The Significance of Middle Nubian C-Group Mortuary Variability, *ca.* 2200 B.C. to *ca.* 1500 B.C.

Volume I

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Abstract

Several twentieth century archaeological expeditions to Lower Nubia recovered the skeletal and cultural remains of C-Group populations mainly from cemetery sites between Shellal and the Second Cataract. Along with the remains of the more or less contemporary Pangrave and Kerma peoples, the C-Group archaeological sequence was assigned to the Middle Nubian Period which lasted from the Sixth to the Eighteenth Egyptian Dynasties and is dated from *ca.* 2200 B.C. to *ca.* 1500 B.C. Conflicting interpretations of C-Group socioeconomic conditions are inevitable since no systematic analysis of the data resulting from the excavations of Middle Nubian cemeteries has ever been undertaken. In an attempt to assess the extent of C-Group economic contact with the Egyptians and to resolve the issue of possible growing social differentiation within the C-Group community, a quantitative analysis of the mortuary remains from fifteen C-Group cemeteries was undertaken. The results indicate that the flow of a small number of Egyptian artefacts into Lower Nubia was relatively constant and that contact between Lower Nubians and Egyptians was probably quite limited. Egyptian portrayals of constant fluctuation in Egyptian-Nubian political relations do not correspond with the evidence from the Nubian archaeological record. The analysis also indicated that economic inequality amongst the Middle Nubian population was present in each date category and tended to increase over time. Socioeconomic differences were greatest during the middle of the Second Intermediate Period. These findings indicate that the Middle Nubian socioeconomic system tolerated increasingly conspicuous differences amongst its members. They are not consistent with the hypothesis that no increase in differential access to burial resources occurred between *ca.* 2100 and *ca.* 1550 B.C. and that C-Group social and economic conditions remained virtually unchanged throughout their 800-year history.

Résumé

Plusieurs expéditions archéologiques du 20e siècle en Basse-Nubie ont relevé les vestiges squelletiques et culturels des populations du Groupe C, venant principalement des cimetières entre Shellal et la deuxième cataracte. Avec les vestiges des peuples Kerma et Pangrave, qui vivaient approximativement à la même époque, la série archéologique du Groupe C a été áttribuée à la periode intermédiaire nubienne qui durait de la sixième jusqu'a la dix-huitième dynastie égyptienne et qui est datée environ de 2200 av. J.-C. à 1500 av. J.-C.

Des interpretations contradictoires des conditions sociales et économiques du Groupe C sont inéluctables car aucune analyse systématique des données résultant des excavations des cimetières en Nubie-moyenne n'a jamais été entreprise. En essayant d'évaluer l'étendue du contact économique entre le Groupe C et les égyptiens et de résoudre la question de l'augmentation des distinctions sociales dans la communauté du Groupe C, une analyse quantitative des restes mortuaires de quinze cimetières du Groupe C a été entreprise.

Les résultats indiquent que le flux d'un nombre insignifiant d'artefacts égyptiens en Basse-Nubie a été relativement constant et que le contact entre la Basse-Nubie et l'Egypte était assez limité. Les descriptions égyptiennes des relations politiques fluctuantes entre l'Egypte et la Nubie ne correspondent pas avec l'évidence de l'histoire archéologique nubienne. L'analyse indique aussi que l'inégalité économique dans la population était présente dans toute catégorie chronologique et avait le tendance à augmenter avec le temps. Les différences sociales et économiques étaient les plus prononcées au milieu de la deuxième période intermédiare. Ces constatations indiquent que le système socioéconomique de la Nubie-moyenne tolérait des differences de plus en plus marqueés parmi ses membres. Elles ne sont pas conformes avec l'hypothèse qu'aucune augmentation dans l'accès differentiel aux ressources d'enterrement a eu lieu entre *ca.* 2100 et *ca.* 1550 av. J.-C. et que les conditions sociales et économiques du Groupe C demeuraient presque inchangées au cours de leur histoire de 800 ans.

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The Middle Nubian data were coded and analysed using *Statview 4.01,* a statistical programme written by Keith A. Haycock, Jay Roth, Jim Gagnon, William F. Finzer and Charles Soper and distributed by Abacus Concepts of Berkeley, California. The thesis was typeset using *Latex: a Document Preparation System* by Leslie Lamport, a computer scientist at Digital Equipment Corporation in Palo Alto, California.

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Chapter 1

Introduction

In the Nile Valley, the land that lies between the First and Second Cataracts is known as Lower Nubia. From *ca.* 2200 B.C. to *ca.* 1550 B.C., it was inhabited by a people of obscure origin whose archaeological remains, discovered by George Reisner during the first decade of the twentieth century, are referred to as "C-Group." Scholarly reconstructions of both C-Group sociopolitical organization and the nature of their contacts with Egypt have produced major controversies. Some researchers have argued that much variation that is sociopolitically significant exists in the Lower Nubian archaeological record. They suggest that this variation reflects changes in Egyptian-Nubian socioeconomic and political relationships, which were expressed as fluctuations in the number of trade objects that became available to C-Group communities, and that the overall trend was toward increasing C-Group social complexity (Kemp 1983: 127; O'Connor 1974: 29-30; Säve-Söderbergh 1989: 8-9; Trigger 1976b: 79). Others claim that little variation exists in the Nubian archaeological record, that large numbers of Egyptian trade goods found their way into C-Group graves at all periods of C-Group history, that the burial data do not mirror the changes in Egyptian-Nubian relationships that are documented in Egyptian texts, and that C-Group populations remained "tribal" and "democratic" until the era of the New Kingdom (Adams 1984: 145). I have used data from 2,713 tombs in fifteen cemeteries to test the null hypothesis that practically no changes took place in C-Group sociopolitical organization between *ca.* 2200 B.C. and *ca.* 1550 B.C. Support for the alternate hypothesis of increasing status differentiation within Middle Nubian societies over time was derived from statistical tests that require rejection of the null hypothesis [see Appendix A]. Results of the data analysis were interpreted within the context of current belief regarding the use of mortuary data to infer socioeconomic conditions in a preliterate society as well as in terms of current knowledge about ancient Egyptian involvement in Lower Nubia.

1.1 The research area

Lower Nubia is characterized by a desert environment. Even prior to its destruction by the High Dam, fertile land in the area was scarce and discontinuous. Where it existed, the river floodplain was flat, lacking in "natural levees," and rarely over a kilometer wide (Butzer and Hansen 1968: 194). During all periods of Nubian history, settlements had tended to be associated with these discontinuous tracts of fertile land (Trigger 1976b: 14-15). Settlements and arable land also were found in those areas where communication along the river was easiest. Above Aswan, travel on the Nile becomes difficult in places for a variety of reasons, for, in addition to the obstacles posed by the rocky nature of the Second Cataract channel, the river gushes through an extremely narrow gorge at Semna which was "impassable by boat at some times of the year" (Trigger 1976b: 67).

Egyptian textual records show that between the Second and the early Fifth Dynasties, floods "averaged 70cm... lower than those of the First Dynasty" (Bell 1975: 253). Butzer has argued that during this period of low floods, and perhaps also during the First Intermediate Period, extensive downcutting resulted in a lower and narrower Nubian floodplain that has persisted until the present (1971: 326; 1976: 28, 54).

Inscriptions at Semna indicate that extremely high floods occurred from 1840 B.C. to 1770 B.C. of the Middle Kingdom era, and there is also a record of a "catastrophically high" Second Intermediate Period flood *ca.* 1695 B.C. (Butzer 1984: 107). Bell has deduced that these abnormal flood levels were recorded on the cliffs at Semna precisely because high floods were not characteristic of the Middle

Kingdom period. Although it is known that the annual flooding of the Nile results from increases in the water supply to the lakes that feed the river (Bell 1975: 243; Butzer 1984: 107), Bell has suggested that an alternative cause for the high Middle Kingdom floods may have been the "further... northward penetration of the summer monsoon rains" (1975: 243, 248). Butzer argues that a "longterm trend to higher floods" may have persisted until the reign of Ramses III (1976: 33, 52-56). He also emphasizes that in addition to long-term trends that can be identified in the geological record, Nile floods were subject to "short-term variability" that must have had significant effects on agricultural productivity throughout the valley. However, it is unlikely that the climate of Lower Nubia differed much from that of the present day. Well-preserved bodies from shallow tombs of the predynastic and Early Dynastic periods indicate that the Neolithic Wet Period in this region had ended prior to *ca.* 3000 B.C. (Bell 1975: 249).

Apparently, some Nubian populations were partly able to overcome the constraints imposed by a marginal environment by importing foodstuffs from Egypt (Trigger 1976b: 54). Nevertheless, the possibilities for population growth were limited, and at practically all times in their history the Lower Nubians possessed a limited economy because they inhabited a region with little agricultural potential (Adams 1984: 161; Martin *et al.* 1984: 200-201; Trigger 1976b: 14, 17).

1.2 The research problem

Skeletal and cultural remains from cemetery and settlement sites were recovered by various archaeological expeditions to Nubia between 1907 and 1965. The earliest known Nubian food-producing cultures are the Khartoum Neolithic of Upper Nubia and the Abkan of Lower Nubia, which were probably roughly contemporary with the earliest Egyptian predynastic cultures such as the Badarian of Middle Egypt [Table 1.1]. In Lower Nubia the Abkan was succeeded by the culture of the Early Nubian or A-Group peoples, whose burials were crammed with Egyptian trade goods as well as locally produced jewelry; rare, large, red and orange painted bowls; and distinctive black-topped pottery (Adams 1984: 118-131). No artefacts of Egyptian origin that date later than the First or Second Dynasties have been discovered in either A-Group habitation sites or A-Group graves. Consequently, archaeologists have been forced to conclude that the lack of burials reflects a long period of near depopulation in Lower Nubia. Re-study of ceramic material from Buhen and several other sites south of Aniba, in conjunction with Egyptian texts, has revealed evidence for a sparse but indigenous population during the Fourth and Fifth Egyptian Dynasties (Gratien 1995: 48-56; Smith 1991: 92).

Evidence, both historical and archaeological, for the reappearance of a *settled* Lower Nubian population, now referred to as Middle Nubian C-Group, occurs towards the end of the Sixth Egyptian Dynasty. Inscriptions at the First Cataract document the journey of the Sixth Dynasty pharaoh, Merenre, to the Cataract to meet with the Medjay, Wawat and Irtje leaders, and Herkhuf's Sixth Dynasty encounters with various Nubian rulers are recorded on his tomb at Aswan. Under Pepi II, Sabni retrieved his father's body from the Nubians in exchange for clothes, oil, honey, ointment and other goods, while punitive raids were conducted by men like Pepinakht, who "hacked up ... large numbers of the enemy" while in the process of curbing what was called a Nubian "revolt" (Emery 1965: 131-132; Trigger 1976b: 59). Burials, that are sometimes superimposed on earlier A-Group graves and usually marked at the surface by a circular stone superstructure or cairn, contain single interments accompanied by distinctive black or red incised pottery and other local and imported objects.

Early in the First Intermediate Period, Egyptian attempts to control Lower Nubia were halted, although trade with C-Group peoples apparently continued and texts claim that some Eleventh Dynasty Theban princes were able to extort coveted goods from the inhabitants of Wawat. The Egyptian Middle Kingdom occupation of the country, which is claimed to have taken place under Senwosret I, lasted until some time in the Thirteenth Dynasty. Recent studies at Askut attest to the continued presence of Egyptian "settlers" following the withdrawal of military rule from Lower Nubia. Egyptian burials in cemeteries at Buhen and Mirgissa, and cemetery and settlement remains at Semna also "support the notion [of uninterrupted occupation] ... from the Middle Kingdom into the Second Intermediate Period" (Smith 1995:

123-136; Trigger 1976b: 85).

Excavations at Middle Nubian cemetery sites in Lower Nubia have revealed that for the duration of the Second Intermediate Period, the region was occupied by C-Group and other contemporary or successive groups that include the Pangrave and Kerma peoples (Nordström 1972: 33; Trigger 1965: 46, 85-99). Pangrave burials are distinguished from those of the C-Group by their location apart from, or at the edges of, C-Group cemeteries; by their use of coarsely incised, graphite coated, offering bowls (Nordström 1972: 65); and by the inclusion of *Nerita* shell jewelry with contracted corpses whose heads were positioned west or north. Kerma burials were extended on an *angareeb* or Nubian bed and accompanied by sacrificial victims that appear sometimes to have included humans. More often, however, the offerings consisted of goats or sheep in association with characteristic hard, thin-walled, tulip-shaped bowls and slightly metallic-looking, black-topped red pottery that probably had been coated with lead prior to firing (Nordström 1972: 65-66). However, the cemetery data indicate that the most populous of these Middle Nubians remained the C-Group peoples.

Settlement remains suggest that the C-Group were agriculturalists who inhabited small hamlets and farmsteads along the Nile (Adams 1984: 154; Bietak 1968: 87). Increasing sedentariness is reflected in the *use* of house types that have been correlated with three phases of their development: First Intermediate Period single room dwellings or tents at Amada and Aniba *Level I*; semi-subterranean, circular, or almost square one-room and clustered, fortified buildings from Middle Kingdom times at Wadi es-Sebua and Debeira; reuse of an already "fortified" Egyptian military settlement at Amada (Wegner 1995: 156); and rectangular, "Egyptian-style" mud-brick dwellings at Debeira and Karanog that were erected late in the Middle Nubian Period when "fully developed village life" finally can be attested (Adams 1984: 147). A similar developmental sequence has been identified from their methods of tomb construction. Nevertheless, the interpretations of these Lower Nubian developments differ. The references to chieftainship in Egyptian texts from the Sixth Dynasty onwards, when early C-Group communities had *heqaw,* or rulers, have been cited by several writers (Adams 1984: 158; Säve-Söderbergh 1989: 12), and the greater complexity of the Second Intermediate Period fortified, habitation sites at Karanog and Amada, which may have been the *heqas'* "headquarters," has been interpreted as evidence that the power of the rulers was increasing (Trigger 1976b: 102). Nevertheless, Adams has concluded that C-Group societies remained "democratic and tribal" until the dawn of the New Kingdom era (1984: 162). Lastly, whereas regional differences in C-Group culture have been attributed to political causes by Adams (1984: 158-159), local variations in C-Group culture have been attributed to "ethnic" differences by Bietak (Trigger 1968: 191).

There is similar disagreement over the extent of Egyptian-Nubian economic contacts. It has been suggested by some researchers that fluctuations in the quantity of imported Egyptian objects that were deposited in C-Group graves over time reflect corresponding changes in their economic and political relationships with the Egyptians (Kemp 1983: 127; O'Connor 1974: 29-30; Säve-Söderbergh 1989: 8-9; Trigger 1976b: 79). On the other hand, Adams, who has claimed that the volume of Egyptian imports to Lower Nubia remained unchanged throughout the Middle Nubian era, has emphasized the absence of correspondence between the Egyptian evidence for constant fluctuation in Egyptian-Nubian political relations, and the lack of variation that presents itself in the Nubian archaeological record (1984: 145). The accuracy of these hypotheses is untested, and it is also unknown whether the evidence reflects regional as well as temporal differences in socioeconomic and political conditions throughout Lower Nubia.

Following the construction of the Aswan High Dam, further fieldwork in Lower Nubia became impossible, and only a systematic analysis of already existing C-Group cemetery data, in conjunction with the relevant settlement data, can perhaps resolve these issues or enable choices to be made between these various interpretations. My thesis research seeks to monitor the amount of Egyptian contact at different periods of C-Group history and also to determine whether periods of intense economic contact tend to correlate with periods of mortuary elaboration and hence with increasing social and political differentiation.

Through a quantitative analysis of the excavated mortuary remains from fifteen C-Group cemeteries, an attempt will be made to test the null hypothesis that no increase in differential access to burial resources occurred between *ca.* 2100 and *ca.* 1550 B.C. and that C-Group social and economic conditions remained virtually unchanged throughout their 800-year history. Superstructure sizes, grave sizes, the type of construction employed, as well as the condition of the tombs, the types of pottery associated with the tombs, the presence or absence of luxury materials, the presence or absence of inscriptions and ceremonial figures, and body treatment will be among the categories examined in order to determine whether any significant socioeconomic differences existed among C-Group communities from different localities at different periods of their history. Moreover, since there are stratified settlement data that illustrate a C-Group tendency to occupy increasingly larger habitations, information on their settlement remains will be incorporated into the study. Theoretical assumptions concerning the identification and measurement of social complexity, the use of mortuary data to infer social conditions, and the nature of prehistoric exchange systems will be employed to interpret the various categories of data investigated. By attempting to assess the value of different interpretations of Egyptian-Middle Nubian socioeconomic relationships, the thesis will contribute to a more detailed understanding of this period of Nubian prehistory.

1.3 History of research

Burial studies in Nubia began with the First Archaeological Survey of the region, which was carried out during the first and second decades of the twentieth century. From 1907-1908 the region between Shellal and Kolesseig was excavated under the direction of George A. Reisner of Harvard University, who was aided in his venture by Cecil Mallaby Firth, then in the employ of the Egyptian Antiquities Service as Chief Inspector and Excavator at Saqqara, and by Grafton Elliot Smith, of the School of Medicine at Cairo. These early excavators concentrated on "mortuary remains almost to the exclusion of other archaeological evidence" (Adams 1984: 71). Between 1908 and 1911 cemeteries from Ginari to Wadi es-Sebua were cleared under Firth's direction. The excavations by Reisner and Firth enabled Reisner to develop a chronology of Nubian societies that stretched from the predynastic to the Moslem eras.

From 1929 until 1931 cemeteries from Wadi es-Sebua to Adindan were emptied under the direction of Walter B. Emery, who was assisted in his task by L.P. Kirwan and a host of African assistants. The cemetery and settlement excavations at Aniba were carried out in the 1930s by Georg Steindorff and Alexander Langsdorff.

C-group skeletal and cultural remains from cemetery and settlement sites also were salvaged by several mid-twentieth century archaeological expeditions to Nubia. In the early 1960s, sites in Sudanese Nubia were carefully excavated under supervision from Torgny Säve-Söderbergh of the Scandinavian Joint Expedition. C-Group remains at Dakka and in the Wadi Allaqi were investigated by the Leningrad Academy of Science, and a C-Group village at Wadi es- Sebua was excavated by a joint French Institute-Swiss Institute team of archaeologists. C-group remains were also encountered by the Austrian National Committee for the Rescue of Nubian Antiquities at Sayala, by the German Institute at Amada, by the University of Strasbourg at Tumas, by the Archaeological Survey of India at Afyeh, by the University of Cairo at Aniba, by the Pennsylvania-Yale Expedition at Tushka and Arminna, by the Sudan Antiquities Service between Faras West and Gemai West, by the Spanish National Committee for Nubia at Argin (Adams 1984: 83-85) and between Abu Simbel and

Table 1.1: Cultural Sequences in Nubia and Egypt [after Adams 1984: 106; Trigger 1976b: 25]

Date BC	Archaeological and historical cultures		
	Upper Nubia	Lower Nubia	Upper and Lower Egypt
1550		C-Group, Stage III	New Kingdom, Dynasty XVIII
1650	Kerma classique	C-Group, Stage IIb	Dynasty XVII
1750		C-Group, Stage IIa	Dynasty XIII
1850		C-Group, Stage IIa	Dynasty XII
2000	Kerma moyen	C-Group, Stage Ib	Dynasty XI
2200			First Intermediate Period
	Kerma ancien	C-Group, Stage Ia	Old Kingdom, Dynasty VI
		DEPOPULATION	
2800			Early Dynastic Period
3200	Pre-Kerma	A-Group	Gerzean/El-Omari
4000	Khartoum Neolithic	Khartoum Variant	Amratian/Merimde
5000	Khartoum Mesolithic	Abkan	Badarian/Fayum A
5200		Shamarkian	Fayum Epi-Paleolithic
10,000			Upper Paleolithic Complex G
12,000		Qadan	Sebilian
13,000		Ballanan	Sebekian
14,000		Gemaian	Silsilian/ Upper Paleolithic [Complexes D,E,F]
17,000		Halfan	
20,000		Khormusan	
25,000			
30,000		Nubian Middle Stone Age	
		Nubian Early Stone Age	

the Sudan border by the University of Chicago Oriental Institute Nubian Expedition (Williams 1983).

1.3.1 Development of the Nubian chronology

During the first decade of the twentieth century, George Reisner's excavations at Shellal in Lower Nubia revealed the remains of several Nubian archaeological cultures that he was the first to order sequentially from prehistoric to Moslem times (1908: 16-21; 1909: 5-6). By using Egyptian trade goods, a Nubian chronology was established (Reisner 1910: 6). It commenced with a predynastic phase which Reisner believed was succeeded by A- and B-Group cultures that lasted until the Egyptian First Intermediate Period (Reisner 1908: 17-19, 1909: 5-6). Reisner also proposed that a C-Group period of Middle Kingdom date could be identified by the presence of pottery and other artefacts that were similar to those recovered from Pangrave cemeteries in Egypt but absent from all other contemporary Egyptian graves (Reisner 1910: 6, 313-314; Smith and Derry 1910: 18). Furthermore, although he postulated that the earliest C-Group graves at Shellal antedated the New Kingdom, Reisner noted that the upper limits of the period were unclear and suggested that some New Kingdom and C-Group graves were probably contemporary (1909: 13).

The separate existence of a Nubian B-Group was first challenged by Junker, who suggested that the individuals assigned to this archaeological culture by Reisner were probably the poorer members of A-Group society. This hypothesis was supported by Harry Smith's re-analysis of the data compiled by Reisner and Firth. Smith discovered that many so-called B-Group graves had been either empty or had contained animal remains, while others could be assigned to either the A- or the C-Group cultures. He concluded that the majority of these graves could not be classified because they either lacked characteristic burial goods, or had been thoroughly plundered (Adams 1984: 132; Smith 1966: 69-124). Smith's findings implied a total absence of population during much of the Old Kingdom.

This disappearance of settled communities has been attributed to either "ethnic or political factors" (Butzer and Hansen 1968: 194). Research by Nordström has established that A-Group communities vanished sometime during the First Egyptian Dynasty (1972: 31), and that this Early Nubian phase was followed by a lack of archaeological evidence for habitation in Lower Nubia until some time in the Sixth Dynasty. However, Adams suggests that some "B-Group" graves may "belong to the time interval to which [Reisner] assigned them." He cites Egyptian texts as evidence of Lower Nubian inhabitants during the period from 2800 to 2200 B.C. (1984: 132-133). He also suggests that the apparent hiatus in the archaeological record between the A- and C-Group periods may be "partly imaginary" and a consequence of both the Nubian tendency to resist Egyptian stylistic changes and the difficulties involved in dating Early Dynastic Egyptian artefacts, or even the result of the temporary adoption of a pastoral economy that is archaeologically invisible (Adams 1984: 133-135; Nordström 1972; Trigger 1976b: 53-54). Säve-Söderbergh disagrees with this explanation; he maintains that even pastoralists leave evidence of their presence (1989: 2).

The discovery of both A- and C-Group pottery in three graves in the same C-Group cemetery at Detti as well as in a tomb at Jebel Sahaba (Säve-Söderbergh 1968: 228-229), and the association of Old Kingdom Meidum ware with A-Group material at Saras (Säve-Söderbergh 1989: 9) could also be interpreted to mean that the A-group period lasted longer or the C-group period originated earlier than has previously been believed. However, although similarities between A- and C-group material exist, and although Egyptian documents have been construed to suggest that Lower Nubia was inhabited between the Second and the Sixth Egyptian Dynasties, Säve-Söderbergh admits that "direct continuity" between the A- and C-group cultures is difficult to confirm (1989: 2, 7).

Furthermore, while still rejecting Reisner's opinion that the B-Group represents a true archaeological culture, Smith has recently accepted Williams' analysis of Early Nubian data and its implication of an indigenous Lower Nubian population of Old Kingdom date. Moreover, Smith has suggested that such a population may have been scanty and nomadic, or semi-nomadic, as a result of Fourth and Fifth Dynasty Egyptian policy designed to control and protect the sources of coveted raw materials by discouraging "permanent settlements and organized chieftaincies ..." (1991: 108) among the Lower Nubians. Following a re-study of ceramic material from Buhen and several other sites south of Aniba, Gratien has identified pottery in these assemblages that differs from both A-Group and Kerma ancien types. This ceramic collection has been tentatively labeled 'B-Group' by Gratien, who considers it the product of a distinct Lower Nubian population of Fourth and Fifth Dynasty Old Kingdom date (1995: 48-56).

Six hundred years after the impoverishment and subsequent disappearance of the A-Group communities from Lower Nubia, the area was occupied by a C-Group population (Reisner 1908: 18-19), which is believed to have remained there from the Sixth to the Eighteenth Egyptian Dynasties (Kemp 1983: 126) [*ca.* 2200 B.C. to *ca.* 1500 B.C. (Säve-Söderbergh 1989: 1)], the partly contemporaneous Kerma culture [*ca.* 2500 B.C. to *ca.* 1560 B.C. (Leclant 1986)], and the Pangrave communities that flourished during the Hyksos era. All three cultures are now assigned to the Middle Nubian period (Nordström 1972: 33; Trigger 1965: 46).

By modifying classifications first developed by Firth and Steindorff in the early decades of the twentieth century (Bietak 1968: 127-131), five stages of C-Group development, based on grave construction as well as on pottery types, have been identified by Manfred Bietak. *Stage Ia* is more or less contemporary with the Sixth Dynasty and the First Intermediate Period; *Stage Ib* corresponds to the late Eleventh and early Twelfth Dynasties; late Twelfth Dynasty and early Second Intermediate Period artefacts are combined in *Stage IIa;* remains from the late Second Intermediate Period are assigned to *Stage IIb;* and *Stage III* corresponds to the Seventeenth and early Eighteenth Dynasties (Bietak 1968; Säve-Söderbergh 1989: 7). Bruce Williams has noted that the *zir*, or tall, wide-mouthed, porous Nubian water jar, is of "special use in chronology since it occurred in *IIa*, though it was derived from a late Eleventh Dynasty form" (1983: 5). In this thesis, an adaptation of Bietak's chronology, in conjunction with grave orientation, location, pottery type and grave inclusions of known date were used to assign burials to one of ten phases or time periods: 2100 B.C. [*Ia,* corresponding to the Tenth Dynasty and earlier]; 2000 B.C [Early *Ib,* roughly equivalent to late Dynasty Eleven]; 1900 B.C. [*Late Ib,* or early Twelfth Dynasty]; 1850 B.C. [*Early IIa,* or mid-Twelfth Dynasty]; 1800 B.C. [*Middle IIa,* or late Twelfth

Dynasty]; 1750 B.C. [*Late IIa,* or Dynasty Thirteen]; 1700 B.C. [*Early IIb,* or early Second Intermediate Period]; 1650 B.C. [*Middle IIb,* or middle Second Intermediate Period]; 1600 B.C. [*Late IIb,* or late Second Intermediate Period]; and 1550 B.C. [*Early III,* or Dynasty Eighteen]. Burial shafts were oriented to the local east-west in *Ib* and Egyptian 'oil jars' were deposited beside superstructure walls; *zirs* and *burmas,* or globular, necked 'Sudanese' water-jars, were deposited beside the tomb walls and the burial shaft was oriented to the local east-west (Emery and Kirwan 1935: 9) in *Early IIa.* Dynasty Thirteen or *Late IIa* tomb deposits continued to consist of *burmas* and *zirs* but many of the latter appeared to be of local manufacture; grave shafts tend to be variable but most are suddenly oriented to the local north-south (Bietak 1968: 51; Emery and Kirwan 1935: 9), and late Middle Kingdom Egyptian pottery is absent (Williams 1983: 5). During the *Late IIb* phase, grave shafts are oriented roughly to the local north-south; pottery tends to be deposited within graves that become more rectangular in shape, and in some cemeteries, the building of superstructures is abandoned. Those late C-Group burials that contained Eighteenth Dynasty objects, lacked superstructures, displayed evidence of cultural borrowing from Pangrave and other Nubian peoples and exhibited an east-west orientation of the burial shaft were assigned to the *Early III* phase.

Following excavations of the large Kerma cemetery at Sai Island and study of all the other known Kerma cemeteries, Brigitte Gratien proposed the first chronology of the Kerma cultures. Except for the earliest or *pre-Kerma* phase in the sequence (Säve-Söderbergh 1989: 21), which was revealed as a result of Bonnet's work in the Dongola Reach, the cultural succession was devised by Gratien. She suggested that the next phase was well attested and called it *Kerma ancien.* At Sai, the priority of Kerma ancien over *Kerma moyen* was established when plundered graves from the Kerma ancien period were discovered below intact Kerma moyen burials. Subsequent phases were termed *Kerma classique* and *Kerma récent.* All were based on differences in grave construction and burial ceramics (Gratien 1978: 19-20, 156), as well as on the relationships of each phase with neighbouring Nile Valley cultures: pre-Kerma with A-Group (Säve-Söderbergh 1989: 21); Kerma ancien with the early Old Kingdom (Gratien 1978: 259) as well as with Bietak's *Stage Ia* C-Group (Säve-Söderbergh 1989:

21); Kerma moyen with *Stage Ib* and *Stage IIa*; and Kerma classique with *Stage IIb*. The Kerma récent phase is comprised of the Eighteenth Dynasty material remains of Egyptianized Kermaites (Gratien 1978: 133-223, 259-260). An "intermediate" phase was also identified between the Kerma moyen and the Kerma classique phases (1978: 163, 230). In Lower Nubia, the earliest Kerma materials are apparently contemporary with Bietak's *Stage IIb* (Bietak 1968: 123, 131), although Säve-Söderbergh has also assigned Kerma-type burials to *Stage IIa* (1989: 8).

