

Introduction and Synthesis: Urban Development and Ecology at Tell Mozan

Peter Pfälzner

1 Aims

The project carried out by the Deutsche Orient-Gesellschaft (DOG) in cooperation with Marilyn Kelly-Buccellati and Giorgio Buccellati at the site of Tell Mozan, ancient Urkesh, was directed particularly at studying the processes of urbanisation. The emphasis is not only on periods of urban growth, but also on events of de-urbanisation or phases of urban regression. One of the project's aims was to devote special attention to the long-standing controversial debate on the so-called "urban collapse", which affected Northern Mesopotamia in the second half of the 3rd millennium BC. This decline of urban society in wide areas of the Syrian and Iraqi Jazirah has very often been directly connected to and explained by fundamental ecological changes.

Therefore, ecological studies were conceived to be an important part of our project at Tell Mozan. Their basic aim, from an archaeological point of view, was to find evidence for possible ecological changes that might have taken place during the Early and Middle Bronze Age settlement periods at Tell Mozan. In particular during the periods of the second half of the 3rd millennium and of the turn from the 3rd to the 2nd millennium BC, which are under constant debate. The aim was to clarify in which form and to what extent ecological changes, if any were to be found, appeared and in which way they could have had an impact on urban development.

Ecological research at Mozan comprises the analysis of carpological remains (seeds and fruits), anthracological remains (charred wood), animal remains, and the study of fluvial systems. Carpological analyses were carried out by Dr. Simone Riehl (University of Tübingen); anthracological analyses, as well as geomorphological investigations, were under the responsibility of Dr. Katleen Deckers (University of Tübingen) and the study of animal bones was undertaken by Dr. Monika Doll (University of Tübingen). The fact that all scientists involved work at the same research institution fostered full interdisciplinary exchange among themselves and the archaeologists involved. The combined effort of archaeo-biological, archaeo-zoological and geo-archaeological research as well as archaeological investigations produced results which are based on multiple, cross-connected sets of data.

According to these aims and strategies interesting insights were achieved in this project. In fact, the data from Tell Mozan, for the first time in the research on 3rd and 2nd millen-

nium Northern Mesopotamia, presents exact frequencies of plant types, particularly crops, charcoal and animal bones for nearly all sub-phases of the Early Jazirah period (EJ II, IIIA, IIIB, IV and V) and extending into the Old Jazirah time. This is the basis for reconstructing a new picture of the history of settlement in the Syrian Jazirah during the 3rd and 2nd millennium BC.

2 Theories

The current theories on 3rd millennium BC Northern Mesopotamian urbanism centre on the question of the extent of "urban collapse" and the reasons for it. Harvey Weiss, together with colleagues,¹ strongly stimulated the discussion by proposing the hypothesis that the breakdown of cities was caused by an abrupt climatic change at around 2200 BC, at the end of the Akkad period, which was caused by an episode of *tephra* fall and followed by a marked increase in aridity leading to the deterioration of the agricultural productivity of the region. Following this hypothesis, the former climatic conditions returned only 300 years later, after 1900 BC, leading to the restoration of urbanism in the Khabur plains.

This theory has been vigorously discussed since it was first expressed in 1993.² Courty herself modified the date of the possible air blast event to around 2350 BC.³ One of the strongest contradictions to Weiss's paradigm was expressed by Koliński.⁴ He argues that the dating of the *tephra* layers at some sites does not conform to the settlement abandonment phase in the late 3rd millennium BC. Furthermore, he points out that a general abandonment of the Khabur basin at the end of the 3rd millennium BC, as postulated by Weiss, did not take place, as is evidenced by sites such as Tell Brak, Tell Mozan, Tell Chagar Bazar, Tell Arbid, Tell Barri and Hamukar.⁵

Many authors, such as Akkermans – Schwartz⁶, emphasized the necessity of further stratigraphical and environmental studies to finally arrive at a coherent picture of the urban and ecological development of the Jazirah in the 2nd

1 Weiss et al. 1993; Weiss – Courty 1993; Weiss 1997; 2000; Weiss – Bradley 2001; Ristvet – Weiss 2000; 2005.

2 Wilkinson 1994; Peltenburg 2000: 185-186, 200; Akkermans – Schwartz 2003: 282-287.

3 Courty 2001.

4 Koliński 2007.

5 Ibid. 351.

6 Akkermans – Schwartz 2003: 283.

half of the 3rd millennium BC. As has been specifically pointed out by Koliński, a change in climatic or rainfall conditions has to be reflected in the composition of plant assemblages.⁷ Therefore, the detailed study of the plant materials from Tell Mozan was particularly aimed at adding new data to this old question.

In consequence, a new and specific picture of the environmental history of the Syrian Jazirah between the 3rd and the 2nd millennium BC arises from the analyses of the DOG-project at Tell Mozan. This picture is mainly based on the results of the carpological samples from Tell Mozan and of a thorough re-evaluation of the existing palaeo-climatic data by Simone Riehl⁸.

3 Tell Mozan stratigraphy and chronology

The stratigraphy of the central upper city of Tell Mozan in areas C2 (residential area in the south-eastern part of the central upper city) and B6 (temple terrace area) stretches uninterrupted over a long period from the Early Jazirah II (ca. 2700/2800 BC) to the Old Jazirah II period (ca. 1650 BC) (Table 1). It particularly gives insights into the time period of the end of the 3rd and the turn of the 3rd to the 2nd millennium. Interestingly, there is a clear continuous architectural development bridging the widely postulated break between the Early and the Middle Bronze Age. The so-called “Pusham-House”, dated to the Early Jazirah V period at the end of the 3rd millennium (Phase C 7), was architecturally modified during the succeeding Old Jazirah I period (Phase C 6) in the early 2nd millennium, with some of the former outer walls of the building still in use.⁹

In his analysis of the pottery sequence Conrad Schmidt¹⁰ discovered that the typical Early Jazirah V pottery, characterized by bowls with sharp-angled carination and jars with a grooved ribbon rim, is restricted to Phase C 7. Due to one cuneiform tablet and hundreds of Ur III seal impressions retrieved from an original functional context it has to be dated contemporary to the Ur III period.¹¹ Moreover, this Phase C 7 might even extend beyond the turn of the millennium for some time into the 20th century BC. This can be concluded from the fact that the same kind of pottery repertoire is, for example, still present in early Isin-Larsa contexts in Mesopotamia.¹²

It is difficult to assess when exactly Phase C 6 at Tell Mozan started. This phase is marked by a completely different kind of pottery, characterized by painted Khabur-Ware and typical Middle Bronze Age bowls with a less accentuated carination

than before. Despite this break in pottery tradition there is a noticeable continuity in architecture reflected within one and the same building, the so-called “Pusham House” (see above). This definitely excludes the possibility of a hiatus between the two phases. We assume that this new kind of pottery must have been introduced during the second half of the 20th century or, at the latest, at around 1900 BC. This change in the Northern Mesopotamian pottery tradition is not paralleled in Southern Mesopotamian developments, so that the beginning of the Old Jazirah I period might have occurred during the ongoing Isin-Larsa Period in the South, and was independent of the latter.

