705	1.698	12.11	17.5	358.9	5.27	33.4	107.9	8.41	86.7	586	197	0.855
LSP188	0.670	1.841	12.19	16.9	377.6	5.15	31.8	104.0	5.77	82.2	479	203	0.650
LSP189	0.628	1.622	14.59	16.9	377.6	5.08	32.1	107.9	7.26	83.0	415	150	0.780
LSP190	0.689	1.489	15.21	17.1	379.3	5.24	33.1	107.9	6.79	88.1	800	236	0.895
LSP370	0.845	1.660	9.38	18.3	316.2	5.37	31.8	115.1	5.13	94.0	(n.d.)	(n.d.)	0.940
LSP371	0.627	1.419	13.61	15.4	330.4	4.66	28.1	92.3	9.12	70.8	658	(n.d.)	1.002
LSP372	0.631	1.549	14.39	16.8	331.9	5.04	31.1	105.9	9.89	64.0	731	(n.d.)	0.938
LSP373	0.653	1.879	11.19	18.3	350.8	5.40	32.1	106.9	3.14	80.9	(n.d.)	(n.d.)	0.809
LSP374	0.675	1.531	11.91	17.4	348.3	5.27	30.4	78.7	6.08	91.0	773	(n.d.)	0.995
LSP375	0.625	1.531	12.39	17.2	330.4	5.07	31.0	98.6	7.13	75.5	630	(n.d.)	0.804
LSP376	0.723	1.742	12.71	17.2	350.8	5.14	30.5	103.0	5.97	93.8	615	(n.d.)	0.946
LSP377	0.743	1.641	12.71	17.0	364.8	5.11	31.3	106.9	5.65	75.9	596	(n.d.)	0.753
LSP378	0.665	1.770	11.09	17.8	352.4	5.35	33.3	103.0	5.47	88.9	668	(n.d.)	0.887
Mean	0.702	1.543	13.48	16.6	347.2	5.03	30.5	99.7	7.20	73.7	678	173	0.870
CV[c]	14.8	19.3	13.2	6.6	5.7	5.3	6.7	9.6	35.3	28.8	20.8	15.6	11.7

Sample Number	Chemical Composition												
	CS (*ppm*)	*BA* (*ppm*)	*LA* (*ppm*)	*CE* (*ppm*)	*SM* (*ppm*)	*EU* (*ppm*)	*TB* (*ppm*)	*YB* (*ppm*)	*LU* (*ppm*)	*HF* (*ppm*)	*TA* (*ppm*)	*TH* (*ppm*)	*U* (*ppm*)
LSP178	4.28	432	36.4	66.4	6.18	1.29	0.796	2.93	0.469	5.89	1.18	9.2	2.07
LSP179	3.70	333	33.8	61.8	5.70	1.21	0.822	2.64	0.415	5.48	1.02	8.4	1.18
LSP180	2.24	348	30.7	58.2	5.45	1.12	0.780	2.64	0.344	5.65	1.04	8.0	1.25
LSP181	3.20	332	33.3	60.1	5.66	1.20	0.692	2.86	0.434	5.46	1.03	8.3	1.34
LSP182	3.72	446	35.8	68.7	6.07	1.24	0.826	3.21	0.441	6.00	1.08	9.1	1.71
LSP183	4.31	434	37.6	71.4	6.38	1.37	0.853	3.13	0.453	6.35	1.13	9.5	2.12
LSP184	3.71	310	34.4	62.1	5.82	1.23	0.675	2.75	0.419	5.50	1.08	8.9	1.78
LSP185	3.85	394	34.4	64.0	5.89	1.26	0.818	2.82	0.434	6.00	1.11	8.9	2.40
LSP186	3.30	400	31.0	56.4	5.22	1.11	0.675	2.43	0.333	5.12	0.94	8.0	1.37
LSP187	4.75	274	37.3	74.5	6.32	1.37	1.021	3.52	0.536	6.08	1.12	9.7	1.41
LSP188	4.14	321	37.2	73.1	6.08	1.36	0.855	3.13	0.466	6.21	1.14	9.8	1.12
LSP189	4.22	429	37.0	72.6	6.25	1.34	0.881	3.03	0.478	6.28	1.17	9.4	1.76
LSP190	3.81	405	35.9	67.6	6.15	1.33	0.853	2.88	0.400	6.15	1.19	9.3	1.88
LSP370	5.18	402	37.5	70.0	6.30	1.38	(n.d.)	3.14	0.501	5.58	1.21	9.8	2.12
LSP371	3.72	400	33.4	62.4	5.65	1.28	(n.d.)	2.82	0.422	5.79	1.18	8.6	2.38
LSP372	4.46	305	36.1	68.5	5.97	1.32	(n.d.)	2.94	0.495	5.62	1.22	10.2	2.45
LSP373	4.75	352	38.3	69.7	6.34	1.42	(n.d.)	3.05	0.499	5.96	0.44	10.3	1.70
LSP374	4.23	501	36.3	66.7	6.08	1.34	(n.d.)	3.16	0.460	5.87	0.90	9.8	2.28
LSP375	4.26	498	36.5	68.5	6.05	1.35	0.828	2.85	0.419	5.81	1.14	9.3	2.08
LSP376	4.22	373	36.6	67.5	6.07	1.39	(n.d.)	3.12	0.495	6.19	0.91	9.4	1.89
LSP377	4.25	294	38.0	72.9	6.31	1.39	0.920	3.09	0.420	6.08	1.20	9.6	1.86
LSP378	4.28	362	38.0	73.5	6.34	1.40	1.009	3.18	0.462	6.17	1.26	10.0	2.48
Mean	4.02	379	35.7	67.1	6.01	1.30	0.832	2.97	0.445	5.87	1.08	9.2	1.85
CV[c]	15.2	16.5	6.1	7.7	5.2	6.8	12.1	8.1	11.0	5.4	16.1	7.2	23.2

[a] Concentrations in Percent (%) or Parts per Million (ppm).
[b] n.d. = No Data
[c] CV = Coefficient of Variation

Coefficients of variation (CV) can be used to express the degree of standardization in elemental concentrations for a given group of ceramics (see, e.g., Longacre et al. 1988). The low CV values for virtually all of the 22 elements in each sampled bowl in our study indicate that the fine-ware wasters have an extremely uniform chemical composition (Blackman et al. 1993); these results closely match the expectations of the standardization hypothesis.