Pangrave remains, which were originally considered to be nearly identical with those from the C-Group culture, were first assigned to the pre-Thirteenth Dynasty period by Reisner (1908: 20; Reisner *et al.* 1909). At Sayala, Pangrave artefacts were attributed to the late C-Group by Firth (Bietak 1966: 43). The earliest Lower Nubian Pangrave materials are apparently contemporary with Bietak's later *Stage IIa* C-Group remains (Bietak 1968: 117, 131; Säve-Söderbergh 1989: 18). Although those from Cemetery D at Tushka West are claimed to be Twelfth Dynasty in date (Bietak 1966: 71-73), Trigger has questioned this assumption and pointed out that it is far more likely that Pangrave use of this small cemetery was restricted to the Second Intermediate Period or early New Kingdom (1968: 191-192). The deposits at Aniba are apparently from the Thirteenth Dynasty, while those at other locations date to the Hyksos period (Bietak 1966: 71-73; Säve-Söderbergh 1989: 18). Mixed Pangrave and C-Group deposits from northern Sudanese Nubia suggest that close relationships existed between Pangrave communities and *Stage IIb* as well as *Stage III* C-Group peoples (Säve-Söderbergh 1989: 18).

1.3.2 Problems with the historical data

Interpretations of textual sources

While in the process of providing a coherent history of ancient Egyptian activities, Egyptologists have often encountered ambiguities amongst their sources that have been ignored by most, debated by some, and attributed by others to the Egyptian practice of composing documents for reasons that differed significantly from those of modern scholarship (Kemp 1983: 354). These inconsistencies in the Egyptian textual evidence fall into several different categories. Examples include numerical discrepancies, such as the three Karnak lists of peoples and places from the south that were under Egyptian rule during the Eighteenth dynasty. In one case seventeen names are given; another gives 400 and the third lists 115 names (Arkell 1955: 89). Likewise, Posener has noted that the lists of Nubian countries recorded on Middle Kingdom 'prisoner' statues record twenty-nine districts whereas only twenty-two are inscribed on vases (1940: 35).

The existence of duplicate inscriptions has also led to much debate. Thus, argument over the reason for the use of similar inscriptions to record the military exploits of Tutmosis I and III in Nubia has led to Breasted's proposal that Tutmosis III did *not* accompany the expedition because of old age, as well as the suggestion that because he *did* go, a great deal of labour was expended to copy the earlier inscriptions (Arkell 1955: 88-89). Schulman has questioned the practice of regarding Egyptian textual evidence as actual historical documentation. After demonstrating that the scene from the Narmer palette of the pharaoh slaying an enemy is similar to the portrayals of Sahure' of Dynasty Five, Pepi I of Dynasty Six, Pepi II of Dynasty Six, and Taharka of Dynasty Twenty-five, who are shown "sacrificing a Libyan prince in the presence of his wife and two sons," Schulman notes that in all four historical versions the woman's name is Khutyotes and the sons' names are Usa and Uni. He suggests that the ancient Egyptians regarded history as "timeless repetition," a view which differs greatly from that of the modern Western world. All pictorial representations of scenes in which the pharaoh is involved in acts of triumph and slaughter must therefore be interpreted with great caution. Schulman also warns that it is difficult to determine whether what is being pictured is a "real event" or a "ceremonial reenactment of something actually achieved" by an earlier pharaoh (1989: 436, 438, 441).

Problems can also arise as a result of misunderstandings or differences of opinion about the meanings of particular words. Debate concerning the Old Kingdom conquest of Nubia has focused on the translation of the term *sḥtp* which can mean (i) propitiate; (ii) set at ease; (iii) make peaceful, and (iv) pacify, or forcibly bring under control, "when referring to hostile lands... It is this latter meaning which has been universally adopted by all students [and has resulted in the discussions between Kadish and Dixon] on the meaning of *sḥtp* in a passage from the texts of Harkhuf. Kadish compiles a considerable list of opposing arguments which uphold two contrary meanings, either to have friendly relations with Nubia (Dixon 1958: 46; Trigger 1976b: 58) or to bring it under control by military conquest. Kadish concludes the latter meaning is intended by Harkhuf, though he argues from the whole context of this official's expedition and not from the verb itself" (Ward 1971: 26).

Debate has also focused on the difficulties involved in attempting to identify geographical areas such as Iam. Dixon has suggested that Iam was not south of the Second Cataract, and certainly not in the Kerma area (1958: 43, 53). Some scholars now locate it in the Kerma region (Edel 1955; Kemp 1983: 129; Trigger 1976b: 57), while others have favoured sites in the desert west of the Nile (Goedicke 1981; Yoyotte 1953), or farther south in the "region of the Shendi reach" (O'Connor 1986: 35). Similar debate has occurred over the locations of numerous other Nubian place names including Wawat, Irem, Irtjet, Setju and Kush (O'Connor 1986, 1987). One consequence of the inability to locate geographical areas with precision is the difficulty that surrounds any attempt to correlate archaeological populations with peoples mentioned in Egyptian texts. It has been noted that the assumption that Harkhuf of the Sixth Dynasty and Sneferu of the Fourth are referring to the *same* presumably Lower Nubian populations is debatable (Adams 1984: 144, 158). In the past, reliance on this assumption has led to "chronological" problems such as the invocation of B-Group communities to fill the gap created by the lack of remains datable to the period between the Second and Sixth Egyptian Dynasties, and the suggestion by Säve-Söderbergh and others that the extinction of the Lower Nubian A-Group population was the consequence of Sneferu's raid on the area (Firth 1912: 11; Säve-Söderbergh 1941: 9).

Interpretations of textual references to Middle Nubian populations

Sixth Dynasty inscriptions from the tombs of Harkhuf and Weni refer to a geographical region of the south called *Ṯmḥ* which was apparently located west of

Iam, and inhabited by desert peoples called *Ṯmḥw,* who were distinguished from the *Ṯḥnw,* who lived to the west of the Nile delta (Ward 1971: 39-40).

The inhabitants of *Ṯmḥ* have been identified with C-Group peoples by Säve-Söderbergh (1941: 39) and Edel (1967: 154), a correspondence that Bietak suggests may be inaccurate (1968: 147). In Gardiner, *Ṯḥnw* is translated as 'Libya' or 'Libyans;' *Ṯmḥ* is given as an Old Kingdom variant of *Ṯmḥw* and also rendered as 'Libyan' or 'Libyans' (1982: 601, 1961: 35). In *Ipuwer,* the *Admonitions of an Egyptian Sage,* the *Ṯmḥw* and the *Ṯḥnw* are both mentioned. Along with the Nubians, the *Ṯmḥw* are included as enemies of Egypt, but there is no other reference to either of these peoples during the First Intermediate Period. Ward suggests that the *Ṯmḥw,* who may have been identical or related to the C-Group, may have been southerners who migrated towards the Mediterranean late in the third millennium B.C. (1971: 40). This seems unlikely, since the migration alluded to took place late in the New Kingdom when the Libyan invaders of Egypt were referred to as the *Ṯḥnw* and the *Ṯmḥw.* The archaeological correlates of these societies have never been identified (Trigger: personal communication).

Posener's translations of Egyptian inscriptions on statues of foreign prisoners have been found to provide more extensive information on the princes and countries of Nubia than is given by the Berlin ostraca, thus permitting correction of some of the conclusions reached by Sethe regarding knowledge of Egypt's neighbours during the Middle Kingdom, which is the time from which these prisoner figurines date. Posener found that in some cases the names of chiefs written on vases had been replaced by the names of their sons and successors on the prisoner statues (1940: 24). *Iwnwt* in Nubia is replaced by *Nhsw* which signifies 'the southerners.' Posener found that in the case of Nubia, the list of countries known to the Egyptians was introduced by the expression 'all the southerners of... (such and such a country), and this is repeated for each district listed. Furthermore, after the list of Nubian regions, the 'prisoner' documents carry the antiquated term the *'Iwnwt* of Nubia' as well.

As an explanation for this usage, Posener rejects the possibility that *Nehesyu* invaders replaced the *Iwnwt* of *Stj;* he points out that the appearance of a new name does not necessarily reflect the appearance of a new group of people and gives the use of the terms 'Greek' and 'Hellenic' as an example. Instead, he argues that *Iwnwt* means 'archers' and *Nehesyu* is the word the southerners used for themselves. During the Middle Kingdom, the two terms were interchangeable. *Iwnwt m Stj* was *not* used in either a geographical or an ethnic sense by the Egyptians (1940: 36-37).

On the other hand, Posener indicates that the term *'Medjay'* is used in an ethnic sense, since no such country is listed for Nubia, but a 'Medjay' prince of the country of *Webet-spt* called *Weh-ib* is mentioned on a vase text; a similar statement is made in the Boulaq papyrus as well. He also suggests that these refer to a Nubian people who perhaps spoke a different dialect, and were not necessarily nomads as supposed by Sethe. Archaeologically, Khartoum Variant and Abkan remains from the Wadi Halfa district show that both mobile pastoral and settled agricultural economies coexisted in the Nile valley even before 4,000 B.C. (Trigger 1985: 466). The term *Nehasyu [Nḥsyw]*, or southerner (Arkell 1955: 75), refers to people of the Sudan, and also to Nubians who lived along the river, whereas desert dwellers were called *Medjayu* or Medjay; Gardiner also notes that an interpreter was needed to communicate with the *Nḥsyw* (1961: 34).

A different interpretation of the word 'Medjay' is found amongst scholars who use it to denote a geographical area. Gardiner, who views 'Nubians' as being 'racially' and linguistically distinct from Egyptians, notes that the pharaoh Merenre visited the First Cataract to "receive the homage of the chieftains" of Wawat, Irtje, *and Medja* (Breasted 1906, 1907: vol i, sect. 317; Gardiner 1916: 186, 1961: 99). Similarly, the autobiographical Sixth Dynasty inscription from Weni's tomb at Abydos relates that when the Egyptians made war against the desert peoples and the *'Aamu,* Pepi I's army consisted of Nubians from the "foreign lands" of Iam, Irtje, Wawat, Kaau, and Medja (Gardiner 1961: 95-96). Occupational usage of the term is also advocated by Gardiner who suggests that the word *Mg3* ['Medjay'] was employed to mean 'police' (Säve-Söderbergh 1991: 207). From the spatial and temporal distribution of Pangrave burials in Egypt, Säve-Söderbergh has identified these people with the 'Medjay' warriors mentioned on the Kamose stela (1951: 70). Bietak equates the 'Medjay' with nomadic Pangrave peoples from the Red Sea Hills who began to settle in the Nile Valley during the Middle Kingdom or the Second Intermediate Period. Moreover, he suggests that the Twelfth Dynasty use of the word *Medjay* can be correlated with this "infiltration," in contrast to the use of the term *Nehasyu* to denote all other Nubian inhabitants (1966: 72-73, 1968: 149). Butzer also argues that 'Medjay' people "settled primarily along the eastern margins of the Nile in Lower Nubia" around 1800 B.C. (1976: 40).

From these conflicting pieces of historical evidence, it is unclear how, or even whether, the notion of "ethnicity" was employed by the Egyptians. The Lower Nubians who took part in the Eighteenth Dynasty rebellion against Tutmosis II at the turn of the fifteenth century B.C. were referred to as the barbarian, "Nubian Troglodytes of Khenthennofer." On the other hand, the Egyptian colonists of 'Khenthennofer,' which was north of Kush, are called "the inhabitants of Egypt" (Emery 1965: 179-180). A wall painting from the time of Tutmosis IV that documents a raid against eastern desert peoples depicts "three Nubians and six foreigners (some of whom are represented as negroes) with the names Cush, Karei, Medju (Beja), Irm, Gwršš and Trk" (Arkell 1955: 90). The foreigners, including the Kushites, who were presumably Egyptian subjects, all wear non-Egyptian clothing. However, in Huy's tomb at Thebes, Heka-nefer, the Nubian Prince of Ma'am, appears in Egyptian garments, but is depicted as a 'Nubian' (Emery 1965: 190), whereas in his own tomb at Tushka, he is shown as an 'Egyptian' in an Egyptianized setting decorated with funerary inscriptions. In this case, physical distinctions were abandoned presumably because the individual involved had adopted an Egyptian mode of *burial.* The circumstances surrounding Heka-nefer's burial reveal the fallacy of attempting to equate ethnicity with material culture.

Chapter 2

The Middle Nubian Culture Period

2.0.3 Distribution of the Middle Nubian cultures

C-Group

Following Reisner's identification of Middle Nubian C-Group cemeteries along both banks of the Nile from Shellal to Tafa and Firth's location of similar burials between Tafa and Wadi es-Sebua, settlements and cemeteries used by these people have been recognized in the Nile Valley from Kubanieh North (Junker 1920; Kemp 1983: 127; Säve-Söderbergh 1989: 12; Trigger 1976b: 61), which is the only C-Group cemetery excavated north of Aswan (Bietak 1968: 37), to Saras, near Semna (Kemp 1983: 127; Mills 1968: 200; Trigger 1976b: 95). The largest C-group sites and cemeteries in Lower Nubia have been found at Dakka, Aniba and Faras. This dispersal has been shown to correlate with the availability of arable land within a discontinuous floodplain (Trigger 1965, 1976b). However, the southern limit of C-Group occupation is apparently still unknown; indeed, it may extend even farther south than Kerma, where either an early phase (Säve-Söderbergh 1989: 12), or perhaps merely similar artefacts (Trigger: personal communication), have been discovered.

Kerma

Fragments of Kerma ware were discovered in Cemetery 7 at Shellal during the 1907-1908 season and assigned to the C-Group by Reisner. At Kuban in 1910, this categorization was questioned by Firth, who recognized that similar pottery from some burials in Cemetery 110 was that of "another Nubian people... possibly... some tribe of the Eastern Desert... contemporaneous with the New Empire, [or perhaps Seventeenth Dynasty] and even earlier" and quite distinct from the late C-Group remains (1911: 3, 9-10; 1927: 23, 53, 143). Elsewhere in Lower Nubia, remains of the Kerma culture have been found at Akasha, Mirgissa and Buhen. Cemeteries are also known from the area between the Second and Third Cataracts, and it is believed that Kerma territory may have extended as far south as the Fourth Cataract, while the remains of a fortified town may exist near Kurgus. While Kerma is the largest known urban centre associated with this Middle Nubian culture, the presence of dense populations throughout the Kerma Basin area is indicated by the existence of large Kerma cemeteries at Bayoud, Tabo and at Wadi el Kowi where all phases of the Kerma culture are present. In addition, the eroded remains of a village that dates to the Kerma classique period have been discovered at Bir Shetilat; the tomb of a high status individual exists at Bugdumbush; and a large mound, apparently of Kerma construction, exists east of Argo (Bonnet 1986b: 8-9).

Pangrave

The earliest known Pangrave deposits in the Nile Valley were unearthed by Mace at Abadiyeh, and assigned by Petrie to the early Second Intermediate Period (Petrie 1901:45). The Pangrave materials discovered by Petrie at Diospolis Parva were thought to be Eighteenth Dynasty in date (Reisner 1908: 20). Characteristic Pangrave pottery that dated from the Thirteenth to the Eighteenth Dynasties had also been found at other Upper Egyptian sites. These included a cemetery at Hu (Petrie 1901: 45), a cemetery at Kizam, and a settlement and a grave that Reisner discovered at Deir el Ballas (Reisner 1910: 6). The burial places of these peoples in Lower Nubia, such as those at Shellal, Ginari, Dakka, Aniba, Sayala and Tumas, are extremely small. Their settlements, which are hard to distinguish from C-Group campsites that show Pangrave influence, have not been studied in detail (Bietak 1966: 43-49, 1968: 179; Säve-Söderbergh 1989: 18). According to Säve-Söderbergh, Pangrave culture was restricted to the territory south of Cusae, which was controlled by Seventeenth Dynasty Theban rulers (Bietak 1966: 43-49, 73, 1968: 179; Säve-Söderbergh 1951: 70). Kemp has reported the discovery of Pangrave cemeteries throughout the Nile valley from Mostagedda, where Brunton unearthed a large burial ground (Säve-Söderbergh 1941: 136), to Tushka, and perhaps also in the Second Cataract region farther south (Kemp 1983: 170). Here, an east bank burial ground near Abka was categorized as Pangrave by the Scandinavian Joint Expedition, as were five fairly large cemeteries north of Wadi Halfa at Ashkeit, Debeira and Faras. A cluster of burials adjoining a C-Group cemetery at Debeira was also considered to be Pangrave (Säve-Söderbergh 1989: 19).

2.1 Middle Nubian societies during the Old Kingdom and First Intermediate Periods

2.1.1 C-Group origins

Both migration (Arkell 1955: 46; Bietak 1968: 142-143; Clark 1967: 613; Edel 1967; Emery 1965: 133; Emery and Kirwan 1935: 4; Firth 1912: 14, 1915: 11-12; Murdock 1959: 159; Säve-Söderbergh 1941) and continuity theories (Adams 1984: 129, 134-135, 143; Gratien 1978: 103, 1995: 45; Nordström 1972: 32; Reisner 1910: 333) have been advanced to account for the appearance of C-Group communities (Kemp 1983: 127; Trigger 1976b: 52-54). Emery has postulated that the C-Group population arrived in the Nile Valley as immigrants "from the southwest" (Emery 1965). Others, including Arkell, have suggested that the onset of drier conditions at the end of the Old Kingdom may have forced either Libyan or Medjay peoples to enter the valley in search of pasturage. This conclusion rests on discoveries of C-Group-related pottery in the Western Desert, in the Red Sea Hills, and at Agordat (1955: 49-53). Trigger has noted that both the maintenance and spread of such similar archaeological cultures would have been encouraged "if some of these groups were semi-nomadic pastoralists" (1976b: 52-53).

Bietak has pointed to the West bank discoveries of the earliest C-Group burials as evidence that the bearers of this culture originated in the Western Desert. He also points out that no C-Group remains have been discovered south of Lower Nubia (1966: 39-40). This suggestion has been criticized by Trigger. He demonstrated that Bietak's argument is not statistically valid because the sample size of seven sites is extremely small, and in Egyptian Nubia more west than east bank sites exist simply because those districts that provided the most fertile soils were located on the west bank and were settled in far larger numbers by C-Group, as well as by earlier and later Lower Nubian agriculturalists.

Trigger also argued that the discovery in Upper Nubia of pottery artefacts that bear similarities to those produced in A-Group, C-Group and Kerma times indicates a common origin for all three cultures during the second and third millennia B.C. Egypt's inability to police Lower Nubia in the late Old Kingdom may have led to a re-occupation of the region by C-Group peoples who were the cultural descendants of A-Group communities. Desert pastoralists may also have camped in the valley because Egyptian surveillance had ceased (1976b: 52-53). Adams also has suggested that the C-group re-occupation of Nubia can be attributed to the same cause as the emergence of C-group culture, namely, the "decline of Egyptian imperialism" (1984: 144). More recently, Bietak has concluded that the origins of the C-Group probably lay in some early culture from which the Omdurman-Kadada, A-Group, and early Kerma cultures were also derived. He also claims that the similarities between the early Kerma and the early C-Group cultures indicate that they were once a single culture complex that existed over a large area of Sudan. The discovery of C-Group-type pottery at Wadi Hawa and Wadi Shaw is cited as evidence of this widespread cultural horizon. On the other hand, Bietak insists that, in spite of their many common features, the C-Group does not represent a direct development of A-Group culture (Bietak 1987; Säve-Söderbergh 1989: 6), whereas Adams cites the similarities between C-Group burials and the A-Group interments in Cemetery 268 at Tungala West as proof of continuity between the two. He notes that at Tungala, Harry Smith found circular tumuli "(i) built of courses of dry undressed stone over the mouth of the grave... (ii) an offering place constructed of upright stones placed at right angles to the tumulus [and] containing offering pottery; [as well as] (iii) what were in all probability uninscribed grave stelae, [all of which]...anticipate the common mortuary practices of the C-Horizon..." (1984: 128-129). Early C-Group culture, which has been assigned to Bietak's *Stage Ia* and *Ib*, covers the time period from the Sixth Dynasty until the middle of the Twelfth Dynasty (Trigger 1976b: 49).

2.1.2 C-Group *Stage Ia* and *Ib* sociopolitical organization

Both Emery and Arkell have claimed that C-group peoples were pastoralists (Arkell 1955: 49; Emery 1965: 137-139; Williams 1983: 68). Adams has admitted that they may have aspired to pastoralism, but insists, as Trigger does, that it would have been impossible to pasture large herds of cattle in Lower Nubia because of the poor environment (1984: 154; Trigger 1965, 1976b: 52). Butzer also has pointed out that, by Middle Kingdom times, even the valley people in Egypt, which would have received more winter rain than fell over Nubia, would have been unable to engage in "seasonal pastoral activities...out onto the desert" (Butzer 1976: 39). Moreover, although evidence from Upper Nubia indicates that the climate in "antiquity," and perhaps during the Middle Nubian period, was apparently less dry than at present (Gratien 1978: 135), it is unlikely that the climate of Lower Nubia differed much from that of the present day. Well-preserved bodies from shallow tombs of the predynastic and Early Dynastic periods indicate that the Neolithic Wet Period in this region had ended prior to *ca.* 3000 B.C. (Bell 1975: 249). Furthermore, although Nordström has claimed that a pottery "fabric tradition with a fine temper of cattle dung is fully developed in the Terminal A-Group and continues unchanged throughout the C-Group period" (1972: 22), it has been established that the faunal remains from a small, early C-Group habitation site at Sayala West were dominated by the bones of sheep (Bietak 1966: 32-33; Trigger 1968: 191, 1976b: 52).

The discovery of a large proportion of gazelle bones at Sayala and at a C-Group site in the Batn el-Hagar indicates that hunting was still important. Similarly, the presence of mollusc shells at Sayala (Bietak 1966: 33), and of fishbones and shell-fish remains on habitation sites in northern Sudanese Nubia attest to some reliance on fishing (Säve-Söderbergh 1989: 12). It would appear, however, that uncertainty about the nature of their subsistence economy has resulted because both the discovery and the study (Gratien 1985: 41) of C-Group food remains are generally lacking. Nevertheless, it is usually assumed that C-Group communities, like earlier Lower Nubian neolithic populations, practised *seluka* agriculture, which was totally dependent on the annual flooding of the discontinuous Nubian floodplain (Nordström 1972: 23). Barley, wheat and various legumes may have been cultivated, while wild dates and other fruit were collected. Domestic animals probably consisted of cattle, goats, sheep and dogs (Trigger 1976b: 35).

The scarcity of C-Group habitation sites has been attributed to the small size of their scattered settlements (Bietak 1968: 87); the flimsy nature of their dwellings; and a long-term tendency to settle in the same locations, which has resulted in the concealment of ancient villages under modern ones (Säve-Söderbergh 1989: 9). In addition to the absence of substantial settlement remains at early C-Group sites, both the "oval compound" of nine, small, circular dwellings at Sayala West [dated to the First Intermediate Period by sealings from Egypt], and believed to be contemporary with the earliest *Level I* (Bietak 1966: 35, 37) circular structures in the stratified village at Aniba (Trigger 1968: 191, 1976b: 51), as well as at other Lower Nubian locations including Areika, Faras, Debeira and Wadi es-Sebua (Bietak 1966: 34-35) indicate that early C-Group communities may have been semi-sedentary. The resemblance of the Sayala West enclosures to the settlement patterns established by some present day African villagers has led to the suggestion that the early C-Group settlements were "lineage based" and consisted of the dwellings of "a man, his several wives and their children" (Trigger 1976b: 51-52). The stone wall at Sayala, which enclosed four of the nine circular structures on the site, has been also interpreted as a "fortification" against peoples from the south and from the nearby deserts (Säve-Söderbergh 1989: 10).

At Aniba, Georg Steindorff concluded that the earliest tombs were those which were marked by small, well built, gravel filled, stone circles (1935: 34-36). Tombs of this type characterize Bietak's *Stage Ia* of C-Group development. Stone stelae were also erected in the earliest cemeteries (Bietak 1968: 25; Säve-Söderbergh

1989: 8). Red-slipped vessels, black-topped bowls, and black incised pots containing offerings were placed against the east wall of the superstructures. In addition to the Egyptian storage jars, which indicate that foodstuffs were probably being imported from Egypt (Trigger 1976b: 49-54), late Sixth Dynasty and First Intermediate Period Egyptian copper mirrors, seal-amulets and scarabs have also been recovered from early C-Group sites (Bietak 1968: 133-134). Herkhuf's tomb inscriptions indicate that the communities or regions of Satju and Irtjet, which were probably in Lower Nubia, were "under the leadership of one man" at the time of his second expedition to Iam. By the time of his third journey, Wawat had been incorporated into this Nubian coalition. Some investigators have postulated that Herkhuf's narrative may reflect either the development of rudimentary kingship in Lower Nubia (Kemp 1983: 126), or merely the fact that Sixth Dynasty Lower Nubian societies were ruled by *heqa* (Säve-Söderbergh 1989: 12) or "chiefs." However, other researchers have suggested that the combined lack of variation in house types, burial offerings and tomb sizes at this time may mean that early C-Group society "remained strongly tribal and egalitarian" (Adams 1984: 157; Säve-Söderbergh 1989: 12; Trigger 1976b: 59).

2.1.3 Political relationships between Middle Nubian societies and Egypt during the Old Kingdom and First Intermediate Periods

Although there is both historical and archaeological evidence of Egyptian involvement with Lower Nubia from the time of the First Dynasty, there is disagreement over the nature of that involvement. While some researchers have interpreted the available evidence to indicate Egyptian settlement, others recognize sporadic activities in the form of raids, or mining and trading expeditions. From the Early Dynastic period until the New Kingdom, Reisner suggested that there was little contact between Egypt and Lower Nubia (1910: 332). On the other hand, Arkell has argued that the inscription at Jebel Sheikh Sulieman on the west bank of the Nile south of Wadi Halfa records "the conquest of the Shellal-Wadi Halfa reach" by Djer, a First Dynasty king (1955: 39), and Säve-Söderbergh has suggested that an active foreign policy against the Nubians was in effect from the time of the Second Dynasty. To support his position, Säve-Söderbergh argues that, although fragmentary, the defeated enemy represented on Khasekhemwy's stele from Hierakonpolis is clearly referred to by the *Stj-* sign as a Nubian (1941: 7, 9).

Other researchers cite Khasekhemwy's Early Dynastic raids along with the Fourth and Fifth Dynasty despatch seals from the fortified trading post at Buhen (Trigger 1976b: 46-47); the mud jar sealing and fragmentary stone stele at Tushka; the diorite paving stones in Khufu's mortuary temple and the diorite statues of Khafre, made of stone obtained from quarries west of Abu Simbel (Adams 1984: 169-170); and the discovery of Egyptian potsherds at Balat and Kuban as examples of Old Kingdom activity (Kemp 1983: 125) in Lower Nubia. As a consequence, some argue that Egyptian rule over Lower Nubia may date from the time of the Old Kingdom when small garrisons, designed to protect the river trade, were established (Emery 1965: 125-127; Kemp 1983: 125).

Archaeological evidence for the Egyptian occupation of Nubia has been dated to the late Fourth and early Fifth Dynasty settlement at Buhen, north of the Second Cataract, where A-group pottery was discovered along with jar-stoppers of mud that bore the royal cartouches of various Fourth and Fifth dynasty pharaohs (Adams 1984: 139, 170; Kemp 1983: 125). The jar-stoppers, and pottery found within the site, were used to date the earliest construction at Buhen to the Old Kingdom era (Adams 1984: 170; Emery 1965: 125; Kemp 1983: 125). Unfortunately, the association between the A-Group pottery and the jar-stoppers is now believed to be spurious (Adams 1984: 696). Emery and others (Kemp 1983: 125) have reported that copper was being smelted at Buhen, and that this was the purpose of the settlement, whereas Shinnie has suggested that the "copper furnaces" are really pottery kilns (Adams 1984: 170-172, 696). The real function of the "kilns" remains an unresolved issue.

Although there is no archaeological evidence to support his claim, Emery inferred an early Egyptian occupation from various historical sources including First Dynasty inscriptions; the Sixth Dynasty inscriptions of Merenre at the First Cataract which document the pharaoh's journey to the Cataract to "receive the homage" of the Wawat, Irtje, and Medjay rulers; and the Sixth Dynasty expeditions of Uni and Harkhuf (1965: 125-130). He has also pointed out that under Pepi I, the official Uni recruited Nubian soldiers to fight against Eastern Desert peoples (1965: 130); dug channels in order to improve navigation through the First Cataract; and obtained timber for boat building from "Nubian chiefs." To Emery, all these activities are indicative of Egyptian control over Nubia. As further evidence of this control, he cited the need for punitive expeditions, such as that conducted by Pepinakht, who massacred "large numbers of the enemy" in the process of curbing a Nubian "revolt." Pepinakht is also claimed to have "reorganized [the Lower Nubian] government and brought the two chiefs of Wawat and Irtet to court to do homage to... Pepi II" (1965: 131-132). Early in the First Intermediate Period the Egyptians lost control of Lower Nubia (Säve-Söderbergh 1941: 42-47, 1989: 2; O'Connor 1974: 29) but maintained trading contacts with C-Group peoples (O'Connor 1974: 29-30), who apparently served as mercenaries in the Egyptian armies.

2.1.4 Kerma origins and sociopolitical organization

The origins of the Kerma culture are still practically unknown, but a close relationship to the A-Group has been postulated (Gratien 1978: 19, 157; Privati 1988: 21; Trigger 1976b: 95; Säve-Söderbergh 1989: 21), and in one grave at Akasha, excavators discovered an A-Group-type carnelian bead, as well as a tubular stone bead that was apparently identical with the type found in the earliest Kerma tombs (Bonnet 1986b: 4). Gratien's work at Sai Island led her to suggest that Kerma ancien populations must have been relatively poor, nomadic or semi-nomadic pastoralists, whose tombs almost always lack weapons and other material goods. Bodies, placed on their right sides with their heads towards the east, were laid on planks and frames of wood in deep, round or oval tombs, over which pebbles of quartz and schist were used to build superstructures (Gratien 1978: 47-159). Like contemporary *Stage Ia* C-Group peoples (Bietak 1968: 25), Kerma ancien communities erected stone stelae in their cemeteries and deposited pottery containing burial offerings outside their tombs. The Kerma ancien ceramics consist of three main types: imported Egyptian

Qena ware and locally made "false Qena;" coarse, handmade Nubian pottery; and fine, handmade Nubian pottery (Gratien 1978: 143-159).