There is, on the other hand, a strong typological continuity in pottery from the Old Jazirah I (Phases C 6 and C 5) to the Old Jazirah II period (Phase C 4). The latter is approximately contemporary with the time of the Old Assyrian Empire under Shamshi-Addu I. This is the last phase of domestic activities in the central upper city of Tell Mozan. There is no indication for continuity of settlement into the Old Jazirah III period, which is the final phase of the Middle Bronze Age.¹³

4 Occupational development and socio-political transformations

The long and detailed sequence of occupation in the central upper city of Tell Mozan demonstrates a continuous use of this part of the city while its functions changed partially. The oval temple precinct was in permanent use from the Early to the Middle, and even the Late Bronze Age¹⁴, while in the area south of the central plaza public buildings of the Early Jazirah III period were replaced by houses during the Early Jazirah IV period (Figure 1).¹⁵

What is the most important observation with regard to the ongoing discussions on an “urban collapse” in the late 3rd millennium is that there is at Tell Mozan a clear continuity of occupation between the second half of the 3rd and the first half of the 2nd millennium BC. Thus, despite the introduction of a new tradition of pottery in the Old Jazirah I period there is no “reoccupation” of the site in the early 2nd millennium. The uninterrupted reuse of existing architectural structures, at least in parts of the settlement, clearly contradicts this assumption. However, at the same time foundations for new houses with a new arrangement of streets were laid out at the beginning of the Old Jazirah I period (Phase C 6).¹⁶ They indicate that most

7 Koliński 2007: 351.

8 Riehl in the present volume.

9 Bianchi - Dohmann-Pfälzner - Geith - Pfälzner - Wissing in press; Dohmann-Pfälzner - Pfälzner 2001: 121-129; idem. 2002 a: 163-168.

10 Schmidt, in press; idem. forthcoming.

11 Dohmann-Pfälzner - Pfälzner 2001: 121-127; Volk 2004: 87-98.

12 Schmidt forthcoming.

13 In the article by Doll (in this volume) a different dating of phases was applied, which represents an earlier version of the stratigraphy of Tell Mozan C 2, before it was modified in 2007. There, level C 4 is erroneously dated to the Old Jazirah III period, which is not maintained any more. Please refer to the stratigraphic chart (Table 1) presented in this chapter in order to properly readjust the phasing of Doll.

14 Pfälzner 2008: 411-416.

15 Dohmann-Pfälzner - Pfälzner 2002 a: 156-162, 187-190.

16 Bianchi - Dohmann-Pfälzner - Geith - Pfälzner - Wissing in press; Dohmann-Pfälzner - Pfälzner 2001: 111-113, 127-129, 137-138; idem. 2002 a: 190.

DATE	TELL MOZAN CENTRAL UPPER CITY				JAZIRAH PERIODISATION	MESOPOTAMIAN CHRONOLOGY
	AREA B6 (Temple terrace)		AREA C2 (domestic quarter)			
	North	South	West	East		
Modern	BN 1	BS 1	BSW 1	BO 1	C 1	
Medieval- Islamic	BN 2	BS 2			C 2	
Hiatus						
1300 BC						
1400		BS 3a 3b	BSW 2 BW 2		C 3	Middle Jazirah I Mittani / Middle-Babylonian
1500						
1600						Old Jazirah III Late Old-Babylonian
1700					C 4	Old Jazirah II Middle Old-Babylonian
1800						
1900		BS 4	BSW 3		C 5 C 6	Old Jazirah I Early Old-Babylonian Isin-Larsa Period
2000				BO 2a 2b	C 7	Early Jazirah V Ur III Period
2100						
2200	BN 3 4a 4b				C 8 C 9 C 10 C 11	Early Jazirah IV Akkad (middle - late)
2300					C 12	Early Jazirah IIIb Late ED III – Early Akkad
2400						
2500		BS 5			C 13 C 14 C 14 C 16	Early Jazirah IIIa Late ED II – ED III
2600						
2700		BS 6a 6b		BO 3	not excavated	Early Jazirah II ED II
2800		not excavated			not excavated	Early Jazirah I ED I

Table 1: Stratigraphy of Areas C2 and B6 at Tell Mozan as established by the DOG-project 1998-2002.

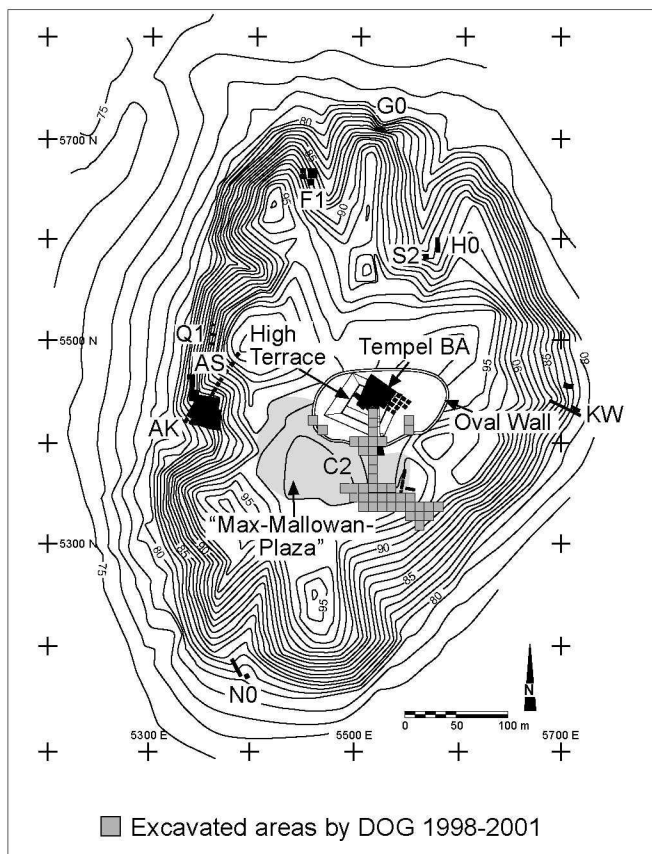


Figure 1: The central upper city of Tell Mozan/Urkes, based on the results of the DOG-project 1998-2002.

probably new occupants had arrived at Tell Mozan. They did not necessarily replace the earlier population but could have installed themselves alongside and among the old residence group.