Although the INAA data show a high level of homogeneity for the waster stack as a single production event, compositional standardization is less pronounced when we extend the analysis to include other fine-ware bowls from Leilan. Neutron activation of 22 fine-ware bowls of the same type from Operation 4 (Stein 1990) in the northeast corner of the site yielded coefficients of variation 3-5 times greater than those of the stacked waster (Table 2). Although the Operation 4 fine-wares show more variability than the stacked wasters, multivariate analyses show that both sets of bowls belong to the same chemical compositional group and that both were manufactured by specialized potters at Leilan. Mahalonobis distance measurements (Bieber et al. 1976) show that the chemical composition of the wasters falls statistically within the larger group of Leilan fine-wares (Blackman et al. 1993). The differences in compositional variability between the wasters and the Operation 4 fine-wares apparently reflect the simultaneous operation of several ceramic workshops at Leilan. Although each workshop manufactured standardized products, the cumulative effects of differences *between* workshops create a greater spread in neutron activation data.

Detailed measurements of vessel dimensions also show differences in the degree of standardization between the wasters and Operation 4 fine-wares at Leilan (Table 3). The bowls in the waster stack show a high degree of metric standardization. Coefficients of variation on the five recorded measurements are all less than ten percent. This finding is consistent with the ranges of variation noted by ethnoarchaeological studies for specialized mass production of standardized utilitarian goods (Longacre et al. 1988).The metric evidence for a high degree of standardization in the stacked wasters becomes less pronounced when we consider the fine-ware bowls from Operation 4, as well. The coefficient of variation for the Operation 4 fine-ware rim diameters are more than twice the CV values for the stacked waster rims. Although the waster rim diameters show less *variation* than the finished fine-ware bowls, the actual diameter *measurements* show a close relationship between the two groups. The waster rim diameters form a tight, homogeneous cluster falling completely within the more variable range of rim diameters from Operation 4 (Figure 2). In other words, the wasters and Operation 4 fine-wares are simply variant forms of a single ceramic type, manufactured by a number of different workshops at Leilan.

The differences between the two ceramic samples at Leilan stem from the fact that the wasters represent a single production event, while the finished

Table 3. Metric Indices of Standardization in Leilan Period IIb Fine-Ware Wasters and Operation 4 Fine-Wares

A. Stacked Waster Measurements

Measurement	*Mean*	*Standard Deviation*	*Coefficient of Variation*
Rim-diameter (cm) (n = 23)	18.52	1.70	9.19
Max. Thickness (mm) (n = 14)	6.54	0.16	9.40
Thickness 1 cm below rim (mm) (n = 28)	4.32	0.35	8.14
Vessel Height (cm) (n = 13)	6.85	0.30	4.40
Base Diamenter (cm) (n = 13)	8.15	0.16	1.98

B. Comparison of Rim-diameter Measurements for Fine-Ware Wasters and Operation 4 Fine-Ware Bowls

Material	*Mean*	*Standard Deviation*	*Coefficient of Variation*
Stacked wasters (n = 23)	18.52	1.70	9.19
Op. 4 Fine-wares (n = 66)	16.55	3.12	18.85
Op. 4 Fine-wares (two outliers omitted, n = 64)	16.47	2.58	15.68

C. F Ratios for Fine-Ware Stacked Waster and Operation 4 Fine-Ware Bowls

F-Ratio	Degrees of Upper Tail Freedom F-Crit. (Numerator) (0.025%)	Degrees of Lower Tail Freedom F-Crit. (Denominator) (0.025%)	F-Calc.
Finished/Waster	65 2.14	22 0.51546	3.3583[a]

[a] significant at $p < .05$.

fine-ware bowls from Operation 4 reflect the accumulated result of multiple production events at a number of workshops over a long period of time (up to 200 years). We can be relatively certain that multiple workshops were operating simultaneously at Leilan because the observed metric variability in the Operation 4 fine-wares remains high when the measurements from this excavation area are analyzed by individual microstratigraphic units (Blackman et al. 1993:Table 6). Thus, even in the smallest measurable temporal units at Leilan, there is evidence for many contemporaneous production events. Sinopoli (1988) has suggested that "noncentralized production" by numerous independent craft specialists would produce a relatively diverse ceramic assemblage due to variation between individual workshops in methods or

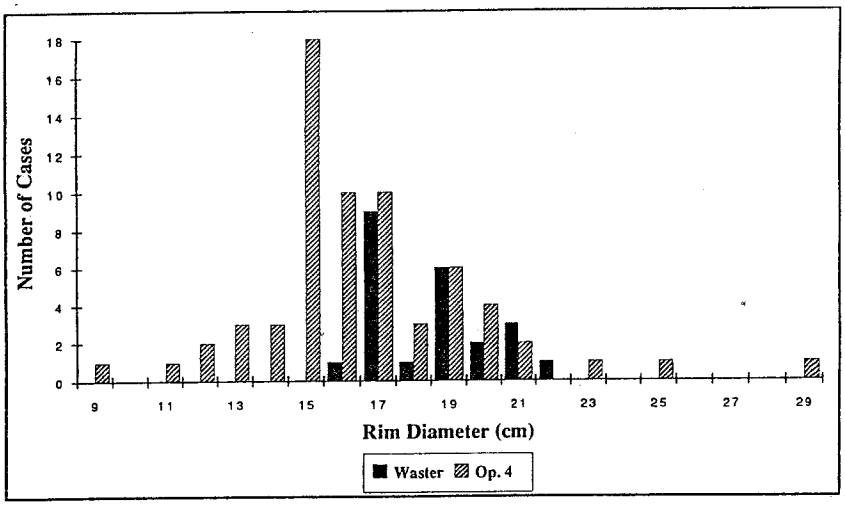

Figure 2. Comparison of Rim Diameters of Leilan IIb Wasters and Operation 4 Fine-Ware Bowls

materials. Multiple production events, even when carried out by specialists, can be expected to increase the amount of variability in chemical composition and vessel dimensions, creating an effect that we call "cumulative blurring" of standardization evidence (Blackman et al. 1993). Both the INAA data and the measurements of the Leilan fine-wares are consistent with Sinopoli's expectations for noncentralized, independent ceramic production, with multiple workshops operating concurrently in both the urban center and the surrounding villages.