Discoveries in the oldest section of the eastern necropolis at Kerma indicate that many Nubian funerary practices, including the use of bed burials and animal sacrifices, may be of considerable antiquity (Bonnet 1980: 58). Nevertheless, whereas animal sacrifices and decorated leather artefacts do appear in some graves towards the end of the Kerma ancien phase at Sai, human sacrifice is absent (Gratien 1978: 140) and there was nothing comparable to the large tumuli and elaborate burial furnishings that accompanied the wealthier burials of the late Kerma ancien era at Kerma. Furthermore, dozens of bowls, that were identical in form and decoration, were discovered around the superstructures of the largest tombs at Kerma, and attest to a certain degree of specialization in ceramic production at this time (Bonnet 1986b: 3-5).

Charles Bonnet's excavations of the settlement at Kerma, dated to *ca.* 3,000 B.C. in the earliest levels, have revealed that occupation of the site had been continuous since the Neolithic era. In the earliest periods, that lack evidence of contact with Egypt (Privati 1988: 21), clusters of storage pits had been surrounded by circular houses in which hearths were occasionally preserved, and during the period of the Egyptian Old Kingdom, a prosperous, hierarchically organized, urban society, known as Kerma ancien (Gratien 1978: 19, 133-160, 259) had flourished there. The development of this society, which was controlled by "chiefs" who possessed large herds of cattle and goats (Bonnet 1986b: 5), has been attributed largely to long distance trade with Old Kingdom Egypt (Trigger 1976b: 58-59). Ivory from the central Sudan and mother-of-pearl from the Red Sea attest to the existence of long distance trade with other localities, whereas the presence of bows in several graves, as well as the skeletal injuries suffered by some grave occupants, indicate that warfare was common (Bonnet 1986b: 5-6).

2.2 Middle Nubian societies during the Middle Kingdom Period

2.2.1 C-Group *Stage IIa* sociopolitical organization

C-Group *Stage IIa* settlements are known from Aniba *Level II,* Areika and Faras (Bietak 1968: 91-92). In the stratified deposits at Aniba and Areika, circular, or sometimes almost square (Säve-Söderbergh 1989: 9), semi-subterranean houses of two kinds were found: single-room dwellings and multi-room or agglomerated structures that included granaries. In both types of house, stone slabs, cemented with small stones and mud, had been used to construct the foundations. Although some eight-roomed houses were discovered, none appeared to be more elaborate than the others. The houses were not located close together or arranged in a formal manner. These settlement data suggest that small, extended families occupied both types of houses, and that C-Group socioeconomic and political organization remained unchanged throughout the Middle Kingdom period (Trigger 1976b: 78-79).

Like those of Bietak's *Stage Ib* period [Late Eleventh and Early Twelfth Dynasty], the superstructures erected over Middle Kingdom C-Group tombs consisted of several layers of rough stone blocks that surrounded a mound of pebbles and sand. Emery and Kirwan reported that the superstructures consisted of "a heap of earth over the grave or vault kept in place by a circular retaining wall of uncemented stones" (1935: 13). Furthermore, they tended to be larger and not as well built as those of the *Stage Ia* phase (Säve-Söderbergh 1989: 8). No wealth differences existed between cemeteries or individual burials at this time (Trigger 1976b: 79; Williams 1983: 118). Late Eleventh and Early Twelfth Dynasty offerings continued to be placed in pottery bowls against the east wall of the stone tumuli. Late Twelfth Dynasty [Bietak's *Stage IIa*] offerings were deposited outside the north wall. In both instances, the pottery deposits correlate with the head end of the burial. During the late Twelfth Dynasty, when the most common cemetery pottery was black incised ware, ceramics are found within the burial shaft more often than in the earlier phases (Säve-Söderbergh 1989: 8).

Although he did discover a fish hook, needles, awls and mirrors of copper, Reisner, like later excavators, recovered very few metal objects from the C-Group graves that were assigned to this period. Ivory was rare, but bone implements such as scrapers, awls, and piercers, were common, and apparently similar to Middle and New Kingdom Egyptian types. No palettes were found, but mother-of-pearl, carnelian, blue-glazed, and other stone beads were numerous. From the nature of these finds, Reisner deduced that Lower Nubian peoples were isolated agriculturalists who fashioned their mats, pottery, baskets and cloth "by hand in family workshops" (1910: 333-335).

The uniformity that apparently existed in both settlement and cemetery construction during the Middle Kingdom era has been interpreted as showing that (i) C-Group communities remained "tribal" and egalitarian; (ii) although there may have been differences in status between members of some communities, these differences were not markedly economic in nature; and (iii) *Stage IIa* communities were essentially similar to *Stage Ia* and *Stage Ib* communities in terms of their socioeconomic and political structure. In addition, the absence of Egyptian artefacts in Lower Nubian graves was interpreted as indicating that *reciprocal* social and economic relations between the two communities were minimal (Adams 1984: 186; Trigger 1976b: 79; Säve-Söderbergh 1941: 2).

2.2.2 Political relationships between Middle Nubian societies and Egypt during the Middle Kingdom Period

Although the Egyptian conquest of Wawat has been attributed to both Montuhotep II (Gardiner 1961: 121, 133; O'Connor 1974: 30) and Amenemhat I (Gardiner 1961: 133-134), the actual reoccupation of Lower Nubia is claimed to have taken place under Senwosret I. This has been inferred from the latter's apparent founding of a garrison at Wadi Halfa, where General Montuhotep's sandstone stela documents the presentation of Kushite and other Nubian captives to Senwosret I (Emery 1965: 141-142). Slightly later in the Middle Kingdom era, Ameny, who had been appointed nomarch in the Oryx nome by Senwosret I, described Senwosret's military campaign to Kush and beyond (Emery 1965: 142-143; Gardiner 1961: 129). The primary motive for the Egyptian incursion into Nubia was access to luxury goods from the south. Soon after the "campaign," Ameny and Senwosret's eldest son journeyed to Nubia to "fetch treasures of gold" for the pharaoh (Gardiner 1961: 134). A gold mine and four mining workshops of Middle Kingdom date at Saras indicate that gold-bearing ores were being exploited during that period, although there is no evidence of Egyptian settlement in the region (Mills 1968: 205-206).

Opinions about the nature of the Middle Kingdom colonization of Nubia also differ. Gardiner views it as consisting of sparsely populated Egyptian-maintained garrisons, in hostile territory, to keep watch over the local population: "there was little or no actual colonization" (1961: 134-137). A more forceful Egyptian presence is advocated by those researchers who posit outright Lower Nubian resistance to the Egyptian invasion. To counter the situation, the Egyptians were compelled to build fortified military installations throughout the land (O'Connor 1993b:12). It is possible that even Areika, long believed to be a C-Group habitation site, was originally constructed as a Twelfth Dynasty *ẖnrt,* or prison, where political and other prisoners could be detained. Evidence of military equipment is lacking at Areika. However, Middle Kingdom Egyptian seals and sealings that derive from bags, jars, and doors [or boxes], as well as eight Twelfth Dynasty mud stamp-sealings of a "befeathered striding figure" that resembles those recovered from several Lower Nubian fortresses, were found at the site. Middle Kingdom Egyptian ware, late Twelfth Dynasty, Thirteenth Dynasty and Second Intermediate Period C-Group [*Stage IIa* and *Stage IIb*] pottery, and a small amount of Pangrave pottery also was recovered. The presence of these artefacts, in conjunction with the building techniques employed in those parts of the site that exhibited Egyptian-style, rectangular buildings, led Wegner to conclude that Areika was originally "... a fortified Egyptian center which maintained regional control. Restricted access ... [was] one of its primary features [and] ... one of its capacities was that of a *ẖnrt,* for the detention of rebel elements ... [among whom] captive C-Group Nubians would have been present ..." (1995: 139, 142, 144, 153, 158). The Areika data also have been interpreted to show that Lower Nubians served as military personnel under the command of Egyptian officers (O'Connor 1993a: 48).

The fortresses at Ikkur and Aniba also may have functioned as regional "control centres," and a *ḫnrt* may have been located at Uronarti (Wegner 1995: 154-156).

2.2.3 Kerma moyen sociopolitical organization

Following Reisner's excavations at Kerma, it was suggested that the Western Deffufa, an ancient Nubian brick ruin, had been situated in the central part of a town in which other buildings had been constructed of reeds and other perishable materials. The Deffufa itself, which had been built in the Egyptian manner, was thought to have been the fortified, Middle Kingdom residence of "an Egyptian 'Governor General' of Upper Nubia" (Trigger 1976b: 86-87). Other researchers suggested that the building may have functioned from the beginning of the Twelfth Dynasty until Hyksos times as an Egyptian trading 'factory' or post (Gratien 1978: 121; Säve-Söderbergh 1941: 103, 108-110, 1951: 53), or even as the palace occupied by the Kushite king (Adams 1984: 700-701; Hintze 1964: 82-85; Trigger 1976b: 87).

It is now known that the town of Kerma grew rapidly during the Kerma moyen period, which was apparently contemporary with the Middle Kingdom (Gratien 1978: 180) and with Bietak's *Stage Ib* and *Stage IIa* C-Group phases. It has been suggested that a state organization had probably developed by this time (Bonnet 1986b: 48). Egyptian writing, fortifications, bakeries, a potter's workshop, a bronze workshop, brick houses and monumental architecture of Middle Kingdom style have been discovered at Kerma (Bonnet 1982: 6-11, 1988: 10, 13, 1989: 36; Gratien 1978: 134-160; Trigger 1985: 469). Around 2000 B.C., some buildings tended to become larger and more elaborate. Houses consisted of between one and three rectangular rooms. On either side of the north-south access road that led towards the town, walls enclosed enormous spaces that had been reserved for livestock; another function of the walls may have been to protect the houses from wind erosion (Bonnet 1986b: 34). The discovery of cramped courtyards, surrounded by small contemporary houses that lacked gardens and granaries, suggested that the central area of the town had been inhabited by the poorer members of the Kerma community (Bonnet 1989: 36).

Although Kerma moyen cemeteries tend to be situated in the same locations as those from the subsequent Kerma classique period, they are known from Kerma ancien locations only at Sai, Akasha, and Kerma. Moreover, although Kerma classique artefacts are never found in Kerma moyen graves, objects from the Kerma moyen phase are often found in Kerma classique contexts. Therefore, it is unclear whether Kerma moyen and Kerma classique communities partially co-existed or followed each other in time (Gratien 1978: 179-180).

The burials of this period tend to consist of large tumuli around which numerous smaller tombs are grouped. The remains of a possible rectangular funerary chapel, which may have been a forerunner to those of the Kerma classique phase, were discovered in the Sai necropolis. Kerma moyen tombs were surmounted by mounds of earth, sometimes surrounded by dry stone walls, similar to those of the Lower Nubian C-Group communities. Stone stelae are absent but wooden sticks were erected near some graves. Small hearths and pieces of carbonized wood indicate places where funerary feasts may have been held. Ox skulls, sometimes accompanied by the horns and skulls of sheep and goats, were placed in pits at the south end of the superstructures. Early Kerma moyen burial chambers tended to be circular; later ones rectangular. The change appears to be correlated with the practice of placing the dead on beds within the burial chamber. Animal sacrifices, as well as grave goods (Bonnet 1980: 54-56) that included toilet articles, jewelry, pottery, ostrich feather fans, ivory, bone needles, imported Egyptian kohl pots, daggers and knives, and locally made Egyptian-type amulets and beads, were deposited either near, or on, the body in the burial pit. Like the Kerma ancien ceramics, those of Kerma moyen date consist of three main types: rare amounts of imported Egyptian Qena ware and locally made "false Qena;" a large variety of rough, mica-tempered, handmade Nubian pottery; and fine, handmade Nubian pottery (Gratien 1978: 160-179). Although absent during the early Kerma moyen phase, both bed burials and retainer sacrifice in the élite tombs at the eastern Kerma necropolis appear to predate the Second Intermediate Period (Adams 1984: 198-199; Gratien 1978: 169; Trigger 1985: 470).

Reisner reported that the buildings surrounding the Western Deffufa had occasionally been rebuilt and that some "ante-dated the Deffufa." The contents of these buildings included imported Egyptian goods, locally produced artefacts, unfinished objects, and raw materials from adjacent lands (Trigger 1976b: 85-86). The presence of these artefacts led to the claim that the Deffufa had served as an Egyptian Middle Kingdom manufacturing and trading post. Disagreement with this interpretation involves the question of the manner in which the settlement could have protected itself, since the existence of the Second Cataract fortresses is indicative of supposedly hostile territory farther south (Arkell 1955: 71; Gardiner 1961: 136-137). Objection to the suggestion that the Deffufa was an Egyptian trading post has also centered on the argument that the burials, bone inlays, faience, weapons, and pottery discovered at Kerma are quite unlike those of the Egyptians (Arkell 1955: 73-74; Gardiner 1961: 136-137; Trigger 1965: 103). Moreover, it has been noted that many of the Egyptian artefacts recovered from the gigantic tumuli at Kerma date to the Second Intermediate Period and reflect trade in re-used Egyptian objects between Kerma and the Hyksos delta kings (Arkell 1955: 68-72; Säve-Söderbergh 1941: 111-113; Trigger 1965: 102-103, 1976b: 90-92). By using a similar argument, O'Connor, who has questioned the existence of an Egyptian Middle Kingdom trading post at Kerma, also contends that many of the Egyptian artefacts found there may have been late Second Intermediate Period plunder or trade goods (1974: 31). Furthermore, during his excavations at Kerma, Bonnet apparently discovered few Egyptian objects that could be dated to the time of the Middle Kingdom (1980: 43).

2.3 Middle Nubian societies during the Second Intermediate Period

2.3.1 C-Group *Stage IIb* sociopolitical organization

Second Intermediate Period C-Group building techniques were similar to those of the earlier phases. However, villages were larger, more clustered, and tended to be fortified. The round or nearly rectangular groundplans of the clustered houses at these habitation sites combine to form large complexes (Bietak 1968: 91-92). Although the site was occupied since Middle Kingdom times, the largest buildings at

Amada are believed to be later Second Intermediate Period or *Stage IIb* in date. Similar fortifications were apparently constructed at Wadi-es-Sebua late in the Thirteenth Dynasty (Trigger 1976b: 100-101) or at the beginning of the Second Intermediate Period (Bietak 1968: 92; Gratien 1985: 41; Sauneron 1967: 165), although Gratien also has argued that the defenses at this site were built towards the end of the C-Group era to protect the community from the raids of Kerma "squatters." The Wadi es-Sebua settlement consisted of about 100 circular or almost rectangular buildings, surrounded by an enclosure wall that contained north, east and southern gates. The western side of the village was bordered by a cliff (Gratien 1985: 39, 55). Dwellings that resembled those at Amada also were discovered at Karanog (Trigger 1976b: 102). These settlements and those at Debeira, the small, rectangular, *Layer III* mudbrick dwellings at Aniba, and the rectangular and almost square buildings at Wadi el-Arab and Wadi es-Sebua, as well as the latest, possibly *Stage III* stone and mudbrick houses at the Areika housing complex or "Nubierburg" (Bietak 1968: 105) indicate the gradual adoption of an Egyptian building-style by the Lower Nubians (Bietak 1968: 105; MacIver and Woolley 1909: 6-9; Trigger 1976b: 102).

According to Bietak, three distinct tomb superstructure types can be recognized during *Stage IIb*. Rectangular, mud brick offering chapels were built against the east wall of some of the largest, while others resembled the type that characterized the *Ib* phase, or consisted of well built stone walls that were filled with either sand or pebbles. Burial chambers also varied in size and in construction during this period. Those with barrel-vaults fashioned of mud brick, and those lined with stone slabs or wood, may have been the burials of "headmen" (Trigger 1976b: 99). Like *Stage IIa* burials, those of *Stage IIb* sometimes contained deep, black-incised or red-incised, handmade bowls, as well as pitchers of rough ware on which figures or geometrical designs were etched. Imported, or at least Egyptian-style, pottery increased throughout the period until it became the dominant type employed in C-Group burial offerings (Säve-Söderbergh 1989: 9).

During the *Stage IIb* period, some researchers have suggested that local Lower Nubian rulers appropriated some components of the mortuary practices of the Kerma élite, including *angareeb* burials, Kerma ware and retainer sacrifice (Adams

1984: 198-199; Gratien 1978: 103; Trigger 1976b: 98, 1985: 470). The stone chapels erected against superstructures at this time may have been adopted from the Kermaites as well (Säve-Söderbergh 1989: 8), while the use of painted animal skulls amongst the grave offerings indicates that some Pangrave burial customs were incorporated into the Lower Nubian funerary complex during this era (Bietak 1968: 105; Gratien 1985: 55; Trigger 1976b: 99-100).

Copper daggers (Bietak 1968: 136; Steindorff 1935: 115) as well as Egyptian scarabs have been reported from Second Intermediate Period C-Group graves at Aniba (Bietak 1968: 135-136), and it has been suggested that these artefacts resulted from tolls demanded "on goods passing through their territory" or from trade with the Upper Egyptians. It has been suggested that "profits derived from this trade enhanced the status of local chiefs and perhaps of entrepreneurs, producing an indigenous society that economically and politically was considerably more complex than it had been formerly" (Trigger 1976b: 97-98). The presence of Pangrave and Kerma objects in burials at this time is also indicative of renewed contacts with neighbours (Säve-Söderbergh 1989: 9). These findings, in conjunction with the texts of the Kamose and Buhen stelae, appear to reflect Lower Nubian independence from Egyptian rule, as well as some form of Kermaite political control as far north as Aswan (Kemp 1983: 160-162). However, it is possible that because Kermaite control over Lower Nubia was relatively weak, many C-Group communities were forced to fortify their villages in order to protect their possessions against attackers, who may have been nomadic Pangrave peoples (Säve-Söderbergh 1989: 10).

2.3.2 Kerma classique sociopolitical organization

At Kerma, defense walls were constructed in the southern part of the city (Bonnet 1980: 36) during the Kerma classique era. Large cattle enclosures as well as monumental buildings, including the central temple complex or Nubian brick ruin known as the *Western Deffufa* (Adams 1984: 198-199; Trigger 1985: 470) and numerous spacious houses, with interior staircases and adjoining silos, attest to the prosperity of the Kerma community at this time. Statuettes, zoomorphic jars, "tulip" jars for domestic use and copies of Egyptian pottery are indicative of the skill of Nubian artisans (Bonnet 1986b: 36-37).

In the Eastern necropolis at Kerma, which extends for 1.5 kilometres and is about 600 metres wide, the largest tombs are those of Kushite royalty. They are Kerma classique in date (Bonnet 1980: 50; Trigger 1976b: 92). In each main burial chamber, the ruler's corpse had been placed on an elaborately fashioned bed that was surrounded by luxury items. The skeletons of up to nearly 400 human sacrificial victims, who had apparently been buried alive, filled an adjoining room that stretched the length of the tumulus. Secondary burials, each with some sacrificed humans and lavish burial offerings, had been made in the largest tumuli, which were in turn surrounded by smaller tumuli. The former may have been the burials of high officials from the king's court, while the latter were probably the graves of lesser Kushite officials and the higher ranking members of the nobility. Researchers have claimed that these burials indicate the presence of a "centralized monarchy," the existence of slavery, a reliance on warfare to facilitate the conduct of trade, and variations in economic status (Trigger 1976b: 93-94).

It is believed that political difficulties in Egypt encouraged the development of a kingdom in the Kerma region, particularly during the Hyksos or Kerma classique era (Bonnet 1986b: 8), when there is abundant evidence of trade connections between Kerma and the Hyksos kings (Trigger 1976b: 95). This long-distance exchange may have begun during the Thirteenth Dynasty (Gratien 1978: 180). During the Kerma classique phase, *ca.* 1750-1500 B.C., the Kerma frontier was expanded to the region of the First Cataract under the enterprising activities of the Kerma classique rulers. The evidence from cemeteries suggests that the small garrisons established throughout Lower Nubia at this time were probably occupied by officials and merchants. This northward extension of Kushite hegemony was apparently the result of their desire to continue trading with the Egyptians (Trigger 1976b: 96-97).

It has been argued that while some objects, such as sealings that bear the names of early Fifteenth Dynasty Hyksos kings (Trigger 1976b: 95) recovered from buildings that surrounded the *Western Deffufa* at Kerma may be evidence of direct trade, others reflect either plunder (O'Connor 1974: 31), gifts from Hyksos rulers to members of the Kushite élite (O'Connor 1974: 32; Trigger 1976b: 92), or trade in re-used Egyptian objects between Kerma and the Hyksos delta kings (Arkell 1955: 68-72; O'Connor 1974: 31; Säve-Söderbergh 1941: 111-113; Trigger 1965: 102-103, 1976b: 90-92). To account for the presence of pottery from southwest Asia in Kushite graves at this time, it has been suggested that gold was used to pay for these imports. However, because it is unlikely that the Kermaites were able to extract gold from mines in the Eastern Desert, this gold may have been obtained from the Batn el-Hagar (Trigger 1976b: 96).

2.3.3 Pangrave sociopolitical organization

Pangrave settlements are scarce, but remains of a probably late Second Intermediate Period campsite have been found in the Eastern desert near Maharraqa South. The suggestion that the location had been inhabited for a short interval of time was based on the following discoveries: surface finds of Pangrave-type ceramics; an occupation layer that consisted of several pits, a dozen hearths, charcoal, a stone assemblage, a fragment of red-polished black-topped pottery, a bowl of reddish-brown ware, animal bones and so-called 'sheep's wool;' and the lack of house remains (Bietak 1966: 49, 61). Other Pangrave settlements have been found at Mostagedda and Qau in Egypt (Brunton 1937: 121-122; Säve-Söderbergh 1941: 136).

Therefore, like most other Nile Valley cultures, the Pangrave, or Medjay (Säve-Söderbergh 1951: 70), phase of Middle Nubian prehistory has been reconstructed largely on the basis of mortuary data. Some Lower Nubian cemeteries of New Kingdom date have been identified as those of Pangrave warrior communities who presumably served as mercenaries in the Egyptian armies that defeated the Hyksos (Bietak 1966: 73; Säve-Söderbergh 1951: 70, 1989: 15, 17) and conquered Kerma at the beginning of the New Kingdom (Bietak 1968; Trigger 1985: 470). According to Bietak, characteristic Pangrave desert burials, which tend to be situated farther away from cultivated areas than those of the C-Group peoples, consist of a contracted corpse "wrapped in skins and roped [as in Burial] 3128 at Mostagedda" (Brunton 1937: 116, 120) with its head positioned towards the north or west; burial offerings of thick-lipped, black-topped, red-polished pottery and coarsely incised, graphite coated offering bowls in which the rim was separated from the body of the vessel by an incised groove or a specific rim shape (Nordström 1972: 65); *Nerita* shell chains; rectangular shell-plaque armbands; Egyptian kohl vessels; grinding stones; palettes; axes, daggers and animal bones; a round grave shaft that is lined either 'carefully' or 'carelessly' with stone slabs, and protected on the surface by a "layer of flat stones" as well as by a "superstructure of loose stones in a ring;" and pottery, as well as painted objects, including the skulls of sacrificed cattle and goats, that had been deposited in pits around the tomb (Bietak 1966: 72-73, 1968: 117-123; Säve-Söderbergh 1989: 17). Pangrave-type burial customs, such as the adoption of shell-plaque arm bands and the use of upright sandstone slabs as a lining in grave chambers, occur in some *Stage IIa, IIb* and *III* C-Group graves (Bietak 1968: 117).

While marked differences between Pangrave and C-Group burial customs have been observed and reported in situations where characteristic Pangrave and C-Group pottery is absent, the similarities in their household utensils have apparently made it difficult to determine which habitation sites are those of a particular community, and which merely show the influence of one culture. In particular, it has been noted that rough ware pitchers, which are incised with figures or geometrical designs and are commonly found on C-Group habitation sites, are difficult to distinguish from Pangrave pottery. As a result, "a definite cultural identification ... [is] difficult or even impossible" (Säve-Söderbergh 1989: 9-10, 17).

Despite the absence of direct archaeological evidence to support their conclusions, researchers have assumed that Pangrave communities were nomadic or semi-nomadic; herded livestock, especially goats and sheep, although the presence of bucrania at gravesites suggests that cattle were also important; and also continued hunting and fishing (Säve-Söderbergh 1989: 18).

Little appears to be known about trading contacts between the Pangrave peoples and their neighbours. Kemp has noted that the inhabitants of the Middle Kingdom garrisons occasionally engaged in local transactions "to acquire cattle" from Medjay and C-Group people, while at Senmet, a First Cataract fort, Medjay people traded gold with the Egyptians (Kemp 1983: 135-136). However, Säve-Söderbergh has cautioned against assuming that all Medjay communities were 'Pangrave,' whereas the reverse is likely to have been true (1989: 15).

2.4 The Middle Nubian collapse

2.4.1 C-Group disappearance or Egyptianization

Reisner reported that C-Group and New Kingdom burials were easily distinguished even when both were found in the same cemeteries. He defended this position in spite of the fact that "thin polished black-topped ware and a few ribbed potsherds of C-group ware" were discovered in some New Kingdom graves. Otherwise, C-Group corpses were contracted, whereas those from the New Kingdom were extended, and different types of pottery had been placed in each type of tomb. Stone vessels were found in New Kingdom but not in C-Group graves, as were cups, bowls, and kohl pots; circular mirrors accompanied New Kingdom burials, while oval ones were placed in C-Group graves; no symbolic, magical or religious objects were found in C-Group burials, but, as in Egypt, canopic jars and other paraphernalia were found in the Nubian New Kingdom tombs (1910: 336-338).

The late Middle Nubian burials from Lower Nubia have been assigned to either C-Group, Pangrave, Kerma, or Pharaonic communities (Säve-Söderbergh 1968: 231). The latter burials have been variously interpreted as those of Egyptian immigrants (Adams 1964: 108; Firth 1912: 28-29) or Egyptianized Nubians, identified by some researchers with the C-Group population of Lower Nubia (Mills 1968: 203) and by others with the Medjay or Pangrave peoples (Trigger 1985: 470). Also contemporary with the Pharaonic graves are those *transitional burials* that exhibit a combination of imported Egyptian artefacts and local Nubian mortuary practices (Säve-Söderbergh 1968: 241-242, 1989: 1, 10). Graves of this type have been identified at Quadrus and elsewhere in northern Sudanese Nubia.

Early investigations appeared to show that the C-Group inhabitants of Egyptian Nubia had disappeared prior to, or by the beginning of, the New Kingdom era (Emery 1965: 168; Firth 1912: 15; Junker 1925: 37; Säve-Söderbergh 1950:

57, 1968: 237; Steindorff 1937). This belief, although apparently unsupported by an investigation which established that an "exodus" of Lower Nubians occurred during the middle years of the Eighteenth Dynasty in the fifteenth century B.C. (Adams 1964: 108), has been upheld by Säve-Söderbergh, who has questioned the validity of Adams' conclusion (1968: 240).

According to Reisner, the Egyptianization of Nubia, which occurred *prior* to the early New Kingdom, was the consequence of the arrival in Nubia of Egyptian populations who had been pushed south by those who were fleeing Hyksos rule. He asserted that the Egyptianization process began "in the Hyksos period long before the conquest of Nubia in the Eighteenth Dynasty" and long after the Middle Kingdom conquests, of which only minimal traces remained at the sites of the massive Egyptian forts. Sixteenth [Fifteenth] and Seventeenth Dynasty graves in Cemeteries 58 [Ginari] and 64 [Metardul] were cited to support this hypothesis because they provided examples of burials that were "absolutely indistinguishable from those of the same period found in Egypt" (Reisner 1910: 335-342).

The occurrence of Nubian names among those of Eighteenth Dynasty officials led to the suggestion that by late in the dynasty the Lower Nubian population had been assimilated by the Egyptians (Säve-Söderbergh 1941: 184, 187). Emery attributed C-Group acculturation to a combination of factors that included an increase in the number of Egyptian colonists, merchants, and military personnel who settled in Nubia following the Eighteenth Dynasty conquest (1965: 177). Nevertheless, despite the claim that "characteristic C-Group culture did not survive the Second Intermediate Period" (O'Connor 1983: 266-268), "Egyptianization" may have been a complex phenomenon, and in spite of the adoption of the Egyptian mode of burial and dress, it may not have extended to other areas of culture.

Opposition by Adams to the acculturation hypothesis led him to combine Reisner's migration theory with Firth's 'cultivation crisis' argument to account for the Eighteenth Dynasty appearance of "Egyptians, and Egyptian culture, and the disappearance of the native ... cultures" from Lower Nubia. Eighteenth Dynasty Egyptian-type graves are cited as evidence of a "fairly considerable Egyptian population... [that] remained concentrated [in the] commercial localities" at a time during the fifteenth century B.C. when low Niles were forcing the local Nubians to move south in search of more fertile land. According to Adams, evidence against acculturation consists of the fact that both Kerma and C-Group burials "remain distinctly non-Egyptian to the end;" that Kerma and C-Group burials are easily distinguished from those of Egyptians; and that, instead of a "proportional increase in the number of Egyptian or Egyptianized graves," both Egyptian and C-Group graves decrease in number towards the middle of the Eighteenth Dynasty. By the late Eighteenth Dynasty, hardly any C-Group graves remain, and Egyptian graves are few. The latter decrease still further during the Nineteenth Dynasty, while C-Group graves disappear altogether. By the Twentieth Dynasty there are "virtually no graves of any sort" in Lower Nubia. In other words, the phenomenon that is reflected in the archaeological record is "depopulation . . . not 'Egyptianization'" (Adams 1964: 104-106, 108).