Moreover, this newly increased population of the Old Jazirah I period must have lived under a new type of organisational order. It is reflected in changed principles of urban planning. The regular layout of new house plots and the simultaneity of their establishment are a clear indication for this structural change. It can most plausibly be explained by arguing that a new type of political order came into existence at the beginning of the Old Jazirah I period. As this period clearly predates the Old Assyrian Empire's phase of extension into the Syrian Jazirah (see above) this new order can not be seen as an indication of Assyrian control. Thus, the new order should not be understood as a consequence of imperial or external rule. Instead, local political systems, presumably on a city-state basis, can be considered as the most plausible model of socio-political organisation in the Old Jazirah I period at Tell Mozan/Urkes. Therefore, similar political developments as in Middle and Southern Mesopotamia during the Isin-Larsa-Period can be assumed to have happened contemporaneously but independently in the Syrian

Jazirah. Here, on the other hand, they need not to be regarded as being independent from the former political systems which had developed in Northern Syria during the Early Jazirah V and as early as the Early Jazirah IV periods in connection with polities under Hurrian control. The strong occupational and architectural continuity in the central upper city of Tell Mozan supports this assumption.

5 The development of urbanism at Tell Mozan

Based on the results of the excavations in the central upper city and the survey in the lower city, carried out by the Tell Mozan DOG project between 1998 and 2002, a coherent picture of the urban development of Urkes from the 3rd to the 2nd millennium can be gained.¹⁷ The strongest impetus of urbanisation is attested during the Early Jazirah III period (2600 – 2300 BC). While the settlement had been mainly restricted to the upper town during the previous Early Jazirah II period, the city underwent a tremendous extension during the succeeding Early Jazirah III period. The core of the settlement and the major religious monumental architecture were still located in the upper city during the Early Jazirah III period. However, now a huge lower city, comprising an area of 120 hectares and being protected by a fortification wall, was established¹⁸ (Figure 2). According to a hypothetical calculation of the population up to 48.000 people could have inhabited the lower city.¹⁹

The large urban population must have required a well-organised and stable supply of major economic goods and foodstuff. This can only have been secured by a well-structured political system. The spatial organisation of the central upper city during the Early Jazirah III period, consisting of several large monumental buildings and a central plaza, can be regarded as an articulate visual symbol of this political system.²⁰

A decline of population started during the Early Jazirah IV period and continued into the Early Jazirah V period. It seems to have been a slow and gradual decrease in the population of the lower city, where occupation becomes sparse and diffused²¹ (Figure 3). At the same time, in the Early Jazirah IV period, ordinary small houses started to occupy the central upper city (Phases C 11 to C8).²² This can be seen as an indication for a tendency of the inhabitants to move out of the lower city and up into the upper city. Furthermore, the settling of lower classes close to the centre of the city might hint at

17 Pfälzner – Wissing 2004.

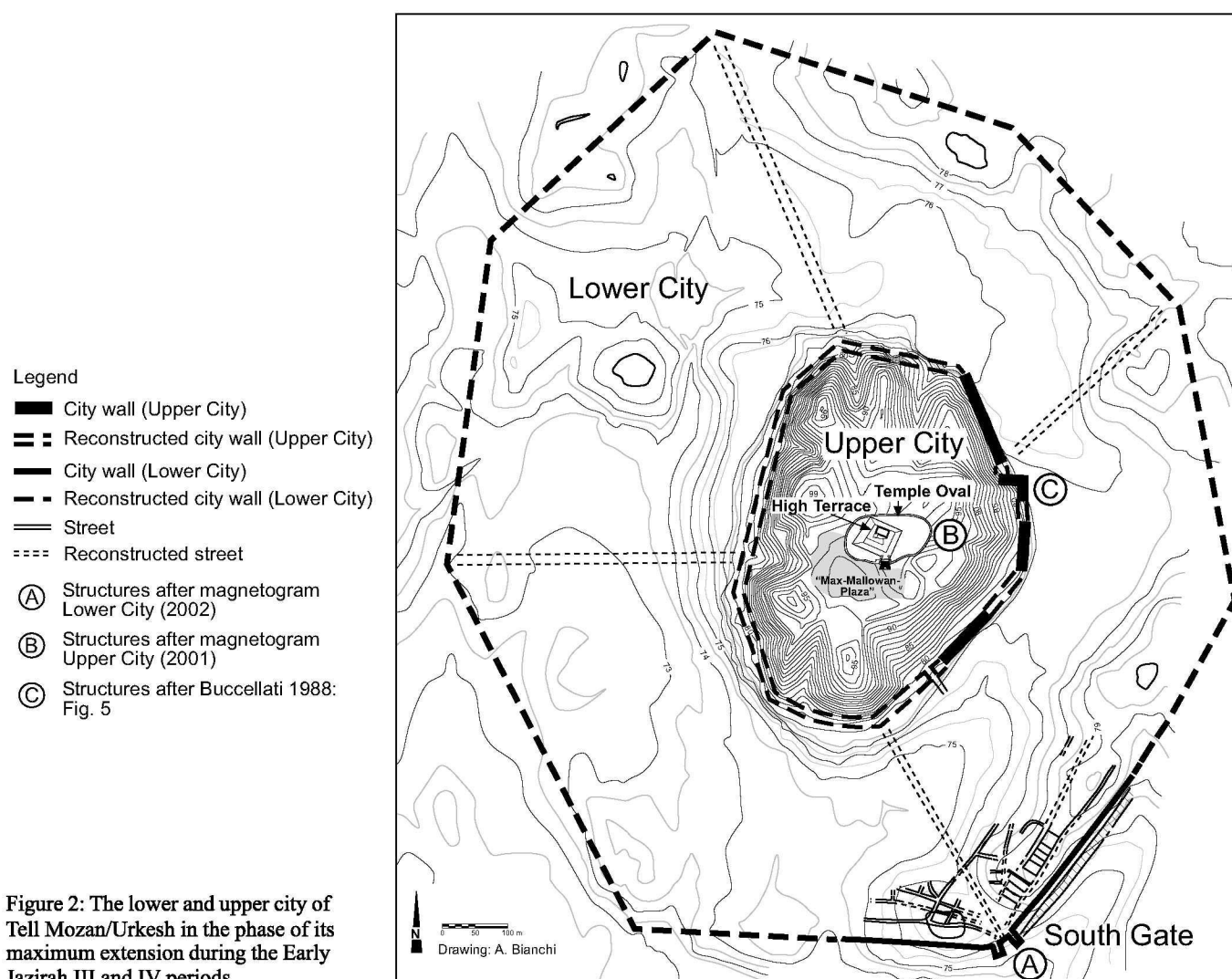
18 Ibid.: 78-81.

