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SALT AT THE DAWN OF HISTORY: THE CASE OF THE BEVELLED-RIM BOWLS[1]

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1. Introduction

The beginning of history is traditionally linked with the introduction of writing, viewed (historiographically) as a fundamental technological breakthrough. The mental faculties of the human brain came for the first time to be stored extrasomatically in a passive medium which not only provided a point of reference for individual memories, but began to establish at the same time the most explicit, comprehensive and self-feeding cultural repository that had ever been possible. It is

[1] This paper (earlier versions of which were presented at meetings of the American Schools of Oriental Research in Anaheim in 1985 and at the meeting of the American Oriental Society in New Haven in 1986) was written in 1987 and is the first in a series of six articles which deal with the history and geography of ancient Khana. The articles are as follows:

(1) "Salt at the Dawn of History: The Case of the Bevelled-Rim Bowls" (published here);
(2) "River Bank, High Country, and Pasture Land: The Growth of Nomadism on the Middle Euphrates and the Khabur" (to appear in M. Wäfler ed., *Khabur Symposium*, Bern);
(3) "The Rural Landscape of the Ancient Zor: The Terqa Evidence" (to appear in B. Geyer ed., *Les techniques et les pratiques hydro-agricoles traditionelles en domaine irrigué*, Bibliothèque Archéologique et Historique, Damascus);
(4) "The Kingdom and Period of Khana" (to appear in *BASOR*);
(5) "The People of Terqa and Their Names" (in preparation);
(6) "From Khana to Laqê: The End of Syro-Mesopotamia" (to appear in a volume edited by Ö. Tunca).

I plan to eventually integrate these articles into a full-size monograph and at that time I will include a fuller documentation than is possible here, including photographic illustrations of the salt playas of Bouara.

I am grateful to Beatrice Hopkinson for first drawing my attention to the significance of salt procurement and production, for her sustained assistance in my own research on this topic, and for her willingness to write a technical appendix which, for lack of space, will appear elsewhere. It is our common intention that she may do more research on our data from Qraya as well as on the contemporary salt deposit in Bouara, on which she will report in other publications.

well-known that the introduction of writing is part of a series of major technological break-throughs (including in particular the first systematic use of metal and the development of large scale monumental architecture) which coincided in turn with a crucial and irreversible social phenomenon — the formation of large and permanently settled social groups which we call the first "cities."

While these are spectacular aspects of a spectacular moment in history, they are obviously only part of a larger story — a story which new archaeological discoveries, and new interpretations of old discoveries, help us to fill in, however gradually. It is such a new interpretation that I wish to propose here, offering it to Adnan Bounni as a special token of friendship, appreciation and admiration. The unique style with which he has blended his unfailing human warmth with thorough professionalism has made a mark on all his colleagues and left an indelible trace on Syrian archaeology. Thé contribution I am publishing here will be, I trust, of special interest to him, building as it does on the concrete evidence of pottery, of which he is a recognized master, and pointing to a special historical role of ancient Syria, for which we share such a special affection.

Of the hundreds of different pottery vessels of ancient Mesopotamia, only a few have stimulated an ongoing discussion as to their specific function, and of these none is perhaps more famous than the "bevelled-rim bowl."[2] One would never imagine it to be so when one sees an exemplar — extremely coarse, inelegant and wholly undecorated as they all are. But what has attracted the attention of scholars from the beginning is the distributional pattern which these vessels exhibit. Because of their peculiar traits and their large numbers, they have become the tell-tale diagnostic type of that fundamental period in Syro-Mesopotamian chronology, the Protoliterate period, that marks the beginning of urban civilization as we know it. And yet — there still is no agreement as to their function.

Now, to propose just such a new functional interpretation of a ceramic vessel type is not only interesting in itself, but also, in our particular case, raises significant implications for the nature of early urban civilization and its trend toward geographical expansion. This is already implicit in the terms of the problem. The large amount of bevelled-rim bowls, their standardization and, ironically, the very expendability which characterizes their use, all point to a broadly based mechanism for production and consumption which is "urban" in our own sense of the term (it is indicative in this respect that a syndicated story on modern consumerism from the Associated Press, dated September 1985, made pointed reference to these very bowls as found in our excavations at the site of Qraya in

[2] See some examples from Qraya in Pl. 6a. I wish to thank Stephen Reimer for the photographs from the Qraya excavations contained in this article. For some recent discussions of this class of artifacts see Nissen 1969; 1970; 1974; 1980; Beale 1978; Shimabuku 1978; Sürenhagen 1978; Barrelet 1980; Balfet 1980:76-81; Le Brun 1980; Johnson 1983; Makkay 1983; Ellison 1984.

Syria, in order to provide evidence of an early counterpart to modern discarding practices). If even just the generic aspects which characterize the diffusion of the bowls are significant, how much more can we expect to learn about the society from which they stemmed if their specific function can be understood!

2. The pieces of the puzzle

The starting point for my interpretation of the bevelled-rim bowls was the observation of obvious and distinctive typological similarities between the bowls and the "briquetage" found at many archaeological sites in Europe.[3] It was Beatrice Hopkinson who first introduced me to this European material, as a result of her on-going research on salt-making in general and on the British salt site of Droitwich in particular. The striking typological similarities between the two pottery types in terms of their ware, shape and distribution is brought home quite readily by the juxtaposition of the two sets of quotes which follow, and which are practically interchangeable — the first two describing the bevelled-rim bowls, and the third the European briquetage. In citing these passages I am adding emphasis and breaking up the text in distinct lines to bring out more clearly the points of comparison.

"... these bowls are quite *fragile*
owing to the *exceptional porosity* of the fabric,
which contains a large proportion of *chaff*
and was on the whole *poorly fired.*
As a result *very few of them were found whole.*
... one can see ... the *irregularity of shape*
due to *hand-fashioning*
(note *finger marks* at the bottom ...)" (Delougaz 1952: 39).

"... made in a form, of heavily *chaff-tempered* clay,
and ... rather *brittle.*
... they were all manufactured *in vast numbers,*
rather *carelessly*...." (Nissen 1972: 99).

"... tous les fragments se révèlent relativement *friables.*
Leur *fragilité* est encore accentuée
par une *cuisson non uniforme* ...
Les fréquentes empreintes de *doigts,*
ainsi que l'*irrégularité relative de la forme* des éléments techniques
témoignent d'un *façonnage manuel*

[3] See the appendix, to appear as a separate article, by B. Hopkinson, and also Benac 1973:68 (I owe this reference to the courtesy of E. S. Elster). For a general introduction to the history of salt see De Brisay and Evans 1975; Multhauf 1978.

réalisé *assez rapidement*
et *en très grande série.*
Les traces d'herbe remarquées laissent supposer que les
végétaux
remplissaient un *rôle de liant* avec l'argile crue ..." (Bertaux n.d.: 70f.).

