

A COMPUTER RECONSTRUCTION OF THE CITY OF NUZI.

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The city of Nuzi (near Kirkuk in Iraq) lies east of the Euphrates in the mountains. The period which concerns us here is that known as Nuzi Stratum II which is dated to the first half of the fifteenth century B.C. The work which we describe here is a result of a Ph.D. dissertation entitled "Economic Geography and Administration at Nuzi" which should shortly be available through University Microfilms, Ann Arbor and London.

The research for the dissertation formed an ongoing computer research project which is called " The Nuzi Times -- All the Nuzi that's fit to print" (With apologies to the New York Times.) The data base at the present time contains 1.7 megabytes of raw data. This data base was used to produce twenty five indices which presented the information in the data base in a number of ways to highlight different aspects of the problems being investigated in the dissertation. These indices were then discussed together with the archaeological reports to produce a descriptive reconstruction of the economy and administration of Nuzi.

The texts in the Nuzi corpus come from two sources, official excavations and illegal digging. The official excavations took place from 1925 till 1932 during which time the whole existing remains of Nuzi Stratum II were excavated. Yet, as early as 1896, T.g. Pinches published the first Nuzi text to come to light. Since then over 300 texts have been published from the collections of museums which acquired texts on the antiquities market. These texts have been used together with the texts published from the official excavations as well as any information concerning texts which have as yet not been published, but which have been referred to in a number of unpublished dissertations which used the Nuzi texts as their basis. The database contains information on almost 3600 texts from Nuzi Stratum II. Thus, according to our estimate, there is accumulated information from some 85% of the total number of texts available.

The community described in these texts was ethnically and linguistically Hurrian and the language of the Nuzi corpus was a peculiar dialect of Akkadian. The tablets cover a wide variety of genres and include administrative documents such as lists of rations, inventories of various types of equipment, records of expenditures of various commodities, letters and proclamations, lists of people for differing reasons, private family records dealing with adoption, family legal matters, court cases, etc. Thus Nuzi has a corpus of texts which are predominantly legal documents, economic records and bureaucratic business records. The texts paint a picture of a fundamentally agricultural society.

Nuzi presents the Assyriologist with a unique opportunity to investigate the functioning of a small town as the texts were excavated from virtually every part of the complete site, not just from the palace or the temple. When the texts were excavated their provenience was noted and this information was included in the official publications of the Nuzi texts. The publication of the "room numbers" of the texts allows all those texts where this room number is available to be "put back" into their original archives with great accuracy. Because of this process it has been possible to work on the archives of individuals or institutions within Nuzi and a great deal of work was done in this way so that the prominent members of the Nuzi society have been well investigated. The project under discussion here is the first attempt to deal with all the available Nuzi material, and the first attempt to treat the whole site as a corporate entity. This global approach has allowed the possibility of investigating problems which can otherwise not be dealt with.

In order to deal with the vast amount of material a computer assisted research project was instituted. All the known Nuzi texts were read and whatever information available was accumulated. The categories were identified, abstracted and were then fed into the computer. Initially the data base was confined to the museum number, the publication reference and the provenience (room number). The rest of the information was then added in several stages by expanding the data base laterally, i.e. by increasing the length of each record. The categories which were identified and abstracted are as follows:

MUSEUM NUMBER: Generally the museum numbers are restricted to the texts which were officially excavated, i.e. JENU and SMN. The texts produced by the antiquities market are generally given without their museum numbers, since this information is available in all cases from the original publications of the texts.

PUBLICATION NUMBER: The publication information for each text is given under this heading. Where a text has not been published the source of the information about the text is given under this heading. In some cases we have been able to give some information as to the future publications of certain of the officially excavated texts, e.g. EN 9, JEN 7, JEN 8.

TEXT TYPE: This heading refers to the genre of the text, e.g. letter, court case, receipt, ration, etc.