O'Connor, who has questioned Adams' thesis that the C-Group peoples were displaced by Egyptian immigrants as well as his idea that the depopulation of Lower Nubia had occurred in the fifteenth century B.C. as the result of low Nile floods, suggests that Egyptianization of the C-Group peoples is well attested in Eighteenth Dynasty Nubian and Egyptian records, and political turmoil was probably responsible for the exodus of the Lower Nubian population during the twelfth century B.C. (1983: 263-268). Moreover, at Aksha, both the cultivation of fields, and the presence of silt deposits on the foundations of an early Nineteenth Dynasty temple, are cited as evidence of high Niles until, and perhaps during, the thirteenth century B.C. (Butzer 1976: 29-30).

Säve-Söderbergh's excavations have demonstrated that C-Group populations survived in southern Lower Nubia until the middle of the Eighteenth Dynasty. Moreover, at Ashkeit, where the C-Group "burial type" persists "into the 13th century B.C.," these peoples appear to have been present in the late Eighteenth Dynasty, and perhaps even in the Nineteenth (Säve-Söderbergh 1968: 237, 1989: 222). Both the size and number of cemeteries that date to the middle of the Eighteenth Dynasty indicate that C-Group communities comprised a significant portion of the population, and that C-Group burial practices continued to be fashionable in that area at least as long as the Egyptian ones. The depopulation argument developed by Adams (1964: 108) was based on opinions put forward by Reisner (1910) and Firth (1927: 28) who claimed that large numbers of Egyptians must have emigrated to Lower Nubia during the Hyksos period (Reisner 1910: 335-342) and co-existed there with a "flourishing" C-Group population until the Eighteenth Dynasty when *seluka* agriculture in Lower Nubia became impossible as a result of low Niles (Firth 1927: 28). Middle Nubian peoples were therefore forced to abandon the area (Adams 1964: 102-120; Firth 1927: 28). This hypothesis has been rejected by Säve-Söderbergh, who claims that in Egyptian Nubia there is no evidence for large numbers of both C-Group and 'Egyptian' burials during the early Eighteenth Dynasty (1968: 240). On the other hand, he also suggests that the burials of the Egyptianized Nubians at Quadrus apparently exhibit evidence of "increasing poverty [which may have]... led to the disappearance of [both these people and the C-Group]... possibly through an emigration southwards caused by a deterioration of the agricultural conditions" (Säve-Söderbergh 1968: 232, 237-239).

Säve-Söderbergh argues for "acculturation" on the basis of the presence of Egyptian-type tombs in places like Quadrus that were not associated with Egyptian towns, forts or temples; the Nubian "misunderstandings" of Egyptian culture that are apparently revealed in Huy's tomb paintings; and "signs of foreign elements in some names and... [the] pathetic misunderstandings of Egyptian beliefs [exhibited by a] deceased [man] and his wife [at Aniba, who]... provided themselves with 361 ushebtis... but amongst them included [twenty-three] with the name of the viceroy Sethi" (1968: 241). The occurrence of the latter objects suggests that the tomb is probably early thirteenth century [late Nineteenth Dynasty] in date (Gardiner 1961: 445; Reisner 1920: 49; Steindorff 1937: 84). Säve-Söderbergh also argues that "many items of great importance to an 'orthodox' Egyptian are lacking [in the] 692 mostly unplundered tombs" at Quadrus, Cemetery 185. He notes that whereas the primary function of an Egyptian tomb was 'to make the name of the dead live,' in none of the tombs of Cemetery 185 "is the name of the deceased mentioned... on any object" (1968: 242). Furthermore, Säve-Söderbergh stresses the fact that whereas two different phenomena (*Egyptianization* and *depopulation*) appear to be reflected in the archaeological record of Lower Nubia between the Seventeenth and Twentieth Dynasties, Adams has chosen to regard these as a single process (1968: 239). Lastly, although debate has tended to focus on the "interpretation" of Egyptian-type graves (Säve-Söderbergh 1968: 240), it is not clear that the same definition of 'Egyptian grave' has been assigned by Adams and Säve-Söderbergh to the burials under discussion. Whereas Adams insists that late C-Group burials are easily distinguished from those of contemporary Egyptians, Säve-Söderbergh cautions that it is difficult to tell them apart, especially if the superstructure is missing and a mudbrick vault has been erected over the burial chamber (1968: 240).

2.4.2 Pangrave disappearance or Egyptianization

Like excavators in other regions of Lower Nubia, researchers with the Scandinavian Joint Expedition to Sudanese Nubia discovered the burials of typical Middle Nubian cultures in cemeteries between Faras and Gamai. The latest of these burials were assigned to three separate categories:

1. those comprising Bietak's C-group *Stage IIb* and *III*, in which the latter stage, represented in burials such as those of northern Nubia in Cemetery 58 from Ginari that exhibit Kerma, Pangrave and Theban features, dates to the period prior to and immediately following the Eighteenth Dynasty conquest of Nubia (Säve-Söderbergh 1989: 10);

2. those that were New Kingdom in date and exhibited local Nubian burial customs while containing Egyptian artefacts were categorized as *transitional*, which is a subgrouping of Bietak's C-group *Stage III*, and a type of burial that was also employed by Pangrave communities at Aniba, as well as in the region between Faras and Gamai. These tombs are characterized by loosely placed, standing slabs of stone that were used to protect the burial chambers (Säve-Söderbergh 1989: 8, 10);

3. those that were contemporary with the "transitional" burials, but resemble Egyptian or "Pharaonic" interments, were classified as either (a) the burials of

Egyptian immigrants (Adams 1964, 1984: 240; Vagn Nielsen 1973: 45), or (b) the burials of *Egyptianized Nubians* who have been previously associated with C-group, Pangrave (Säve-Söderbergh 1989: 11; Trigger 1985: 470) and Kerma peoples.

Warfare, in which C-Group and Kerma people were pitted against Medjay and Egyptian warriors in the early part of the Eighteenth Dynasty, has been postulated as one reason for the apparent decrease in sedentary, Lower Nubian, C-Group farming communities following the Egyptian victory. C-Group cultivators may have been forcibly resettled in densely populated areas while the Egyptians' Medjay allies were rewarded with C-Group lands on which they could pasture their livestock. Egyptianized Lower Nubians from the New Kingdom era may therefore be members of Pangrave or Medjay, rather than the C-Group, populations (Trigger 1985: 470).

Similarly, Säve-Söderbergh concluded that the *transitional cemeteries* suggested a relationship with Pangrave, rather than late C-Group, traditions. Moreover, he argued that by the "Hyksos" phase of the Second Intermediate Period, the east bank C-group communities between Faras and Gamai were already Egyptianized, as illustrated by the oldest Pharaonic tombs in Cemetery 185 at Quadrus. Säve-Söderbergh has postulated, therefore, that the Pangrave communities were not Egyptianized at this early date as effectively as the C-group population although they do show a tendency to use oval or rectangular burial chambers. Proof of this is the continued use of contracted burials along with Pangrave-type pottery in the *transitional cemeteries,* and the lack of typical Bietak *Stage III* remains (1989: 10-12). Like Trigger, Säve-Söderbergh has also suggested that those 'Medjay' Nubians who served under Theban rulers in their battles against the Hyksos would tend to become Egyptianized (1989: 4). Pangrave culture seems to have disappeared by the late Seventeenth Dynasty in Egypt and in northern Lower Nubia, but in northern Sudanese Nubia, it survived until "well into the New Kingdom" (Säve-Söderbergh 1989: 18).

The 'Egyptian acculturation hypothesis' of one or more local Nubian communities, rather than the 'Nubian exodus hypothesis,' appears to offer a more satisfactory account of the disappearance of the Middle Nubian *cultures*, especially since recent archaeological investigation in the Batn el-Hagar indicates that the region remained thinly peopled after the C-Group era. Furthermore, during the Second Intermediate Period, the Dal cataract area was inhabited by Ukma agriculturalists and their probable Kerma overlords; after the conquest, both groups apparently adopted Egyptian burial customs (Säve-Söderbergh 1989: 11). However, the apparent disappearance of the Lower Nubian *populations* may have been the consequence of a shift back to pastoralism (Trigger 1985: 470).

2.4.3 Kerma conquest

At Kerma, the discovery of New Kingdom and even later tombs containing contracted burials indicates that the site continued to be occupied after the Egyptian invasion (Bonnet 1978: 108). Nevertheless, no cities were rebuilt in the Kerma Basin after the Egyptian conquest of Kerma. The existing settlements were abandoned after the wars of Tutmosis I and II. Evidence of the conflict consists of pillaged tombs and partially destroyed fortifications (Bonnet 1986b: 10). However, O'Connor suggests that Upper Nubian resistance to the invading Egyptians persisted over a period of about eighty years. In spite of the various campaigns launched by Ahmose and Amenhotep I, Tutmosis I had only managed to extend the Egyptian empire as far south as Sai Island by the end of his reign. It was only during Hatshepsut's reign or during the "sole reign" of Tutmosis III that the Egyptians gained effective control over Upper Nubia (1987: 125; Säve-Söderbergh 1989: 5).

Chapter 3

Exchange Relationships between Middle Nubian Societies and Egypt

3.0.4 The role of exchange in the development of complex society

The classic version of the role of trade in the development of complex society was presented by Engels. In *The Origin of the Family, Private Property and the State* (1891), he suggested that all property was collectively owned in "primitive" societies. In some of these societies, technological advances led to the production of *surpluses* that stimulated increases in trade. Goods were no longer produced for domestic use alone, and the manufacture of commodities became the dominant aspect of these economies. This led to the development of wealth differences, capital accumulation, merchants, and eventually *economic classes*. The organization that appeared as a consequence of this developmental sequence was a repressive state that functioned to protect the economic interests of the ruling élite (Engels 1942).

Some theorists have adopted the main concepts of this model to account for the growth of prehistoric exchange systems. A generalized, neoevolutionist approach to the question of sociocultural diversity that was based on Polanyi's notion of exchange, and characterized by the principles of reciprocity and redistribution (1957a: 250-256), has been advocated by Marshall Sahlins and subsequently adopted as the basis of most archaeological investigation into the process of state formation (Sahlins 1965: 139-236; Service 1979: 16-26). This approach was derived from the substantivist position that viewed a distinction between gift and commodity as essential to an understanding of the historical development of trade. According to Befu, the hypothesis developed by Sahlins that linked specific *types* of exchange and hierarchy receives confirmation from Brady. The latter reported that some people in the Ellice Islands who aspired to high rank tended to convert initially balanced commercial exchanges into asymmetrical, "generalized" types with the intention of increasing their prestige (Befu 1977: 268).

Renfrew, who has suggested that a study of trade can be employed to determine the extent of its causal role in cultural change and development in prehistoric societies, views the development of *regional trade* as the main determinant in the formation of complex society. This "culture process" approach is derived from his definition of "cultures" as interconnected but independent systems that can be isolated for study. Renfrew has argued that the internal forces at work in a particular society will be reflected in its economy, of which *trade is one aspect that can be quantified*. Moreover, since a change in material culture is indicative of changes in the other institutions of the society under study, and particularly in its economy, an investigation of the society's trading contacts is especially instructive due to the "multiple functions" of trade, which include its ability to produce (a) surplus wealth, (b) craft specialization, (c) new products, (d) new demands for goods and (e) new ideas (1969: 153-154).

In a qualitative, contextual description of the process of urbanization, Renfrew attempted to demonstrate that an expansion of regional trade rather than external influences was a major factor in the development of an urban community. Renfrew has been able to identify an "increase in the *intensity* of cultural life" that can be correlated with an increase in the sizes of habitation sites but is unaccompanied by evidence for a greater number of settlements. This *intensity* is inferred from the appearance of fortifications, luxury materials and metal tools. Renfrew also suggested that the increase in the range of available artefacts occurred as a result of increased trade. This increase, which was stimulated by new needs and occupations that included the local production of metal objects, led to the development of urban centres in the absence of population increases and agricultural intensification. Renfrew concluded that there is no need to invoke external influences to explain the development of early European civilization (1969: 158-160).

More importantly, Renfrew reviewed the ways in which cultural contact is inferred and emphasized that the source rather than the style of a prehistoric object should determine its origin. One of his major contentions is that long-distance trade must be proved, not assumed. In the absence of chemical analysis, and except for instances where supplies of raw material are limited to a few known sources, he has argued that stylistic similarities cannot be assumed to be evidence of long-distance trade. He also emphasized the need for quantitative physical studies of traded materials such as that performed for obsidian in the Near East (1969: 154-158). Similar analyses may be needed to explain inter-regional interaction in the Nile valley during the Middle Nubian period.

Mechanisms proposed by researchers to account for increasing volumes of trade over time employ evolutionary concepts that range from down-the-line exchanges to the establishment of ports of trade equipped to deal with enormous quantities of goods (Schortman and Urban 1987: 50). In places such as the Nile Valley, where no systematic regional studies of exchange have been carried out, these concepts, in combination with several aspects of some general societal development models, may serve as a useful framework for trying to understand the processes of inter-regional interaction and societal change during the Middle Nubian era. It has been widely accepted that a succession of trading modes, in which predynastic down-the-line trade was eventually replaced by virtual Egyptian monopolization of long distance trade with the Kerma region (except for the duration of the Second Intermediate Period), characterize exchange relationships between Egypt and Nubia from late predynastic until New Kingdom times (Trigger 1976a: 3-6, 1976b: 5-10, 21).

Brian Fagan has used evidence from archaeological sites in South Central Africa to support his suggestion that the *local trading networks* that played a critical role in the development of long distance African trade were rooted in the inter-village exchange of raw materials in the early Iron Age in the first millennium B.C (1969:

1-13). Similar observations have been made with regard to the networks that preceded the Hopewellian exchange systems in eastern North America during the first two centuries A.D. (Braun 1986: 119). In the Nile Valley, an early trade in salt has been inferred from the discovery of marine shells in Khartoum Neolithic sites (Tigani El Mahi 1988: 119), and the presence of Khartoum Variant pottery in Abkan and A-Group settlements at Gemai and Abka may reflect a local exchange network (Nordström 1972: 12).

While it has been postulated that predynastic exchange contacts between Upper Egypt and both Lower Egypt (Wenke 1989: 139) and Mesopotamia were probably insignificant (Hoffman *et al.* 1986: 183; Moorey 1987: 41), it is known that Early Dynastic Egyptian foreign trade was conducted by both land and sea with Palestine, Syria (Trigger 1983: 59-60) and Nubia (Gardiner 1961: 44). First Dynasty tombs of high government officials and royal personages contained Palestinian pottery, and Egyptian artefacts inscribed with royal names have been recovered from Palestinian settlements (Baines 1988: 197; Trigger 1983: 59-60; Kantor 1965: 16-17). Agreement over the conditions of exchange is lacking (Polanyi 1957b: 15-17). Financing the importation of wood, oil, and ivory may have been done with manufactured products and surplus foods that had been obtained as taxes (Trigger 1983: 59), or, perhaps gold was used by the central government to trade for exotic Near Eastern products (Gardiner 1961: 44; Moorey 1987: 41). Trade may have been a royal monopoly (Trigger 1983: 59) and the primary method for the pharaoh to procure coveted goods was to organize an expedition to the source of the required commodity (Childe 1942: 115; Lloyd 1983: 329; Service 1975: 231).

Egyptian-Nubian "bartering places" may have been located in those areas of Lower Nubia where Early Nubian A-Group communities were most heavily concentrated. The cache at Khor Daûd of mostly Egyptian storage jars suggests that the site was "a specific locality where people met to exchange and redistribute goods. [Khor Daûd may have been] the forerunner of later possible trading centres ... The site may also have been a riverain bartering place for cattle pastoralists living in the tract between the Red Sea Hills and Lower Nubia. [Furthermore] within the A-Group area an exchange of both indigenous and foreign goods must have occurred between individuals, families and village units. It is probable that these transactions were channelled to a significant extent through a system of reciprocity and perhaps also redistribution..." (Nordström 1972: 25-26). In spite of the fact that the Early Nubian distribution of slate palettes is limited to the northern portion of Lower Nubia, whereas painted egg-shell ware bowls are seldom found north of Gerf Husein (Nordström 1972: 25-26), Nordström's hypothesis is generally supported by evidence for the "widespread and ... equitable distribution of Egyptian goods in 'A-Group' graves" (Adams 1984: 137). This suggests that regional as well as local exchange networks were already in existence before the beginning of the Egyptian First Dynasty. On the other hand, it has alternatively been suggested that the "early Nubians were not engaged in trade at all" and that the goods recovered from A-Group graves were obtained as payment for mercenary service in the Egyptian army. Impoverishment and decline of A-Group society resulted when the Egyptians shifted from "voluntary recruitment to the forcible enslavement of Nubian troops" (Adams 1984: 137).

3.0.5 Economic relationships between Middle Nubian societies and Egypt during the Old Kingdom and First Intermediate Periods

Although most archaeologists have assumed that the foreign goods recovered from C-Group sites were obtained as the result of trade (Adams 1984: 137, 145), textual evidence suggests that *several different exchange systems coexisted* between Egyptians and the diverse inhabitants of both Upper and Lower Nubia. In short, exchange relationships between C-Group communities and other peoples, particularly the Egyptians, may have been quite complex (Nordström 1972: 25-26; Trigger 1976b: 44). Old Kingdom documentation indicates that some Egyptian goods were presented to C-Group leaders as gifts. It has also been suggested that some may have been "wages" earned by Nubian mercenaries, and some may have been levied as tolls against the transport of Egyptian trade goods through Lower Nubian territories, whereas others may have been truly trade goods (Trigger 1976b: 44, 56-60).

Egyptian commerce with lands south of Wawat, such as Iam, which was perhaps in Upper Nubia, developed during the early Old Kingdom period. It has been suggested that sometime during the Third Dynasty, Buhen was probably founded as a base from which trade could be conducted with communities above the Second Cataract, and that by the Sixth Dynasty, the Egyptians may have acquired complete control over this trade. The efforts of the Old Kingdom Egyptians to maintain the trade routes to Kerma resulted in ambivalent behaviour towards the C-Group communities who occupied the intervening territories (Trigger 1976a: 6, 10, 1976b: 59-60). In order to "protect the trade route to Iam," gifts were at first given to Lower Nubian leaders. "Textual sources from the end of the Old Kingdom...imply that the exchange at that time was a mixture of various economic and social transactions. Some of the items that Herkhuf and other travelers brought back to Egypt during the Sixth Dynasty may have been acquired as gifts from Nubian chiefs along the Nile, while other Nubian or southern products, such as ebony, ivory, and perhaps cattle, may have formed the staple commodities of an established trade with long traditions" (Nordström 1972: 25-26).

The gift-giving policy shifted to the raids that were conducted against the Lower Nubians during the latter part of the Old Kingdom. Djemi's First Intermediate Period funerary texts indicate that the inhabitants of Wawat were taxed by Theban rulers (Säve-Söderbergh 1989: 2). Nevertheless, the true extent of Egyptian economic involvement with the lands south of Aswan at this time remains a matter of conjecture. Some investigators have suggested that imported Egyptian artefacts are plentiful in C-Group burials during the First Intermediate Period, (O'Connor 1974: 29; Trigger 1976a: 10, 1976b: 60), while others have commented on the rarity of ivory in Egyptian tombs at this time and interpreted it as showing that the Egyptians had lost control over Lower Nubia and trade with Kerma had stopped (Säve-Söderbergh 1989: 2; Trigger 1976a: 10). Nevertheless, although some Sixth Dynasty Egyptian burials at Mostagedda contained no burial goods, and some contained only locally produced items such as alabaster and horn vases, mirrors, eyes and tools of copper, crumb beads, shell ring beads, faience beads, seal amulets, cloth, grinders, buttons, shells, galena, scarabs, and bone spatulae, the presence of ivory implements along with carnelian beads, and head rests and coffins of wood (Brunton 1937: 100) suggest continued contact with the lands to the south. Late Old Kingdom trade with Nubia was conducted by Elephantine officials, and similar contacts may have existed during the early First Intermediate Period as well (Ward 1971: 36). Thus, the antecedents of the *Stage Ia* and *Ib* Middle Nubian exchange system probably lay in local and regional exchange networks that antedated the late Sixth Dynasty, or were at least in existence by the First Intermediate Period.

3.0.6 Economic relationships between Middle Nubian societies and Egypt during the Middle Kingdom Period

It is therefore possible that the primary purpose of the Middle Kingdom incursion into Lower Nubia was to create *ports of trade* (Polanyi 1968: 238-246; Smither 1945: 4; Vercoutter 1970: 171) through which control was established over *pre-existing exchange systems* in both Upper and Lower Nubia. Egyptian-Nubian trade was centered around the Lower Nubian forts. The latter were places where goods were stored, portaged, or transshipped, and where traders could settle (Polanyi 1968: 246; Vercoutter 1970: 171-173). At Mirgissa, Vercoutter recognized multiple functions that may have been characteristic of all the Lower Nubian forts: defence, surveillance, control over traders and other members of the local population, and transshipment of long-distance trade goods (1970: 173). None of these functions is incompatible with Polanyi's definition of ports of trade (1968: 246), although it is unclear whether interethnic interaction took place at forts other than Mirgissa, Uronarti, Semna and Senmet.

Evidence of Middle Kingdom trade between Egyptians and Upper Nubians has been inferred from the "thousands of mud seals originating from sacks" (Reisner 1955; Vercoutter 1970: 171-172) that were recovered at Uronarti and Mirgissa. Other evidence of the importance of a Middle Nubian exchange system with the Egyptians consists of the presence of workshops at Buhen, and of storage and manufacturing areas at other Lower Nubian forts, including Kuban (Emery and Kirwan 1935), Semna, Kumma and Mirgissa, where there were both warehouse and port facilities (Adams 1984: 181-184; Dunham and Janssen 1960: 1-15). The 300 Egyptian inscriptions at the base of the rock of Abu Sir that record the journeys around the Second Cataract of numerous Middle Kingdom boatmen, officials and merchants (Adams and Nordström 1963; Hintze 1964; Reisner 1955) provide further proof of Upper Nubian-Egyptian trading contacts.

Exchanges between Egyptians and Lower Nubians also are known to have occurred. It is believed that "each fort engaged in small-scale local transactions, particularly to acquire cattle" from Medjay and C-Group people. The arrival of Nubian traders is recorded in the Semna despatches; beer and bread were given in exchange. Adams has suggested that the discovery of a scales in the Middle Kingdom horizon at the Semna fort suggests that the Egyptians may have purchased gold from local traders who obtained it from Duweishat ores (1984: 189). The discovery of relatively large amounts of C-Group pottery in the Egyptian Middle Kingdom garbage dumps at Semna South (Žabkar 1972: 83) and in the pre-New Kingdom levels of the harbour area at Serra East (Knudstad 1966: 173) may reflect an exchange relationship between the two communities. Corvée labour was probably supplied by local C-Group communities at Kuban, a "trading station and dispatch post to Egypt" where small-scale exchanges between Egyptian military personnel and C-Group peoples may have taken place. Beads of blue faience from C-Group graves and Middle Nubian pottery from the fortress (Emery and Kirwan 1935: 8, 27, 67-69) may be evidence of this exchange. At Senmet [Bîgeh] (Gardiner 1916: 186), a First Cataract fort, Medjay people traded gold with the Egyptians (Kemp 1983: 135-136).

Furthermore, Adams has emphasized that almost half the 1,484 C-Group graves excavated during the First and Second Archaeological Surveys of Nubia "contained one or more objects of foreign origin. Beads, bracelets, and other ornaments were the most common, occurring in 528 graves [thirty-six percent]. One out of every five graves also contained one or more Egyptian-made pottery vessels. Ground slate palettes, alabaster vessels, and various objects of copper and bronze were less common, but still conspicuous [and] are indicative of a continuing flow of peaceful, two-way trade between Egypt and Nubia . . ." (1984: 169). He has rejected the suggestion that many of the Egyptian goods in Middle Nubian graves may have been obtained as "compensation for labour" or as gifts (Trigger 1976b: 59-62). Instead, he claims they were traded to the Nubians in return for forest and wild animal products (Adams 1984: 168-169).

O'Connor has stated that during the First Intermediate Period *[Stage Ia]* regular Egyptian contact with C-Group peoples is inferred from the large numbers of Egyptian artefacts that were traded to Nubia; that in the early part of Dynasty Eleven, the number of Egyptian artefacts found in C-Group graves declines rapidly; and that C-Group graves of the Dynasty Twelve period *[Stage Ib* and *Stage IIa]* "contain few Egyptian artefacts, for the political relationship changed and the services of the C-Group could be coerced by means of the Middle Kingdom fortresses of Lower Nubia" (1974: 29-30). Apart from possible water jars, Kemp also reports that very few Egyptian artefacts have been recovered from Middle Nubian C-Group graves (1983: 127; Trigger 1976b: 79). On the other hand, Säve-Söderbergh has reported that during *Stage Ia* imported Egyptian artefacts are rare, whereas during the First Intermediate Period and Eleventh Dynasty, they are frequently found in *Stage Ib* tombs. He also notes that "imitations of Egyptian pottery are common." By the late Twelfth Dynasty *[Stage IIa]*, however, he also claims that Egyptian goods are once more rarely found in C-Group burials. Locally produced artefacts of bone, stone or shell are used instead (1989: 8-9).

In Middle Kingdom times, therefore, one consequence of the C-group location in the buffer zone between two strong "powers" who were trading partners was that their role in the "genuine international trade" that had developed between Egypt and Kerma became "accidental" and "minimal" (Adams 1984: 186; Trigger 1976b: 60). The absence of Egyptian Middle Kingdom objects in C-Group tombs may have been due to the decline in the need for mercenaries (Trigger 1979: 79). Another interpretation of the lack of imported Egyptian artefacts is that C-Group communities rejected Egyptian material culture because of their "aversion" to the Middle Kingdom occupation of Lower Nubia (Säve-Söderbergh 1989: 9). Presumably, the alleged decrease in Egyptian-made goods in Eleventh and Twelfth Dynasty C-Group graves (Trigger 1976b: 79) also might have occurred because these exchanges were conducted directly with Upper Nubian merchants. It is unclear whether there was also a decline in the *overall* number of goods that were deposited in the C-Group graves of this period. Other evidence suggests that an increase in prosperity did occur at this time (Trigger 1976b: 80). Consequently, if most of the items recovered from C-Group graves were manufactured locally, many may have been exchanged through *local interaction networks* (Kemp 1983: 127).

The significance of a trade in locally crafted products to the various inhabitants of Lower Nubia during the Middle Kingdom era was presumably due to the need for C-Group and other local communities to form alliances; obtain élite goods for sumptuary and legitimation purposes; obtain burial goods; and obtain utilitarian goods.

Nevertheless, in spite of the apparent emphasis on exchange that can be inferred from the composition of their remaining burial offerings, C-Group societies remained relatively undifferentiated socially until late in the Middle Nubian period. This lack of social differentiation may be attributed to:

1. the absence of dense population aggregates and hence of the need for decision-making hierarchies; or,
2. excessive Egyptian exploitation and extraction of surpluses from farmers; or,
3. the operation of the *"by-pass phenomenon"* identified by Beale in highland Iran and described as a situation in which regional exchange centres are "by-passed" or ignored and trade is carried on directly with the sites that control the resource areas (1973: 143-144); or,
4. an apparent lack of differentiation created by the "levelling" effect produced by continual grave robbing and the subsequent reuse of plundered objects as burial goods; or,
5. widespread factional competition between potential local élites.

Because external grave offerings on C-Group burials resemble those that remain in Egypt after the "commemorative ceremonies" that are held after Egyptian funerals (Adams 1984: 157), these offerings can perhaps be interpreted as evidence of competitive feasting amongst C-Group social units. This in turn may be attributed to factional competition between potential local leaders. "Chiefs" (Emery 1965: 155) who possessed the ability to command corvée labour are specified in a text from Senwosret II's reign (Trigger 1965: 97). Regional similarities in elaborate pottery styles and other burial goods over relatively long time periods have been interpreted as evidence of factional competition, since factions are comprised of structurally and functionally similar groups that share similar ideologies and symbolic modes to express their demands for legitimacy (Brumfiel 1989: 127-137). The non-hierarchical nature of C-group communities has been attributed either to resistance to Egyptian domination or to poverty which stemmed from their exclusion from the Nile trade profits (Trigger 1965: 104-105).

On the other hand, these Middle Nubian C-group peoples have been perceived by some researchers as possessing greater wealth than either their ancestors or predecessors because of the large quantities of burial goods, *many of which were non-Egyptian,* that were apparently recovered from Middle Kingdom C-group graves. Large amounts of pottery, in addition to bronze artefacts, shell finger and ear rings, "bracelets of gold, silver, ivory, shell, alabaster and beadwork; necklaces and belts of beadwork with amulets of gold, silver and shell," as well as differences in both tomb size and elaboration, are cited as evidence of this prosperity (Emery 1965: 158-164).