It was on the basis of these striking similarities that I first referred to such a possible new interpretation of the bevelled-rim bowls in a paper dealing with the "urban revolution" delivered in 1975 at the 14th International Congress of Historical Sciences.[4]

In the course of our on-going excavations at the Protoliterate site of Qraya, now under the direction of Stephen Reimer, several new factors began to emerge which pointed more and more toward such an understanding of the bevelled-rim bowls as items used in salt production. Taken together, these observations make, I believe, a cogent case for the interpretation which I am submitting here.[5] Let us review first the nature of the evidence pertaining to the material evidence, i.e. the bowls themselves and the archaeological assemblage associated with them. The features already noted in the literature pertain primarily to the bowls in and of themselves, and may be summed up here under the following headings.

(1) To begin with the *typology* of the bowls, they have been noted to exhibit a peculiar *porosity* (obtained through extensive vegetal fiber tempering).

(2) The porosity has been considered a factor inducing *fragility*, which in turn

[4] Subsequently published as Buccellati 1977; for the reference to the bevelled-rim bowls and salt manufacture see p. 32. A similar suggestion has recently been advanced, with reservations, by Potts 1984:269; Potts' article is very thorough and informative in its analysis of the general issue of salt procurement and use in ancient Mesopotamia, its use of medieval and recent historical sources, and its analysis of archaeological materials from the third millennium. The difference with my contribution is thus one of complementarity, since in my article one will find (a) a discussion of only the Uruk period material, with special reference to the excavations at Qraya, (b) a stress on the distributional peculiarities of emplacement and stratigraphic association, (c) a set of geo-political considerations affecting the history of settlement in the region of Khana. In her appendix, to be published elsewhere, B. Hopkinson gives a specific typological correlation to European briquetage and experimental utilization of the bevelled-rim bowls in the process of salt production.

[5] Other interpretations, which are not necessarily mutually exclusive with each other or with mine, consider the bevelled-rim bowls to have been used for various types of food preparation (Delougaz 1952:127; Sürenhagen 1978:101f.; Ellison 1983:63f.), for rations (Nissen 1970, and more recently 1983:92f.; Johnson 1983:360; Ellison 1984:63f.; Liverani 1986:123; Zagarell 1986:418 and, with the further suggestion that the bowls played a symbolic role, 419; see also the objections of Balfet 1980:80f.), for smelting (Nissen 1970:115; 1974:9; 1980:96) or for "presentation" purposes in a religious setting (Beale 1978; Makkay 1983:5). With regard to the interpretation of the bowls as ration containers, one should note that the discard would be expected to have been either in industrial areas (where consumption of the rations would have taken place), or in storage areas (where the workmen would have received rations). Assuming that either stratigraphic setting may be documented for major assemblages of the bowls, the question would still remain as to why the bowls would have been broken in such homogenous masses: the patterned type of breakage which can be observed implies a kind of waste that is not very well compatible with the notion of an efficient administrative set-up. One would expect the latter to have been instrumental in creating the bowls for repetitive ration distribution in the first place.

has been taken to account for the fact that so many are found broken. In point of fact, however, bevelled-rim bowls do not appear to be more easily breakable than ordinary vessels. While I have not tested this aspect in any special way, I have noticed that in caring for the whole vessels found on the excavations (of which there were dozens) no special precautions were taken, and no special incidence of breakage occurred.[6] Hence I rather suspect that fragility has been assumed from the amount of broken vessels, rather than as an independent variable. This is significant if one assumes that breakage was, at least in many or most cases, intentional (as I will propose in the next section).

(3) There is a distinctive *standardization* of manufacture, largely due to the fact that they were mold-made (Nissen 1970; 1980; Johnson 1973:130 f.; Balfet 1980:78-80); this resulted in

(4) a general uniformity of *size ranges*, and

(5) a general *carelessness* in the finished product. This resulted in part from the *speed* with which they were produced. This has been observed in the literature with regard to the *shaping* of the vessels (Nissen 1970:138; H. Wright in Johnson 1973:131). It is interesting to add in this respect, following the observation by Hopkinson (to be published elsewhere), that production speed was also enhanced by the heavy vegetal tempering, because this made it possible for them to be *fired* much more quickly than normal pottery, since they did not have to be fully dry before firing.

(6) Little has been recorded about the *stratigraphic context* of the bowls, and in fact Nissen has remarked that excavation reports have been characteristically skimpy in this respect, other than in the broadest sense.[7] What is generally noted is the following. The bowls occur in very *large quantities*, whether broken or whole.

(7) When whole, they are often found *clustering together*, and then

(8) their emplacement is frequently *upside down*.

(9) They are found in *temples and administrative areas* (but then, very few non-public areas have been excavated for this period).

While these observations already suggest the possibility of a comparison not only with the salt industry of prehistoric Europe[8] and East Asia[9] but also with what is known ethnographically about Meso-America[10] and Africa,[11] there are additional

[6] Sürenhagen 1978:101, notes that the bowls were not damaged even though they had been tossed away in antiquity.

[7] Nissen 1972:99; Le Brun 1980:61f.; Wright 1980. See Sürenhagen 1978:101, for some considerations on emplacement.

[8] See above, n. 3. I have not been able to see Bloch 1971, quoted prominently by Potts 1984.

[9] Baas-Becking 1931.

[10] See especially Andrews 1983 (I owe this reference to the courtesy of M. Beaudry). The situation may have been different in North America, where no particular tool specialization seems to be associated with salt procurement (Muller 1987:16). I have not been able to see Brown 1980 or Avery 1983.

[11] See Riehm 1961:191 and pls. XXIIIa-b for some interesting comparative illustrations.

characteristics with regard to emplacement and stratigraphic context that make such a comparison even more convincing — even though they have not generally been noted in the literature. My attention was called to these stratigraphic associations by the results of our own excavations at Qraya,[12] although parallels can be found at most other Protoliterate sites.

(10) The bowls are associated with characteristic *fire installations* that have pottery grills placed above the fire chamber; the relatively large size of these installations and the lack of evidence of organic refuse nearby makes it unlikely that they may have served as ordinary cooking ovens; on the other hand, the absence of slag implies that one need not automatically consider them pottery kilns.[13]

(11) A type of vessel which is frequently associated with the bowls are *large, high-rimmed platters* (see an example from Qraya in Pl. 6c).

(12) Another characteristic item associated with the bowls, though in limited quantity and at fewer sites, are *pottery ladles* or large spoons (see two examples from Qraya in Pl. 7a).

(13) The bowls, whether whole or broken, are found in *open areas*, with traces of *water run-offs* nearby.