TEXT CONTENT: This heading refers to the content of the text, whether it is dealing with commodities such as grain, cattle, sheep or wood, or indicates that it deals with a certain legal action, e.g. aššuti, maruti, sale, loan, etc.

TEXT FINE is identical to **TEXT CONTENT** but is used to further refine/define the text genre.

AREA CODE: The site of Nuzi is divided into ten geographic regions according to the divisions used by Lacheman (HSS 16 pp. v f.) Our numbers 0 - 9 correspond to Lacheman's numbers 1 - 10 for each of the areas.

ROOM NUMBER: These are the numbers given to the rooms of the site by the excavators. They are given so that each text can be placed back in its archaeological setting. We have changed the numbering system so that all the numbers presented in the data base agree with the numbering system used by Starr to draw the maps numbered 13, 30 and 34 in Nuzi Vol. II.

SCRIBES: We list all those scribes who signed their names to the texts which they wrote.

ADMINISTRATIVE PNS ACTIVE: This is a listing of those persons who were active in the administration of the city of Nuzi. These persons were the ones who initiated or carried out the actions referred to in the text.

ADMINISTRATIVE PNS PASSIVE: This is a listing of the persons who were the recipients of the actions described in the texts.

GEOGRAPHIC LOCATION: This is a listing of expressions which indicate the direction to which or from which personnel or commodities are going or coming, or where they are if they are static. This helps to identify the movement of persons or commodities through the redistributive economy.

REASON: This is a listing of the cause or the purpose of an administrative action.

ACTION: This is a listing of the administrative action which was performed, e.g. sold, disbursed, loaned, etc.

CHRONOLOGY PN: This is a listing of the attestations of the members of four of the important families at Nuzi. The genealogies of these four families are well established.

With the data base complete programs were written to present the information contained in the data base in a variety of ways, each of which highlighted some area of interest. Thus by ordering the data according to the Administrative personnel it was possible to identify who the active personnel were and the area/room in which this activity took place. The same could be done for commodities or text genres or scribes or geographic locations or administrative actions. In all twenty five indices were drawn up along these lines covering 2032 printout pages. Each of the indices covers a double computer printout page, i.e. 30 linear inches.

At the present time these indices are in the process of being microfiched and will then be available to any interested parties who should contact the author for more information.

To date only one elementary "statistical" program has been interesting and this is merely the adding together and percentizing of the number of texts in each area which are of the same genre and deal with the same commodity or legal action.

The analysis of this basic statistical program revealed an interesting pattern. Some of the listings in the results showed that certain types of texts or commodities were spread over a number of areas of the mound while other text types or commodities were concentrated in one or sometimes two areas of the site. This concentration in certain areas of the site revealed very clearly where certain types of action or commodities played a role in the life of the city. Thus foci of administrative activity or of business were easily identifiable. We are able to indicate where in the site grain was stored, the army was administered, the pastoral industry was run, the merchant quarter, the specific uses to which individual rooms were put, e.g. the various storerooms in the palace, and where certain legal activities were important.

As was expected it was found that the vast majority of legal texts had a fairly even spread throughout the site. The only real exception to this was in the case of marutu documents which were concentrated almost exclusively in one area. This is explained by this genre being concerned with land distribution or sale and there may well have been an office which dealt with this matter as a part of the official administration. However, there is still a spread of these documents throughout the site and it is possible that a normal form of legal document was used for administrative purposes.

This phenomenon also has highlighted an interesting peculiarity of another type of text dealing with land, the titennutu or antichretic loan. It was found that the proportions in which this were found were the inverse of the general trend of all the other text types dealing with real estate. Here we see that those who could afford to acquire land permanently were in different areas to those who were only able to get the land "leasehold" and then had to return the land when the lease was up. This could also be seen as a way for an impoverished landowner to remain on his land as a "tenant farmer".