19 Ibid.: 81; based on a methodological approach proposed by Pfälzner 2001: 28-34, Fig. 9, 399-400.

20 Dohmann-Pfälzner – Pfälzner 2002 a: 156-159, 170-172, 187-189; Pfälzner 2008: 407-409, 412-413.

21 Pfälzner – Wissing 2004: 81-82, Fig. 25.

22 Dohmann-Pfälzner – Pfälzner 2002 a: 159-162, 187-189.



a decline of central authority within the city. However, the principal existence of the city and its institutions (e.g. the central terrace temple precinct) were not challenged during this phase of decline in the population. Even new economic establishments – such as the merchant house of Pusham – were founded during the Early Jazirah V period.

The lower city was nearly entirely abandoned during the Middle Bronze Age. From the onset of the Old Jazirah I period only very sporadic activities can be identified in the lower city.²³ Thus, the re-urbanisation of the upper city was not accompanied by similar processes in the lower city. This is a clear hint at a lack of population despite public programmes for urban development and planning during the Old Jazirah I period. Interestingly though, the remaining Middle Bronze Age residents of the upper city were characterized by relative

wealth; this conclusion is based on the technical quality and the size of their houses.²⁴

6 The ecological conditions of urban development at Tell Mozan

The results of botanical and zoological analyses of materials from areas C2 and B6 at Tell Mozan and geomorphological investigations in the surroundings, which are presented in this volume by Riehl, Deckers, and Doll, can be correlated with the above presented outline of urban development at Urkesh. This comparison results in an interesting match of data which considerably increases our understanding of urban, socio-political and economic processes during the 3rd and 2nd millennium BC.

The most important result of Riehls research is that she is able to identify a clear change in agricultural activities,

²³ Pfälzner – Wissing 2004: 71-76, 82.

²⁴ Dohmann-Pfälzner – Pfälzner 2000: 195-196, 203-219.

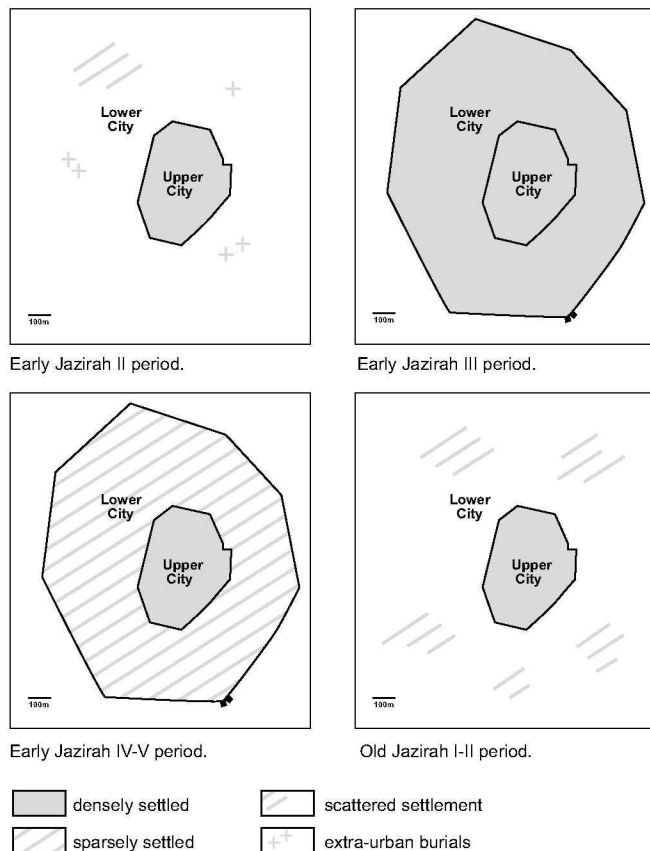


Figure 3: The developmental phases of the city of Tell Mozan/Urkish.

attested in changing proportions of crop types, at two specific points of time: at the turn from the Early Jazirah IV to the Early Jazirah V phase, and at the turn from the Early Jazirah V to the Old Jazirah I period.²⁵ In between the other periods the frequencies of crops remained more or less stable. A similar rhythm of change and continuity is also manifest in the other analysed materials.

6.1 From Early Jazirah III to Early Jazirah IV

Between the Early Jazirah III period, when the extent of urbanisation had reached its apogee, and the following Early Jazirah IV period, when Urkish was politically important under a Hurrian dynasty²⁶ but the number of inhabitants had already started to decrease, no major changes are discernible in the ecological situation. The crop production remains stable with an emphasis on the cultivation of barley; it being a particularly stress-resistant type of crop.²⁷ Deciduous oak woodland existed around Tell Mozan, and presumably in a wider area of the Syrian Jazirah. It was more or less stable

25 Riehl in the present volume.

26 Buccellati 1998; 2005; Buccellati – Kelly-Buccellati 2001; 2005.

27 Riehl in the present volume: 22, 57-59, 65-69.

from the Early Jazirah III to IV period, although it shows slightly less moisture indicators in the later period.²⁸ In the archaeo-zoological record, there is no change from Early Jazirah III to IV with regard to the principal distribution of animal species. This is characterized by a comparatively large amount of pigs as opposed to relatively few cattle besides the dominating sheep/goat economy.²⁹ The constant frequency of pigs unmistakably points to a stable availability of water in the region. The occurrence of the beaver during the Early Jazirah IV period is another indicator for the abundance of surface water, in this case specifically connected with a lush riverine vegetation.³⁰

Taken together, the data set from Tell Mozan indicates more or less constant favourable ecological conditions during the Early Jazirah III and IV periods in the region. There are no indications for major natural change or an ecological catastrophic event. Combined with the observation of a low importance of hunted animals,³¹ and the evidence for cattle and pigs being slaughtered within the settlement³² - requiring urban butcheries - a stable, well-organized and autonomous urban-based agricultural system must have existed at Urkish from the first to the second half of the 3rd millennium BC.