Archaeological surveys of the Lelian region (Stein & Wattenmaker 1990, n.d.) provide additional evidence for noncentralized ceramic production both within Leilan and in its hinterlands. Systematic surface collections at Period IIb sites within a 15 km radius of Leilan recovered stacked fine-ware bowls and wasters at the sites of Farsouk Kebir, Gir Souar, and Qotba Tahtani, indicating that the same fine-ware bowl types were manufactured in at least three of the surrounding settlements, as well (Figure 3). Plots of iron:scandium ratios in the neutron activation data show clear differences in chemical composition between fine-ware bowls from Leilan and those from contemporaneous villages (Figure 4). Analyses of 178 samples of finished fine-wares from the village sites in addition to the Operation 4 fine-wares from

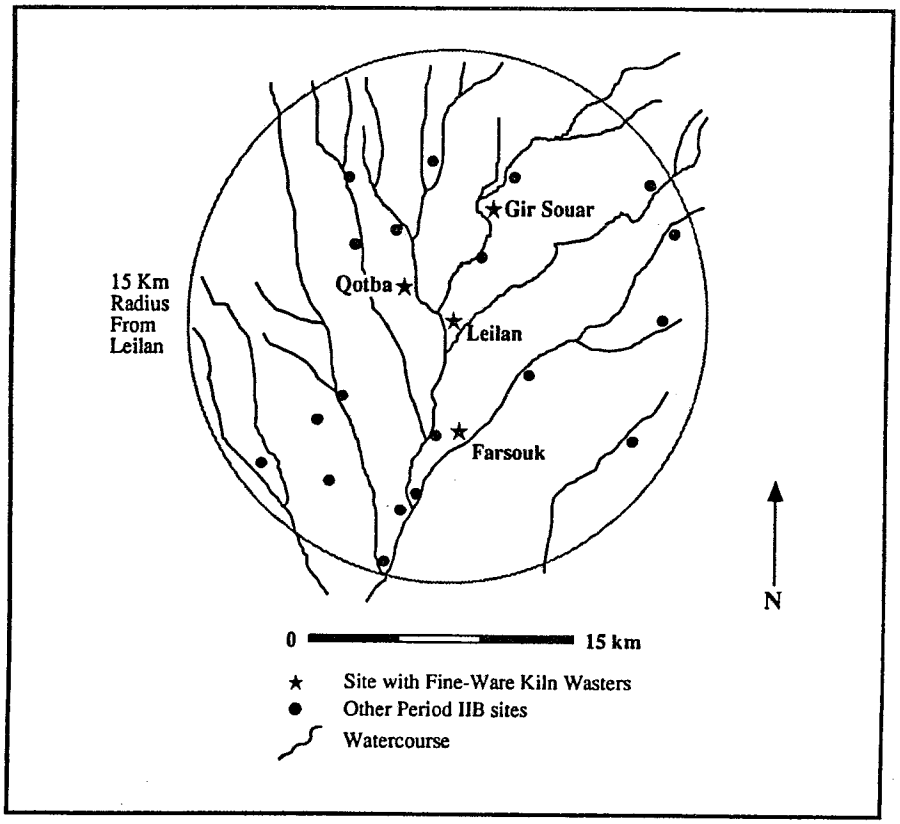

Figure 3. The Leilan Hinterland, Showing Period IIb Sites and Locations of Fine-Ware Ceramic Production (Starred Sites)

Leilan itself show no evidence to support a model of large-scale ceramic exchange at the regional level (Stein n.d.). Instead, it appears that many, if not most villages in the Leilan hinterlands manufactured their own ceramics locally. In sum, the chemical compositions, vessel dimensions, and distributions of manufacturing debris are all consistent with a system in which mid-third millennium fine-ware ceramics were produced by a relatively large number of independent craft specialists.

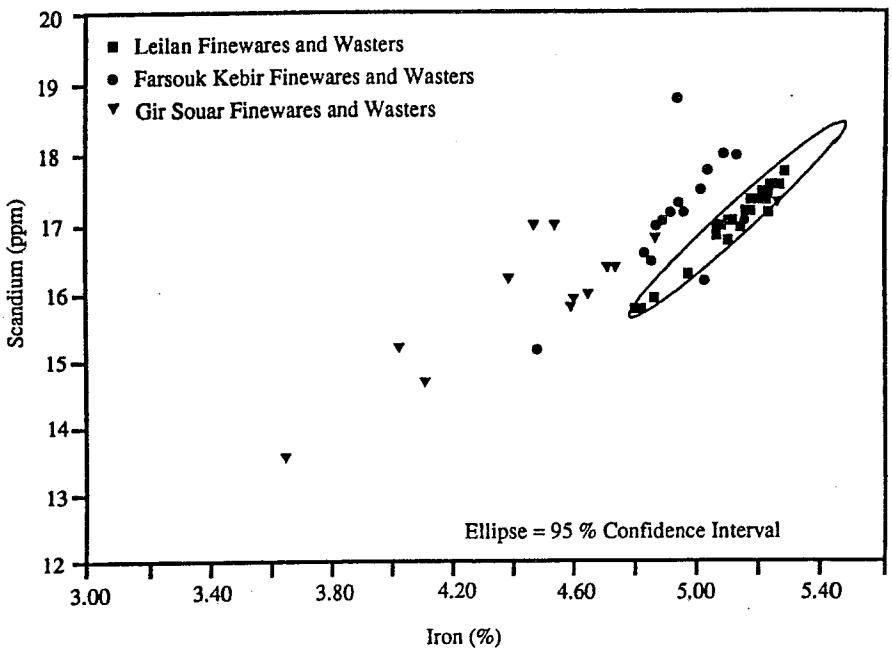

Figure 4. Iron (Fe): Scandium (Sc) Ratios from Instrumental Neutron Activation Analysis (INAA) of Period IIb Fine-Ware Ceramics and Wasters from Leilan and Contemporaneous Village Sites within a 15 km Radius (Ellipse indicates the 95% confidence interval for inclusion within the Tell Leilan chemical composition group.)

THE DECLINING PRESTIGE OF CERAMICS IN MID-THIRD MILLENNIUM MESOPOTAMIA

As noted earlier, there appears to be a close correlation between the production of utilitarian goods and an organizational context of independent craft specialists (Clark & Parry 1990). The physical and decorative characteristics of the Leilan Period IIb fine-wares suggest that, by the mid-third millennium B.C., these mass produced bowls were no longer valued as prestige items, but instead had come to be seen as simple, utilitarian vessels. This process of change, or "category shift" (Edens 1992) in the value that a group places on different forms of material culture, is common for luxury items used by elites as status markers or prestige goods (see Douglas & Isherwood 1979). Goren (1991) suggests that, when ceramics have an important social role as prestige

goods, there will be a greater investment of time and effort devoted to the *decorative* aspects of the vessel. Clark and Parry (1990:293) describe this class of goods as "hypertrophic," emphasizing that their key roles are in status reinforcement and legitimation. By contrast, when ceramics have a mainly utilitarian role, greater effort will be devoted to the *functional* characteristics of the vessels, such as stability, durability, ease of manufacture, and ease of transport. Obviously, it can often be difficult to determine whether a particular ceramic characteristic is functional, decorative, or some combination of the two; nevertheless, by monitoring diachronic changes in the ceramics, general trends should emerge in these categories.

In comparing the Leilan fine-wares from the early third millennium (the Ninevite V period, equivalent to Leilan Period III) to those of the mid-third millennium (Leilan Period IIb), we can see a clear shift from invested effort in decoration to invested effort in functional characteristics of ceramics. Although the technology of ceramic production remained unchanged, an important shift took place in the relative emphasis on vessel function as opposed to vessel appearance.