Although some researchers have suggested that the Egyptians may have been dependent on C-Group communities for 'meat' and other staples (Emery and Kirwan 1935: 8), the danger in relying on local populations for food has been recognized (Trigger 1990: personal communication). However, since the inhabitants of Egyptian forts, such as Shelfak [which was constructed on the rocky west bank at Saras, while C-Group communities occupied the floodplain slightly further north (Mills 1968: 200-202)] were hardly likely to be food producers, and more likely to be scribes (Smith 1972: 51, 58), merchants or guardsmen, it is possible that local C-Group leaders may have demanded farmers' surpluses, which were traded to the Egyptian colonists for nonfood items. The already mentioned C-Group pottery from the garbage dumps at Semna South (Žabkar 1972: 83) and the Serra East harbour site (Knudstad 1966: 173) could be a consequence of exchange between the two peoples. In a comparable situation, Brumfiel has argued that because of the difficulties involved in food procurement for the citizens of Texcoco and Tenochtitlán in Central Mexico, either manufactured nonfood products were exchanged with rural crop growers for staples, or some nonfood tribute was channeled through the market system and traded for food (1980: 466). Spindle whorls recovered from provincial Huexotla were interpreted as evidence of the former type of transaction. Nevertheless, several critics have remarked on the difficulties involved in attempting to use archaeological remains to measure concepts such as "surplus" (Wenke 1981: 96-97).

3.0.7 Economic relationships between Middle Nubian societies and Egypt during the Second Intermediate Period

By *ca.* 1800 B.C., late Middle Nubian C-Group communities were producing surpluses (Adams 1984: 161), presumably through coercion from local leaders. Unlike the peoples of the Middle Kingdom period, who had settled in small villages in which the houses were not densely packed (Trigger 1965: 98, 1976b: 78-79), they inhabited fortified, nucleated settlements in which granaries were discovered amongst the clustered houses at some locations including Wadi es-Sebua and Amada (Adams 1984: 145-161; Trigger 1976b: 100-102). It is perhaps significant that, in addition to this tendency towards population aggregation, other characteristics of the late Middle Nubian period include weapon manufacture at Buhen, the appearance of large, high status burials, and other indications of a wealthier, more numerous, and more complex society (Trigger 1965: 104). Since the Upper Egyptians were no longer resident at the Lower Nubian forts during the Second Intermediate Period, and the *"by-pass phenomenon"* no longer functional, it is possible that greater social complexity may have been achieved as the result of an expansion in local craft production and exchange. However, no detailed analysis of artefactual remains (that includes a diachronic assessment of the production of locally manufactured goods in relation to imported items), that could indicate whether the growth of a more complex society in Lower Nubia can be correlated with an expansion in local exchange networks in the *absence* of substantial long distance trading relationships has ever been undertaken. The new prosperity of the C-Group communities has been attributed to the ability of local leaders either to engage in long-distance trade or to levy taxes on Hyksos and Upper Nubian goods that were shipped through their domains (Trigger 1965: 105). In general, interpretations of Second Intermediate Period developments have tended to differ. Some researchers have suggested that in spite of certain indications of increasing complexity in Lower Nubian societies, there is no evidence of elaborate class differentiation (Trigger 1976b: 102), while others have noted that they lacked specialized occupations as well as the ability to monopolize wealth and power (Adams 1984: 161). On the other hand, the variability in tomb construction and in the sizes of dwellings at habitation sites such as Karanog and Amada has been claimed to show "growing class differentiation" (Säve-Söderbergh 1989: 12).

Knowledge of the Middle Nubian cultures is derived from (i) excavators' publications, (ii) the artefacts they collected from a few settlement sites and excavated from a large number of cemeteries and (iii) contemporary Egyptian writings. The latter document frequent changes in economic and political relationships with the Lower Nubians. As a result, some researchers have reasoned that fluctuations in the relatively small quantity of Egyptian objects that were deposited in C-Group graves over time reflect these changes. Especially during the Middle Kingdom era, when Egyptian records at places such as Areika show that "leniency towards Nubians [was lacking and that the] military forays employing troops of soldiers ... [that took place during the Twelfth Dynasty probably involved] ... attacks against nearby C-Group locales (Wegner 1995: 150-151), it has been thought that "all evidence for C-Group sites ... indicates ... an almost total lack of Egyptian material culture" (Wegner 1995: 141). On the other hand, other researchers insist that large numbers of Egyptian artefacts were imported to Lower Nubia throughout the Middle Nubian era, and that the volume of this exchange remained virtually unchanged during this time period. Furthermore, as previously stated, while many scholars cite the apparent lack of variation in the Middle Nubian cemetery and settlement data as evidence that the society remained essentially egalitarian from the era of the Sixth Dynasty until that of the Eighteenth, the differences observed in tomb construction and in the sizes of dwelling on some habitation sites are claimed by others to show possible growing social differentiation amongst Middle Nubians over time. However, in the absence of any systematic analysis of the C-Group material remains, it is hardly surprising to find that these reconstructions of C-Group political and socioeconomic organization are often in complete disagreement.

Since the flooding of Lower Nubia as a result of the construction of the High Dam at Aswan, studies of Middle Nubian settlement remains are now impossible. Also, since detailed reports on excavated habitation sites are usually lacking, the largest body of information on the C-group period exists in the form of reports on excavated mortuary remains. Therefore, the latter must serve as a basis for any analysis of Middle Nubian society. However, because the practice of employing mortuary evidence in the social analysis of an archaeological society is itself problematic, this issue will be discussed in the next chapter.

Chapter 4

Use of Mortuary Data to Infer Socioeconomic Conditions

While archaeological usage of mortuary data was originally confined to the construction of classificatory and chronological schemes (Brown 1971:1), late twentieth century approaches to the study of these data can be assigned to three major categories:

1. those that focus on the material aspects of burials in attempts to understand the ideological (Hodder 1982b: 140-141; Shanks and Tilley 1982: 135-152; Shennan 1982: 156) and social significance (Brown 1981; Mainfort 1985; O'Shea 1984; Pearson 1988: 1-13; Pearson *et al.* 1989: 1-5; Peebles and Kus 1977; Rothschild 1979; Tainter and Cordy 1977) of past mortuary practices,

2. those that employ data from skeletal analyses to make population based as opposed to individually oriented inferences about the diets (Cassidy 1984; Chisholm *et al.* 1983; Cohen 1989; Farnsworth *et al.* 1985: 114; Larsen 1984; Norr 1984; Schoeninger *et al.* 1983; Smith *et al.* 1984; van der Merwe 1982), paleodemographic profiles (Angel 1984; Buikstra and Konigsberg 1985; Cook 1984; Dickel *et al.* 1984; Goodman *et al.* 1984), and paleopathological conditions (Dickel *et al.* 1984; Larsen 1984; Ubelaker 1984) of archaeological communities, and

3. those that utilize both skeletal and cultural data in an attempt to understand past economic and sociopolitical conditions (Martin *et al.* 1984; Palkovich 1984; Schoeninger 1979a, 1979b).

The theoretical assumptions that underlie the ideological approach to mortuary analysis are derived from the work of Tylor (1871) and Frazer (1886), as well as that of Kroeber (1927) and Childe (1951, 1964). The viewpoints adopted by those who utilize the social approach have evolved from the opinions of several investigators, including Yarrow (1880), Lubbock (1882), Wallis (1917), Radcliffe-Brown (1922), Bendann (1930) and Griffin (1930). The work of later investigators also has been influenced by that of Van Gennep (1960: 146), who suggested that burial treatment varies according to the social status, age and sex of the deceased, and that of Hertz, who noted that status oriented, differential burial treatment was accorded to the elderly, children, suicides and others (1960: 92; Bartel 1982: 36; Binford 1971: 7-14).

Although there is disagreement about the origins of the skeletal changes that have been documented for various ancient agricultural peoples, one trend that has been revealed through diachronic skeletal analyses indicates increases in the incidence of infectious diseases among both Old and New World agricultural populations (Allison 1984; Angel 1984: 68; Buikstra and Cook 1980; Perzigian *et al.* 1984). In some instances the disease increase appears to be correlated with the adoption of agriculture; other studies indicate a progressive rate of disease increase (Goodman *et al.* 1984), while some researchers find the incidence of infectious disease to be highly correlated with complete dependence on domestic plant resources (Cassidy 1984; Norr 1984: 482). Analyses also have revealed increases in the frequency of certain skeletal pathologies, such as porotic hyperostosis and premature osteoporosis, which have been linked to both dietary and settlement changes. In some areas these changes appear to have been accompanied by craniofacial changes as well (Carlson and Van Gerven 1977: 504).

The assumptions concerning the use of mortuary data to infer social conditions are discussed below, along with current interpretations of post-Mesolithic changes in the skeletal morphology (Brace and Montagu 1977; Kennedy 1984: 173-

175, 184) and socioeconomic institutions of early farming populations. It is suggested that the most adequate reconstructions of changing economic and sociopolitical conditions result from the use of settlement data as well as burial data from both cultural and skeletal contexts.

4.1 Inferences from burial analysis

4.1.1 The ideological approach to the interpretation of mortuary data

Following a review of mortuary practices during the last 50,000 years, Gordon Childe concluded that a diachronic trend towards poorer and fewer burial goods (1945: 16-18) is indicative of social stability, as well as of a change in the way in which wealth is perceived. In recent years these assumptions concerning mortuary practice have been accepted by many researchers (Cannon 1989: 437-438; McGuire 1983: 110; Morris 1987: 42; Parker Pearson 1982: 112; Pearson *et al.* 1989: 38; Ucko 1969: 265-266), and Childe's categorization of mortuary ritual as "ideology" has received widespread attention (Chapman 1980: 61; Chapman and Randsborg 1981: 4; Childe 1956: 131). As a consequence of the latter approach (Leone 1982: 181), but also partly due to the influence of Kroeber, who believed burial practices to be unstable and therefore representative of "fashions" rather than "social expression" (1927: 312-315), objections to the use of mortuary data to infer social organization have been raised by many scholars, including Ucko (1969: 273-274) and Humphreys (1981: 4), who also emphasize the instability of mortuary customs.

No theoretical explanation of this instability exists (Bartel 1982: 47; Parker Pearson 1982: 110); instead, debate on the manner in which mortuary data are employed to infer social organization has focused on the extent to which patterning in the mortuary context truly reflects cultural or social reality. Whereas Häusler has insisted that social phenomena need not provide the motivation for differences in mortuary practice (1983: 404-405), one of the most recent supporters of Kroeber's position has suggested that mortuary practice is dictated by fashion while serving as a forum for social competition. The latter is said to be the function of all mortuary ritual and the source of all mortuary variability. Alternating periods of elaboration and restraint are held to be manifestations of the process of social display. Changes in British mortuary ritual during the nineteenth century are used to support this argument, but unfortunately, a single attribute, grave monument design has been employed to "measure" the relevant variables (Cannon 1989: 437-444, 439). Shennan also has proposed that competitive display during life is more apt to lead to differentiation amongst the deceased (1982: 30; Mainfort 1985: 576-577).

Some post-processual researchers have argued recently that the social "reality" of a society cannot be revealed as a result of burial analysis; yet, they also claim that the *misrepresentation* of that "reality" can be knowable (Braithwaite 1984: 97; Hodder 1982a, 1984: 64; Shanks and Tilley 1982: 129). Thus, Ian Hodder has argued that burials that are undifferentiated with regard to status, sex and age cannot be interpreted to mean the absence of social differences among the grave population during life. Because the absence of differentiation in burial may be linked to attitude changes towards death, mortuary studies should emphasize "attitudes to death and life, and ... as part of these attitudes we must expect distortions, partial expressions and even inversions of what happens in social life." Like Ucko and others, Hodder insists that burial and social organization are not necessarily correlated (1982b: 144-146, 1982e: 10; Kroeber 1927: 308, 314; Ucko 1969: 273); several aspects of burial, including the presence of elaborate graves, can have different meanings in different communities (Hodder 1982b: 19; Trigger 1974: 100; Ucko 1969: 268). Nevertheless, he also asserts that "the construction of tombs in the early [Trechterbeker culture] argues for the presence of corporate groups," and furthermore, that the long usage of well built tombs "suggests that ties with the ancestors may have been used to legitimate dominant sub-groups ... within society." Links between mortuary ritual and "increasing social hierarchy" are postulated (Hodder 1982c: 169-170). Elsewhere, relationships are proposed between undifferentiated burials and small-scale, "acephalous" societies (Hodder 1984: 61), as well as between the status and age of deceased Mesakin Nuba and the quantity of burial offerings placed on their graves (Hodder 1980: 164, 1982b:142). An outstanding example of the structural-symbolic approach is provided by Hodder, who argues that fourth and third millennia B.C. long mound tombs in Atlantic Europe evoke connections with central European houses of the fifth and fourth millennia B.C. Both tombs and houses were constructed according to a common pattern that is claimed to symbolize the treatment of women in prehistoric European societies. In spite of his caveat that ethnographic analogies from unrelated historical contexts are unreliable, the most fundamental aspect of Hodder's argument is derived from ethnographic data on the treatment of women from the Baringo district of Kenya and in contemporary East African Muslim societies (Hodder 1984: 54–62).

Like Hodder, Ucko cites ethnographic evidence to support his contentions. Although primarily interested in the construction of a "typology of funerary customs," Ucko noted the total lack of relationship between the wealth of a Nankanse individual from Ghana and the placement of objects in his or her grave. Articles are only included in those graves in which the souls of living persons are trapped along with the deceased and unable to escape. While objects remain in the grave, the living individual to whom they belong is protected from death. These and other similar observations led Ucko to propose that similar burial practices are not necessarily the result of contact between different peoples, large tombs are not always those of the nobility, and the economic status of an individual may be unrelated to the quantity of grave goods recovered from his or her tomb. Since the objects may have been included for other reasons, the quantity of grave inclusions and the elaborateness of tombs may be unrelated to the overall wealth of a society, and it is difficult to estimate individual wealth from burial goods, since both "social and ritual" behaviour govern burial object selection. As a result, neither the use of particular types of objects nor counts of objects will necessarily reflect the richness of a particular tomb (1969: 265-266). It also has been suggested that the mere presence of burial offerings need not be correlated directly with the true amount of wealth available in a particular society (Jacobsen and Cullen 1981: 93-94; Ucko 1969: 265-267, 275), since both "poor" and "rich" communities engage in transforming material objects into burial goods.

Liversage has asserted that the burial record reflects nothing save ideology (1983: 148). On the basis of mortuary evidence alone, Parker Pearson, who monitored a change from elaboration to restraint in nineteenth and twentieth century

Cambridgeshire burial patterns (1982: 110-112), has argued that ideology alone is symbolized in the mortuary record. A similar claim was made by Shanks and Tilley who performed statistical tests on Neolithic bone piles in English and Swedish barrows in an attempt to show that the bone assemblages had not accumulated as a result of random selection (1982: 130). Although the earlier interpretation of "successive inhumation" to account for the bone piles was rejected and Shanks and Tilley were unable to establish conclusively that the burial patterns observed were not the result of either the differential preservation of body parts or the effects of burials over a long time, they concluded that "a non-random selection of bone material" had occurred either before or after burial (1982: 141-147). To ensure the continuance of the social differentiation characteristic of Neolithic society, and in particular the differential access to resources on the part of elders, specially selected bones were entombed in a manner designed deliberately to misrepresent the existing social order (1982: 134-151), in which the status and authority of leaders was derived from their relationships to specific dead ancestors rather than from the accumulation of prestige items (Braithwaite 1984: 102). In this approach, bodies in tombs have symbolic meaning (Shanks and Tilley 1982: 152) and the bone patterning found as the result of statistical analysis is claimed to be directly reflective of that symbolism. In spite of their rejection of the use of "role theory" (Parker Pearson 1982: 99) to distinguish between socially distinct burial clusters, Shanks and Tilley posited a society with dominant and subservient groups in which the bone accumulations were assumed to be those of the group traditionally regarded to be dominant (Atkinson 1984: 92; Ucko 1969: 268).

By using a theoretical framework that is derived from the observation that symbols of bodily adornment are ambiguous and totally dependent on the context in which they are used, but patterned within particular historical contexts, the symbolism underlying the placement of burial objects in relation to deceased individuals in two Anglo-Saxon cemeteries was investigated by Pader (1980: 144-147). Although artefact positions were found to covary with skeletal positions and some individuals possessed more artefacts than others, and although those with artefacts and those without were located in different sectors of the same cemeteries (Pader 1980: 149), Pader rejected the possibility that ranking had been symbolized in the burials and suggested that "something else in the social relations ... is causing the disparity between the sexes, and between ... [some of the] males and those in other sectors" [of the cemetery at Mildenhall] (1980: 157). She concluded that both male-female and adult-child relationships were reflected in the burial patterns (Pader 1980: 155-157). No other social relationships, such as that between siblings, were investigated.

Although critical of Binford's hypothesis that demands correspondence between social organization and mortuary complexity, Ian Morris accepts the basic tenets of role theory, which he employs to conduct an analysis of Iron Age Greek burials. By monitoring changes in burial goods, burial treatment, and age structure patterns believed to reflect corresponding changes in social structure, he establishes that during the Dark Age and Archaic periods individuals of high status received elaborate burial whereas those of low status were excluded from formal burial. During the Classical period, restraints on mortuary elaboration were imposed on the entire society by the ruling classes (1987: 37-42, 54). Morris stresses that it is the ritual manifestation of social structure, which is comprised of roles, that is reflected in burials (1987: 39-40). Not only does he insist that neither social complexity nor social organization is associated with the burial record, he attributes the decline in Greek mortuary elaboration to the use of ideology which served primarily to mask conflict and exploitation (1987: 184-186).

Because Morris' study was based on an "undemonstrated assumption" (Cannon 1989: 446) that certain elements of the social structure can be disguised, inverted, and otherwise manipulated through mortuary ritual, he utilized textual records to complement his research on the rationale that the use of "primary literary evidence" added a *more reliable* dimension to his analysis of Greek burials (1987: 36-51). This point is debatable. These records were presumably élite-sponsored and also subject to the same cultural distortions that permeate the burial data. Dyson has reported that researchers engaged in the construction of "Roman mortuary tables" were forced to rely solely on skeletal analyses of post-second century A.D. Roman remains after the discovery that inscriptions on Roman tombstones did *not* provide exact information on age at death. Instead, the tombstones recorded "age information which commented on the significance of the death rate in relation to cultural values" (1988: 197). While the sample of tombstones revealed an underrepresentation of both middle-aged individuals and infants, people who had died as youths, as well as those who had apparently lived to be incredibly old, were overrepresented (Dyson 1988: 197). Sally Humphreys and others also have noted that representative samples of a community may be physically absent from cemetery sites from which members were excluded on the basis of social status, sex or age (1981: 4; Mainfort 1985: 558; Maxwell 1970; Ucko 1969: 270-271). Alternatively, Cook has pointed out that because excavated skeletal material constitutes a "mortality sample" of a past living population, it will reflect "differential effects of aspects of the mortuary programme, for example distinctions based on age, status, and cause of death...on inclusion in the sample" (1981: 134).

4.2 The social approach to the interpretation of mortuary data

Sociopolitical and socioeconomic distinctions

The earliest use of mortuary data to infer social distinctions among ancient peoples can be traced to the activities of archaeologists whose discoveries of pyramids and nobles' tombs from the early civilizations of Egypt, Mesopotamia, China and Mesoamerica led them to equate lavish burials with high rank. Similarly, an analysis of 297 prehistoric British tombs prompted Lubbock to propose that the individuals buried in the largest were persons of the "highest socioeconomic stratum" (1900: 134-143; Bartel 1982: 36). However, although the discovery of elaborate objects in the largest burial mounds of the prehistoric peoples of the Wessex culture led Gordon Childe to suggest that the burials belonged to "chiefs," social distinctions were not thought to be marked among other members of European Bronze Age cultures (Chapman 1980: 61; Childe 1957, 1958: 66; Ucko 1969: 268).

Unlike Childe, who recognized no social distinctions among members of continental European Bronze Age communities (Chapman 1980: 61), Otto, a German scholar, suggested in 1955 that four distinct social levels could be inferred from Unetice cultural remains. For North America, Bushnell suggested as early as 1920 that the "relative ranks of individuals" could be determined from the burial equipment associated with some graves in the Tarpon Springs burial mound in Florida. Later, through studies of cemeteries and burial mounds, other American investigators recognized the existence of sub-groups, such as clans, as well as individuals of high status (Chapman and Randsborg 1981: 4-5). Nevertheless, a social approach to the study of mortuary practices remained unexplored until the work of Binford and Saxe in the early 1970's.

The social dimensions of burial practices were first investigated in terms of the recognition accorded the social persona of the deceased by groups that employed different modes of subsistence. The latter was employed as a "measure" of social complexity because ethnographic data on both sociocultural and status complexity in the societies being studied were lacking (Binford 1971: 18, 1972: 230). Hodder has since argued convincingly that the complexity of the relationship between mortuary variability and society was not revealed by Binford's crude methodology (1980: 163, 168). Following his analysis of forty stateless societies to "test" Kroeber's opinion that burial practices were unstable and unrelated to other aspects of culture such as technology and social organization, Binford defended earlier researchers' beliefs in the stability of various burial practices including methods of grave construction and corpse treatment (Binford 1971: 10-11; Stanislawski 1963; Voegelin 1944). He concluded that mortuary practice and social structure were closely related: "the form and structure which characterizes the mortuary practices of any society are conditioned by the form and complexity of the organizational characteristics of the society itself. Change or variability in either form or structure must take into account the limiting or determining effects exerted on these practices by the nature of the organizational properties of the society." Contrary to the diffusionist viewpoint regarding burial practices, he also maintained that neither the idea nor the mere knowledge of a particular burial form would lead to its adoption by a particular society (1972: 235-236).

Binford emphasized the existence of a direct relationship between the mode of subsistence employed by a community and the number of duty-status relationships recognized by the various social groups within it. Variations in the amount of status differentiation recognized by settled agriculturalists and members of other subsistence categories reviewed by Binford suggested that the degree of mobility (1972: 230) and consequently the relationship to particular tracts of land characteristic of a given society may be an important constraint on the structure of the burial programme adopted by that society. Saxe has established the interconnection that exists between corporate groups, formal disposal areas, and resources, such as land (Chapman 1981: 73-74; Chapman and Randsborg 1981: 14-19; Renfrew 1976; Saxe 1970: 119-121, 139-154). Control over area resources and the use of cemeteries has been attributed to corporate groups who have acquired authority in those specific locations (Jacobsen and Cullen 1981: 90). A similar explanation has been offered by James Brown, who claims that emerging power groups tend to attach themselves to specific burial locations that serve as symbols of their power base (1981: 29).

O'Shea, who employed historical records to complement his burial analysis of Amerindian grave sites, argued that membership in a corporate or kin group was symbolized in the two equal groupings of spatially separate Pawnee burials discovered at Barcal (1984: 29). Goldstein has also asserted that ethnographic tests have shown that *exclusive* use of a formal, bounded area for the disposal of a community's dead is indicative of "a corporate group that has rights over the use and/or control of crucial but restricted resources. This corporate control is most likely to be attained and/or legitimised by means of lineal descent from the dead, either in terms of an actual lineage or in the form of a strong, established tradition of the critical resource passing from parent to offspring" (1981: 61). Although Goldstein's interpretation has been questioned (Hodder 1982b: 141-143), and shown to be inapplicable in various contemporary contexts where "attitudes" (Hodder 1980: 166) are invoked as the prime mover that generates structural change, it has been observed that her extension of Saxe's hypothesis establishes a fundamental link between mortuary data and social structure (Morris 1987: 52-53). Nevertheless, critics have noted that even among researchers who have arrived at conclusions that are fundamentally opposed to those of Kroeber and his recent supporters, an integrated theory of mortuary behaviour is lacking (Chapman and Randsborg 1981: 2; O'Shea 1984: 32).

4.2.1 The paleonutritional approach to the interpretation of mortuary data

Paleonutritional indicators of economic change

Despite assertions that no correlation exists between subsistence mode and the quality of either health or diet (Cassidy 1984: 334-335), changes in diet as well as deficiencies in diet that are associated with radical economic changes, such as that from hunting and gathering to farming, have been inferred from both skeletal pathologies and skeletal growth patterns in some archaeological populations (Roosevelt 1984: 569-570). As a consequence, the health status of a community can be evaluated with the aim of estimating the success or failure of particular human adaptations. Because diseased skeletons mirror disruptions in bone growth and repair, the methodology employed consists of the identification of pathological conditions in prehistoric skeletal material and the use of several of these to infer nutritional stress (Cook 1984: 237). Huss-Ashmore and her colleagues have presented an overview of the techniques used to infer past dietary status from ancient Nubian and American Indian skeletal remains. Although there is no one diagnostic marker of nutritional stress, if patterns of bone growth, remodeling, and degree of repair are studied, and if the incidence of infectious diseases, and the aging pattern of the whole archaeological population can be established, then the periods at which stress markers occur can be identified and compared to the mortality schedule of the prehistoric population being studied (Huss-Ashmore *et al.* 1982: 411-413).

Similarly, Goodman *et al.* used dental and skeletal evidence to show that stress indicators were general and cumulative, general and episodic, or linked to specific diseases. The identification of nonspecific indicators of stress that are commonly linked to inadequate diets supported the basic concept that nutritional stress is culturally derived and dependent on access to those foods that have been categorized as desirable by a given population. These stress indicators included growth disruption; Harris lines, or interruptions in long bone growth; and enamel hypoplasias, or interruptions in tooth enamel formation (Goodman *et al.* 1984: 38; Roosevelt 1984:

573).

Although some researchers maintain that the correspondence between shifts in subsistence and changes in skeletal morphology is unclear (Ubelaker 1984: 509), the cranial alterations identified in some post-Mesolithic populations have been attributed to the switch to an agricultural mode of subsistence and the adoption of a diet of starchy foods (Carlson 1976: 467-469; Carlson and Van Gerven 1979: 575). Moreover, the morphological changes in both teeth and facial structure that have been documented for ancient Nubian populations have been interpreted by most researchers as a direct result of the *transition* to agriculture (Armelagos *et al.* 1984: 137-138) during the fourth millennium B.P., and two hypotheses have been posited to explain the documented facial reduction. The masticatory-functional hypothesis postulates a decrease in jaw size, and hence in tooth size, that occurred as the result of a decreased need for strong chewing muscles following the dietary switch to soft, starchy foods (Carlson and Van Gerven 1977: 501-504; Carlson and Van Gerven 1979: 574). Advocates of the dental reduction hypothesis argue that increased consumption of starchy foods permitted the development of smaller, less complex teeth. This change was accompanied by associated changes in the jaws and in the overall facial structure (Armelagos *et al.* 1984: 133-134).

Other anthropologists are of the opinion that the skeletal pathologies and abnormalities identified in the Nubian populations developed as a result of the adoption of *intensive* agriculture (Martin *et al.* 1984: 204). These researchers suggest that the formerly adequate diets of the early food producers were replaced by nutritionally inadequate diets during the later periods of Nubian history. However, both historical and archaeological sources indicate that the Lower Nubian ability to produce an adequate supply of food crops was quite limited (Vercoutter 1970: 170). Beckett reported that Burckhardt's description of the Nubians he encountered included the observation that "their size and figure were, as a rule, proportionate to the extent of their cultivable soil; where the plain is large and the people can cultivate it to an appreciable extent... they are tall, muscular and healthy; but where, on the contrary, the plain does not amount to more than twenty or thirty metres in extent, they have small figures" (Beckett 1910: 355; Burckhardt 1819: 25). Moreover, there is archaeological evidence for a post-Mesolithic increase in Nubian skeletal abnormalities and pathologies that is indicative of nutritional stress, and there is evidence for the importation of Egyptian foodstuffs during both the Early and Middle Nubian periods (Trigger 1976b: 54). In addition, various investigators have reported that skeletal abnormalities including sarcomas, carcinoma, hyperostosis frontalis, and endochondromas have been found in those Late Nubian groups that practised intensive agriculture (Van Gerven *et al.* 1979: 563).

Retarded growth was suggested by studies of three prehistoric Sudanese Nubian populations in which the epiphyses on the long bones were still not fused in some individuals estimated to be about twenty-five years old. In the first two years and during the early teens, growth increases occurred, but maximum growth occurred later than in modern populations. Similar results from Dickson Mounds populations in North America led to the conclusion that maturation in preindustrial populations was delayed. An identical slowing of growth was detected in the pre-nineteenth century skeletal remains from Inuit and Aleut groups (Huss-Ashmore *et al.* 1982: 411-413). Decreased stature has also been documented for some Mesolithic populations from eastern Europe and the Near East (Angel 1984: 60). Some researchers have suggested that final adult height and the degree of sexual dimorphism present in a population may be related to its nutritional status, but Huss-Ashmore *et al.* point out that results on this topic are inconclusive, probably because both of these variables are also under strong genetic control (1982: 413).

Skeletal analyses also have established that some indicators of stress are associated with nonspecific diseases such as *porotic hyperostosis* and *osteoporosis,* or a decrease in cortical bone mass. Porotic hyperostosis, a skeletal condition which manifests itself as spongy, sievelike cranial bones, is believed to be produced by the chronic iron deficient anemia that results from iron deficient diets or diets in which iron absorption is blocked (Huss-Ashmore *et al.* 1982: 414-432; Palkovitch 1984: 430). In three Dickson Mounds populations this disease is believed to be directly related to changes in diet and specifically to the adoption of maize as a staple food by Middle Mississippian groups. The phytates in maize can inhibit absorption of the limited amount of iron also contained in this cultigen. Researchers discovered that forty percent of the individuals in the Middle Mississippian Dickson Mounds population who suffered from porotic hyperostosis also exhibited postcranial infectious lesions. Only seven percent of the Late Woodland specimens fell into this category. Other present day studies also suggest that illness can be caused as a result of the synergistic relationship that exists between malnutrition and infection (Buikstra and Mielke 1985: 360). The latter reduces the capacity to metabolize nutrients, such as iron, which in turn inhibits the ability of the body's immune system to defend it against infection (Huss-Ashmore *et al.* 1982: 416–418).

Premature osteoporosis, a condition which is believed to reflect protein-energy malnutrition, and is viewed therefore as an even more reliable indicator of a deficient diet than long bone growth interruptions, has been identified in both juvenile and young adult prehistoric peoples (Huss-Ashmore *et al.* 1982: 425–426).