The presence of a number of texts of a particular type in an area has allowed the textual evidence to clarify the use to which certain areas of the site were put. The outstanding example of this is in the case of some rooms in what the texts show to be an area which contained a large proportion of the grain distribution texts. Starr (Nuzi Vol I, p.242f.) describes the unusual construction of the floor in five of the rooms which make up this large complex of seventeen rooms in squares D and I of the excavation. These five rooms all have a floor which is so constructed as to be "as damp-proof as possible with mud-brick". Starr notes evidence of a fire and poses the possibility that the damp-proofing was done in order to carry out liquid, and he leaves the purpose of these uniformly constructed rooms as a matter of doubt, though he does make the point that this type of floor would ensure that no moisture from the surrounding earth would affect the contents of the rooms.

The text corpus from this complex has about 80% of all the Nuzi texts dealing with grain, in one form or another. It is clear that this protected zone was primarily a (grain) storage area. Many of the texts make reference to the Akkadian phrases "ina - , ištu - , ša maqratti ", meaning into, out of, belonging to the grain storehouse. Since many of these texts also refer to the grain administered here as "ša ekalli ", that is belonging to the palace it seems clear that we can identify this area as the "maqrattu ša ekalli " - the storehouse of the palace.

Similar evidence has led to the identification of the bīt nakamti, the storehouse within the palace, together with its administrative office, as well as the office of the šakin biti, the palace governor.

This aspect of the complete project demonstrates the advantages which can be derived when the work of the archaeologist and the work of the linguist are combined in such a way as to complement each others findings. The possibilities of accurate interpretation are increased when the information presented by the archaeologist are complete and accurate. Unfortunately in the case of the Nuzi excavations there is a problem in that many of the room numbers have been permanently lost with the consequence that it is difficult, if not impossible, to place many of the texts in their archaeological provenience. Many of the texts which do not any longer have their provenience available have fallen naturally into one of the ten areas into which the site is divided because the computer listings have shown them to be compatible with the personal names of other personnel in the area as well as the same text types dealing with the same commodities. While this method of assigning a provenience by means of internal evidence is certainly not foolproof, it still enables the researcher to have some additional control over the proportion of textual evidence with which he is working. Some two hundred and sixty eight texts in the data base have been dealt with in this manner, representing well under 10% of the total number of texts. Approximately five hundred texts remain in the corpus with no provenience attached to them at all, and with no possible way of assigning a provenience except by further detailed study of the internal evidence of the whole Nuzi corpus.

The physical structures of a temple and a chapel in the palace were identified by the excavators on the basis of a small number of objects found in the respective areas of the dig. A number of texts were found in both the temple and the chapel. None of the texts published refers to any of the normal type of activity which we find in other similar structures in the Ancient Near East. The texts are either personal legal documents or have to do with the administration of the standing army and its rations. The textual evidence

casts doubt upon the use to which these two structures were put during the period of Nuzi Stratum II. We cannot rule out the possibility that they were in fact used for worship, but we can doubt that we had a fully functioning A.N.E. temple in operation at this period.

In just the same way as text types and commodities had spreads and concentrations though the Nuzi site, so too do the personal names have spreads and concentrations which can be just as revealing. Thus if we find a personal name repeated many times over in one area, with that personal name dealing with the same administrative function and the same commodity, then we can reasonably assume that we are dealing with one person. Further, if this same personal name then reappears in an altogether different provenience dealing with the same kind of administrative function in connection with the same commodities then it is also reasonable to draw the conclusion that we are still dealing with that same, one individual.

The computer has allowed us to gather just such data as that described above, and with the data thus derived it was possible to find interconnections between areas of the Nuzi site. These interconnections could not stand in their own right but with the accumulated weight of the internal evidence they can be given some credence. Using this type of evidence it is now possible to trace the route which some commodities took through the redistributive economy of the city of Nuzi. For example, grain was stored in the grain storehouse outside the palace. From this storehouse it was distributed to various part of the palace and to the king's personal escort as provisions when the king went from city to city in his realm. The grain was also distributed to the various forms of livestock which needed fodder. Strangers to the city were also allocated their food ration in this one area. Rations for the army were distributed in two other areas of the mound, but there is a very tentative possibility of showing that the grain still came from the grain storage area.