6.2 From Early Jazirah IV to Early Jazirah V

A conspicuous ecological change is manifest between the periods Early Jazirah IV and V. It is indicated by a decrease in barley, which had been the dominant crop in the Early Jazirah IV period and before. At the same time an accentuated increase in free-threshing wheat can be observed, becoming the favoured crop during the Early Jazirah V period.³³ As free-threshing wheat is a more demanding crop and needs more humidity, one can conclude that sufficient soil moisture must have been available during the Early Jazirah V period. This more humid phase is thought to have persisted from ca. 2100 to 1950 BC. A natural availability of sufficient humidity - in contrast to irrigation - for the cultivation of free-threshing wheat is supported by the modelled precipitation values, proposed by Bryson, which show an accentuated peak of rainfall between 2250 and 1950 BC and is also confirmed by the stable carbon isotope record in the cereals from Tell Mozan.³⁴

These combined ecological results clearly contradict earlier assumptions of a pronounced aridity during this time, which is generally related to the “4200 BP event”. Thus, a

28 Deckers in the present volume: 178-179, Table 1.

29 Doll in the present volume: 199, 244-253

30 Ibid.: 200, 276-278.

31 Ibid.: 283.

32 Ibid.: 225-226, 282.

33 Riehl in the present volume: 22, 57-59, 65-69.

34 Bryson 1997, cited from Riehl in the present volume: Table 1; Riehl et al. 2008: 1011-1022.

new picture of the agricultural and occupational history of the Syrian Jazirah at the end of the 3rd millennium BC emerges. It clearly demonstrates that in the area around Tell Mozan there was no climatic-ecological necessity to abandon urban sites in the Jazirah during the Early Jazirah IV and V periods, i.e. towards the end of the 3rd millennium BC. This important result is further supported by the local archaeological evidence at Tell Mozan: during the Early Jazirah V period, so weakly attested at other sites, the settlement continues to exist, there are intensive merchant activities that indicate a certain level of wealth in the city, and the temple precinct is used uninterruptedly, which demonstrates a continuity of (religious) institutions.³⁵ In addition, the supply of food must have been well-controlled and stable in the settlement - as is shown by the deliberate selection of the more demanding free-threshing wheat as favoured crop of cultivation. Furthermore, stable weed proportions from the Early Jazirah IV to the Early Jazirah V period hint at a continuous agricultural system.³⁶ The oak woodland, so characteristic for the environment of the Syrian Jazirah in the earlier periods of the 3rd millennium, continued to exist during the Early Jazirah V period.³⁷

Thus, no major climatic or human impact on the environment of the region is observable. The find of one leopard-bone in Early Jazirah V layers of Tell Mozan furthermore supports the assumption of a continued existence of humid conditions and woodlands in the region.³⁸ Also the frequency of slaughtered animals does not significantly change from the Early Jazirah IV to V period. The only exception being the beginning of an increased popularity of cattle accompanied by only a slight decline in the number of pigs, the latter requiring the continued existence of humid surroundings.³⁹ Taken together, this evidence supports the observation that no major ecological changes occurred in the Syrian Jazirah during these periods.

The decrease of population, which nevertheless existed at Tell Mozan and at most other sites in the Jazirah during the Early Jazirah IV and V periods, therefore, needs another explanation than that of climatic change. Urkesh is a clear example for the fact that population decreased although the climatic and ecological conditions, the supply of food and the economic situation were good. Thus, the demographic changes should rather be explained through socio-political factors (see below).

6.3 From Early Jazirah V to Old Jazirah I / II

The second change of crop proportions occurred at the turn from the Early Jazirah V to the Old Jazirah I period. At this point the strongest indication of change is visible in the whole sequence of Tell Mozan. The free-threshing wheat, favoured so much during the Early Jazirah V period, decreases again considerably in proportions. Instead, there is a return to barley combined with an increased amount of emmer wheat, both of which are less demanding in terms of humidity. This conforms very well to Bryson's modelled precipitation rates, which suggest a gradual decrease of precipitation in the time after ca. 1900 BC.⁴⁰ A decrease in moisture availability is supported by the stable carbon isotope evidence.⁴¹ The increase of crops that demand less water hints at increasing aridity during the Old Jazirah I and II periods.

More changes characterize the turn from Early Jazirah V to Old Jazirah I: lentils decrease in proportion and are progressively replaced by bitter vetch during the Old Jazirah I and II periods. This again mirrors the replacement of a water-sensitive by a higher stress-tolerant plant at the beginning of the Middle Bronze Age.⁴² There is also a clear break in the frequency of weeds between the Early Jazirah V and the Old Jazirah I / II periods, a fact that is interpreted by Riehl as a sign of a reorganisation of agricultural activities.⁴³ Astonishingly enough, this is very much in accordance with archaeological observations at Tell Mozan that lead to the assumption of a differently organized socio-political system and a process of re-urbanization in the Old Jazirah I period (see above).

The deciduous oak woodlands in the Syrian Jazirah suffer a considerable decrease from the Early Jazirah V to the Old Jazirah I / II period.⁴⁴ Deckers argues that this was caused by a combined effect of climatic drying and human impact.⁴⁵ However, despite the decrease of the woodland, the moisture indicators rise at the same time, as can be concluded from the anthracological analyses.⁴⁶ This is astonishing, because it contradicts the carpological and climatic investigations hinting at higher moisture in the Early Jazirah V period followed by slightly drier conditions in the Old Jazirah I / II periods. There are two possible reasons behind this inconsistency: First, wood is less sensitive to short term climatic changes than crops;⁴⁷ second, those pieces of charred wood entering the archaeological record during the Old Jazirah I period could have grown earlier and could even have already been cut in an slightly earlier time, when conditions were

35 See Pfälzner 2008: 413.

36 Riehl in the present volume: 59, 67.

37 Deckers in the present volume: 178-179, Table 1.

38 Doll in the present volume: 200, 275, 281.

39 Ibid.: 199, Tables 8-10, 14-19.

40 Riehl in the present volume: Table 1.

41 Riehl et al. 2008: 1011-1022.

42 Ibid.: 59, 67.

43 Ibid.: 60, 67.

44 Deckers in the present volume: 176.

45 Ibid.: 177.

46 Ibid.: 177, Figure 25, Table 1.

47 Riehl in the present volume: 178-179.

still moister, as assumed for the Early Jazirah V period. Therefore, the wood sample could theoretically be a delayed indicator for moister conditions before the Old Jazirah I period, thus corresponding to the other evidence for higher precipitation rates in the Early Jazirah V period.

The archaeo-zoological data again show a significant long-term change from the Early to the Middle Bronze Age. Cattle were increasing constantly during the first half of the 2nd millennium BC, a development that had already started in the Early Jazirah V period but reached its peak during the Old Jazirah I and II periods.⁴⁸ Cattle principally need less humidity than pigs, so that, at a first view, this could support the idea of increasing aridity in the Syrian Jazirah during the Middle Bronze Age.⁴⁹ On the other hand, the frequency of pigs does not diminish significantly enough during the Old Jazirah I and II periods to support this idea. Therefore, other explanations need to be found. Doll⁵⁰ points out that increased cattle economy helps to feed a growing population, but she points out that the increase of cattle could also be explained by a stronger demand for cattle as working animals, i.e. for ploughing. The latter is a very attractive explanation in view of the noticeable organisational changes in Middle Bronze Age society of the Jazirah. Thus, the increase in cattle can probably be seen in connection with the observed reorganisation of agricultural activities and the restructuring of socio-political systems in the Old Jazirah period (see above).