[12] An initial note on the site appeared in Buccellati and Kelly-Buccellati 1987:6f. The archaeological documentation pertaining to the excavated material from Qraya, and parallels from other sites, will be found in the forthcoming *Qraya Modular Reports* (to appear in the journal *Syro-Mesopotamian Studies*), authored by the various field directors who have been responsible over the years for the excavations at Qraya. Work at the site is currently being conducted under the direction of Stephen Reimer (since 1984) while earlier seasons were under the direction of Kay Simpson (1977-78) and Daniel Shimabuku (1983-84). For the first report currently in press see Simpson 1983 and forthcoming. I am grateful to S. Reimer for information on the details of the excavations at Qraya; his report, which is forthcoming, will include the pertinent documentary evidence.

[13] See an example of fire installation from Qraya in Pl. 6b. Discussions of kilns deal primarily with their formal and functional typology, and very seldom with their stratigraphic setting, particularly their association (or lack of association) with slag and wasters, or even with fire dogs or other supports; and the definition "*pottery* kilns" is often applied automatically to any fire installation that does not appear to have been a cooking oven. For an ethno-archaeological approach to the problem, see Barrelet 1980:56; Balfet 1980:71-76. An interesting substantive discussion of the role of slag and wasters is found in Y. Majidzadeh 1977:213 (see also 210; I owe the reference to S. Reimer): he argues that the lack of slag only indicates that the potter had cleaned the work area in preparation for the next firing. It should be noted however that (a) while such cleaning might well have removed all or most wasters, it could hardly have been so thorough for slag, which can easily become embedded in the floor surfaces around the kiln, and that (b) one cannot assume that the lack of mention of slag in a site report implies that in fact there was no slag. For our purposes, I assume that fire installations for which there is no demonstrable association with slag, wasters, fire dogs or such (meaning that their absence has been explicitly observed and properly recorded by the excavator) *may* have been used for other functions even if typologically they are suited to have been used as pottery kilns. It may further be noted that, should one wish to interpret fire installations in a setting like the one at Qraya as pottery kilns, one would still have to explain the unique pattern of breakage of the bevelled-rim bowls (see presently), which would be even more puzzling if the fire installations are pottery kilns: why so many broken pots without wasters or slag?

(14) *Clay sealings*, which had been applied to both containers and doors,[14] are found in the same context as the bowls.

(15) The nature of the disposal lends itself to more specific observations. As was already noted, the vessels are found together in large quantities, both broken and whole (when whole, often upside down). What should now be added, is that (in Qraya at least) there is no indication of roof or wall collapse which would have caused the breakage: rather it appears that they were *discarded in situ*, i.e. that they were dumped together whether broken or whole. This is a rather unique emplacement phenomenon which can be observed for bevelled-rim bowls at many sites: one can hardly think of other instances when one and the same type of utilitarian ceramic vessels has been disposed of *en masse* in a self-contained disposal place (such as a pit[15] or an oven no longer in use).

(16) This suggests that there was an element of *intentionality* in the process of discarding: if so many bowls are discarded together in a broken state, one may infer that they were broken intentionally and further that they were dumped at the time they had been broken (otherwise one would expect more of a mixture with other types of vessels).

(17) If so, we may draw the additional inference that the general area where the dumping took place corresponds to the *working area* where the bowls were being put to use while still whole.

3. The technology of salt production[16]

Even a brief glance at the reconstruction of salt installations in pre-industrial societies around the world[17] will show readily that there is a striking similarity between such installations and the cluster of elements just described for the bevelled-rim bowls and their context. Here, I will look again at the Syro-Mesopotamian data which we have just reviewed, and I will in so doing indicate how the various pieces of the puzzle may come to explain each other if viewed as the components of a salt making installation. Obviously, this is a reconstruction for which the evidence is only inferential.

(1) *Brine was gathered* from local supplies in containers for which we have at present no demonstrable evidence. On the basis of ethnographic evidence from

[14] Of the latter (door sealings) we have so far no examples at Qraya, but for other Protoliterate examples (though not necessarily found together with bevelled-rim bowls) see Wright 1980:278; Fiandra and Ferioli 1985.

[15] For evidence from Chogha Mish see Delougaz and Kantor 1975:97.

[16] I use the term "production" in a generic sense, that subsumes gathering as well as drying or boiling — in other words, the entire process of producing a commercially viable entity, from the procurement of the raw material to the curing and disposition of the same in manageable units.

[17] See above, notes 3, 10 and 11. Pl. 7b provides a reconstruction (published by Bertaux 1972, Fig. 10 and reproduced in Hopkinson 1975, Pl. II) of a salt-making installation from the Lorraine very similar to what I envisage to have been the situation in Qraya.

Meso-America,[18] a vessel which may hypothetically have been used for this purpose is the rather distinctive "bifid jar,"[19] which is a spherical jar, very light in fabric, with a narrow neck and a shoulder handle: such jars, however, are only known from later periods in the area of Qraya (specifically, they are found in second millennium Mari, Baghouz and Terqa[20]), and the possible correlation to salt remains purely speculative. As for the local sources of salt in the region of Qraya, they will be discussed in some detail in the next section. The traces of water run-off in the general area at Qraya where bevelled-rim bowls were found may have been occasioned by the process of handling the brine.

(2) *The brine was placed in large, high-rimmed platters*, which in turn were placed *on the grills* resting directly upon a subterranean fire-chamber. This phase of the process aimed at the elimination of the water content of the brine through direct and intense heating.[21] The fuel was presumably provided by the local brush and dung cakes; since the fire chambers are relatively small (about 70 cm in diameter and 50 cm in depth; two of these ovens have been found in Qraya in the area of major accumulation of the bevelled-rim bowls), not much fuel was necessary for any given firing. The large open platter allowed for easier evaporation in the oven which we may assume to have been open to the sky.[22] Given the size of these platters, few are found intact, but many flat sherds belong probably to this type of vessel. No major evidence of burning has been noticed on the sherds, but this may be attributed to the fact that the flame was not in direct contact with the vessels, since these were elevated on the grill which sat above the fire chamber.

(3) The resulting dry salt was then *scooped out with the pottery ladles*[23] and placed in the bevelled-rim bowls, which were placed *on the edges of the grill*, next to the central platter. Such a reconstruction of the salt making process has been proposed for the prehistoric sites in France.[24] The use of ladles would have been

[18] See Andrews 1983:82, with Fig. 4.7 and 4.8.

[19] For a different interpretation of this type of vessel see Gates forthcoming.

[20] See Kelly-Buccellati and Shelby 1977:24-25 (*TPR* 4 18).