About 20-25 percent of the early third millennium (Ninevite V period, equivalent to Leilan Period III) ceramics at Leilan have elaborate incised, punctated, and excised surface decoration (Figure 5; see also Schwartz 1983:123, 1985, 1988). The most common fine-ware forms have closed or restricted rims (Schwartz 1983:125), which are harder to stack. As a result, these vessels are more difficult to store, transport, or even fire in large numbers in a closed kiln. The bases of these early third millennium fine-wares are predominantly pointed (i.e., conical) or pedestals (Schwartz 1983:123). Measurents taken from published drawings of 22 Ninevite V fine-ware cups and bowls from Leilan and Tell Brak (Schwartz 1983, 1985, 1988; Oates 1982) yield a mean height:width ratio of 0.804 (Table 4), indicating that these vessels are all very tall, relative to their width. As a result of these base forms and dimensions, the highly decorated Ninevite V vessels have a high center of gravity and are not very stable; their design is more appropriate for visibility than for the reliable retention of contents. The thin-walled fine-wares are generally brittle, since they were not fired to the point of partial vitrification (Blackman et al. n.d.). In short, the Ninevite V/Leilan Period III cups and bowls are inconvenient to mass produce, difficult to transport in large volumes, unstable, physically fragile—and emphasize aesthetic considerations over functional practicality. These characteristics are consistent with our expectations for ceramics whose primary purpose was the assertion of status.

By contrast, the mid-third millennium (Leilan Period IIb) fine-wares from Northern Mesopotamia show a clear shift toward an emphasis on functional utility. Plain-ware bowls have no surface decoration at all (Figure 6). Open, unrestricted rim forms predominate (Oates 1982, Schwartz 1983:118), permitting the bowls to be stacked in large numbers for closed-kiln reduction

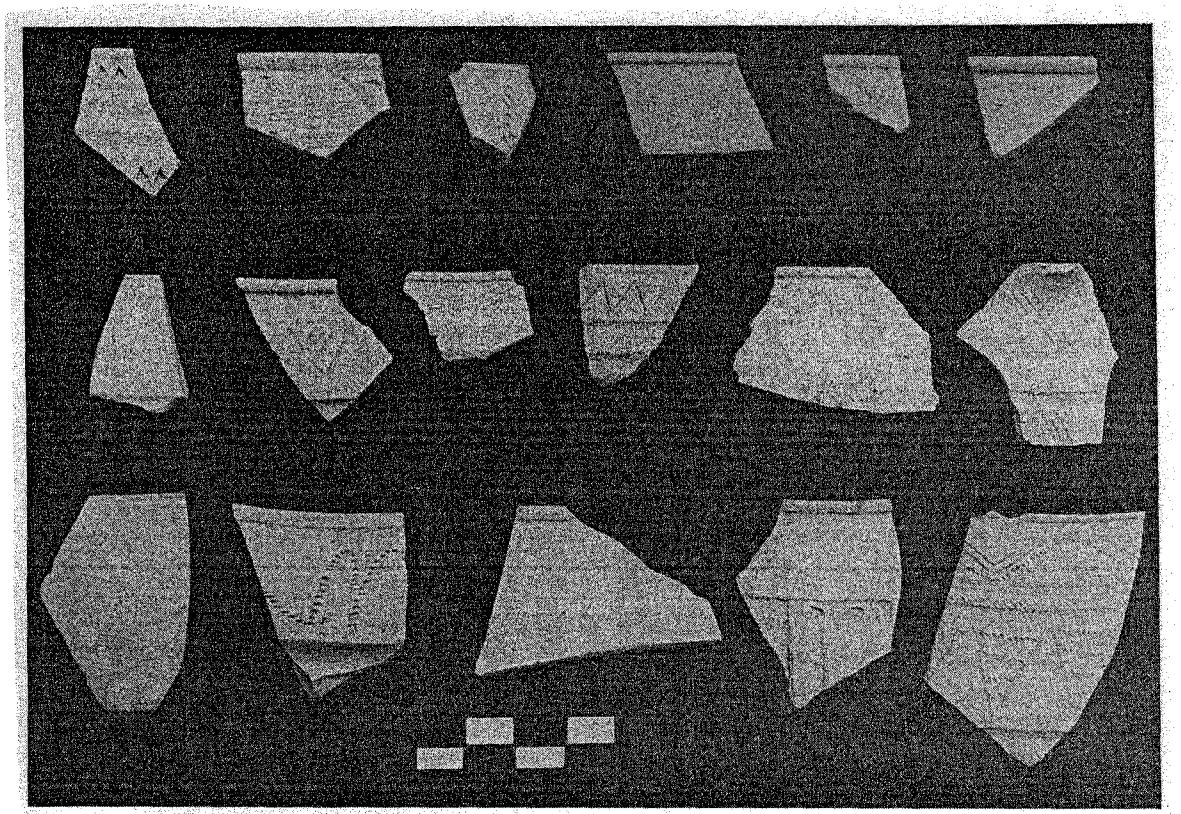

Figure 5. Ninevite V (Leilan III) Fine-Ware Ceramics with Incised, Punctated, and Excised Decoration on Restricted Rim Forms