The computer also allowed the possibility of comparing a large number of attestations of personal names with great accuracy and it is in this area that some very interesting conclusions came to the fore.

The length of time which is normally assigned to the period of Nuzi Stratum II is worked out by multiplying the number of generations in a well established genealogy by an arbitrary number of years per generation. Thus where we have five generations in one scribal family we find the sum 5 times 20 or 30. This computation gives us a period of between 100 and 150 years for the Nuzi Stratum II period. This is the kind of generalization that we all make and when it comes to exactly this kind of generalization we could all go very wrong.

None of the Nuzi texts bears any means of dating the time when it was written. This is a phenomenon which is rare in the A.N.E. where the scribes and administrators were careful of all the proper bureaucratic niceties. In attempting to set up a relative chronology for the texts in the Nuzi corpus some very interesting facts came to light. Two scribes were shown to be active in four or five generations of some of the chronology PN genealogies and two of the chronology PNs were attested in the texts written by four of the generations of the scribal family. In addition there is evidence that one of the princes of Nuzi was served by four generations of shepherds. Even more powerful is the argument presented by one of the Administrative personnel who appears to be active throughout the whole time of the Nuzi Stratum II period. The evidence of these attestations of five individuals during their active working life must give rise to some doubt that they lived active lives of between one hundred and one hundred and fifty years. The obvious conclusion is that we need to rethink the way in which we estimate time periods from the evidence presented by genealogies.

In any case it is clear that the previous estimates of the length of time to be attributed to Nuzi Stratum II has to be compressed by possibly as much as 50%. Thus we would suggest a period of time of between 50 and 75 years for this phase of Nuzi.

Using the computer to show who was attested in a text with whom, since this is an indication that both were alive at the same time, we found that it was possible to set up a relative chronology of some of the more active individuals in the Nuzi corpus. First of all we needed a genealogical timeflow on which to base the whole chronology. Since no absolute dating method was available this by necessity had to be an artificial construct based on some solid evidence in the textual material.

One of the genealogies proved to have just such a construct when we only took those attestations when there were other generations present. This construct gave seven "Bands of Contemporaneity" which then formed the skeleton base of the relative chronology.

G	I							
E	II	X	X	X	X			
N								
E	III			X	X	X	X	
R								
A	IV				X	X	X	X
T								
I	V						X	X
D								
N								
		1	2	3	4	5	6	7
		BANDS OF CONTEMPORANEITY						

The chart shows clearly that we have a timeflow in our genealogical construct, since the further along the Bands of Contemporaneity we go the further we progress through the generations.

The person is present (and alive) in Bands 1 - 4 but absent (and probably dead) in Bands 5 - 7. His sons are attested in Bands 3 - 6, his grandsons in Bands 4 - 7 and his great-grandson in Bands 6 - 7.

The relative chronology is then constructed around the co-attestations of these two genealogies. Wherever person A is attested with person B that person A is put into all the Bands of Contemporaneity where B is shown. Thus we find that the same name usually occurs in more than one Band but it is possible to locate an individual on the relative chronology reasonably accurately. This process is continuing and it is hoped to eventually have fed all the personal names in Nuzi into the computer so that the relative chronology can become as complete and accurate as possible.

In closing I would ask anyone who is interested in the technical methodology or the data base of the Nuzi texts not to hesitate to contact me for more information or for output on microfiche. I would also be prepared to share the data base as it exists on tape should there be sufficient reason to do so. And like all amateur computer users I would like to thank again all those who have helped and are helping on the computer side to make this project possible.