[21] An objection to this procedure is that in modern ethnographic evidence "the boiling of saline solution is never attested since the summer's heat is sufficient to evaporate any and all saline solutions" (Potts 1984:249). It should be noted, on the other hand, that Potts' own suggestion that the solid-foot goblets of Mesopotamia may correspond typologically to the *augets* of European prehistory (1984:260-65) would seem to imply more than their having been used only for transportation and storage, since this type of vessel, in non-Mesopotamian contexts, is specifically related to boiling. It seems possible that boiling may have taken place successively, for the purposes of refinement. Beatrice Hopkinson intends to test this in the near future in an experiment with salt to be gathered at the Bouara playas; the experiment will attempt to determine what refinement would occur as a result of boiling. See also the interesting observations in Butz 1984:296.

[22] To the extent that the fire installations were domed, they would not have been suitable for boiling or drying salt, since evaporation is an essential consideration in the process. Since the roof over the grills, if there was one, would have been small and flimsy, it is conceivable that the fire installations might have served a double purpose — if roofed, for pottery, if unroofed for salt.

[23] Of course, the ladles may have been used as well (or instead) to place the brine in the platters.

[24] Riehm 1961: Fig. 3; Bertaux 1972: Figs. 7-10; n. d.: fig. 29.

warranted by the fact that at this stage the brine was hot, and that there was presumably a reasonable concern not to spill any of the content and to keep it at the same time as clean as possible. Given the high solubility of salt, it would seem all but impossible that any amount of salt could be detected in the walls of the bowls, and to the extent that salt minerals may be found to be present, they may be attributed to the clay itself or the nature of their emplacement in saline soil rather than to the presumed content of the bowls.

(4) The bevelled-rim bowls were kept on hand, ready to be used, in the general vicinity of the ovens: they were placed *upside down* and *stacked one on top of the other* only because the resulting pile would thus be more stable, rather than because of any more specific purpose (I owe this suggestion to Beatrice Hopkinson).

(5) The generally small size of the bowls as well as their shape and especially the type of fabric which characterizes them would be ideal for the *final process of desiccation of the salt cakes.*[25] Owing to the larger surface at the top, the small volume of the salt contained in the bowl and the possibility for the moisture to drain through the porous walls of the vessel, the resulting salt cake would be very thoroughly desiccated, and thus proportionately less susceptible to spoilage.

(6) After removal from the grill, the bowls with the salt cakes inside them were *stored for shipment.* Such storerooms, and the containers in which the salt cakes were kept, were presumably kept under lock and seal — which would account for the sealings found in this area.

(7) It is an open question whether the salt cakes were systematically *removed from the bowls* or not. On account of the weight of the bowls, it would seem logical that they *would* have been removed for shipment — and this would account for the large number of broken bowls and the characteristic nature of their disposal, all in the same area. We will, however, come back to this question when dealing with the issue of trade. It would appear in any case that the bowls would break easily, and thus were not generally reused (although there does not seem to be any contraindication to such reuse in terms of salt making per se).

(8) The *approximate standardization of bowl sizes* makes good sense within this perspective. On the one hand, bowls needed to be produced in great quantities because of the high incidence of breakage, and the easiest way to mass-produce them would have been to use molds, which Nissen has convincingly shown was in fact the case (Nissen 1970:137). On the other hand it was convenient for both

[25] Riehm 1961 notes that in various tests the "highly porous objects" from Halle (i.e., the briquetage) "proved unsuitable as boiling vessels" because "on heating the walls burst so that the brine flowed out." He interprets them accordingly as "salt cake moulds and parts of salt drying apparatus. Filled with the freshly boiled salt obtained from" impermeable containers where the salt had been boiled, "they probably stood around a glowing hearth. This mould was, however, suitable for one use only: it had to be smashed when the hardened salt cake was taken out" (p. 183f.). On p. 184 Riehm notes that there was a standardization of sizes and shapes, and that these "lumps of hard salt of as equal a weight as possible ... were probably marketed together with their 'packaging,' i.e. in their mantle of clay."

storage and shipping to have units of about the same size. Note that this does not require that the size be exact, since the measuring standard was presumably by weight rather than by units of volume: this then accounts well for the observations by Shimabuku (1977) and Beale (1977), who have argued against a precise standardization as proposed by Nissen (1970) and Johnson (1973).

(9) It appears from the above that one can also account in this manner for the *carelessness of manufacture*. The bowls were intended functionally for an ephemeral use, since breakage was easy as a result of their inherent porosity and fragility, and was perhaps even intended at the time that the cakes were removed.

(10) Finally, the presence of bevelled-rim bowls in *temple or public areas* (nothing can be said as yet in this respect for the evidence from Qraya) would account well for the general scope of such a technological enterprise which logistically, if not technically, required a degree of coordination better suited for a larger organization than that available in the private sector.

It should be stressed again that this interpretation of the bevelled-rim bowls as serving in salt procurement is largely inferential: it accounts well for a number of peculiarities which can be found in the stratigraphic distribution of these items.[26] It must also be repeated that this interpretation does not exclude the concomitant use of the bowls for other purposes — a multifunctionality which would have been made even easier by the industrial-scale production presupposed by a salt procurement scenario like the one just outlined.

4. The dynamics of trade

That salt was in fact big business[27] is presupposed not only by the considerations

[26] The seasonal distribution in the discard of the bevelled-rim bowls, noted by Wright et al. 1980:272 (see also Johnson 1983:360), whereby there is a higher incidence of items apparently datable to the summer (on the basis of associated animal remains), may be related to the fact that the summer is the period when the salt can be "harvested" in the saline playas.

[27] By way of comparison, one may note that in medieval Italy salt trade was in the order of several million kilograms per year, see e.g. Multhauf 1978:8f. (in 1850 England, yearly production was up to almost 650 million kilograms, with about 350 million used for internal consumption, p. 120). The fundamental work on salt in the ancient Near East is now to be found in Potts 1984 (some of the points made in this article are already presented in more concise form in Potts 1983). For occasional remarks in the earlier literature see for example Limet 1977:54; Ellison 1983:148; Crawford 1973. Potts' suggestion (1983; 1984:255f., 270) that the Amorites may have been involved in such trade, as nomads have been in recent times in the Near East, is quite plausible. It should be noted, however, that in the Isin corpus (*BIN* 9), where he finds evidence for the association between the Amorites and leather bags, there are many more cases of non-Amorites than of Amorites mentioned as recipients of leather bags, so that his argument is tenuous (for a recent study of this archive see Van de Mieroop 1986). I may incidentally remark that where he faults me (p. 256, referring to Buccellati 1966:309) for saying that the use of the leather bags on the part of the Amorites is "obvious" when in fact it is not, he seems to miss the point I had in mind: I was contrasting the situation in Isin with that in Drehem, where the use of the animals given to the Amorites is even *more problematic* than the use of the sandals and bags given them in Isin

made so far about its production, but even more by the larger picture which we can draw with regard to trade and the socioeconomic factors behind it. And in this respect the evidence from Qraya is especially instructive.