7 A general model for the development of urbanism in the Early to Middle Bronze Age Jazirah

The results of carpological, anthracological and zoological studies applied to samples from the central upper city of Tell Mozan decisively help to understand the urban development of Urkesh and other cities in the Syrian Jazirah from the Early to the Middle Bronze Age. There is no indication for rapid climatic change during the 3rd millennium BC, nor is there any indication for a deterioration of agricultural conditions at around 2350 or 2200 BC as had been proposed in earlier studies (see above). Instead, there is an astonishing continuity of crop cultivation, plant use and animal husbandry through the Early Jazirah periods until the Early Jazirah V period at the end of the 3rd millennium. This indicates a continuity and stability of the human-ecological system throughout the 3rd millennium BC.

Undoubtedly, drastic irregularities in the development of urban centres, including the abandonment of a large number of sites, took place during the second half of the 3rd mil-

lennium BC, which, however, cannot be directly related to environmental change. In fact, there were shifts both in environmental situations and in settlement structures which resulted in changing patterns of urban development. As has been pointed out by Riehl,⁵¹ economic-cultural factors need to be taken into account in order to explain the changes in agricultural activities, which are visible in the studies of the plant and animal material. Here, a specific model is proposed, which tries to identify “socio-political turns” as a catalyst of urban development in the Early and Middle Bronze Syrian Jazirah being opposed to periods of socio-political continuity.

7.1 Socio-political continuity in the Early Jazirah IV period

The urban system of the Syrian Jazirah was initiated and formed during the Early Jazirah II period and enhanced during the Early Jazirah III period by systematic urban expansion,⁵² by structured city planning and through the construction of allotment houses, e.g. at Tell Chuera or Tell Bderi.⁵³ This system continued to exist in the Early Jazirah IV period. Many of the urban centres and smaller cities were continuously occupied from the Early Jazirah III to IV period. At some places, where Akkadian rule was imposed directly (Tell Brak, possibly Tell Leilan⁵⁴), architectural or other features of the material culture of Southern Mesopotamia were added to the existing structures. As the example of Tell Mozan clearly demonstrates, the basic foundations of the agricultural system remained unchanged between the Early Jazirah III and IV periods. Stable climatic and environmental conditions were the background of this development. At Mozan, one can furthermore observe that the major public buildings, such as the temple oval, remained unmodified.⁵⁵ This hints at a continuity of societal structures.

Change is visible in the beginning of a slight decrease of population affecting the lower city at Tell Mozan, while obviously driving poorer segments of the population up to the upper city. This can be interpreted as a first weakening of the internal order of the local socio-political system despite the general picture of continuity. At Tell Chuera this decrease of internal power structures is demonstrated by the dumping of ashes and other domestic refuse in the middle of the city where once the central plaza had been located.⁵⁶

48 Doll in the present volume: 199, Tables 8-10, 14-19.

49 Ibid.: 281.

50 Ibid.: 281-282.

51 Riehl in the present volume: 66-69.

52 Pfälzner – Wissing 2004: 78-81, Fig. 22-25.

53 Pfälzner 2001: 378 ff; 2002; Dohmann-Pfälzner – Pfälzner 1996; 2002 b, 13.

54 Senior – Weiss 1992; Weiss – Courty 1993.

55 Pfälzner 2008: 412-413.

56 Dohmann-Pfälzner – Pfälzner 1996.

Period	Date (B.C.)	Tell Mozan urban and environmental development					Socio-political turns	
		Mozan Levels (Pfälzner, in press a, b)	Mozan urban development	Cultivation (Riehl, this vol.)	Animal husbandry (Doll, this vol.)	Woodland (Deckers, this vol.)		Modelled precipitation (Riehl, this vol.; after Bryson)
OJ II	1800 – 1650	C 4	Urban continuity - continuity of domestic quarters - temple oval continued in use	Stress-tolerant barley & emmer	Sheep/goat economy; increase of cattle	Decrease of oak park woodland	480 mm	OJ urban system: Continuity phase
OJ I	1950 – 1800	C 6-5	Urban reorganization - lower town depopulation - upper town re-urbanisation - new city planning - temple oval continued in use	Increase in barley, decrease in free-threshing wheat	Sheep/goat economy; slightly reduced pig frequency; start of cattle increase (wild: leopard hints at wood parkland)	Oak park woodland (with less moisture indicators)	512 mm	1 st turn
EJ V	2100 – 1950	C 7	Urban reduction - diminution of lower town population - temple oval continued in use - establishment of trader house	Mainly (highly demanding) free-threshing wheat; weed taxa of fresh-moist habitats	Sheep/goat economy; high pig frequency (wild: beaver hints at moist conditions)	Oak park woodland (with slightly less moisture indicators)	512 mm	EJ urban system: Continuity phase
EJ IIIb	2400 – 2300	C 12	Urban expansion and city planning - foundation of lower city - circumvallation of lower city - temple oval - central plaza with public buildings	Stress-tolerant barley & emmer	Sheep/goat economy; high pig frequency	Oak park woodland (with moisture indicators)	500 mm	EJ urban system: Expansion phase
EJ IIIa	2600 – 2400	C 16–13	Formation of urban structures - foundation of upper city - construction of temple terrace		Sheep/goat economy		480 mm	
EJ II	2800 – 2600	BS 6					470 mm	EJ urban system: Formation phase

Table 2: The correlation of the urban and environmental development of Tell Mozan/Urkesh during the Early and Middle Bronze Age (based on: Riehl in the present volume: Table 1 and 7; Deckers in the present volume: Table 1; Doll in the present volume and Pfälzner in press a, b).