Porotic hyperostosis and osteoporosis also have been detected in prehistoric Sudanese Nubian populations (Huss-Ashmore *et al.* 1982: 414–432). Studies of Nubian skeletal material revealed that in children from birth to six years of age the occurrence of porotic hyperostosis was thirty-two percent higher than in the general population. Because of the age distribution and the mildness of the condition, hereditary anemias were discounted as a cause of the condition. Instead, an iron deficient diet, bacterial infections, parasitic infections, and local weaning practices were all suggested as factors that may have contributed to the high incidence of porotic hyperostosis among the ancient Nubians (Carlson *et al.* 1974: 405; Huss-Ashmore *et al.* 1982: 416; Van Gerven *et al.* 1981: 404).

Paleonutritional and cultural indicators of socioeconomic change

Prehistoric human burials have been discovered at El Kadero, a Khartoum Neolithic site in Upper Nubia. Social stratification amongst the Kadero community was inferred from the presence of "rich grave goods" in the grave of an adult male, whose wealth represented "symbols of power" (Krzyzaniak 1978: 169; Tigani El Mahi 1988: 112). This grave has also been interpreted as that of the "headman" in a ranked society, as well as that of an individual with special religious status in an egalitarian context. In each case, the adoption of agriculture is cited as the possible generator of the postulated socioeconomic changes within the society (Tigani El Mahi 1988: 111-119).

Much farther north, the existence of status differences among Terminal A-Group communities has been inferred from the discovery of notable variations in the sizes of their tombs and in the quality of the burial offerings contained in them. Because early C-Group cemeteries show far less variability in both grave sizes and in the quality of burial goods, it has been suggested that these Middle Nubian societies were egalitarian in character (Trigger 1965: 98).

It is perhaps significant, therefore, to discover that the frequency of cribra orbitalia, or porotic hyperostosis, was *lower* amongst C- than A-group populations (Huss-Ashmore *et al.* 1982: 414-415). It is possible that because studies of these Nubian societies have revealed the existence of skeletal pathologies and abnormalities in the *same* populations that exhibit craniofacial changes, both skeletal and craniofacial changes may be the result of multiple stressors that culminated in general growth retardation of all bony structures in ancient Nubian agriculturists. Thus, the craniofacial data and the post-cranial skeletal data may be monitoring a single condition: chronic nutritional stress. Underfeeding produces stunting in the skulls and limb bones of laboratory animals (Huss-Ashmore *et al.* 1982: 401-402), and reports on the effects of protein-energy malnutrition in present day peoples show that the most fundamental skeletal changes to result from malnutrition are a reduction in total bone mass accompanied by overall growth retardation (Garn and Clark 1975; Garn and Frisancho 1971; Huss-Ashmore *et al.* 1982: 402-403; Larsen 1984: 381-382; Stini 1969, 1971). This reduction in bone mass may include skull size (Angel 1984: 67; Kennedy 1984: 174-175) as well as tooth size. The latter is known to be affected by environmental factors such as disease and nutritional stresses (Scott and Turner 1988: 106-107). Nevertheless, the possibility that chronic malnutrition, rather than a postulated "skull rotation," may account for the apparent craniofacial alterations in Nubian peoples has not been investigated.

Since detailed information on the social aspects of the Nubian skeletal material employed in these studies is usually lacking, it is difficult to correlate the existence of evidence for poor nutrition in general with possible differences in social status. However, there appears to be some correspondence between high frequencies of cribra orbitalia and the possible existence of social ranking in A-group communities. Elsewhere, other researchers have attributed the presence of similar skeletal abnormalities to the effects of *sedentism and aggregation* rather than diet (Cohen 1984: 586; Cook 1984: 261; Kent 1987; Norr 1984: 481-482; Smith *et al.* 1984: 129-130). Increases in the frequency of porotic hyperostosis amongst Anasazi populations of the southwestern United States since the PaleoIndian era led Susan Kent to argue that a combination of crowded settlements and poor hygiene had resulted in a rise in the incidence of parasitic, bacterial and viral diseases. These in turn caused chronic iron deficiency anaemia. Kent cited evidence that most cases of porotic hyperostosis tended to occur in children under the age of ten, which corresponds to the age grouping in which infectious diseases are most common and severe. She also asserted that the Anasazi were basically a "sedentary" group who enjoyed an adequate diet that was probably not iron deficient. Instead, she maintained that iron deficiency amongst the Anasazi resulted from the body's inability to absorb iron as a result of chronic infectious disease (Kent 1987: 609-625). In the sample of 1,500 individuals disinterred from various east bank cemeteries by the Scandinavian Joint Expedition to Sudanese Nubia, Vagn Nielsen identified seventy cases of cribra orbitalia. He reported that the incidence of this disease generally increased over time, although it was present in sixteen percent of the A-group sample and only in seven percent of the C-group population (Martin *et al.* 1984: 206). The particular phases to which the samples belong are unknown, but a correlation with Terminal A- and late C-group times would be necessary to support Kent's hypothesis.

By late Middle Kingdom times, C-Group communities were producing surpluses (Adams 1984: 161), presumably under pressure from local leaders. The *nucleated settlements* that date to this period were fortified, and granaries were found among the densely packed houses at several locations including Wadi es-Sebua and Amada (Adams 1984: 145-161). In addition to this tendency towards *population aggregation,* other distinctive features of the late Middle Nubian occupation include the construction of sizable tombs and other indications of a wealthier, more populous, and more complex society (Trigger 1965: 104).

It also has been established that one consequence of social complexity, and thus of differential access to resources, is nutritional stress (Roosevelt 1984: 573). Schoeninger demonstrated that differences in meat and plant food consumption corresponded to differences in social rank in the socially stratified population at Chalcatzingo in Mexico (1979b: 295-306). Angel has documented differences between the skeletal remains of Mycenean rulers and commoners that included improvement of the rulers' dental health as well as increases in the length of their long bones over time. The observed differences were attributed to the consumption of a high protein meat diet that was available only to the ruling class (1984: 66). Likewise, Buikstra has attributed the greater stature of those presumably high status North American Middle Woodland individuals who received elaborate burial treatment to the effects of better diets and less nutritional stress than that characteristic of the lower status members of the society (1984: 222-223). It is possible therefore that, if nutritional stress developed amongst the less advantaged segments of some Nubian communities as a consequence of the exploitation of one social group by another, the existence of some Nubian pathologies can be attributed to the rise of social complexity amongst ancient Nubian communities.

Although studies of Middle Nubian skeletal populations have traditionally focused on 'racial' affinities and facial morphologies, at least one group of researchers addressed the problem of population growth estimates, life expectancy, and the incidence of disease in order to assess possible changes in nutritional status that could have resulted from socioeconomic changes in the societies concerned. Skeletal abnormalities, including retardation in long bone growth, premature osteoporosis, porotic hyperostosis and Harris lines were attributed to nutritional stress that had developed as a consequence of food production and hence changes in diet as well as social status (Martin *et al.* 1984). Apart from this study, and an investigation into the relationship between grave superstructures and status at a Nubian Christian village site on the island of Meinarti which indicated that superstructures, high status and increased longevity were positively correlated (Armelagos *et al.* 1981: 49-51), the social implications of skeletal pathologies amongst ancient Nubian communities have received little attention.

Unfortunately, it would appear that even the latest twentieth century researchers who conducted metrical and other analyses on ancient Nubian skeletal material assumed that the populations being studied were socially homogeneous. Thus, although Carlson and Van Gerven noted that the distinctions once made between A- and B-group burials had been shown to "reflect only socioeconomic variation" among A-group peoples (1979: 564), other analyses of Nubian skeletal material acknowledge no differences in social status among the individuals being studied. However, since many "wealthy," plundered tombs lacked bodies, and others were badly preserved (Vagn Nielsen 1970: 121), it is possible that the bulk of the analysed skeletal material was recovered from the graves of low status Nubians.

During the final C-group occupation of Nubia, which was probably contemporary with an Egyptian expansion south as far as the Fourth Cataract, burials referred to as 'Pharaonic' (Vagn Nielsen 1973: 31-33) are believed by some researchers to be the graves of Egyptianized Nubians and by others to be the graves of Egyptian immigrants to the area. The main significance of these burials lies in the fact that

1. they are contemporary with but *different* from the C-group graves of the New Kingdom period;

2. in contrast to the C-group graves, most of the burial furnishings were Egyptian although the corpses had been interred in the Nubian manner (Vagn Nielsen 1973: 35); and

3. multivariate analyses of cranial measurements of *males'* skeletal material obtained during the 1960-1964 Scandinavian Joint Expedition to Sudanese Nubia, apparently showed that 'Pharaonic' skulls were *bigger* and *longer* than C-group skulls (Vagn Nielsen 1970: 74-75, 1973: 45), while those of "[t]he females are perhaps less different" (Vagn Nielsen 1970: 86-87).

Some researchers believe that cranial length ratios are primarily genetically coded (Bisson: personal communication) while others have claimed evidence for a correlation between skull size and "quality of nutrition" (Cohen 1989: 128), namely, that reductions in skull size can occur as a result of malnutrition (Kennedy 1984: 174-175). Vagn Nielsen attributed the difference in grave furnishings and cranial size between the two contemporary groups to a probable difference in 'race' (1973: 45). However, given the differences in social organization that seem to be reflected in the late Middle Nubian archaeological record, it is possible that the differences noted by Vagn Nielsen are indicative of differences in social and nutritional status between the two groups. Individuals who suffered the greatest nutritional stress may perhaps have died at an earlier age and their skulls may have failed to reach their "genetically coded" maximum attainable sizes.

Likewise, frequency differences in cribra orbitalia amongst C-group and 'Pharaonic' peoples may be a reflection of the effects of sedentism and aggregation (Kent 1987: 624-625) rather than the expression of an "ethnic characteristic" (Vagn Nielsen 1970: 96). The disease was discovered in seven percent of the C-group sample and in sixteen percent of the 'Pharaonic' population. Forty-two percent of the C-group children and eighty percent of the 'Pharaonic' juveniles exhibited symptoms of cribra orbitalia or porotic hyperostosis (Vagn Nielsen 1970: 97). Thus, in spite of possible access to a more varied diet, the skeletal remains of the 'Pharaonic' population may also reflect consequences of sedentism and aggregation that derive from inadequate refuse disposal. Increases in parasitic, viral, and bacterial diseases have been attributed to changes in the patterns of refuse removal that accompany sedentism (Kent 1989: 2).

Despite their shortcomings, the studies reviewed above are clearly an advance over the type of skeletal analysis characteristic of the early twentieth century, which was concerned either with the identification of specific diseases in particular individuals (Cohen 1989: 117), or with speculation about the 'racial' attributes of prehistoric populations (Adams 1984: 91-95; Armelagos *et al.* 1981: 34-35). The use of mainly Nubian mortuary populations to recreate the culture history of the region was in accord with diffusionist and migrationist accounts of cultural change that postulated repeated indigenous population replacement by an endless horde of marauding 'races' in whom negroid or caucasoid characteristics were correlated with periods of Nubian cultural decline and growth respectively. During the first half of the twentieth century, these theories were supported by the anatomical findings of G. Elliot Smith and F. Wood Jones (1910: 15-179), G.M. Morant (1925) and A.M. Batrawi (1935, 1945, 1946). Crichton's (1966) and later, Strouhal's (1971a, 1971b, 1971c) adaptations of these arguments for the repeated "influence of a foreign element, which was predominantly Negroid" (Armelagos *et al.* 1981: 35) and was detected in Badarian, C-Group, Meroitic, and X-Group crania has been upheld by Billy (1976a, 1976b) and Dzierzykray-Rogalski (1977). Although Strouhal's conclusions differed from those of Vagn Nielsen, the latter's interpretations of the Sudanese skeletal remains also are based on a 'racial' approach to the data. In contrast, the indication that Sudanese skeletal remains reflect great continuity between successive peoples and cultural horizons (Adams *et al.* 1978: 518-523; Armelagos *et al.* 1981: 35; Carlson 1976: 467-469; Van Gerven *et al.* 1977: 270-277) has resulted in shifting the focus of much recent investigation towards the use of skeletal data to infer changes in Nubian paleonutritional and paleoeconomic patterns. Unfortunately, however, because of limited data and time and space limitations, any integration into this thesis of results from skeletal analyses would be premature.

Chapter 5

Quantitative Determinations of Social Inequality from Mortuary Data

Although several theorists have challenged the concept (Flanagan 1989: 247-248, 262; Paynter 1989: 370; Rowlands 1989: 29), it has been widely accepted that the structural complexity of a particular society will be expressed by the amount of social differentiation present in the society (Bender 1989: 83; Flannery 1972; Kent 1989; McGuire 1983). Two dimensions of social differentiation, horizontal [heterogeneity or different, but essentially equal, roles or statuses such as descent groups] and vertical [inequality or ranking], have been conceptualized to account for variations in the degree of social complexity exhibited by different societies. Tainter has suggested that mortuary data are the type most suitable for assessing these variables (1977: 329). Furthermore, the variables that comprise the extent of inequality can be measured by estimating economic differences between members of a community. "The distribution of material resources represents an important aspect of inequality in all societies. Indeed, anthropologists...normally evaluate inequality by the division of material wealth within a society. Material goods reflect inequality well because they are both the symbols and the source of stratification" (McGuire 1983: 104). Thus, an assessment of the economic status of an archaeological society should provide a measure of the degree of inequality represented and thus indicate the degree of ranking or stratification present.

In the Moundville investigation of social ranking, Peebles and Kus stipulated the minimum conditions that can be accepted as evidence of a hereditary ranking system (1977: 431). Nevertheless, Randall McGuire has suggested that one of the greatest challenges faced by archaeologists who study social complexity is "how to reconstruct social structure so that [definitions of heterogeneity and inequality] can be applied to archaeological data." He also has argued that heterogeneity and inequality, the two variables that contribute to cultural complexity, may be negatively correlated, and, unlike Mainfort, who claims to have calculated "the actual wealth contained" (1985: 555) in mid-eighteenth century Amerindian graves at the Fletcher site in Michigan, McGuire points to the difficulties encountered in attempts to estimate the wealth and the roles of individuals from mortuary data that have been documented by numerous researchers, including Tainter (1978), Braun (1981), and Bartel (1982) (McGuire 1983: 122-124).

Braun points out that mortuary data are the culmination of various cultural and geological processes. When these factors are combined with analytical problems such as inaccuracies in the input data, problems with the clustering procedures employed, difficulties with the underlying theoretical assumptions, and problems in determining estimates of mortuary complexity, the ability of other investigators to reproduce the results obtained will be seriously hampered (1981: 412). Braun reviewed the analytical procedures employed in a number of studies by Tainter, whose determinations of wealth differences between society members were based on ethnographic evidence that "energy expenditure in mortuary ritual is directly related to rank grading" (Tainter 1978: 127-128), to compile a list of errors that tend to affect the analysis and interpretation of mortuary data. These included the observations that (a) Tainter (1975, 1978) evaluated an ethnographic sample in which *known* social status was correlated with energy expenditure on corpse disposal, but failed to evaluate the converse situation (Braun 1981: 399); (b) misclassification of the geographical sources of numerous Middle and Late Woodland burial artefacts from the Klunk-Gibson mortuary population had resulted in erroneous estimations of energy expenditure and consequently of rank levels (Braun 1981: 402-403); (c) Tainter's failure to isolate distinguishable rank levels from the Klunk-Gibson data set may have been due to the absence of ranking in these communities rather than to the conclusion proposed which attributed the lack of distinct ranks to the inappropriateness of the multivariate technique employed (Braun 1981: 405); and (d) that individuals who do not differ in social importance may receive burials that differ in energy expenditure (Braun 1981: 411).

Hodder has maintained that Tainter's interpretation of mortuary practice may be inaccurate since "less differentiation in burial" does not necessarily correspond to less differentiation in life (1980: 166-167, 1982b: 144-145). Yet, the extent to which the lack of differentiation observed in the archaeological record truly reflects cultural patterning may be difficult to assess. For example, there are many indications that as social organization becomes more elaborate, more effort and attention *may* be directed towards mortuary planning. Unfortunately, many planned, rank-correlated *ante-mortem* activities, which may range from childhood tomb selection among the Merina (Huntington and Metcalf 1979: 65) to inheritance transfers among the Roman élite, may not be archaeologically visible.

Further criticism of Tainter's methodology (Orton and Hodson 1981: 105-106; O'Shea 1984: 17) and theoretical assumptions has focused on phenomena like Huron ossuary burials that could be interpreted as expressions of differences in rank since the presence of both disarticulated and articulated bodies manifest themselves as variations in energy expenditure (Tainter 1978: 127-128). In fact, the articulated corpses are those of recently deceased individuals (Trigger 1969: 108-111). Parker Pearson's analysis of recent English mortuary practice also appears to contradict Tainter's claim that social rank determines energy expenditure in mortuary ritual. On the basis of mortuary evidence alone, Parker Pearson suggested that it would be impossible to distinguish the burials of the "upper" from those of the "lower" classes in late twentieth century Cambridge. However, in spite of the established "inversion" in terms of perceived rank, differentiation *between* status groups was acknowledged. He noted that gypsies, showmen and some Roman Catholics engage in more elaborate mortuary rituals than do other members of the Cambridge community who occupied positions of high social status (1982: 104-105). Ranking differences *within* these groups, that may have correlated with the elaborate grave monuments erected for their dead, were not investigated. Moreover, despite Parker Pearson's observation that there is no correlation between funeral cost and status, he reported that at all times from the seventeenth century to the present, when only pauper's graves are spatially distinct from others in the society, burial locations have served to differentiate between various English social strata (1982: 106-107). Hence, Parker Pearson's study does not necessarily invalidate Tainter's hypothesis. We may conclude that, if there *is* differentiation in burial remains, this probably *does* mean that there was differentiation in social life. It is unlikely that a society that *lacks* social differences among the living would institute differentiation among its dead.

Humphreys has also cautioned against the assumption that there must be a direct correlation between the status of the deceased and lavish energy and resource expenditure. She points out that in situations involving the "commemoration of saints and martyrs by a religious congregation," the funeral resources are not necessarily derived from either the estate of the deceased or his or her kin (1981: 9). However, Humphreys' observation fails to contradict O'Shea's principle that *disposal treatment is consistent with status in life* (1984: 33-38), since both saints and martyrs command positions of high status in those societies that award them lavish burial treatment.

The linkage between energy expenditure and rank grading also was emphasized by Binford: "Persons who are full participants in the corporate society at the time of their death must be afforded rites which sever their relationship with that society" (Binford 1972: 211). However, "when a child [or other person] dies within a society in which social position is not inherited, very few duty-status relationships outside of the immediate family are severed. The level of corporate involvement in the mortuary rites is thus largely at the familial level; the rites are performed, either within the precincts of the family's 'life space' or outside the life space of the wider society, which therefore remains uninvolved in the mortuary rites" (Binford 1972: 234).

On the other hand, O'Shea's conclusions regarding the Amerindian burials at Barcal support Tainter's asserion that the "ethnographic literature seems to indicate clearly . . . that energy expenditure in mortuary ritual is directly related to rank grading" (1978: 127-128). The Barcal grave offerings "tended to reflect the achieved personal status of each individual. Although achieved wealth is expressed, marked mortuary elaboration is not really observed at Barcal, even among the individuals holding elevated social positions. This suggests that the ranking system was probably quite weak, with little absolute difference between the individuals within it" (O'Shea 1984: 108). Also, the decrease in elaboration of the "funerary complex" monitored by O'Shea (1984: 273) appears to be associated with a corresponding devolution in social organization. O'Shea suggested that "several of the observed changes in mortuary symbolism may be indicative of adaptations to merged villages [and]. . . despite village merger, autonomous social units continued to maintain discrete burial locations" (1984: 280). O'Shea found that Arikara and Pawnee mortuary practices changed rapidly over a sixty year period. Status markers as well as the use of grave offerings were subject to change. Nevertheless, he concluded that "changes in funerary behavior are integrally related to the overall configuration of the living society" (1984: 283-284). Moreover, O'Shea observed that "funerary treatment and grave assemblage tended to perform complementary tasks in mortuary differentiation. Treatment tended to symbolize horizontal and special status distinctions, whereas the composition of the grave assemblage [expressed]. . . vertical differentiation" (1984: 107).

Bartel points out that because of the symbolic nature of mortuary ritual, adjacent ethnic groups may employ exactly the same method of burial form, such as cremation, to denote persons of high status in one group and low status in the other (1982: 50-51; Binford 1971: 16). Ethnographic information about such customs is therefore obviously necessary. Bartel implies that such ambiguity would make status identification archaeologically difficult; he does not caution that it is unwise to assign status on the basis of a single attribute such as burial form or position.

The findings of most of these researchers that regularities exist in the realm of mortuary practice (O'Shea 1984: 33-38), that disposal treatment is consistent with status in life, that the use of formal disposal areas, the existence of corporate groups in which authority is vested, and resource control are all interrelated, and that emerging power groups attach themselves to specific burial locations, all appear to be consistent with Binford's premise that a strong correlation should exist between the organizational complexity of a society and its mortuary system (1972: 236). Their findings also suggest that, since "ritual is often scale dependent" (Johnson 1982: 406), even if the specifics of a particular burial programme are shared by more than one society, the *scale* of these operations appears to depend on the degree of social organization present. In short, whereas simplification of mortuary ritual cannot be assumed to reflect a corresponding simplification in social structure, the scale of the mortuary ritual engaged in by a society only tends to increase if social complexity increases.

Consequently, a detailed diachronic study of the mortuary practices of any society is likely to provide some information about the degree of social differentiation present in the society at different time periods, especially since the concept of social differentiation is normally defined in terms of the types of economic inequalities that exist among members of a society, and which therefore determine the structural complexity of the society. A determination of the changes in social complexity or in inegalitarianism that may have taken place in a past society therefore requires some diachronic measure of the "amount" of economic inequality present in that society.

In Egypt, there fortunately is overwhelming evidence that grave goods were used as status markers throughout the Dynastic era as well as during the preceding predynastic periods, because objects such as jewelry, pottery, ivory artefacts, and a variety of toilet articles are found as part of the funerary equipment throughout the entire time span from the Badarian (Anderson 1992: 62-65) to the fourth century A.D. (James 1979: 248). Since similar grave objects also are encountered in Nubian burials from the Early Nubian era until the end of the Ballana period in the mid-sixth century A.D., it would be reasonable to infer something of Middle Nubian socioeconomic conditions from an investigation of variations in their burial remains. It will be suggested therefore that it is possible to monitor changes in Middle Nubian C-Group socioeconomic conditions by conducting a diachronic analysis of their burial artefacts. Patterns of local and long-distance exchange may also be revealed by such an analysis.

If, therefore, it can be established that among C-Group communities

1. individual access to local as well as to imported non-luxury items such as pottery was unrestricted at all times, and that,
2. individual access to local as well as to imported luxury artefacts was unrestricted at all times, and that,
3. the ratio of imported artefacts to locally produced artefacts remained unchanged over time, and that,
4. this access was no greater in some localities than in others, and that,
5. access to burial in an elaborate tomb was not restricted to a minority of the late Middle Nubian population, and that,
6. the burial places of any minority were not spatially distinct from the burial places of other members of the population, and that,
7. this tomb elaboration does not parallel an elaboration in the production of funerary pottery and other locally made burial goods,

it will be suggested that, throughout the period from *ca.* 2100 to *ca.* 1550 B.C.,

1. no increase in differential access to burial goods occurred, and that,
2. no form of luxury resource control was operative, and that,
3. the volume of Egyptian imports remained constant and does not reflect the changes in politico-economic relations between Middle Nubians and Egyptians that are portrayed in Egyptian written records, and moreover, that,
4. the power of leaders was not increasing and Middle Nubian C-Group communities remained "democratic" until the era of the New Kingdom.

Chapter 6

Methodology and Data Selection

6.1 Methodology

The methodologies employed to reconstruct past social organization from mortuary data are diverse and involve (i) statistical procedures (Anderson 1989; Peebles 1971; Saxe 1971), (ii) formal analysis that incorporates the tenets of "role theory" (Brown 1971; Saxe 1970) to reveal clustering in the data that is believed to correspond with social distinctions, (iii) quantitative analyses that utilize systems theory concepts to identify and estimate distinctions in rank between society members (Tainter 1978: 130-131; Tainter and Cordy 1977), and (iv) seriation techniques that reveal trends towards elaboration, followed by restraint, within specific historical contexts (Cannon 1989).

Exploratory data analysis and standard inferential statistics are the main quantitative procedures utilized in this thesis. Initial investigations of data were based on techniques advocated by Whallon, who modeled his approach to archaeological data analysis on the concept of 'exploratory data analysis' that was first adopted by Tukey (1977: 3). Whallon recommends the use of simple "display and descriptive statistics ... to bring out patterns and structure in data ... [and to discover] whether what we expect or hope to find does or does not exist, whether any more complex manipulations of the data are useful or necessary, and whether they are likely to represent the critical structure of the data adequately and accurately" (1987: 141, 149).

Descriptive statistics [including the mean, standard deviation, standard error, total burial count, minimum and maximum number of observations, number of missing observations, range of variation in the "subject" under observation, and total number of objects distributed among the burials under observation] were obtained for each cemetery. Frequency distributions of each variable for the time period represented by the burials in each cemetery also were obtained.

Since statistical methodology requires the application of confirmatory procedures that assess the reliability with which inferences can be made from the sample under consideration to the population being studied (McClave and Dietrich 1988: 7), an appropriate array of standard inferential statistics was employed to scrutinize the Middle Nubian data. Where possible, contingency tables were used to determine whether there was any association between specific variables [such as total grave goods, grave area or volume, superstructure size, locally produced artefacts, or imported artefacts] and the date of any particular grave. In many instances, however, such dependence could not be tested because the number of remaining grave inclusions was insufficient due either to the destruction of graves by *sebâkh*-diggers, who collect nitrogenous earth to use as crop fertilizer, and/or plunderers, or to the original "poverty" of the graves themselves. Attempts to identify the clustering of materials in specific portions of cemeteries were nearly always impossible for similar reasons. *Either the number of undisturbed graves was extremely small or plundering had been so efficiently effected that the sample size of the remaining artefacts was not large enough for tests of association to be meaningful.* As Kintigh has noted, "statistical methods often make assumptions about data that simply cannot be satisfied in archaeological situations. In particular, we have trouble with assumptions of randomness and with assumptions about the distributions of variables" (1987: 131-132). However, to avoid the problem of unknown distributions, nonparametric procedures were employed in this thesis. In situations where "the p samples are random and independent," and where five or more measurements exist in each sample (McClave and Dietrich 1988: 593), it was possible to employ either the Mann-Whitney U statistic or the Kruskal-Wallis H test to compare variables over time (W.J. Anderson: personal communication). For each variable, e.g. total shell beads, its population mean was calculated for each time period. The object of the test is to reject the null hypothesis which states that the means of the populations in different time periods are equal. In cases where two populations, e.g. 2100 B.C. and 1750 B.C., are being studied, the Mann-Whitney test was used. In situations where more than two populations were under study, the Kruskal-Wallis test was applied. Rejection of the null hypothesis is based on the p-value obtained for a particular test. The p-value for a test is the value of α [the level of significance of the test] at which the observed value of the test statistic becomes significant. If $p \leq \alpha$, the null hypothesis is rejected; if $p > \alpha$, the null hypothesis cannot be rejected (W.J. Anderson: personal communication). In this thesis, the value $\alpha = 0.05$ was used for every test. The theoretical assumptions underlying each test are given in Appendix A.

6.1.1 Inferences from statistical data

The method of 'weighting' artefacts is discussed in Section 6.2 below. 'Weightings' of burial goods were based on the raw material from which an artefact was made. Consequently, burial statistics, except numerical estimates of Egyptian and other foreign exchange, are unaffected by the origins assigned to the burial artefacts. For example, variables such as 'total grave goods;' descriptive statistics, such as 'mean number of artefacts per burial;' and the corresponding computed standard deviations or calculated percentages are *totally independent* of artefact origin. Likewise, because nonparametric tests of significance are carried out on counts of raw data, these tests also are unaffected by the origins assigned to artefacts. Inferences about Middle Nubian complexity were based largely on the results of hypothesis testing. Diachronic increases and decreases in statistical populations, such as artefact quantities that remain numerically unchanged regardless of their place of origin, underlie most of the arguments put forward in the thesis.