The starting point of our argumentation may be the question of the location of Qraya and its relationship to other settlements of the same period. From all available evidence there are only two sites of the Protoliterate period on the middle Euphrates — Qraya and Ramadi.[28] Qraya is situated slightly north of Terqa, and Ramadi slightly north of Mari, and they may well represent the historical antecedent for each of the two later cities, which became successively the capitals of the middle Euphrates region in historical periods. There are no other known Protoliterate sites on the Euphrates south of Qraya and Ramadi until the southern region of Iraq. It is generally assumed that the expansion of the Protoliterate period to the North took place along the Tigris, and then West along the upper plains of the Khabur in Northeastern Syria and on the sites of the recent excavations at Habuba Kebira, Kannas and Aruda, all in the Big Bend of the Euphrates. That the Euphrates did not serve as a primary communication route to the South is suggested by the fact that even in later historical times there was a natural boundary south of Mari (coinciding in fact with the modern political boundary between Syria and Iraq): on the Iraqi side the Euphrates valley is even more constricted, to the point that hardly any irrigation, however limited, was possible. Hence there was a marked lack of urban settlements,[29] and only at the time that large scale pastoralism developed in the middle Euphrates region (resulting in the phenomenon of the Amorites) did a normal communication route come to be open along the river.[30]

In this perspective, as the map in Pl. 5 makes clear, the settlements at Qraya and Ramadi, more than 250 kms. south of Tell Brak, represent a detour which requires some explanation.[31] The narrow trough of the Euphrates at the juncture with the Khabur, known today as the *Zor*, was unlikely to appeal to people used to the

(Buccellati 1965:300): while sandals are to be worn and bags to be used as containers, animals could be sacrificed, eaten, bred, shorn, or cared for and returned.

[28] An article on Ramadi is to appear in vol. 5 of *M.A.R.I.*, which I have not yet seen in print. Some preliminary remarks are found in Simpson 1983:298.

[29] See the maps in Abu Al-Soof n.d.: 181; Le Brun 1980:61.

[30] I have developed this argument in the second and in the last of the articles mentioned above in n. 1. For a different understanding of the Euphrates as a viable communication route in early historic times see Simpson 1983:282-301; Margueron forthcoming.

[31] A few sites with Uruk period material on the surface have been reported for the lower Khabur in Kühne 1978-79 (Hussein, Ahmar South, Fadghami, Mashnaqa) and for the steppe on the east bank of the Khabur in Pfälzner 1984 (Anayat), but none of these appears to have been a major urban site. For some interesting remarks on locational geography and on travel times as applied to Uruk period settlements see Johnson 1983: esp. 362-67, 369-72, 376f., 393-95. See also Nissen 1980:96, for a remark to the effect that the contrast between Nineveh (with rich deposits of bevelled-rim bowls) and Gawra (no bowls at all) may be due to a difference in the type of settlement.

fertile rain-fed plains of the upper Khabur or the vast alluvial plains of the south where large scale irrigation was possible (on a scale unimaginable in the constricted valley of the *Zor*). And, in point of fact, both Qraya and Ramadi do not appear to be anywhere near the scale of Tell Brak, for instance, nor are other sites of Brak's magnitude known from the middle Euphrates: in other words, Qraya and Ramadi are relatively small and isolated settlements in a region which did not otherwise seem to have, at that time, sustained any full-size urban settlements.[32] Nor do we have reason to believe that a broadly based rural society of agro-pastoralists had already developed to its full extent in the Protoliterate period as it will be at a later date with the Amorites: full use of the unique geo-morphological characteristics of the lower Khabur/middle Euphrates region (corresponding to the later political entity of Khana) seems to have developed only during the third millennium, and thus would not presumably have been a factor in attracting Protoliterate period settlers to come south along the Khabur basin.[33]

A plausible answer is provided by a comparison of the distribution of Protoliterate sites in Syria with the known location of major salt sources, as shown on the enclosed map. The area of the upper Khabur plains and of south central Turkey appears to be devoid of major salt sources,[34] and yet it was precisely in this area that the Protoliterate settlers were expanding, presumably coming from the south over the Tigris in search of easier access to the natural resources of the Taurus mountains. The lack of major salt resources in the area where new urban settlements were being established is likely to have posed an appreciable problem, sufficiently so to cause the settlers to actively search for them. And such a search would have brought them to the area of Qraya and Ramadi.

As is apparent from the map,[35] both sites are at an even distance (some 40 kms. as the crow flies) from the salt "playas" of al-Bouara,[36] which are very considerable in size and are exploited commercially in our own days. In fact, this area ranks third for the amount of salt produced in modern Syria (Lefond 1969:357). During a

[32] This is all the more remarkable considering that two rather significant sites of the Neolithic period are known for this general region, Bouqras (a few kilometers north of Qraya, see recently Akkermans et al. 1983), and Tell es-Sinn (in the immediate vicinity of Der ez-Zor, see Roodenberg 1979-80).

[33] Continued systematic study of animal remains from Qraya and Terqa by K.F. Galvin will be of considerable importance for this question. See for now Galvin 1987.

[34] Forbes 1965:175 refers to "large deposits ... near Ali Dagh, north of Tuz Khurmatli, near Koh Tuz not far from Mardin and near Vihan and Sert," but I did not find specific references to these deposits in terms of amounts and accessibility. See also Dillemann 1962:62, and Potts 1984:243.

[35] For an excellent and detailed map of the area see Pfälzner 1984, Abb. 71. Pfälzner notes (p. 181) that of the various salt lakes in the area only Bouara is commercially exploitable, on account of the presence there of a year round spring of fresh water, while at the other locations the water is only from run-offs and the salt deposits are very brackish.

[36] This is the Arabic spelling, to be preferred to the Ottoman "Bevara" used by Unger 1916 and Potts 1984:242-45 in their long and very informative discussion of this area. Local people I have asked and who have taken me to the playa simply refer to it as *al meleḥ*, "the salt."

brief visit to these salt playas I did not observe signs of ancient occupation,[37] but the visit was on the occasion of a holiday outing, during which I made no systematic attempt at surveying the playas, which are very large and quite inhospitable. Even today, human presence there is extremely limited and only seasonal, and it would seem a priori unlikely that there may have been any concentration of ancient remains anywhere in the playas themselves, and even if such had been the case, it is likely that the geo-morphological nature of the area would have erased any trace. Given the general persistence of the same geo-morphological conditions during historical periods, it is quite likely that these playas were in existence and accessible in early historical times. Consequently, I am postulating that the "detour" to the south along the Khabur was occasioned by the need to obtain larger amounts of salt than those which might have been obtainable locally in the North. It is also possible that the marshes corresponding to ancient meander loops of the Euphrates may have served as a source for salt, but they would presumably have been of minor importance vis-à-vis the major resource provided by the playas.