7.2 The “first turn”

From the Early Jazirah IV to the Early Jazirah V period a number of settlements in the Syrian Jazirah were abandoned, while others (Tell Mozan, Tell Chagar Bazar, Tell Brak, Tell Barri, Tell Arbit, Tell Leilan) continued to exist.⁵⁷ This alone is an argument against an universal validity of the “urban collapse theory” caused by a climatic event at around 2200 BC. Furthermore, the evidence of botanical and zoological analysis at Tell Mozan demonstrates that neither climatic change nor environmental deterioration happened at this time. On the contrary, environmental conditions improved. The higher moisture resulted in a preferred selection for free-threshing wheat at Tell Mozan. Here, even new economic institutions (e.g. the “Pusham-House”) were established during the Early Jazirah V period. This establishment, however, seems to have been stimulated from outside, as is indicated by the close connections of the “Pusham-House” to Southern Mesopotamian Ur III economic activities.⁵⁸

But how, in view of the surprising evidence of favourable environmental conditions in the Syrian Jazirah, can the abandonment of a large number of sites and the considerable reduction of Tell Mozan in terms of a decrease of population be explained? I want to bring forward the hypothesis that an erosion of the local socio-political system must have taken place. The urban elites probably were no longer able to maintain the social order in urban centres, which had formerly been based on a well-organized integration of the local urban population into a central administrative system. The former high level of organisation of this urban system is demonstrated by the rigid principles of city planning and the spatial urban structuring through “allotment houses”⁵⁹. The decline of these and probably other aspects of social order resulted in an erosion of the urban landscape. Urban residents left the cities due to a lack of social protection and economical organization offered by the local polities.

7.3 The “second turn”

A second socio-political turn is attested between the Early Jazirah V and the Old Jazirah I period. Starting with the Old Jazirah I period a reorganisation of the society takes place. It comprises the reorganisation of agricultural activities, the

reorganisation of settlements as expressed by a controlled process of re-urbanisation, and a reorganisation of the socio-political system.

The urban reorganisation process at Tell Mozan (Phase C 6) is best visible in the layout of new and regular building plots for houses, in a new system of streets, and in the contemporary construction of several rectangular foundation platforms for houses at the beginning of the Old Jazirah I period, with a partial reuse of older structures of the Early Jazirah V period (“Pusham-House”). With regard to the natural environment the intensive deforestation activities, attested by the radical decrease of oak woodland in the Jazirah, can be explained as a consequence of intensified and extended agriculture. Fields for cultivation were systematically enlarged in order to produce a surplus of agricultural goods, a tendency that was all the more necessary in view of the increasing aridity of the region. Intensification can also be deduced from the growing amount of cattle in urban settlements, as is attested at Tell Mozan. Cattle played an important role not only as supplier of meat, but also as labour force for ploughing. Thus, the increase in cattle was probably directly related to an expansion of agricultural areas. These examples show that new principles of social organisation were introduced by the new, local, urban-based political systems.

It is important to note that this societal reorganisation took place before the establishment of the Old-Assyrian Empire of Upper Mesopotamia in the Syrian Jazirah, thus was not connected to these later events. Instead, it happened parallel to the Isin-Larsa Period in Middle and Southern Mesopotamia and might show some similar traits, especially in view of the archaeological evidence of an Ur III to Isin-Larsa continuity at Tell Asmar/ Eshnunna.⁶⁰ The societal reorganisation in the Syrian Jazirah is furthermore contemporary – and probably related to – the formation process of political systems and urban centres of the Amorrites.

More research is needed to understand the reorganisation of Northern Mesopotamian and Western Syrian society on a larger regional scale at the beginning of the 2nd millennium BC. This research must fully embrace environmental evidence, but should not be guided by a paradigm of ecological determinism that seeks to relate cultural change directly to climatic change.

⁵⁷ Koliński 2007: 351 f.

⁵⁸ Dohmann-Pfälzner – Pfälzner 2001: 121-127, 135-137; 2002 a: 163-168; Schmidt 2005: 106-122.

⁵⁹ As defined by Pfälzner 2002.

⁶⁰ Frankfurt – Lloyd – Jacobsen 1940: 1-6.