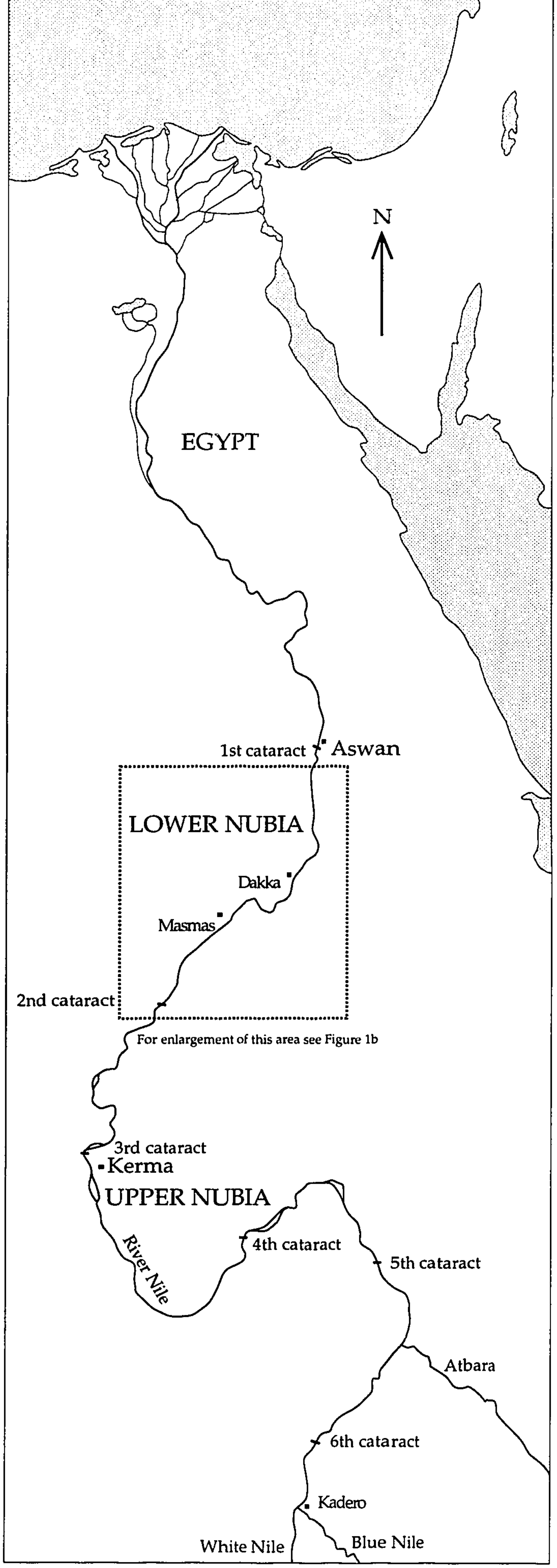


Figure 1a. Archaeological sites in the Nile valley [Scale 1cm: 102 km]

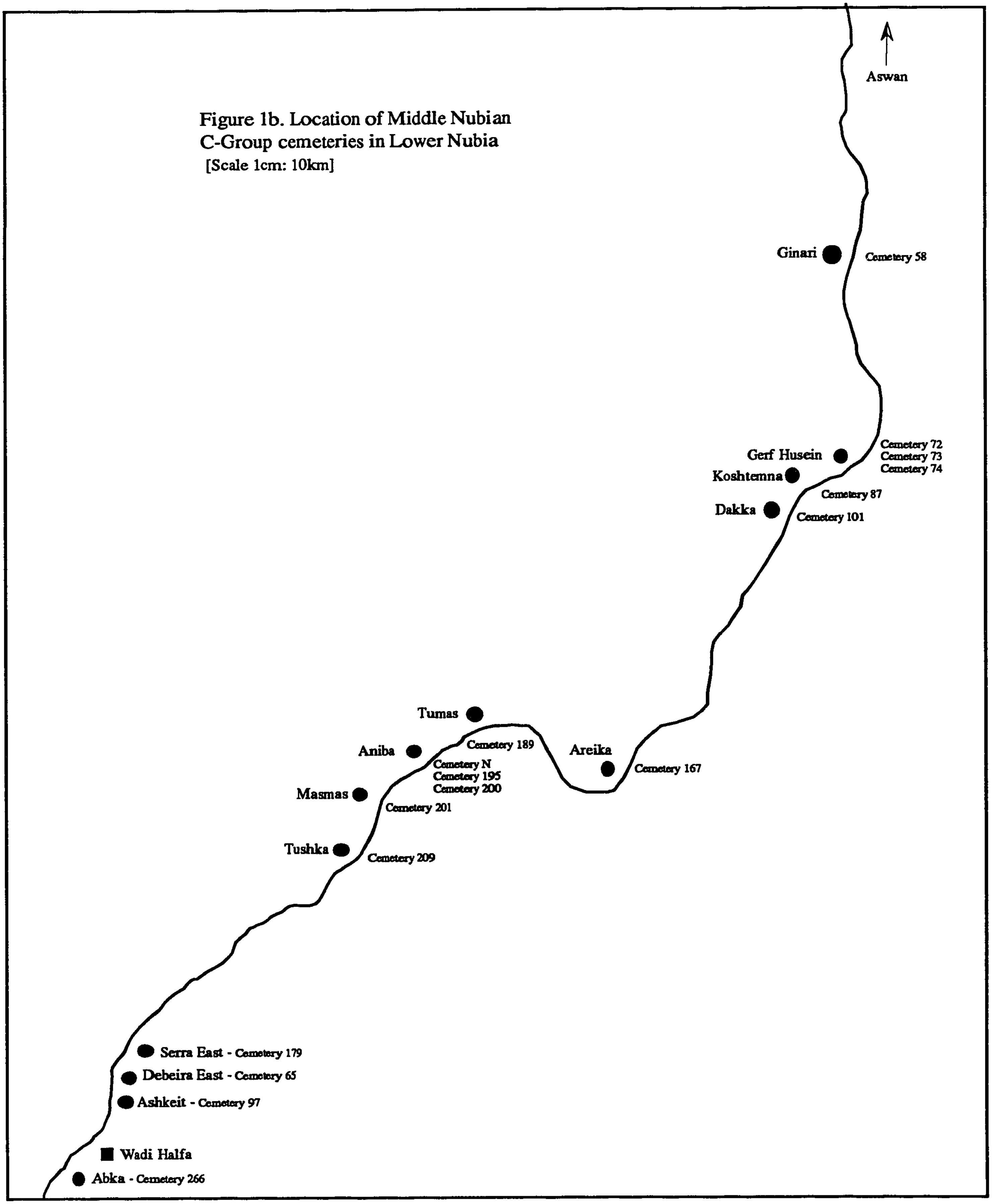


Figure 1b. Location of Middle Nubian C-Group cemeteries in Lower Nubia
[Scale 1cm: 10km]

6.2 Data selection

Between Shellal and Gemai, more than 200 Middle Nubian cemetery sites were discovered in the first sixty-five years of the twentieth century. Since it was impractical to carry out a statistical study on such an enormous body of material, a sample was required and chosen in the following manner. A numbered list of C-Group cemetery sites was compiled from those recorded in publications by Reisner (1910), Firth (1912, 1915, 1927), Emery and Kirwan (1935), Steindorff (1935), Williams (1983), Säve-Söderbergh (1989) and Bietak (1968). A table of random numbers was used to select fifty of these cemeteries for analysis. However, for the reasons outlined below, only fifteen were suitable for inclusion in the dataset on which this thesis is based. First, those cemeteries that lacked a relatively large sample of burials from at least two different time periods were useless for a diachronic study. An example is Cemetery 142 at Naga Wadi, which contained a single New Kingdom-period C-Group grave. In northern Sudanese Nubia, Cemetery 235 at Debeira and Cemetery 441 at Gemai each consisted of a single Middle Nubian grave. Other sites with too few burials to conduct a *diachronic* analysis are Cemeteries 24, 246, 426 and 434. Second, some cemeteries [183, 184, 262 and 270, also from northern Sudanese Nubia] were excluded because the graves belonged to a single time period. Third, I was unable to assign dates to individual graves in the remaining cemeteries for the following reasons: either (i) no pottery was present [Cemetery W at Aniba contained four graves and no ceramics (Steindorff 1935: 193)], or, (ii) no sufficiently diagnostic C-Group pottery or Egyptian material was present, or, (iii) the descriptions of the ceramics present are too vague, or (iv) insufficient detail or no description of the burials in a particular cemetery is provided in the literature. An example of a situation in which only minimal information was provided is the report by Emery and Kirwan that Cemetery 159 "was a large C-Group cemetery with remains of stone superstructures. It lay on the east bank of the river...on the boundary between Sinqâri and Korosko" (1935: 151). Their description of the Middle Nubian mortuary remains at El Malki is equally brief. Cemetery 161 was "of the late C-Group period, [and] ...lay slightly to the south-west of a settlement of stone huts of the same period and, no doubt, was the burying place for the inhabitants of the town. The graves had been plundered to such an extent that not even the bones had been left in place" (1935: 151).

As stated previously, the aim of this investigation is to determine whether social and economic differences among members of Nile Valley C-Group communities increased, decreased or remained the same during the second and third millennia B.C. This will be determined through a diachronic analysis of tomb size; burial offering quantity and type; as well as through a comparison of each cemetery's estimated 'wealth indices' as revealed by a 'weighting' of the individual tomb offerings in each cemetery. 'Production indicators' for variables, such as tomb construction, local goods 'production,' and exchange, also were assessed by 'weighting' the material remains from each burial on the combined basis of tomb size and burial offerings for the time periods appropriate to each cemetery.

Where cemetery plans are available, a spatial analysis of graves was conducted in an attempt to identify the existence of 'non-random patterning' in the distribution of grave types, body treatment and specific types of grave inclusion such as gold. The burials included in this analysis are those which have been listed in the site reports as occurring in C-Group cemeteries or in the C-Group and New Kingdom sections of cemeteries.

The sample of cemeteries between Aswan and Wadi Halfa [Figure 1b] chosen for statistical analysis contained approximately 3,605 Middle Nubian burials [2,713 of which could be dated] and were located in the following fifteen regions of Egyptian and Sudanese Nubia: Cemetery 58 at Ginari which contained fifty-one C-Group and 'New Kingdom' burials; Cemeteries 72, 73 and 74 near Gerf Husein with ninety-nine burials; Cemetery 87 at Koshtemna, which contained seventy graves; Cemetery 101 at Dakka with approximately 600 recorded graves; Cemetery 167, which was situated at Areika and contained 114 graves; Cemetery 189, south of Tumas, with 372 graves; three necropoli at Aniba: Aniba N [Aniba North] with 961 graves, Cemetery 195 with 105 graves and Cemetery 200 with ninety-three graves; Cemetery 201 at Masmas with eighty-six graves; and Cemetery 209 at Tushka with approximately 257 graves to which dates can be assigned. The cemeteries in northern Sudanese Nubia that were chosen for analysis are Cemetery 179 at Serra East with 235 *Stage Ia* and *IIb* graves; 195 *Stage Ia* to *IIa* graves from Cemetery 65 at Debeira East; Cemetery 97 at Ashkeit with 134 recorded graves of *Stage Ib* and *IIa* date; and Cemetery 266 at Abka with 111 *Stage Ib* to *IIa* graves.

All data were compiled from information recorded in the following publications: The records of the fifty-one C-Group and 'New Kingdom' burials at Ginari, the C-Group burials near Gerf Husein, and the C-Group burials near Koshtemna are published as "Part II. Catalogue of Graves and their Contents" in the first volume of *The Archaeological Survey of Nubia: Report for 1908-1909* (1912) by C.M. Firth. The records of the 600 Middle Nubian burials in Cemetery 101 at Dakka are published under the title "Middle Kingdom Nubian Cemeteries, C-Group Period" in *The Archaeological Survey of Nubia: Report for 1909-1910* (1915) by C.M. Firth.

The records of the C-Group burials in Cemetery 167 near Amada, at Tumas in Cemetery 189, in Cemetery 195 and in Cemetery 200 near Aniba, as well as those in Cemetery 201 at Masmas, and those of the 278 burials in Cemetery 209 at Tushka are published as separate sections of "The Cemeteries and Ancient Sites in Geographical Order" in the first volume of *The Excavations and Survey Between Wadi Es-Sebua and Adindan: 1929-1931* (1935) by Walter B. Emery and L.P. Kirwan. Records of the cemetery and settlement excavations at Aniba N were compiled by Georg Steindorff and Alexander Langsdorff and published as the first volume of *Aniba: Mission Archéologique de Nubie 1929-1934* (1935) by Georg Steindorff.

The records of the C-Group burials in Cemetery 179 at Serra East, in Cemetery 65 at Debeira East, at Ashkeit in Cemetery 97 and those of the 111 burials in Cemetery 266 at Abka are described by Torgny Säve-Söderbergh in *Middle Nubian Sites* (1989), a two volume report on some of the work carried out by the Scandinavian Joint Expedition to Sudanese Nubia during the 1960's.

Characteristics of the excavators' reports

Since the C-Group data that form the basis of this thesis were obtained from site reports that had been compiled by several different archaeologists over a period of approximately sixty years, the degree of detail offered varies tremendously.

In the reports prepared for the First Archaeological Survey, the age and sex of grave occupants is commonly catalogued; superstructure conditions are described and their diameter measurements are listed, but, although the number of remaining layers of stone is roughly indicated, the superstructure heights are never recorded; individual grave orientations are usually specified while grave conditions are not; some artefacts, such as hair clasps, are incorrectly identified; and the pottery descriptions are sometimes so vague or incomplete and/or lacking illustration that identifications are impossible.

Whereas Steindorff rarely specifies the sex of grave occupants, subadult skeletons are noted, and superstructure diameter, height and condition usually are reported. Different types of stone superstructure are distinguished; grave orientation is normally specified but grave condition is not; detailed reports of grave construction are given; pottery is usually classified as either Nubian or Egyptian; and some graves are assigned to a particular phase of the C-Group occupation. Beads usually are identified and reported on in some detail although vague terms are used to account for most finds. Thus, "a few beads" were found in N700a, N739a, and N740 (Steindorff 1935: 172, 175); "numerous beads" were discovered in N530d, N557a, N639 and N878a (Steindorff 1935: 160, 163, 168, 185), "a few glazed beads" were retrieved from N588 (Steindorff 1935: 165) and "blue glazed ring beads" were removed from N154 (Steindorff 1935: 136).

The age and sex of grave occupants is ordinarily stated in the report by Emery and Kirwan. However, although superstructure diameters are sometimes documented, their height is usually never reported, their condition is given infrequently and their manner of construction is ignored. Grave condition is practically always reported but grave orientation is often unspecified and regularly at odds with the orientation presented on the cemetery plans. For example, on Plate 45, the orientation of Burial 82 in Cemetery 167 is either head towards the local northeast or the magnetic southeast. However, it is reported lying on the right side, "head south-west" (1935: 189). Pottery is often improperly described or illustrated, thus making it sometimes difficult to know whether an item was locally manufactured or imported, and insufficient detail is nearly always the rule where descriptions of beads are concerned.

Extremely detailed reports, in which age and sex estimations, superstructure and grave sizes, grave orientation, grave condition, pottery descriptions, and bead identifications are systematically recorded, were prepared by Säve-Söderbergh of the Scandinavian Joint Expedition to Sudanese Nubia. The time ranges within which particular cemeteries were in use also are given and cemetery maps were provided for almost all the burial sites. However, because of the emphasis on "transitional," early Eighteenth Dynasty cemeteries, detailed plans were provided for sites from this period, such as 35 and 220, whereas barely adequate diagrams were given for earlier sites such as Cemetery 65 for which a map that illustrated the different varieties of tomb construction would have been extremely useful.

In addition to these problems, for many burials grave locations could not be determined because the same grave number was issued to more than one grave. Some cemetery maps contained graves that were not mentioned in the text; grave locations were not always included on the appropriate map and for some sites, such as Cemetery 72 and Cemetery 74 at Gerf Husein, no cemetery plans were provided.

In many cases the information given about a particular burial was either inappropriate or insufficient for inclusion in the quantitative analysis. At Aniba North, for example, 10.70 percent of the graves were completely empty; another 5.19 percent were described by Steindorff as "insignificant" or "without importance;" and in a further 4.78 percent nothing but "bones" were discovered. In all, therefore, approximately twenty-one percent of the burials at Aniba North were statistically useless *because they could not be dated.* Although several factors, including differential preservation and the effects of plundering as well as the initial lack of grave goods in some instances certainly contributed to this situation, inadequate reporting was also a contributing factor. For example, a comparison of the records for the following three Aniba North burials shows that Burial N423 was omitted from the cemetery map and deemed to be "without importance" although it yielded a potsherd and an *Aetheria* eye-paint container. On the other hand, superstructure and grave dimensions had been recorded for both Burial N162 and N400, and both had been entered on the grave plan even though N162 contained nothing except "a few bones" and N400 was completely empty (Steindorff 1935: 136, 151, 152). Similar instances of arbitrary recording were common in the reports from all periods.

Determinations of grave orientation also tended to be extremely problematic, mainly because some excavators have claimed that the orientation of the Middle Nubian C-Group burial shafts was planned in relation to the direction of the Nile (Emery and Kirwan 1935: 9). Later Bietak established that there were two essentially different orientations that referred to "river direction and not magnetic north, and he labeled them east-west and north-south" (Williams 1983: 3). However, although Säve-Söderbergh notes that "this makes no difference" in northern Sudanese Nubia (1989: 8), for the other cemetery sites confusion easily arises over the excavators' use of directional terms. For example, Williams reports that "according to magnetic north, at Adindan [east-west] becomes southeast-northwest and ... [north-south] northeast-southwest" (1983: 3). Moreover, while both 'river north' and magnetic north are depicted on some cemetery maps (Firth 1912, 1915, 1927; Williams 1983), on some presumably magnetic north alone is represented (Steindorff 1935), and on others the directional arrows are unnamed (Emery and Kirwan 1935). Therefore, whenever the reported grave orientations in a cemetery appeared doubtful, Bietak's version of the differences that existed between the local and magnetic readings at the site in question was adopted. Thus, while river or "local north is 140 degrees east of north" at Areika (Bietak 1968: 69), at Aniba and at Tushka it is "45 degrees east of north" (Bietak 1968: 23, 79). Details on grave orientations are provided in the appropriate places in the text.

Representative sample of cemeteries

Extensive archaeological research in Lower Nubia has only been carried out in areas under threat of inundation by repeated raising of the Aswan Dam. During the various archaeological surveys of Nubia, different parts of the valley have received different amounts of attention. For example, during the First Archaeological Survey, about seven kilometers of the Dakka plain was extensively investigated in the 1909-1910 season, but in the following season, Firth and his workers surveyed approximately fifty kilometers along each bank of the Nile. About forty-four sites with a total of

1,615 C-Group graves probably were investigated, but, because the importance of methodical documentation was not fully recognized, complete accounts of the work carried out by the First Archaeological Survey do not exist (Adams 1984: 72-74). During the Second Survey, the east bank between Wadi es-Sebua and Adindan was not systematically explored, and the west bank was completed in a rather hurried fashion. A detailed survey of this stretch, which followed the thirties flooding of the region, was undertaken by Harry Smith in the early sixties (Smith 1962: 5-104), at a time when the area between Faras and Gemai also was being carefully explored (Trigger 1965: 47-49) by members of the Scandinavian Joint Expedition under the supervision of Torgny Säve-Söderbergh.

In spite of these drawbacks, burials in the sample of cemeteries that I have chosen are probably fairly representative of the entire Middle Nubian time period. Unfortunately, there was only a single burial from Bietak's *Stage Ia*; however, there were 115 from *Stage Ib*; 1,421 from *Stage IIa*; 1,022 from *Stage IIb* and 154 from *Stage III*. In fact, the samples from each time category compare favourably with those proposed by Bietak (1968) and Säve-Söderbergh (1989), whose investigations led to the assignation of approximate dates to 632 Middle Nubian C-Group graves. Twenty-seven of these burials were assigned to *Stage Ia* [*ca.* Ninth and Tenth Dynasties]; 115 to *Stage Ib* [*ca.* late Eleventh and early Twelfth Dynasties]; 261 to *Stage IIa* [*ca.* late Twelfth and Thirteenth Dynasties]; 136 to *Stage IIb* [*ca.* Hyksos times and Seventeenth Dynasty] and ninety-three to the Eighteenth Dynasty. Although Bietak described the characteristics of *Stage III* [*ca.* Seventeenth Dynasty and early Eighteenth Dynasty] in some detail, he failed to identify specific burials from this period of Middle Nubian history.

Representative sample of burials

Many archaeologists have cautioned that the recovery of a representative sample of an archaeological burial population is a dubious matter since disposal of the dead may be accomplished by more than one method in a single society (Tainter 1978: 109), or, the method of burial may be conditioned by the circumstances of death

(Brown 1981: 28; Binford 1972: 235). In many cases, small sample sizes constitute the only available burial remains (O'Shea 1984: 57-58) and these may not be at all representative of the past living population (Binford 1972: 401) due to either natural or cultural postdepositional disturbances or incomplete recovery techniques (O'Shea 1984: 52-53). Nevertheless, the C-Group skeletal material on which my research will be based can be considered to be fairly representative of the past living populations from which it was derived, since it was well preserved and consists of relatively large numbers of specimens including subadults.

Another problem that results from the nature of the data itself is the difficulty of attempting to estimate both the age and sex of skeletal remains (Bocquet-Appel and Masset 1982; Buikstra and Mielke 1985: 366-390). Age estimates and the sexing of the skeletons from Koshtemna were carried out by Dr. Douglas Derry; during the Second Archaeological Survey by Dr. Ahmed Batrawi; and for the Scandinavian Expedition, human remains were analysed by Ole Vagn Nielsen. Unfortunately, because the genetic affiliations of the Lower Nubian population were the primary concern of these scholars, their analyses of the skeletal data consist primarily of cranial measurements. As a result, little can be gained from these studies.

Although C-Group cemeteries that were thoroughly plundered had to be omitted from the data analysis, disturbed graves proved to be the most serious defect inherent in the archaeological remains that were analysed. Undisturbed graves are a rarity. However, when it could be established that plundering was carried out quite systematically, its effect on the data was assumed to be constant. Nevertheless, in spite of this precaution, the combined effects of inadequate reporting, low burial counts, low artefact counts, the nearly complete absence of skeletal remains in some cemeteries and/or the total destruction of superstructures and graves meant that the datasets for several cemeteries consist of only those graves that contained artefacts [Cemetery 101 at Dakka, Cemetery 167 at Areika, Aniba North, Cemetery 195 at Aniba, Cemetery 200 at Aniba and Cemetery 201 at Masmas].

At Adindan, Williams suspected that "some [pottery] objects were redeposited repeatedly [and concluded that it was difficult to] be completely sure that any object is contemporary with the tomb where it was found" (1983: 21-22). Similarly, because some First Intermediate Period Egyptian 'oil jars' at Aniba North were found *in* grave shafts as well as with possible Pangrave remains, it was impossible to assign Eleventh Dynasty dates to the burials with which they were associated.

Major variables

The major variables employed in the data analysis were: ***superstructure size, superstructure construction*** [stone enclosure, brick enclosure, stone enclosure and stone chapel, stone enclosure and brick chapel, brick enclosure and brick chapel], ***superstructure condition*** [intact, partial, none], ***superstructure goods*** [local, Egyptian, or imported pottery and other items], ***grave size*** [area and occasionally volume], ***grave pit construction*** [unlined, unlined with stone offering slab, unlined with brick vault, unlined with vault and stone offering slab, Kerma-style, stone slab lined, quarrystone lined, brick lined, brick lined with vault, unrecorded, undetermined and unknown],***grave condition*** [plundered, undisturbed, unknown and unrecorded], ***grave pottery*** [black topped bowls and jars; a distinctive, black incised ware, that was sometimes painted, and almost always modeled in the form of a bowl or cup; globular *burmas,* in red or brown ware, either with or without incised, geometric designs that were occasionally accompanied by images of humans and other animals; Egyptian and Egyptian-style versions of the oblong *zir;* Kerma and Kerma-style vessels; and coarsely executed Pangrave bowls], ***total local pottery, total Egyptian pottery, total imported pottery, Egyptian stone, clay or faience objects other than beads*** [button seals, scarabs and amulets], ***beads*** [glazed, stone, metal and shell], ***total local beads, total Egyptian beads, shells*** [freshwater and marine], ***total burial goods, total local goods, total Egyptian goods, total tomb wealth, body position*** [contracted, extended, unrecorded, unknown], ***head orientation*** and ***face orientation,*** [north, south, east, west, unrecorded, unknown and none], ***body condition*** [complete, partial, unrecorded, unknown and none], ***sex*** [male, female, unrecorded and unknown], ***age*** [subadult, adult, unrecorded and unknown], ***inscriptions, owner's marks,*** residual classes of ***'other local goods'*** such as animal offerings [bones, horns, partial and complete skeletons]; feathers; matwork; wood [coffins] and leather [in the form of shrouds, kilts, skirts, headdresses, sandals, pillows and bags], *'other Egyptian goods'* [particularly linen], and *'other imported goods'* such as mother-of-pearl and tortoise shell, a category of luxury goods including local and imported *gold, silver, copper, alabaster, carnelian* and *ivory,* and lastly, *date* [2100 B.C., 2000 B.C., 1950 B.C./1900 B.C., 1850 B.C./1800 B.C., 1750 B.C., 1700 B.C., 1650 B.C., 1600 B.C. and 1550 B.C. being roughly equivalent to Bietak's Stages Ia, Ib, IIa (early, middle and late), IIb (early, middle and late) and III respectively].

Omissions

Despite the existence of Egyptian bronze tools of Middle Kingdom date, and because of the tendency for excavators to use the terms bronze and copper in their publications as if they were synonymous, because of the "lack of a large series of chemical analyses of early Egyptian metal objects," and because it has been established that the number of copper objects far exceeds those made of bronze in the tomb of at least one New Kingdom pharaoh, (Lucas and Harris 1989: 219-220), both bronze and copper objects were recorded as copper objects for the purposes of this investigation. Unmodified "flakes" were not included in 'Grave Goods' totals. Pits containing only bucrania, or the horns and skulls of various animals, such as gazelles, were omitted from the dataset. Those animal burials that occurred within the grave chamber of a human interment were treated as grave offerings; all others were ignored. Burials that lacked grave goods were usually excluded from the dataset.

Counts of beads and other objects

In many of the site reports consulted for this analysis of C-Group burial remains, artefact occurrences are seldom quantified precisely. Objects are either listed without acknowledgment of the actual number encountered or, especially when referring to beads, terms like "bands," "strips," "strings," and "girdles" are used as a substitute for enumeration. A typical example of this practice is met with in the description of Burial 122 from Cemetery 87 at Koshtemna. A photograph of the object from Burial 122, described in the report as "two strips of white shell beads and

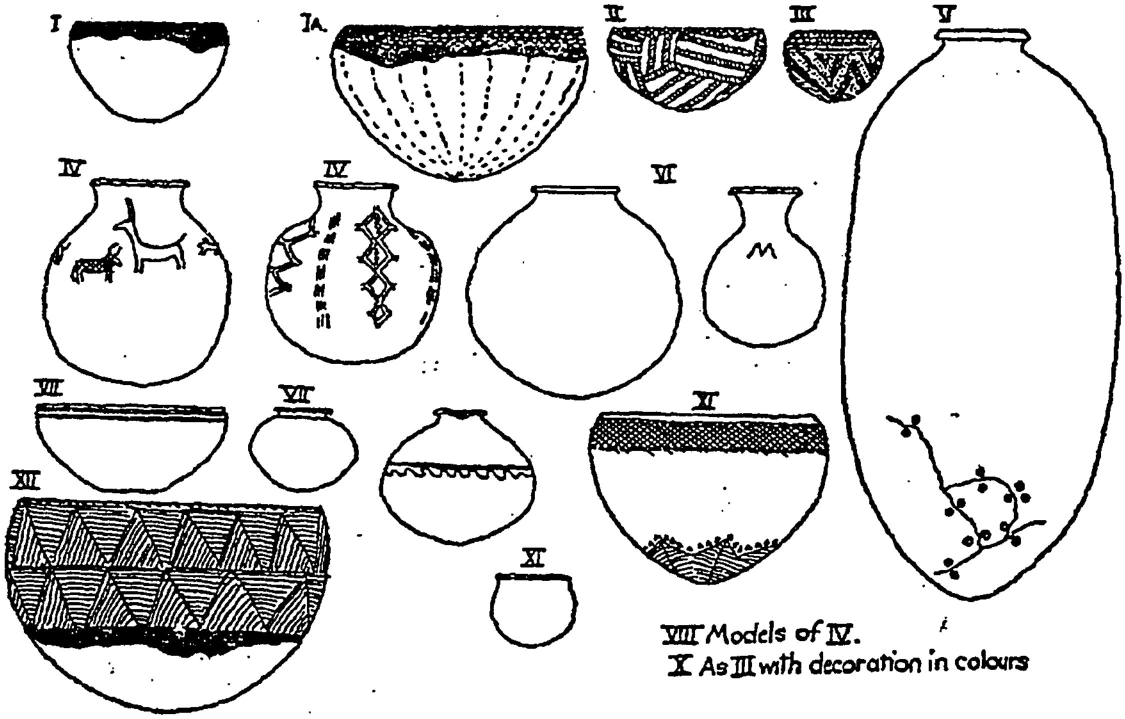
Table 6.1: Estimated counts of artefacts recovered from C-Group burials in the Nubian Nile Valley

Artefact	Count
Un-named amount	5 beads; 5 strings etc.
Quantity	10 beads (Firth 1912: 160)
Bead anklet	25 beads
Bead belt	100 beads
Bead bracelet	20 beads
Bead headdress	60 beads
Bead kilt	150 beads
Bead necklace	50 beads
String	35 beads
String - long	75 beads
String - short	35 beads

green-glaze disc beads," shows that this particular necklace is divided into twenty-two sections. A total of approximately 186 unidentified "shell" beads comprised eleven of these sections and the remaining eleven sections consist of a total of approximately 286 green glazed beads (Firth 1912: 167, Plate 56/4). Likewise, the 292 carnelian ring beads recovered from Burial 50 are reported merely as "cornelian beads" (Firth 1912: 167, Plate 56/5). From the same grave "black and white stone beads" describes the occurrence of 98 beads (Firth 1912: 167, Plate 56/6). Because of this tendency to give ambiguous accounts of the exact number of artefacts associated with a particular burial, undisclosed numbers of artefacts were counted in the manner listed in Table 6.1. It should be noted that bead counts will sometimes be underestimated as a result of this procedure.