It is interesting in this connection to note that by far the largest salt producing area in Syria today is located not far from the Protoliterate sites of the Big Bend area of the Euphrates, in the Jabboul playas between Meskene and Aleppo: production there is almost thirty times as large as that of the playas of al-Bouara near Qraya. It is possible to speculate that here too salt may have played a role in the choice of the Protoliterate settlements, although other factors would certainly have been operative here that were not in the region of Qraya.

There is a unique dimension to the pattern of salt trade as proposed here — unique vis-à-vis other patterns of economic interchange which have been recognized for ancient Mesopotamia.[38] In the case of salt, the commercial need for trade went hand in hand with the know-how for technical aspects of production: that is to say, salt was not produced by manufacturing centers that had discovered on their own the sources of raw material, and had come to rely on long distance trading partners to deliver the produced goods to urban markets. Rather, sources of salt were discovered and exploited by the same commercial entities that had established the need for the market in the first place, i.e. the large urban communities which we know especially from the "Protoliterate" South and from northern sites like Brak.[39]

[37] The survey by Pfälzner is extremely interesting for our present concern, because it gave evidence of some 42 ancient sites (1984:181 with Abb. 71) in the steppe area north of Bouara. One of the sites (Anayat ash-Sharqi III, see Abb. 75) is particularly significant in that it yielded Uruk type remains (p. 185 and Abb. 76:3-4). Pfälzner describes (p. 182) the sites in the area as very small permanent or semi-permanent settlements, numbering between two and ten houses. With reference to Potts, Pfälzner also mentions the possibility that the sites may have been established in connection with salt procurement.

[38] See Yoffee 1981 for a review of recent work on the subject of trade; for particular references to patterns of trade see Limet 1977; Kohl 1978; Zagarell 1986.

[39] I think that the differences in material culture to be found between the sites in the North and those

These considerations argue in turn for an important conclusion, namely, that the individuals responsible for the spread of the Protoliterate type of material culture to the North and the Northwest were in fact the Sumerians who had developed the first urban culture in the South. The diffusion of specific implements would in this case be linked with the very specific technological know-how which is to be presupposed behind salt-making; it would also be linked with the specific needs arising within the newly developing urban society for new dietary situations and for medium-to-long term preservation of foodstuffs and other items. This is an impressive array of concomitant facts — material culture with its attendant manufacturing techniques (especially the mold-made porous vessels known as bevelled-rim bowls), the fairly elaborate technology of production of a given good (salt), the search for sources of the raw material, the complex set of needs served by the end product — which supports fairly conclusively the notion that the widespread distribution of Uruk type elements of material culture corresponds to an actual expansion of the Sumerian urban civilization, through the carrier of its own people rather than through borrowing and adaptation by others.

5. The puzzle within the puzzle

There is little doubt that salt was of great importance for early society especially after the implementation of agriculture had introduced an essential element in the diet which did not include a built-in salt component. While salt can be easily accessible where it is found in nature, as in the playas, it cannot be simply "harvested," nor is it available with the same degree of ease in every region. Given the combination of these two factors — the important role of salt in human diet and relative difficulty of procurement in sufficient quantities — the production of salt, and where necessary its trade, would appear as one of the major activities of early settled communities, and even more so of early urban society.

Much has been written about salt production in other areas of the world, for example in pre- and early historic Europe, in Meso-America and in Africa (see notes 3, 10 and 11). It is a remarkable puzzle, then, to see how little attention has been paid to this issue within the field of Mesopotamian, or even ancient Near Eastern, studies, up until the recent articles by Potts and Butz.[40] The chapter on salt in Thompson (1936: 1-16) was the most comprehensive survey available. The summary review by Forbes (1965: esp. 175-177) builds essentially on Thompson's data as far as Mesopotamia is concerned. Characteristically, the book by the

in the South and the Big Bend (see Simpson 1983:282-301, for a useful summary of the evidence) does not constitute an objection to this interpretation, but I will omit a discussion in this context.

[40] Potts 1983; 1984; Butz 1984. Potts has tentatively, and independently, arrived at the same interpretation of the bevelled-rim bowls suggested here, see p. 269.

Brothwells on *Food in Antiquity* devotes a few relatively detailed pages to Europe (1969:160-162), but says practically nothing about the Near East. The only specific and substantive discussion (prior to Potts) of salt trading in the ancient Near East is the article by Anati (1962:29 f.), in which he explains the rise of Neolithic Jericho as a trading center which drew for its supply on the salt available from the Dead Sea.[41] Various studies which deal with salt as used in the fishing industry (e.g. Crawford 1973) or food and diet (Bottéro 1981:194 f.; 289; Ellison 1983; Limet 1987:138 f.) do not consider the issue of salt procurement. In the volume of Iraq devoted to the 1977 Rencontre Assyriologique, which had been devoted to the issue of trade, the only author who refers, however briefly, to salt is Limet (54 f.).

The main reason behind this puzzle — i.e. the puzzle that the presumed role of salt in ancient Near Eastern diet and trade has generally been disregarded in the literature — constitutes, at the same time, one of the main objections which can be raised against the interpretation I have proposed. If salt was so important to Mesopotamian urban life,[42] why is it that the rich scribal inventory of administrative texts does not highlight prominently the role that I am claiming salt played in that civilization? Even though the bevelled-rim bowls (to which the explanation given here properly applies) precede by a few centuries the major record of this administrative scribal tradition, the production of salt as such would have had to continue, albeit with implements of a different type. While such implements may be perhaps recognized in different shape in the later archaeological record (Potts 1984:258-267), it is puzzling that so little should be found in the administrative record.[43] In the Ur III period, some 1000 years later than the period of the bevelled-rim bowls, there are occasional references to fairly large amounts of salt (180 pounds in one case, 2537 quarts in another: the references will be found in Limet 1977:54; see also Limet 1987:139), but these remain occasional instances; in one of these cases, the salt units are described with the word "brick." Some texts from Ugarit (see Potts 1984:252 f. with references), some 600 years later than the Ur III texts, list 760 "blocks" (*kbd*) of salt in one instance, and 1060 blocks in another: these are said to come from "salt fields" (*ṣṣ* and *ṣiṣu*, glossed as *eqel ṭabti*), which are associated with names of individuals, possibly the owners or managers. And an interesting literary reference is found in the religious text entitled Maqlu (5:79): it speaks of the "Amorite salt" (*ṭabat Amurri*), possibly a reference to the salt derived from the playas of al-Bouara and Jabboul, besides others near Palmyra, all geographically located in "Amurru." (An interesting literary reference to salt

[41] On the question of salt from the Dead Sea see Potts 1984:228. The possibility of salt procurement and trade has otherwise been suggested on an occasional basis, as in Kirkbride 1974:91.