8 References

- Akkermans, P. M. M. G. – Schwartz, G. M. 2003
The archaeology of Syria. From complex hunter-gatherers to early urban societies (ca. 16000 - 300 BC), Cambridge World Archaeology, Cambridge.
- Bianchi, A. – Dohmann-Pfälzner, H. – Geith, E. – Pfälzner, P. – Wissing, A. in press
Ausgrabungen 1998-2001 in der Zentralen Oberstadt von Tall Mozan / Urkeš: Architektur und Stratigraphie, SUN, Serie A, Band 1, Wiesbaden.
- Bryson, R. A. 1997
Proxy indications of Holocene winter rains in southwest Asia compared with simulated rainfall, in: H. N. Dalfes – G. Kukla – H. Weiss (eds.), Third millennium BC climate change and Old World collapse, NATO ASI Series. vol. I 49, 465-474.
- Buccellati, G. 1998
Urkeš as Tell Mozan: Profiles of the Ancient City, in: G. Buccellati – M. Kelly-Buccellati, Urkeš/Mozan Studies 3. Urkeš and the Hurrians. Studies in Honor of Lloyd Cotsen, BM 26, 11–34.
- Buccellati, G. 2005
The Monumental Urban Complex at Urkeš. Report on the 16th Season of Excavations, July-September 2003, Studies in the Civilization and Culture of Nuzi and the Hurrians 15, 3-28.
- Buccellati, G. – Kelly-Buccellati, M. 2001
Überlegungen zur funktionalen und historischen Bestimmung des Königspalastes von Urkeš. Bericht über die 13. Kampagne in Tall Mozan/Urkeš: Ausgrabungen im Gebiet AA, Juni-August 2000, MDOG 133, 59-96.
- Buccellati, G. – Kelly-Buccellati, M. 2005
Urkeš as a Hurrian Religious Center, SMEA 47, 27-59.
- Courty, M.-A. 2001
Evidence at Tell Brak for the Late ED III/Early Akkadian Air Blast Event (4 kyr BP), in: D. Oates – J. Oates – H. McDonald, Excavations at Tell Brak: Nagar in the Third Millennium, vol. 2, 367-372.
- Dohmann-Pfälzner, H. – Pfälzner, P. 1996
Untersuchungen zur Urbanisierung Nordmesopotamiens im 3. Jt. v. Chr.: Wohnquartierplanung und städtische Zentrumsgestaltung in Tall Chuēra, DaM 9, 1-13.
- Dohmann-Pfälzner, H. – Pfälzner, P. 2000
Ausgrabungen der Deutschen Orient-Gesellschaft in der zentralen Oberstadt von Tall Mozan/Urkeš. Bericht über die in Kooperation mit dem IIMAS durchgeführte Kampagne 1999, MDOG 132, 185-228.
- Dohmann-Pfälzner, H. – Pfälzner, P. 2001
Ausgrabungen der Deutschen Orient-Gesellschaft in der zentralen Oberstadt von Tall Mozan/Urkeš. Bericht über die in Kooperation mit dem IIMAS durchgeführte Kampagne 2000, MDOG 133, 97-140.
- Dohmann-Pfälzner, H. – Pfälzner, P. 2002 a
Ausgrabungen der Deutschen Orient-Gesellschaft in der zentralen Oberstadt von Tall Mozan/Urkeš. Bericht über die in Kooperation mit dem IIMAS durchgeführte Kampagne 2001, MDOG 134, 149-192.
- Dohmann-Pfälzner, H. – Pfälzner, P. 2002 b
Untersuchungen zur Urbanisierung Nordmesopotamiens im 3. Jt. v. Chr. am Beispiel des Tall Chuēra, Teil II: Die Entstehung der Parzellenhäuser und die Entwicklung des Stadtzentrums, in: R. Eichmann (ed.), Ausgrabungen und Surveys im Vorderen Orient I, Orient-Archäologie, 1-22.
- Frankfort, H. – Lloyd, S. – Jacobsen, T. 1940
The Gimilsin Temple and the Palace of the Rulers at Tell Asmar, OIP 43, Chicago.
- Kolihksi, R. 2007
The Upper Khabur Region in the Second Part of the Third Millennium BC, AoF 34/ 2, 342-369.
- Peltenburg, E. 2000
From Nucleation to Dispersal. Late Third Millennium BC Settlement Pattern Transformations in the Near East and Aegean, in: O. Rouault – M. Wäfler (eds.), La Djéziré de l'Euphrate syrien: de la protohistoire à la fin du IIe millénaire av. J.-C., Subartu 7, 183-206.
- Pfälzner, P. 2001
Haus und Haushalt. Wohnformen des 3. Jtsds. v. Chr. in Nordmesopotamien, DaF 9, Mainz.
- Pfälzner, P. 2002
Early Bronze Age Houses in the Syrian Djezireh, in: M. a-Maqdissi – M. Abdul Karim – A. al-Azm – M.D. al-Khoury (eds.), The Syrian Djezireh. Cultural Heritage and Interrelations, Proceedings of the International Conference held in Deir ez-Zor April 22nd-25th, 1996, Documents d'Archéologie Syrienne I, Damascus, 231-238.
- Pfälzner, P. 2008
Das Tempeloval von Urkeš. Betrachtungen zur Typologie und Entwicklungsgeschichte der mesopotamischen Ziqqurat im 3. Jt. v. Chr., Zeitschrift für Orient-Archäologie 1, 2008, 396-433.
- Pfälzner, in press a
Die räumliche Struktur der zentralen Oberstadt von Tall Mozan, in: Bianchi, A. – Dohmann-Pfälzner, H. – Geith, E. – Pfälzner, P. – Wissing, A., Ausgrabungen 1998-2001 in der Zentralen Oberstadt von Tall Mozan/Urkeš: Architektur und Stratigraphie, SUN, Serie A, Band 1, Wiesbaden.
- Pfälzner, in press b
The Chronology of Third to Second Millennium BC Urbanism in the Syrian Jazirah, in: N. Laneri – P. Pfälzner – S. Valentini (eds.), Looking North. The socio-economic dynamics of the northern Mesopotamian and Anatolian regions during the late third and early second millennium B.C., SUN, Serie D.
- Pfälzner, P. – Wissing, A. 2004
Urbanismus in der Unterstadt von Urkeš. Ergebnisse einer geomagnetischen Prospektion und eines archäologischen Surveys in der südöstlichen Unterstadt von Tall Mozan im Sommer 2002, MDOG 136, 41-86.
- Riehl, S. – Bryson, R. A. – Pustovoytov, K. 2008
Changing growing conditions for crops during the Near

- Eastern Bronze Age (3000-1200 BC): The stable carbon isotope evidence, *JASc* 35, 1011-1022.
- Ristvet, L. – Weiss, H. 2000
Imperial Responses to environmental Dynamics at Late Third Millennium Tell Leilan, *Orient-Express* 2000.4, 94-99.
- Ristvet, L. – Weiss, H. 2005
The Habur Region in the Late Third and Early Second Millennium B.C., in: W. Orthmann (ed.), *The History and Archaeology of Syria*, Vol. 1 (in press) (published electronically, see: <http://leilan.yale.edu/pubs/files/RistvetWeiss2005HAS1>).
- Senior, L - Weiss, H. 1992
Tell Leilan <silabowls> and the Akkadian Reorganisation of Subarian Agricultural Production, *Orient-Express* 1992.2, 16-20.
- Schmidt, C. 2005
Überregionale Austauschsysteme und Fernhandelswaren in der Ur III-Zeit, *BaM* 36, 7–151.
- Schmidt, C., in press
The Late Third and Early Second Millennium B.C. Pottery Tradition in the Syrian Jazira and Beyond, in: N. Laneri – P. Pfälzner – S. Valentini (eds.), *Looking North. The socio-economic dynamics of the northern Mesopotamian and Anatolian regions during the late third and early second millennium B.C.*, SUN, Serie D, Wiesbaden.
- Schmidt, C., forthcoming
Ausgrabungen 1998-2001 in der Zentralen Oberstadt von Tall Mozan / Urkeš: Die Keramik der Früh-Ĝazīra V† bis Alt-Ĝazīra II-Zeit vom Tall Mozan, SUN, Serie A, Band 4, Wiesbaden.
- Volk, K. 2004
Beschriftete Objekte aus Tall Mozan/Urkeš, *MDOG* 136, 87-101.
- Weiss, H. 1997
Leilan, Tell, in: E. M. Meyers (Hrsg.), *The Oxford Encyclopedia of Archaeology in the Near East*, Vol. 3, New York – Oxford, 341-347.
- Weiss, H. 2000
Causality and Chance. Late Third Millennium Collapse in Southwest Asia, in: O. Rouault – M. Wälder (eds.), *La Djéziré de l'Euphrate syrien: de la protohistoire à la fin du IIe millénaire av. J.-C.*, *Subartu* 7, 207-217.
- Weiss, H. et al. 1993
H. Weiss – M.-A. Courty – W. Wetterstrom – F. Guichard – L. Senior – R. Meadow – A. Curnow, *The Genesis and Collapse of Third Millennium North Mesopotamian Civilization*, *Science* 261, 995-1004.
- Weiss, H. – Bradley, R. S. 2001
What drives Societal Collapse?, *Science* 291, 609-610.
- Weiss, H. – Courty, M.-A. 1993
The Genesis and Collapse of the Akkadian Empire: The accidental Refraction of historical Law, in: M. Liverani (ed.), *Akkad. The First World Empire*, Padova, 131-155.
- Wilkinson, T. J. 1994
The Structure and Dynamics of dry-farming States in Upper Mesopotamia, *Current Anthropology* 35.5, 483-505.