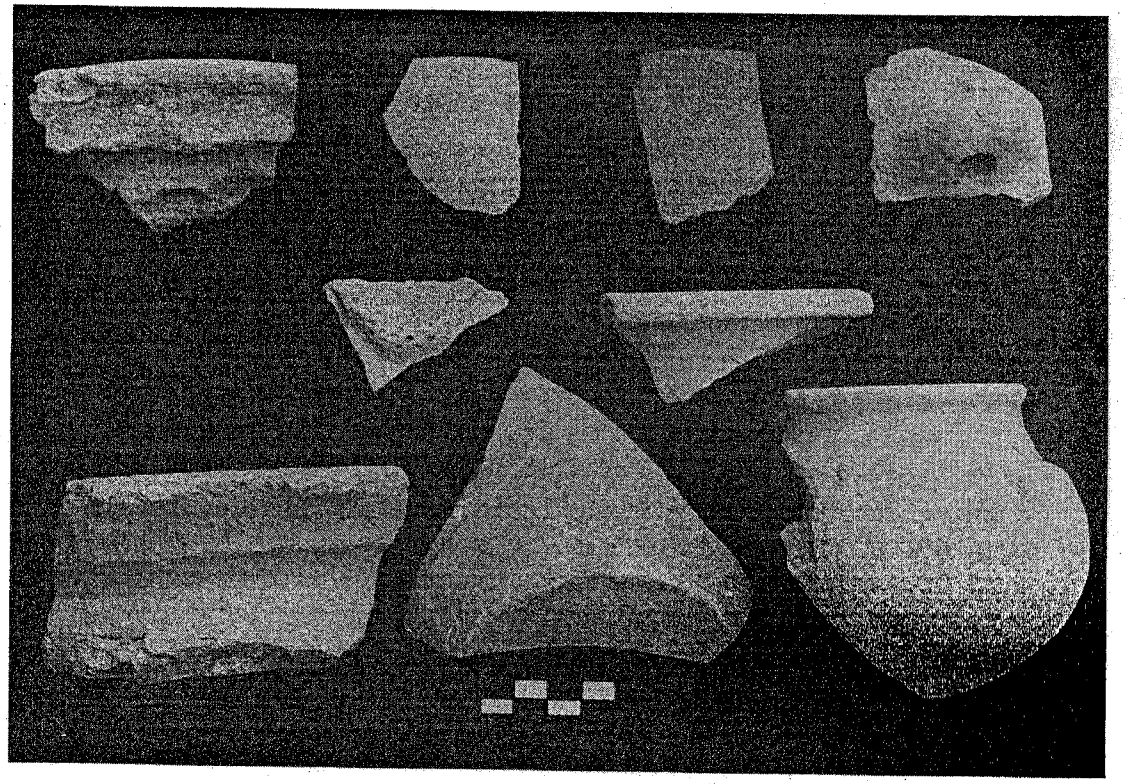

Figure 6. Mid-Third Millennium (Leilan IIb) Ceramics (Undecorated open simple rim bowls [Top Row, center two rims] with flat bases [Bottom Row, center] form the single largest component of the Period IIb assemblage. The decorated sherd with the snake appliqué decoration [Center Row, left] derives from a fenestrated "fruit stand" vessel, apparently used for ritual purposes.)

Table 4. Form, Decoration, and Height: Width Ratios for Ninevite V (Leilan Period III) Serving Vessels from Leilan (n = 22)

Reference	*Rim*	*Base*	*Decoration*	*Height: Width Ratio*
Schwartz 1983:Fig. 36-5	Restricted	Pointed	Incised	0.46
Schwartz 1983:Fig. 36-8	Restricted	Flat	Plain	0.44
Schwartz 1983:Fig. 37-1	Restricted	Pedestal	Painted	0.79
Schwartz 1983:Fig. 37-3	Restricted	Pedestal	Painted	0.81
Schwartz 1983:Fig. 30-7	Restricted	Pointed	Incised	0.89
Schwartz 1983:Fig. 36-3	Restricted	Pointed	Incised	0.95
Schwartz 1983:Fig. 36-4	Restricted	Pointed	Incised	0.79
Schwartz 1983:Fig. 36-6	Restricted	Pointed	Incised	0.94
Schwartz 1983:Fig. 36-7	Restricted	Pointed	Incised	0.81
Schwartz 1983:Fig. 38-1	Restricted	Pointed	Incised	0.72
Schwartz 1983:Fig. 38-2	Restricted	Pointed	Incised	0.78
Schwartz 1983:Fig. 38-3	Restricted	Pointed	Incised	0.84
Schwartz 1983:Fig. 38-4	Restricted	Pointed	Incised	0.83
Schwartz 1983:Fig. 38-5	Restricted	Pointed	Incised	0.86
Schwartz 1983:Fig. 38-6	Restricted	Pointed	Incised	0.82
Schwartz 1983:Fig. 39-23	Restricted	Pointed	Incised	0.84
Schwartz 1983:Fig. 39-24	Restricted	Pointed	Incised	0.84
Schwartz 1983:Fig. 40-7	Restricted	Pointed	Incised	1.04
Schwartz 1983:Fig. 30-8	Restricted	Pointed	Plain	0.81
Schwartz 1983:Fig. 30-13	Restricted	Pointed	Plain	0.81
Schwartz 1983:Fig. 36-9	Restricted	Pointed	Plain	0.76
Schwartz 1983:Fig. 39-4	Restricted	Pointed	Plain	0.86
MEAN HEIGHT: WIDTH RATIO = 0.804				

firing, easy transport, and convenient storage. The pointed bases of the earlier Period III disappear entirely; instead, the Leilan Period IIb fine-wares have wide, flat bases and a lower center of gravity. Height:width ratios for a sample of 55 Period IIb serving vessels, such as fine ware cups and bowls from Leilan and Tell Brak (Oates 1982; Schwartz 1983, 1985, 1988; Stein 1990), yield a mean value of 0.474; this ratio, which is markedly lower than vessel proportions in the earlier Period III, reflects the increased stability of the new forms (Table 5). The fine-wares are often fired to the point of partial vitrification; this makes for a harder, less porous and, therefore, more durable vessel. Overall, by the mid-third millennium, ceramic manufacture in the Leilan area had shifted to emphasize functional considerations such as stackability, durability, and stability, rather than decorative characteristics (Table 6).

The shift from an emphasis on decoration to a focus on the functional characteristics of the vessels suggests that ceramics had lost whatever earlier status they might have had as prestige goods in the Mesopotamian world (see also Crawford 1991:127). Apparently, the only contexts in which ceramics retained some value as prestige or high-status items were in the ritual sphere.

Table 5. Form, Decoration, and Height: Width Ratios for Mid-Third Millennium (Leilan Period IIb) Serving Vessels from Leilan and Brak (n = 55)