[42] Bottéro 1981:289 says that in ancient Mesopotamia, salt "ne semble pas avoir eu l'importance que nous lui reconnaissons." Also note that on p. 193f. he shows how food could be preserved through a drying process that did not involve the use of salt.

[43] For the relatively meager evidence from literary texts, see Potts 1984:228-235.

outside of Mesopotamia is found in the Bible, which refers to the "covenant of salt," *berīt melah*, in Numb. 18:19 and 2 Chr. 13:5; the precise import of this phrase seems to elude modern exegesis.) The only Mesopotamian texts where salt is mentioned prominently are lexical texts[44] and the glass texts[45] — but by their very nature these texts do not give us an idea of the quantities involved nor of the frequency of use.

Such relative lack of evidence in the administrative record remains unexplained. Limet (1977:54) — to my knowledge the only author to have even raised the issue before Potts — has suggested that vegetal-based salt may have been employed regularly in lieu of mineral salt, since the latter is mentioned occasionally in the ration lists.[46] While this may have been occasionally apt as a substitute, it would not appear likely that it would have served as a full-scale replacement for common salt. Since it is likely that salt supplies were a part of the accounting process (and the link with sealings that we have at Qraya is in line with this presumption), we are left with the suggestion (however weak this may be) that texts of this type have not yet been found in the archaeological record.[47]

Another objection to my interpretation of the bevelled-rim bowls is the fact that these bowls are found at all sites of the Protoliterate period, including sites which are not near salt sources. A reasonable explanation seems however possible for this fact, along a multiple line of reasoning. On the one hand, it is possible that, in some cases at least, the bowls were used as containers for shipment; while this appears rather uneconomical because of their weight, it is conceivable that the bowls were preferred under certain circumstances in order to provide better protection for the salt cakes, especially protection from moisture;[48] in addition, salt shipped in the bowls may have appeared to be as if guaranteed by a trademark — the bevelled-rim bowl itself. Alternatively, it is also possible that while salt was shipped in different containers, such as bags of cloth or skin (Potts 1984:253-258), it was then stored at the place of destination in bowls of the same format as the ones in which it had been manufactured at the place of production. These bowls would then have been made independently at the sites where the salt was being delivered — an assumption that would further explain the need for standardization in the bowls, to the point of their having been made universally in molds. Finally, it is also very likely that once the bevelled-rim bowls had become available in such large quantities, they came to be used for a variety of other purposes in addition to the one for which they had been intended originally: multifunctionality was certainly common on all

[44] See references and discussion in Potts 1984:246f.; Butz 1984. See also the title *mun* ur_4 "salt gatherer" attested in a text from Fara, quoted in Potts 1984:253.

[45] Thompson 1936:1ff.; Oppenheim 1970, index s.vv. *naga*-plant; *mil'u*-mineral.

[46] See Potts 1984:249f.; Butz 1984:285f.

[47] See also the remarks by Hopkinson in the appendix to be published elsewhere, and Butz 1984:315.

[48] See also above, n. 25, and the appendix by Hopkinson to be published elsewhere.

levels of Mesopotamian life, except for the most specialized structures and items. In particular, they may have been used for any type of food processing in which evaporation or draining of water was important, as originally proposed by Delougaz.[49] At any rate, these alternative interpretations need not be regarded as necessarily mutually exclusive; in other words, the bowls may have been made both for salt production *and* other purposes, and shipment may have taken place in *both* the bowls and other, less heavy, containers (see Le Brun 1980:66).

In spite of these potential objections, it seems fair to say that the interpretation here proposed accounts for more concomitant factors of typology, emplacement and distribution than the other current interpretations (reviewed recently by Beale 1978; see also Makkay 1983). The very difficulty implied in the relative lack of references to salt in the administrative record should be welcomed as a challenge for historians to face more directly, if not the interpretation of the bevelled-rim bowls per se, then the more significant issue of salt procurement in ancient Syro-Mesopotamia.

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[49] Delougaz 1952:128. It should be noted that Delougaz's reference to a possible use of the bowls for "the separation of whey from curds," and thus for the preparation of cheese or yoghurt, with which his theory has come to be identified, was only by way of exemplification. For other simple uses in food preparation see Ellison 1984:64.