A PROPOSED RELATIVE CHRONOLOGY

0	PUMI, SEMI	APIL, SIN							
1	TEHIP, YILLA S. PUMI, SEMI	ARTA, SEMI S. APIL, SIN S. APIL, SIN S. APIL, SIN S. APIL, SIN S. APIL, SIN S. APIL, SIN TAYA	KIP, TEJUP MIRI, TEJUP TEBUYA TRUPI, YILLA PAT, TEJUP WIRAHME	AKUYA S. KATIRI	AKUYA S. KATIRI S. AKUYA S. AKUYA S. ZINE AKAP, SEMI S. ZINE	AKUYA S. KATIRI S. AKUYA S. AKUYA S. ZINE AKAP, SEMI S. ZINE	TAKUA, I S. UMITEYA		
2	TEHIP, YILLA S. PUMI, SEMI	BALU, KARID TAYA PUSTEYA UTA, PA, AN, SE AR, TEJUP WADAR, BELI D. AK, DINGIR, RA THE, MILK, ABI BUNGAL, IBBI KIMUYA KIMUYA ART, ILU ITH, ADIHE	S. APIL, SIN S. APIL, SIN S. SIM, IBBI S. IM, ADOD S. TAYA S. TAYA S. TAYA S. KIANHIDU S. SIN, MADIR S. TAYA S. TAYA S. D. AK, DINGIR, RA S. TAYA	ITHI, TEJUP MIRI, TEJUP TEBUYA, KALI PARTASUA SILWA, TEJUP MUTIP, BARRI APMINAYA WIRAHME	AKUYA ZINE BALU MUTIP AKAP, SEMI S. ZINE	AKUYA ZINE BALU MUTIP AKAP, SEMI S. ZINE	AKUYA ZINE BALU MUTIP AKAP, SEMI S. ZINE	S. TAKUA, I S. TAKUA, I	
3	TEHIP, YILLA ENNA, PATI AKIP, TABENMI S. TEHIP, YILLA	TAYA D. AK, DINGIR, RA KIMUYA ITH, ADIHE ENNA, PATI NANNA, PA, AN, SE SIN, MADIR, BUMI UTA, ANOUL SIN, UBALLIT ART, ILU MUTIYA ZUMU, NIBU ZUMU, NIBU DERTYA	S. APIL, SIN S. TAYA S. TAYA S. TAYA S. TAYA S. TAYA S. TAYA S. D. AK, DINGIR, RA S. UTA, PA, AN, SE S. SIN, MADIR S. KIANHIDU S. BALU, KARID S. KULIYA	PARTASUA SILWA, TEJUP MUTIP, BARRI APMINAYA TEJUP, BARRI WIRAHME	AKUYA ZINE BALU MUTIP AKAP, SEMI S. ZINE	AKUYA ZINE BALU MUTIP AKAP, SEMI S. ZINE	AKUYA ZINE BALU MUTIP AKAP, SEMI S. ZINE	S. TAKUA, I S. TAKUA, I	
4	TEHIP, YILLA ENNA, PATI AKIP, TABENMI SUKI, YILLA TAKU	UTA, ANOUL SIN, UBALLIT ITH, ADIHE ILA, NIBU BUNUYA ZINI BUMU, I, IBBI ENNA, PATI UM, I, TEJUP AKAP, SEMI AKI, TEJUP ZUMU, ADAN	S. APIL, SIN S. TAYA S. TAYA S. SIN, MADIR S. SIN, MADIR S. KIANHIDU S. BALU, KARID S. UTA, NIBU S. TUMARI S. BUNUYA S. WAGAM, BELI S. INTIYA	PARTASUA SILWA, TEJUP MUTIP, BARRI APMINAYA TEJUP, BARRI WIRAHME	AKUYA ZINE BALU MUTIP AKAP, SEMI S. ZINE	AKUYA ZINE BALU MUTIP AKAP, SEMI S. ZINE	AKUYA ZINE BALU MUTIP AKAP, SEMI S. ZINE	S. TAKUA, I S. ILAWU	

I III IV V

GENEALOGIES