Reference	*Rim*	*Base*	*Decoration*	*Height: Width Ratio*
Stein 1990:Fig. 26-10	Open	Flat	Painted	0.28
Oates 1982:Fig. 1-5	Open	Flat	Plain	0.44
Oates 1982:Fig. 1-6	Open	Flat	Plain	0.40
Oates 1982:Fig. 1-7	Open	Flat	Plain	0.54
Oates 1982:Fig. 1-8	Open	Flat	Plain	0.45
Oates 1982:Fig. 1-9	Open	Flat	Plain	0.47
Oates 1982:Fig. 1-10	Open	Flat	Plain	0.46
Oates 1982:Fig. 1-11	Open	Flat	Plain	0.55
Oates 1982:Fig. 1-12	Open	Flat	Plain	0.62
Oates 1982:Fig. 1-13	Open	Flat	Plain	0.61
Oates 1982:Fig. 1-14	Open	Flat	Plain	0.43
Oates 1982:Fig. 1-15	Open	Flat	Plain	0.47
Oates 1982:Fig. 2-20	Open	Flat	Plain	0.54
Oates 1982:Fig. 2-21	Open	Flat	Plain	0.55
Oates 1982:Fig. 2-22	Open	Flat	Plain	0.56
Oates 1982:Fig. 2-23	Open	Flat	Plain	0.48
Oates 1982:Fig. 2-24	Open	Flat	Plain	0.60
Oates 1982:Fig. 2-25	Open	Flat	Plain	0.60
Oates 1982:Fig. 2-26	Open	Flat	Plain	0.42
Oates 1982:Fig. 2-27	Open	Flat	Plain	0.43
Oates 1982:Fig. 2-28	Open	Flat	Plain	0.40
Oates 1982:Fig. 2-29	Open	Flat	Plain	0.43
Oates 1982:Fig. 2-30	Open	Flat	Plain	0.38
Oates 1982:Fig. 2-32	Open	Flat	Plain	0.53
Oates 1982:Fig. 2-33	Open	Flat	Plain	0.54
Oates 1982:Fig. 2-34	Open	Flat	Plain	0.41
Oates 1982:Fig. 2-39	Open	Flat	Plain	0.41
Oates 1982:Fig. 2-40	Open	Flat	Plain	0.47
Schwartz 1983:Fig. 28-5	Open	Flat	Plain	0.41
Leilan Stacked Waster Meas.	Open	Flat	Plain	0.43
Leilan Stacked Waster Meas.	Open	Flat	Plain	0.39
Leilan Stacked Waster Meas.	Open	Flat	Plain	0.37
Leilan Stacked Waster Meas.	Open	Flat	Plain	0.41
Leilan Stacked Waster Meas.	Open	Flat	Plain	0.38
Leilan Stacked Waster Meas.	Open	Flat	Plain	0.37
Leilan Stacked Waster Meas.	Open	Flat	Plain	0.35
Leilan Stacked Waster Meas.	Open	Flat	Plain	0.35
Leilan Stacked Waster Meas.	Open	Flat	Plain	0.36
Leilan Stacked Waster Meas.	Open	Flat	Plain	0.35
Leilan Stacked Waster Meas.	Open	Flat	Plain	0.36
Leilan Stacked Waster Meas.	Open	Flat	Plain	0.32

(*continued*)

Table 5. (Continued)

Reference	*Rim*	*Base*	*Decoration*	*Height: Width Ratio*
Leilan Stacked Waster Meas.	Open	Flat	Plain	0.36
Oates 1982:Fig. 10-19	Open	Pedestal	Corrugated	0.61
Oates 1982:Fig. 2-31	Open	Round	Plain	0.40
Oates 1982:Fig. 2-35	Open	Round	Plain	0.52
Oates 1982:Fig. 2-41	Open	Round	Plain	0.37
Oates 1982:Fig. 2-42	Open	Round	Plain	0.37
Oates 1982:Fig. 2-43	Open	Round	Plain	0.42
Schwartz 1983:Fig. 28-6	Open	Round	Plain	0.52
Schwartz 1983:Fig. 28-7	Open	Round	Plain	0.44
Schwartz 1983:Fig. 28-8	Open	Round	Plain	0.94
Leilan Op.4 Lot 18,burial 4	Open	Round	Plain	0.82
Stein 1990:Fig 26-9	Open	Round	Plain	0.78
Stein 1990:Fig 26-7	Open	Round	Plain	0.52
Oates 1982:Fig. 2-36	Restricted	Flat	Plain	0.67
MEAN HEIGHT: WIDTH RATIO = 0.474				

Very tall, narrow, highly decorated (often with snake motifs; see Figure 6) ceramic fenestrated stands (Oates 1982:Fig.3, nos. 44-46) are commonly thought to have been used as ritual vessels. Some support for this interpretation comes from Mari, a mid-third millennium urban center on the middle Euphrates river, where inlaid friezes from the Dagan temple show priests holding vessel stands of this type while officiating at a sacrifice (Weiss 1985:Fig.50). The continued use of ceramic fenestrated stands in ritual contexts, even after virtually all other classes of ceramics had become primarily utilitarian goods in Mesopotamian society at large, probably reflects the conservatism and slower rates of stylistic change in religious paraphernalia relative to more secular material culture.

With the exception of this one, special-purpose vessel form, the preponderance of the North Mesopotamian ceramic evidence is consistent with the expectations for utilitarian craft goods. Overall, examinations of chemical composition, vessel measurements, the regional distribution of manufacturing debris, and changing investment in aesthetics versus functionality all suggest that Mesopotamian ceramics in the mid-third millennium B.C. were widely distributed commodities produced by a large number of noncentralized, independent specialists. To compare the organizational context of ceramic production with that of other crafts, we must use textual evidence from temple or palace archives in Mesopotamia and North Syria.

Table 6. Changing Patterns of Form, Functionality, and Decoration in North Mesopotamian and North Syrian Ceramics

A. Ninevite V (Leilan III)—Early Third Millennium B.C.
1. Elaborate Surface Decoration
2. Restricted Rim Forms
3. Very Small Flat Bases, Pointed Bases, or Pedestal Bases
4. Tall Vessels with a Higher Center of Gravity
5. Softer, More Porous Texture Due to Lower Firing Temperature

B. Leilan IIb (Mid-Third Millennium B.C.)
1. Plain Wares—No Surface Decoration
2. Open Bowl Forms—Permit Mass Firing, Easier Storage and Transport
3. Wider, Flat Bases—More Stable, Functionally Efficient
4. Low Center of Gravity—More Stable
5. High Fired Fine-Wares—Harder, More Durable, Less Porous Vessels

TEXTUAL EVIDENCE CONCERNING CRAFT PRODUCTION IN MID-THIRD MILLENNIUM MESOPOTAMIA

Although cuneiform texts provide a wealth of data concerning administration of the personnel, raw materials, and outputs involved in certain kinds of craft production, it is enormously difficult to convert this information into a coherent general picture of Mesopotamian economic organization. In assessing the textual evidence for craft production, it is important to emphasize that the existing corpus of third-millennium texts is a nonrandom, nonrepresentative sample which records the transactions of a very limited subset of Mesopotamian society—the "great institutions," the palaces and temples. Those groups or sectors of society which existed outside the purview of the palace and temple generally did not leave written records (Diakonoff 1974, Gelb 1969). For this reason, our reconstructions of the economic activities of the Mesopotamian "private sector" or "rural sector" derive almost entirely from archaeological rather than textual evidence.

Even when textual evidence is available from palace and temple archives, we must remember that these documents represent specialized, abbreviated records of highly specific types of transactions that took place within circumscribed administrative spheres. Thus, the absence of an item or craft from these records does not mean that this activity was absent in Mesopotamian society; it simply reflects the fact that the institution or bureaucratic department that kept the records did not administer that particular activity. By the same token, the fact that the texts might mention a particular craft or activity does not necessarily mean that the latter was a state monopoly. It is, thus, important to distinguish between the crafts and

activities that the "great institutions" practiced along with everyone else in Mesopotamian society and those crafts or activities that the state actually *controlled.* Obviously, not every item listed in the texts was a high-status good.