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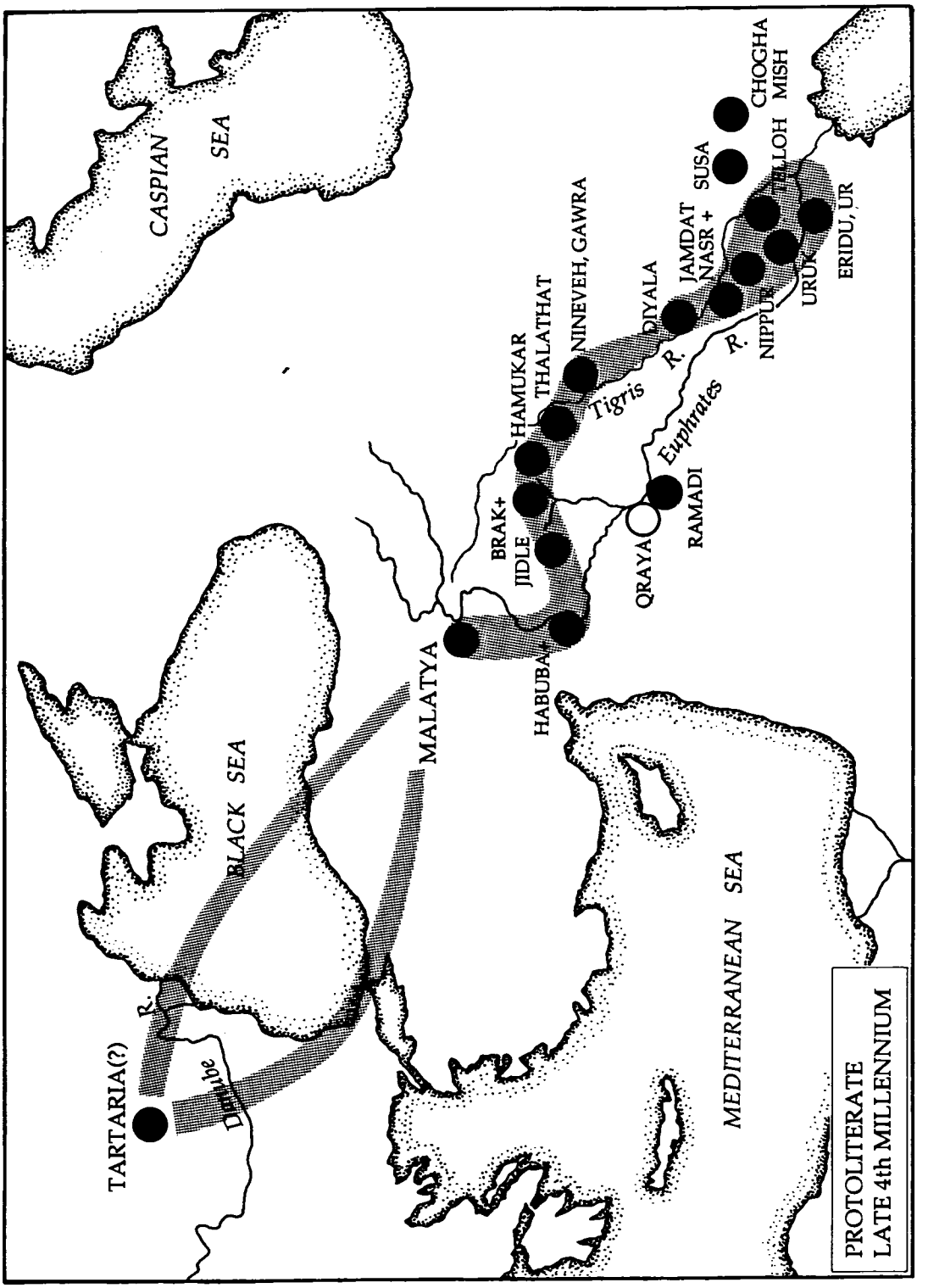
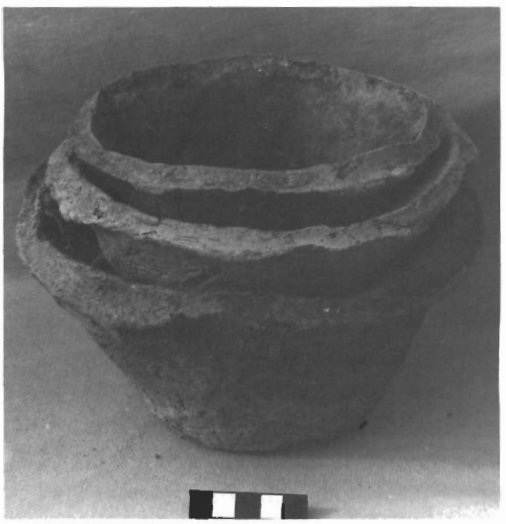
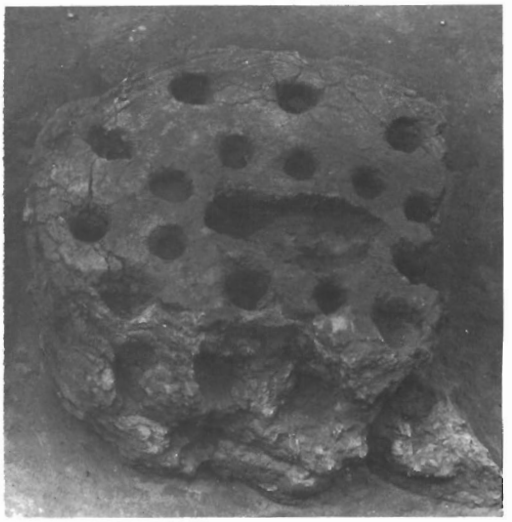


Plate 5. Distribution of Uruk period sites. Based on Abu Al-Soof n.d., p. 181.



a

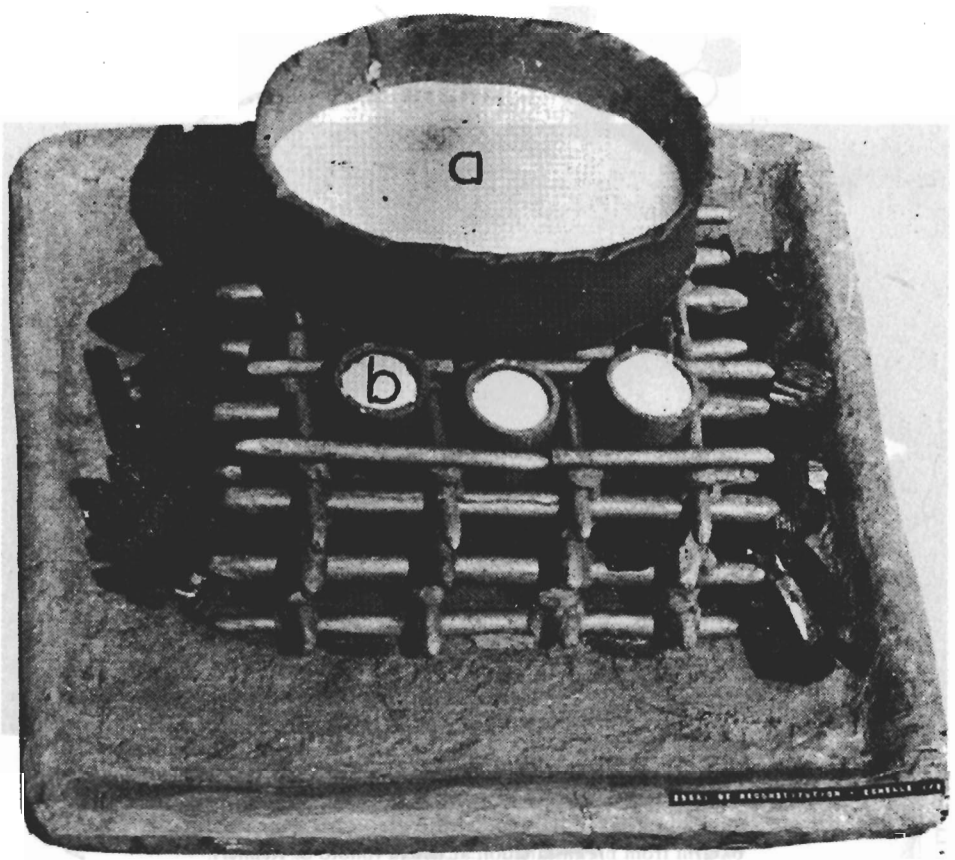


b

c

Plate 6a. Bevelled-rim bowls from Qraya. Three complete vessels, representative of the Uruk period assemblage at Qraya and elsewhere (photo S. Reimer).
b. Grill from fire installation at Qraya (photo S. Reimer).
c. Fragment of coarse ware platter from Qraya (photo S. Reimer).

a



b

Plate 7a. Pottery ladles from Qraya (photo S. Reimer).
b. Reconstruction of salt-making installation in the Lorraine (photo Bertaux 1972, fig. 10, reproduced in Hopkinson 1975, plate II). The platter (a) is used for boiling brine, and the small bowls (b) for drying and molding the salt cakes. The special hearth design serves a function similar to what might have been the function of the grill in the Qraya hearth. The ware of the vessels is also very similar to that of the bevelled-rim bowls.