Nor was every dependent worker in the "great institutions" necessarily involved in the production of high-status goods. The Mesopotamian temple or palace was in many ways analagous to an extremely large and wealthy household; as such, it retained, as maintenence staff, low-status dependent workers who provided the goods and services needed for the internal consumption and day-to-day operation of that institution (see Lipinski 1979, Powell 1987). The inclusion of these dependent workers in the archives of the palaces and temples in no way implies that the state monopolized control over these professions. Instead, these dependent workers merely duplicated, within the administrative sphere of the temple or palace, activities that were also taking place outside the purview of the great institutions, in Mesopotamian society as a whole. These "duplicated" professions (and their products) apparently included farmers, herders, fishermen, woodcutters, bakers, and possibly even potters, as well—this last group producing small volumes of utilitarian pottery for the internal consumption of the temple or palace. This group of attached specialists can be distinguished from the attached craft specialists who produced high-status items under strict administrative control.

Several lines of textual evidence serve to identify high-status goods and the organizational context within which they were produced. First, the prices or value equivalents of raw materials are often listed, providing fairly direct information about which goods and materials were most expensive. Second, archival records of the storage and disbursement of goods often distinguish between high-status items given as gifts/tribute and everyday commodities provided as rations to dependent workers in the palace or temple. We can therefore identify prestige items, based on: (1) the presence of the appropriate craft specialist in the texts as a dependent of a "great institution," (2) textual evidence for state procurement of the necessary raw materials, (3) a high price/value equivalent for the raw materials or finished products, and (4) records indicating that these particular items were presented as gifts to high-status individuals of known social rank. When this textual evidence is combined with excavation data and archaeometric analyses of craft items or manufacturing debris, the resulting composite picture shows that metals and textiles had replaced pottery as high-prestige goods in the mid-third millennium Mesopotamian world.

METALS AND TEXTILES AS THE MAIN PRESTIGE GOODS OF MID-THIRD MILLENNIUM MESOPOTAMIA

As ceramics declined in status, textiles, metal objects, and semiprecious stones (such as lapis lazuli) became some of the most widely used and recognized

prestige goods in mid-third millennium Mesopotamia. The palace and temple "sectors" of Mesopotamian society appear to have closely controlled access to precious metals (gold and silver), high-quality textiles, and semiprecious stones through their control over raw material procurement, long-distance trade, and the labor of attached specialist producers. Both mortuary evidence from the Royal Cemetery of Ur in southern Mesopotamia (Woolley 1934; Pollock 1983, 1991) and numerous textual references from Mesopotamia and North Syria support the identification of these artifact classes as items of wealth and emblems of high status.

Textiles functioned as clear markers of prestige in the mid-third millennium. Iconographic evidence, such as the Royal Standard of Ur (Woolley 1934:Pl. 91-93), depicts people of different ranks ranging from wealthy elites down to slaves, with the relative status of each group expressed in distinct styles of woolen garments. Similarly, cuneiform documents from palace and temple archives in North and South Mesopotamia list different grades or qualities of textiles. The highest grades of textiles were carefully stockpiled and given as gifts or tribute, while the lowest grades were given as rations to attached specialists dependent on these institutions.

Metals—particularly gold and silver—formed another main class of prestige goods in mid-third millennium Mesopotamia. Metals such as gold had clearly become the most valued material for serving vessels. The banquet scene from the Ur Royal Standard shows seated elite individuals drinking from high, fluted goblets (Woolley 1934:Pl. 91-93). Other finds from the Ur Royal Cemetery clearly show that these vessels were made of gold and silver (Woolley 1934:Pl. 157, 162).

Metal goods and textiles were important not only as badges of prestige, but also as the principal media of exchange and tribute between elites of the mid-third millennium city-states of Northern Mesopotamian (Pinnock 1984). What was the organizational context of the craft specialists who made these goods? The model of craft production that we discussed earlier suggests that prestige goods will most likely be made by centralized, attached specialists whose raw materials, labor, and output are controlled by the elites. This turns out to be exactly the case for the Mesopotamian world in this time period.

Cuneiform documents from the palace archives at the urban center of Ebla in North Syria provide a good example of how this system worked. These elite institutions recorded the raw materials kept in centralized storehouses and listed the attached craft specialists to whom they were disbursed. Metalsmiths (*simug*) appear prominently in these records. Craft specialists were organized into "labor squads" (*é-duru*), each supervised by an overseer from the royal palace (Archi 1982:212-213). Southern Mesopotamian texts also attest to the presence of a virtually identical system of precious metal storerooms in the palaces and temples, together with inspectors or supervisors whose job it was to oversee the work of goldsmiths (Limet 1972:8-9). Mid-third millennium

palace archives from the southern city of Lagash show centralized control over vast amounts of precious metals—900 kg of silver and 300 kg of gold in one text alone (Westenholz 1984:28).

The largest number of cuneiform documents in the Royal palace archive at Ebla deal with textiles and garments, while the second largest group of records deal with metals (Archi 1985:146; Gelb 1986:162). In the annual statement of the palace controlled metals warehouse (*é-am*), almost 15,000 standardized ingots of bronze are recorded—approximately 1.125 tons of bronze. In addition, 100 gold bars (around 8 kg) and 840 silver bars (64 kg) are also reported, as tribute from just one city (Archi 1982:211). Large numbers of metalworkers were employed by both the temple and palace to work these raw materials into a whole range of goods, from tools to jewelry.

The Ebla palace also maintained an institution called "the wool house," where textile production was based. The powerful city-state of Mari frequently sent wool to Ebla, where it was woven into textiles and garments (Pinnock 1984:27). One wool house inventory lists over 7,000 garments, broken down by category into good quality and lesser quality textiles (Archi 1982:211).

Textiles, garments, and metal goods were all manufactured by attached specialists. These were considered high-status goods, the production and circulation of which were under strict control by the centralized institutions such as the palaces and temples (Pinnock 1984:28). This practice apparently began in Mesopotamia as early as the late Uruk period (the late fourth millennium B.C.; see Crawford 1991:137, Nissen 1988:89) and is widely attested during the Early Dynastic III and Akkadian periods in the mid-third millennium (Postgate 1992:115, 227-228). The centralized institutions maintained this control over high-prestige textiles and metal goods in several ways. Since Mesopotamia lacks natural ore deposits, copper, silver, and gold were all scarce raw materials that had to be imported from Anatolia, Oman, and Iran (Moorey 1982, Stech & Pigott 1986, Yener 1982). Thus, centralized control over access to metals (especially gold and silver) could be achieved through close administrative control over both the incoming raw materials (Westenholz 1984:28) and the finished products (Limet 1972:9). Control over high-prestige textiles was apparently more difficult to maintain, since the raw material, wool, was readily available throughout Mesopotamia. The centralized institutions might have maintained their control over high-prestige, luxury textiles through a strategy of close control over the knowledge and skills of the specialists themselves. In this respect, it is interesting to note that, of all the craft specialists attached to Mesopotamian centralized institutions, almost none were actual slaves; the only exceptions were weavers, who from the third millennium onward were male and female slaves (Zaccagnini 1983:24).

THE "DUAL" ECONOMY OF EARLY MESOPOTAMIAN STATES

Although weavers and metalsmiths are ubiquitous as attached specialists in elite institutions such as the palaces and temples, the 17,000 cuneiform records from the Ebla palace make no references to potters as palace dependents, either in the city itself or in surrounding villages. Potters appear rarely, if ever, in the major palace and temple archives from mid-third millennium Southern Mesopotamia (Crawford 1991:131). It is therefore reasonable to conclude that the vast majority of potters operated as independent specialists. In sum, both the cuneiform documents and the archaeological evidence of the ceramics themselves indicate that ceramic manufacture was a noncentralized activity that was not under the direct control and administration of Mesopotamian elites or centralized institutions.

The organizational context of craft specialization in mid-third millennium B.C. Mesopotamian city-states highlights those goods which were considered "politically charged commodities" (Brumfiel & Earle 1987:5), while also showing which products and producers existed outside the core concerns of the central institutions and elites. We suggest that city-states such as Leilan had essentially "dual" economies in which centralized institutions such as the palace and temples coexisted with a "non-elite" sector (Figure 7). The centralized institutions would have controlled the production (and the attached specialist producers) of those goods they considered essential to maintaining the power, wealth, legitimacy, and authority of the state, while independent specialists in the non-elite sector would have produced a wide variety of lower-status, utilitarian goods and services.

This dual economy extended beyond craft production; the centralized institutions also maintained attached specialists in subsistence activities such as farming and herding. Land, agriculture, and pastoral products were the most important sources of wealth for Mesopotamian elites and centralized institutions and, as such, formed a core concern of the state. In the case of agricultural and pastoral production, both sectors would have engaged in the same activities, albeit at markedly different scales of production and with different production strategies (see Adams 1978, Stein 1987, Zeder 1991).

The major differences between the two sectors emerge in the realm of craft production. Although individual palaces and temples might have produced small amounts of ceramics for their own internal consumption, in general the state eschewed control over ceramic production, focusing instead on more valued goods such as metals and textiles, which were produced by attached specialists affiliated with the palace and temple sectors of the economy. (See Sinopoli [1988] for a similar organizational context of craft specialization at the medieval south Indian Vijayanagara empire.) Several factors might account for the state's minimal role or noninvolvement in ceramic production. At one

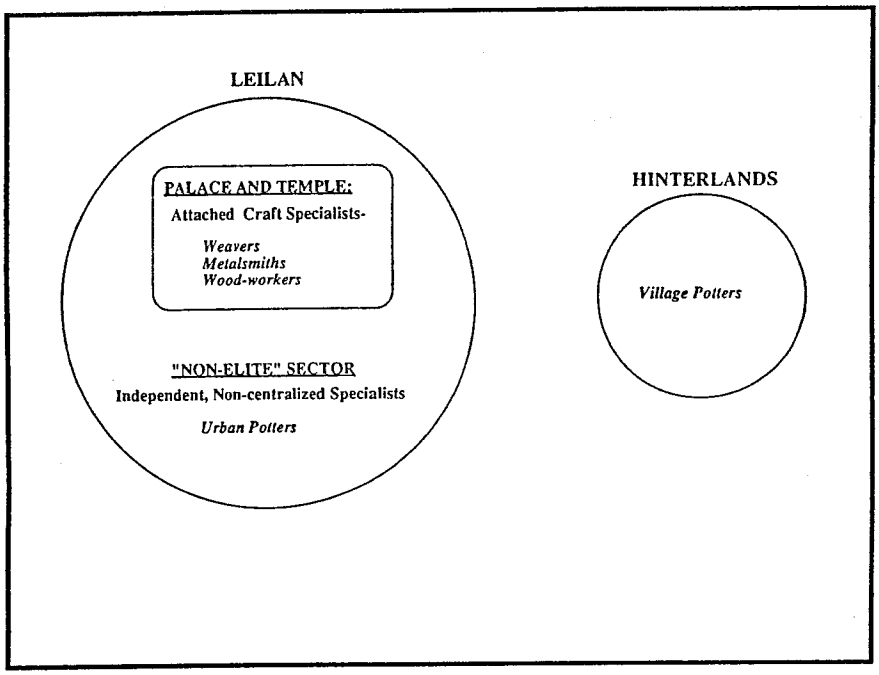

Figure 7. Hypothesized "Dual" Economy of Craft Organization in Leilan IIb (ca. 2400-2300 B.C.): Leilan vs. Hinterlands

level, as we have argued, ceramics were no longer high-prestige markers of status or wealth by the mid-third millennium; there was, thus, little ideological incentive for the state to control their manufacture. At another level, even if it had wanted to, the state would have had great difficulty controlling ceramic production, since clay, water, and potters' skills were everywhere available, both in the cities and in the rural areas, beyond the reach of effective, continuous administrative control. The existence of independent ceramic specialists outside the purview of the centralized institutions could therefore have reflected both a deliberate decision on the part of the state and a recognition of the limits on state power.

CONCLUSION

We have used a combination of archaeological, textual, and iconographic data to examine the economic and political context of ceramic production in complex societies of northern and southern Mesopotamia. This evidence points

to several main features of productive organization in the mid-third millennium complex societies of Mesopotamia and neighboring areas of North Syria. Compositional and metric analyses of the Leilan ceramics show that these were mass produced by a relatively large number of noncentralized workshops of apparently independent specialists, both in the urban center of Leilan and in the surrounding villages. The noncentralized nature of ceramic production argues strongly against elite control of this craft.

This interpretation is consistent with the nature of the Leilan fine-wares as utilitarian goods. The physical and stylistic characteristics of north Mesopotamian ceramics suggest that pottery declined in prestige to become a utilitarian good in the mid-third millennium. Iconographic evidence shows that metals and textiles had become some of the main prestige goods, items of wealth, and media of exchange among elites in this period, replacing ceramics and, possibly, polished stone vessels, as well.

Textual evidence shows that the attached specialists mentioned in temple and palace archives of the mid-third millennium are metalsmiths and weavers, rather than potters. Invisible in the art and written records of Mesopotamian "great institutions" such as palaces and temples, the organization context of utilitarian craft production can only be inferred through a combination of survey, excavation, and archaeometric analyses of the craft products themselves along with their associated manufacturing debris. The evidence we have presented here suggests that ceramics and the independent craft specialists who produced them were marginal in the dual political economy of Mesopotamian complex societies. The ruling elites of the Mesopotamian city-states expressed their wealth and prestige through their control over the crucible and the loom, rather than the wheel.

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