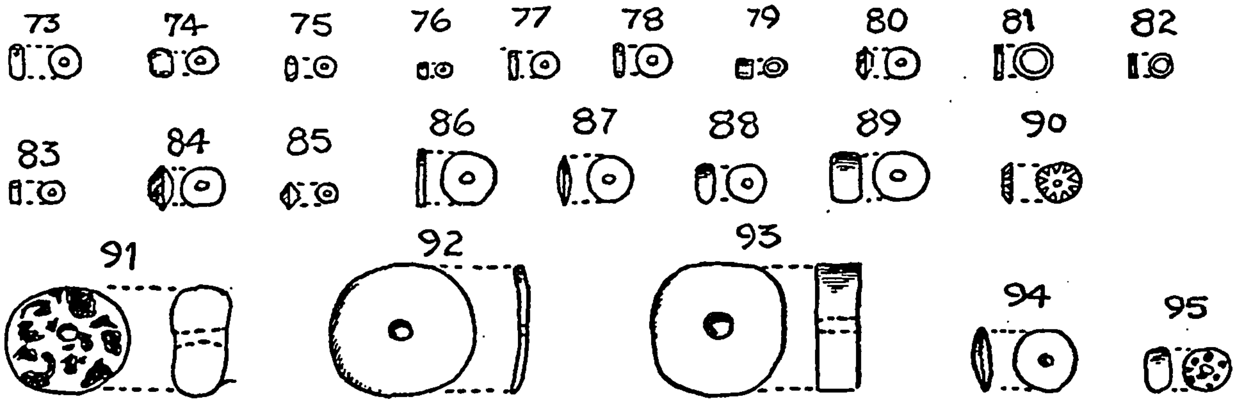
Dating procedure

In Nubia, as in Egypt, archaeologists have observed that First Intermediate Period graves are aligned east-west whereas Middle Kingdom ones are aligned north-south (Bietak 1968; Petrie 1901: 42-43; Reisner 1910: 18). Therefore, on the assumption that grave orientations were adopted by different communities throughout large sections of the Nile Valley at approximately the same time periods, dates were assigned to Middle Nubian graves largely on the basis of grave shaft orientation and in accordance with the following principles: those that shared the same method of grave construction and that occurred in close proximity within a cemetery were considered to be of the same date; those that were oriented towards the local east-west, and contained unquestionable Egyptian artefacts that predated the Middle Kingdom, were labeled First Intermediate Period; those that were oriented east-west and associated with tall water pots or *zirs* were allocated to 1850 B.C.; those that were oriented east-west and associated with *zirs* as well as globular jars [Bietak's *IIa 23*] or *burmas* were dated to 1800 B.C.; those that were oriented north-south and associated with *zirs,* plain or incised *burmas,* Kerma or Pangrave-type artefacts, and painted, black-incised pottery were allotted to 1750 B.C.; those lacking Middle Kingdom Egyptian pottery but associated with plain or incised *burmas,* painted, black-incised pottery, Kerma or Pangrave-type artefacts, and possessing grave shafts that were oriented north-south, were allotted to 1650 B.C.; and those that lacked superstructures as well as *burmas,* but possessed grave shafts that were oriented north-south or east-west, and were associated with Egyptian "New Kingdom" pottery, painted black-incised pottery, Kerma or Pangrave-type artefacts, were dated to 1600 B.C. Finally, those Middle Nubian graves that contained New Kingdom Egyptian pottery and lacked superstructures but were oriented either to the local north-south or east-west, were dated to 1550 B.C. (Bietak 1968: 192-194; Williams 1983: 3-9). Graves of the last type were encountered in Cemetery 50 at Metardul, where Reisner wrote that the "New Empire graves . . . are oriented roughly east-and-west along the western side of the cemetery, and north-and-south along the eastern side. [The burials were] all extended . . . [and moreover] the pottery and other objects were few in number, but unmistakable in character" (1910: 292).



I: plain, black-topped, red polished, Nubian ware
IA: ornamented, black-topped, red Nubian ware
II: black-topped, red polished, incised Nubian ware
III: red or black polished, incised, Nubian ware
IV: *burma* [incised, graffiti-type Nubian vessel]
IV: incised *burma*
V: Egyptian *zir*
VI: Egyptian white ware
VII: Egyptian red ware
VII: Egyptian ointment jar
VIII: elaborate, graffiti-type *burma*
IX: Egyptian, red-brown or white ware, vessel
X: elaborate, painted Nubian ware
XI: Pangrave, incised, polished, black, brown or red, ware
XI: Pangrave, plain, polished, black, brown or red, ware
XII: Pangrave black-incised vessel

Figure 2a: Middle Nubian pottery [Source: Firth 1915: 18-19]



73: carnelian; blue glaze; green glaze.
74: black glaze.
75: amethyst; carnelian; black glaze; blue glaze.
76: blue glaze; gold.
77: shell.
78: carnelian; shell.
79: gold.
81: gold; silver.
82: gold.
83: shell.
84: quartz.
86: blue glaze; shell.
87: carnelian.
91: unidentified stone.
93: pottery.
94: blue glaze.
95: unidentified stone.

Figure 2b: Middle Nubian ring or disk beads. Nos. 80, 85, 88, 89, 90, and 92 date to the Early Dynastic and/or Meroitic periods [Source: Emery and Kirwan 1935: 537]

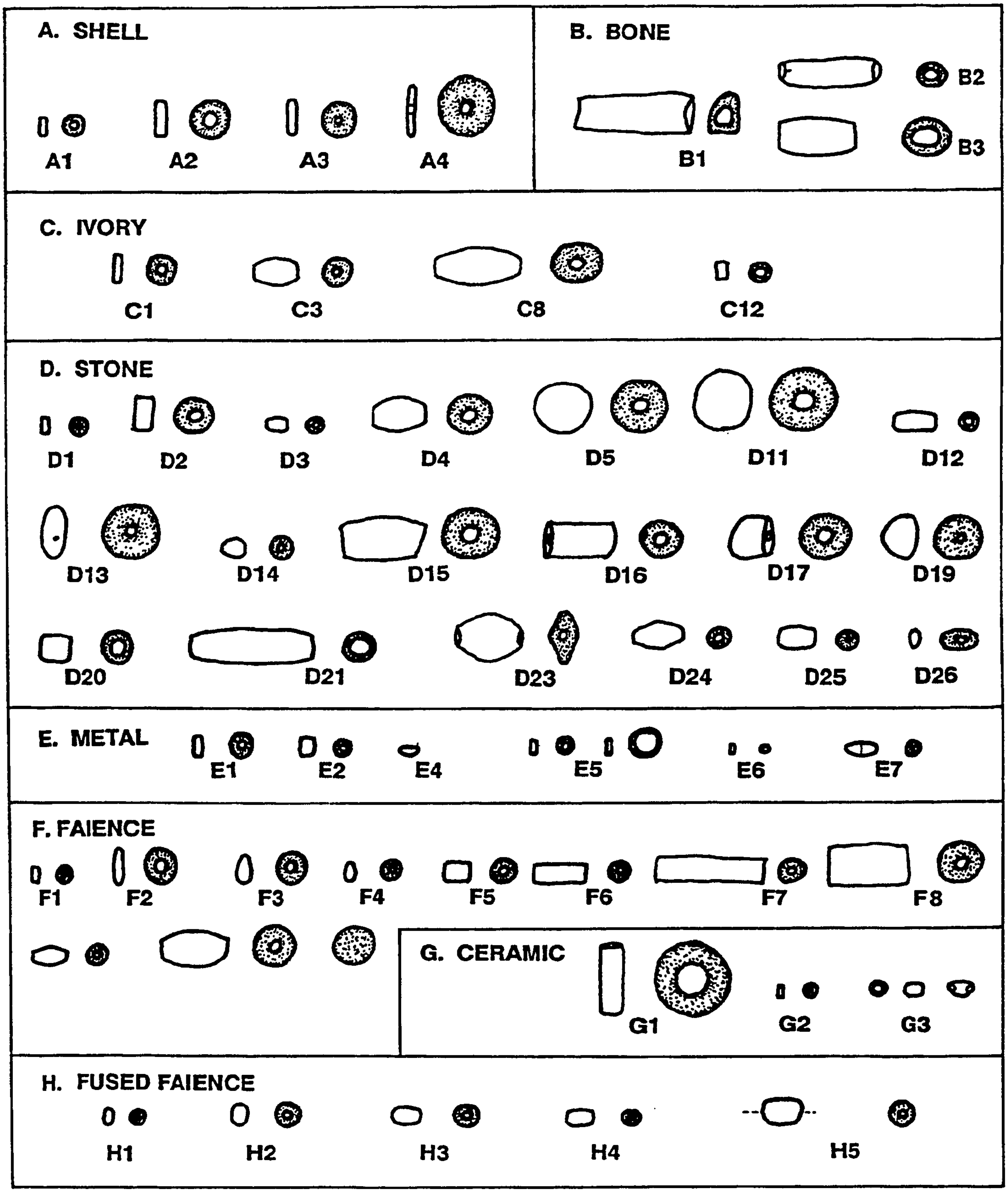


Figure 2c: Middle Nubian beads [Source: Säve-Söderbergh 1989: 77]

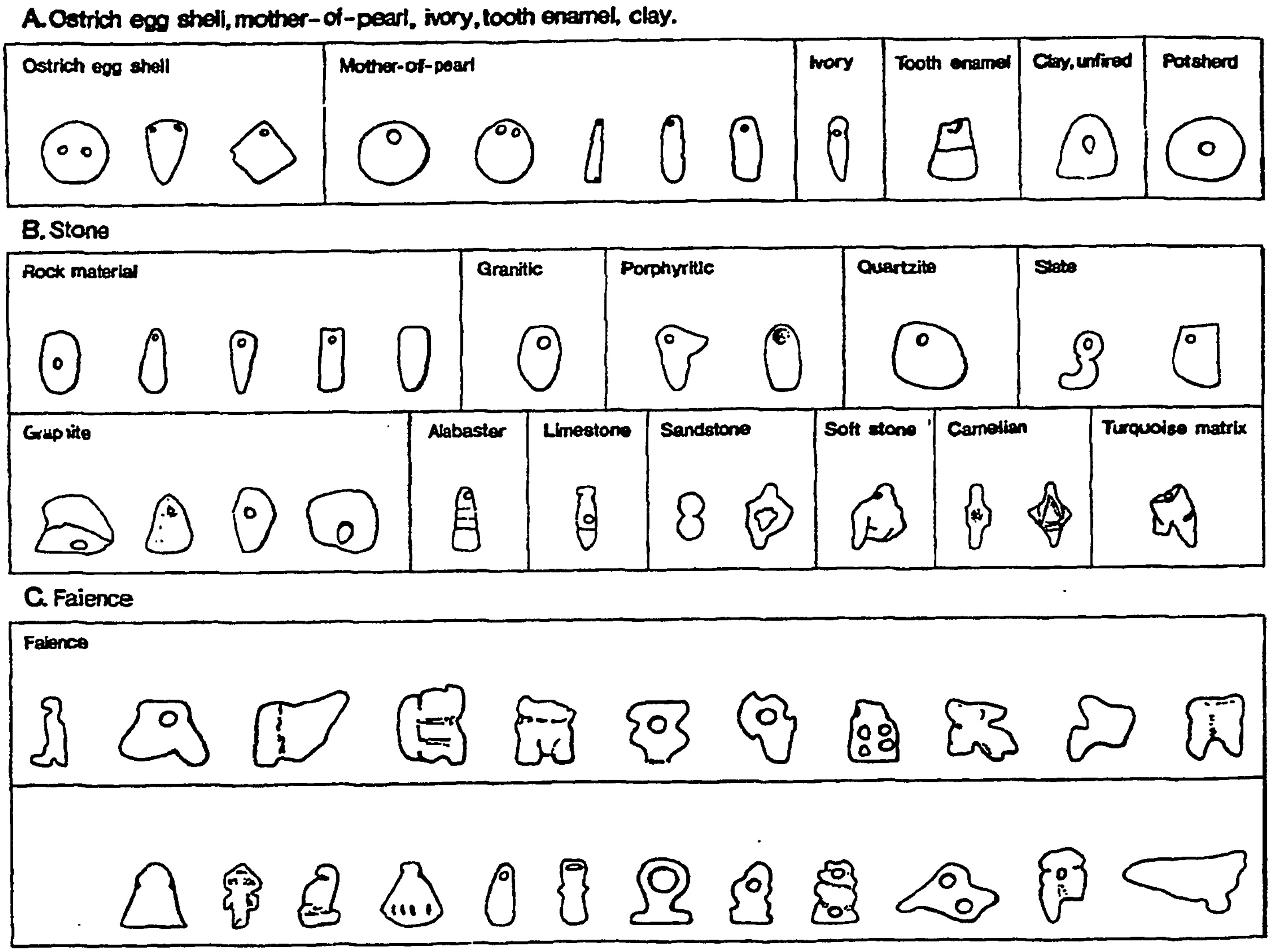


Figure 2d: Middle Nubian pendants [Source: Säve-Söderbergh 1989: 110]

Table 6.2: Pottery chronology for Middle Nubian C-Group burials [Adapted from Bietak 1968; Firth 1912; Säve-Söderbergh 1989; Williams 1983]

Pottery	Date B.C.				
	2050	1850	1750	1650	1550
black incised	x	x	x	x	x
black-topped, red	x	x	x	x	x
burma [incised]			x	x	
burma [plain]		x	x	x	
Egyptian drop pot					x
Egyptian oil jar	x				
Egyptian ointment jar		x	x	x	
Egyptian red ware			x	x	x
Kerman black-topped, red			x	x	x
painted, black-incised				x	
Pangrave black-incised			x	x	x
Qena ware		x	x		
red incised	x	x	x	x	x
zir		x	x		

Pottery

Firth reported that "pottery of ... hard yellow white and red ware [is] ... of Egyptian manufacture or are copies of these, while the SCRW [smooth coarse red ware] and RPBT [red polished black-topped] pottery are of local make ..." (1927: 22) [Figure 2a].

At Fadrus [Quadrus], Troy reported that "the ovoid jar ... possibly locally manufactured ... plays a particularly central role in the [Eighteenth Dynasty] ceramic assemblage, gradually assuming ... the role of an almost obligatory element in the funerary equipment. Additional ceramic forms are numerous, reflecting easy access to this imported ware." Troy also notes that later in the Dynasty "the pottery, although still rich in variation and quantity, begins to become more uniform ... suggesting the development or adoption of a tradition in which the ceramics of the funerary meal, plates and cups are replaced by the flower pot and beerbottle, indicating perhaps a conscious association with the Egyptian religious ritual represented by the *ḥtp-di-nsw* offering of bread and beer ... this ware is also, most likely, manufactured locally, as it is abundant even as other Egyptian goods decline." Troy further reports that even later in the Eighteenth Dynasty "personal adornments, such as beads, seals and figurative pendants become rare, as do other manufactured objects such as kohl pots. The now traditional funerary pottery, most likely locally produced, and funerary practices such as the use of a coffin and body wrappings, survive even as contact with the sources of the wealth of Fadrus ... cease" (Säve-Söderbergh and Troy 1991: 250-251).

In spite of these and other observations that a large proportion of the Egyptian-style pottery associated with C-Group graves was probably of local manufacture, distinctions were rarely ever made between the two types in the grave registers. Consequently, for the purposes of this investigation, all Egyptian-style pottery were classed as imports. Kerma-type vessels were also all listed as imports. However, since neither "true" Egyptian nor Kerma tombs tend to be found amongst wholly C-Group burial clusters, whereas large numbers of probably Pangrave, or at least Pangrave-influenced, burials are reported from several C-Group cemeteries, Pangrave ceramics were considered to be locally produced.

Potsherds were considered to be grave offerings rather than material included in the backfilling from grave pits (O'Shea 1984: 24), largely because of reports that predynastic Egyptians had been buried with whole pots that were later crushed by the weight of the grave filling (Brunton and Caton Thompson 1928: 21), and because excavators of Middle Nubian cemeteries have consistently reported the discovery of whole pottery vessels that had been routinely deposited either beneath the walls of the grave superstructures or within the grave shaft. Potsherds that clearly had been used for other purposes, such as for digging (Firth 1912: 60) were acknowledged under 'Pottery Class,' but excluded from 'Grave Goods' totals.

Faience

The origin of the faience objects recovered from C-Group tombs is highly problematic. The most widely accepted belief is that all faience artefacts had been obtained through trade, presumably with the Egyptians. Steindorff concluded that the three faience vessels from Aniba N were Egyptian imports (1935, 1: 107), and faience beads were said to be acquired from the Egyptians in exchange for C-Group "meat" (Emery and Kirwan 1935: 8).

On the other hand, Reisner claimed that amongst the artefacts removed from C-Group graves, the "pottery and the amulets show distinctly Egyptian influence; but neither is characteristically Egyptian" (Reisner 1910: 335). Furthermore, from Burial 507 in Cemetery 74/500 at Gerf Husein, Firth reports finding a "cup [of] black-glaze [with] white filled incised patterns" (1912: 109) that is shown in Plate 40 of the report for 1908-1909 as a typical, black-incised C-Group bowl [Illustration no. a, 2]. He also recovered a presumably locally made "blue glaze nose plug" from a New Kingdom burial [no. 33] in Cemetery 130 at Barsineshei (Firth 1927: 183).

In Egypt, the excavator of the Pangrave cemetery at Mostagedda suggested that the faience objects from the burials had been fashioned by Pangrave peoples. In Cemetery 3100/3200, the three "Taurts [of blue faience] . . . which were found in oval graves . . . are apparently of 'native' make [and] . . . a certain kind of very small ring bead, with a tendency to the spheroidal shape, of a bright blue faience, very irregularly made, was a distinctive characteristic of the culture. It occurred in almost every grave, and with fifty-seven burials there were often enough to make many long strings. Great quantities had been used for sewing on leather garments [and] . . . they are distinct from Egyptian beads." Burial 3137 also contained ". . . a few of the typical irregular little blue faience beads" (Brunton 1937: 117, 125).

In spite of the assertion, based on Petrie's discussion in *Tel el Amarna* on 'the use of quartz pebbles to produce glass,' that "iron-free quartz is just as necessary for making blue faience, [a process] for which sand would be unsuitable as containing iron compounds" (Petrie 1894: 25-26; Williams 1983: 76), it is known that "the normal glaze used by the . . . Egyptians is similar in composition to ancient glass and was made by heating together sand (silica with lime impurities) and natron or plant ash . . . " (James 1979: 213, 216). Glaze was used to coat either stone or a "paste" of ground, moistened and moulded stone. Lucas and Harris state that a white faience "body material" is derived from the use of powdered quartz rock, rock crystal, or white quartz pebbles whereas using powdered sand, sandstone, or flint produces a grey, brown or yellowish "body material" (1989: 158).

Furthermore, after a study of Nile Valley faience by Kaczmarczyk and Hedges, who analysed the "chemical composition of Egyptian faience produced from predynastic through to Roman times, and fabricated from Alexandria to the 3rd Cataract," they reported that "while there were a number of distinct variations in the type of faience produced, the basic process consisted in fusing a core of granular quartz or sand with sufficient alkali ... [to enable] low melting alkali-based glazes to be applied" (1983: 1-6). In short, the materials required to produce green or blue faience are sand, water, plant ashes, and a copper compound. Kaczmarczyk and Hedges also concluded that while there was a "gradual development [in Egyptian faience production] of forming techniques, shapes and glazing methods, and a probable increase in the amount of experimentation with materials and processes ..." their analysis of Middle Kingdom and Second Intermediate Period faience objects "revealed a conservative technology based on a 2000 year tradition which encountered relatively little upheaval due to socio-economic or political and military instabilities" (1983: A-91, A-92, A-107). These two researchers also suggested that socioeconomic as well as regional and stylistic differences are reflected in the faience: "some of the material recovered from royal tombs or those of high-ranking officials is distinctly different from contemporary material found in more humble graves" (Kaczmarczyk and Hedges 1983: 223).

Vandiver, who conducted a similar study of Egyptian faience, noted that while *no evidence for Egyptian faience production exists, there is possible factory evidence for the manufacture of faience at Kerma.* Thus, beads that postdate the Middle Kingdom era are surely more likely to be Kermaite than Egyptian in origin if evidence of manufacture is used as the criterion by which Lower Nubian faience is assigned an origin. Vandiver also explains that "early faience technology was derivative of lithic technology; [that] faience body materials are prepared as powders by grinding; [and that] ... the powdered raw materials are then wetted, [moulded], dried and fired according to ceramic practice [after being covered with the glazing material in powdered or liquid form. In addition, Vandiver claims that] following an initial period of experimentation with the forming and glazing of beads and amulets in a variety of materials during the ... fourth millennium, one method of glazing, the heating of effloresced salts [i.e. glazing by the firing and melting of efflorescent salts which accumulated during drying], became the established means of producing faience during the Protodynastic, Old Kingdom and First Intermediate Periods. [Nevertheless, although several glazing methods, including efflorescence, cementation, and application were used during the Middle Kingdom Period], ... once the best method of producing artificial stone was found, the early development persisted through years of technological modification and elaboration, but the principal process remained modeled and molded powdered quartz or sand mixed with small amounts of the oxides of sodium, calcium and copper ... [and] the efflorescent method of glazing persisted ... as a means of producing a brilliant, durable glaze with good color quality." When analysed, the body material of Egyptian faience has been proved to consist of "about 92-99 % silica, 1-5 % lime, and 0-5 % soda, with lesser amounts of Al_2O_3, Fe_2O_3, MgO and CuO" (Vandiver 1983: A1-A28).

Unfortunately, none of the faience objects analysed by either Vandiver, or Kaczmarczyk and Hedges, came from sites in Lower Nubia. Stylistically, the Lower Nubian *ring* or *disk* beads cannot be distinguished from those discovered in Egypt or Upper Nubia. Nevertheless, in this thesis, faience or glazed *ring* beads [Figure 2b and Figure 2c] are considered to be of local C-Group manufacture, for the following reasons: First of all, the techniques of glazing beads were known in the Nile Valley at least since the Badarian era [*ca.* 3,850 B.C. (Holmes 1988: 70)]. Most of the beads excavated from Badarian cemeteries at Badari, Mostagedda and Matmar were glazed steatite; in Burial 5705 at Badari West Brunton and Caton Thompson discovered a Badarian bead belt that had been fashioned from "... masses of green glazed steatite cylinder beads ..." (1928:14), and from Burial 592, a similar Badarian grave at Mostagedda West, Brunton recovered "... at least five thousand blue glazed steatite beads" (1937: 37). Moreover, glazing can be accomplished at temperatures below 920 deg C (Kaczmarczyk and Hedges 1983: A-29), and the technical knowledge required to produce faience is little different from that required to produce pottery or pottery beads. The raw materials required to produce faience consist of sand, plant ashes, and a colouring substance such as "raw copper ore" (Kaczmarczyk and Hedges 1983:

63); glazed beads were probably produced by Pangrave communities as well as by "specialists" in Egypt and Upper Nubia; large quantities of glazed beads were found in Middle Nubian C-Group burials; and most significantly the excavators of Site 65 at Debeira East list a bead of "yellow-white quartz paste [possibly] for faience" as part of the contents of Burial 1 (Säve-Söderbergh 1989: 85). Furthermore, the ring or disk-shaped glazed beads, that are present in large quantities either as embroidery on leather kilts, belts, and headbands, or simply strung in long strings, sometimes together with beads of other materials, especially ostrich eggshell, occur in tombs of all types. However, they are often absent from the richest burials, while frequently, in badly plundered graves they are the only remaining artefacts. While all of these arguments constitute indirect evidence that faience ring beads are likely to have been locally manufactured, on the other hand, glazed scarabs were assigned an Egyptian origin, as were glazed amulets. Both glazed amulet beads and glass beads were counted as "glazed Egyptian beads." Examples occur at Ginari and at Serra East. In the latter cemetery, six *amulet beads* were found in Burial 159 and a *glass bead* was discovered in Burial 122 (Säve-Söderbergh 1989: 89).

Metal artefacts

Gold is found in stream deposits and in quartz veins. Its inertness and its "great density make it concentrate in stream beds, either in small flakes or in larger nuggets, from which it may be removed by panning. It is of wide occurrence, originating most often in quartz or sulphide veins, from which it is freed by the destruction of the enclosing rock in the weathering process . . ." (Pough 1960: 79). Gold is often discovered in the form of crystals that are octahedral in shape, but "distorted clusters of parallel growths to give feathery leaves, wires, or thin plates are most common" (Pough 1960: 79). Gold is extremely malleable, which means that the metal "can be deformed by pounding without crumbling . . . [It is also very] ductile . . . [and its] hardness [is] 2.5 -3 . . . [Like gold, silver is] very malleable and ductile . . . [and its] hardness [is] 2.5 -3" (Pough 1960: 79, 82).

Aldred has suggested that "[m]uch of the [Egyptian] gold [from] earliest times was found in metallic form as shining granules among sands and gravels. Its collection and melting into larger rings or ingots were not difficult processes and well within the ability of primitive peoples. It is possible that much of the gold levied in the New Kingdom as an annual tax upon Nubia and the Lower Sudan ... was collected in this way. It is shown in tribute scenes either as ring-shaped ingots or as gold dust contained in red leather bags. Later and more advanced methods of mining involved the extraction of gold from veins in quartz rock, which had to be fractured by quenching areas previously heated by fire, pounding and grinding the broken portions, and panning the powder to separate the heavier metal particles. Such work was laborious and performed, at least in Ptolemaic and Roman times, by criminals" (1971: 29-31).

Aldred notes that "[t]he tools used by the [Egyptian] jewellers were of the simplest and most primitive kind. Their furnace was a pottery bowl upon a stand filled with glowing charcoal. Their blowpipe was a reed tipped with a clay nozzle which would need to be renewed frequently. Yet even with such a crude instrument it would have been possible to raise the temperature of a metal object heated on the brazier to a critical point in selected areas sufficiently high to make hard solders melt and run; and even to fuse the metal being worked if insufficient skill was exercised ... [g]old and silver were hammered by polished pebbles held in the hand ... the place of the modern file was taken by abrasive stones of various degrees of fineness, made from sandstone and quartzite ... In the absence of any tool resembling shears, ... gold ... would have had to be cut by scoring several times with a sharp implement such as a flint or hardened copper chisel, and, if the metal was thick, by bending it to and fro until it fractured along the score-marks ... Despite such crude and imprecise tools, the Egyptian jeweller achieved ... such marvels of craftsmanship as the Dahshur and Lahun treasures ..." (1971: 67-69). Aldred also notes that Egyptian craftsmen used "gold that was generally of a high carat, ranging from 17 to 22 ... [Such gold] is soft ... and is sufficiently malleable to be worked with tools of bone or even hardwood ... (1971: 71).

Smith has suggested that "the Early A-Group were exploiting the eastern desert for gold-panning ... [and that Lower Nubian A-Group chiefs of the Naqada

IIIb period] were not only intermediaries for the Upper Nile traffic, but were also supplying a considerable proportion of the gold ... so notable in what remains of the royal and sub-royal burials of the latest Predynastic and early First Dynasty [in Egypt]" (1991: 108).

Williams reported that some C-Group bracelets and finger rings, all "... rather simple" had been *fashioned from metal.* He noted that whereas circular "bangle bracelets were ... carved from ivory or made by cutting seashells from gastropods or pelecypods to make circles, [o]val penannular bangle bracelets were made of bone, ivory, or metal. The most noteworthy objects of this class are two large round ivory bracelets from T160 ... and two open oval gold bracelets from U2 ... Rings [which] were less common in the cemeteries than bracelets [also were] ... made of shell, bone, ivory, or metal ... " (1983: 83). In Williams' typology of locally made objects, finger rings were divided into three groups. Some had been fashioned from shell, some had been made of ivory or bone, and others of metal. The metal finger rings had been constructed from either silver wire, copper wire or "gold sheet bands" (1983: 81-83).

On the other hand, Williams insisted that all the metal beads at Adindan were Egyptian in origin since they "offer evidence of high skill and workmanship paralleled by no other object found in the cemeteries at Adindan" (1983: 92). These beads occurred as "rings made of bent pieces, barrels of silver or copper over either a resin or a beeswax core, and silver and gold rings strung onto ... a thick core of vegetable fibres and held on this core by loops which were made at each end and then bound with leather ... " (Williams 1983: 93). Because the sizes of the gold ring beads "... are so precisely regular and they fit so evenly on the fibre core [Williams suggested that] they must have been made on the core itself or at least at the same time as the core" (1983: 65). He also suggested that "the rings were probably made of spirally wound sheet metal [and concluded that they] ... appear to have been assembled in Egypt" (Williams 1983: 65).

However, following a year-long gold- and silver-smithing course, I concluded that practically all the simple gold and silver objects, such as finger rings and bracelets, as well as the *ring* beads included in the C-Group assemblages [Figure 2b and Figure 2c], could have been produced with a *minimal knowledge of metal working.* Objects that were stylistically Egyptian were classed as imports. However, since gold and silver ring beads are stylistically the same as those produced in Egypt, and because they are simple in design and simple to make, they were considered to be of local manufacture. Barrel beads that had been hammered into shape over a wood or clay core also were considered to be of local manufacture.

Stone artefacts

At Adindan, Williams claimed that although a few "crude stone beads, [that were] outsize [and] would require little specialized skill to make ... [and that were] probably plundered from earlier tombs, may be of C-Group origin, virtually all the other [stone and other] beads from C-Group, Pan Grave, and Kerma tombs at Adindan are Egyptian" (Williams 1983: 91). Renfrew also has claimed that the discovery of "... beads and simple objects of copper at Ali Kosh or Çayönü, possibly worked by hammering alone, is in fact less remarkable than finds of neatly perforated beads of stone at these sites" (Renfrew 1979: 160).

In this thesis, regardless of the raw material from which they were fashioned, stone objects that were *stylistically* Egyptian, including scarabs and amulets shaped to resemble crocodiles, fish, birds, frogs, body parts and Hathor heads (Steindorff 1935: 55), were assigned to the category of imports. Bracelets, rings and other stone artefacts that employed simple construction techniques, and simple stone beads that were typically 'ring,' 'disk,' or 'tubular,' in shape [Figure 2b, Figure 2c and Figure 2d], were categorized according to their raw material source of origin [Table 6.4 and Table 6.5].

Wealth indices

Wealth indices, determined from averages of the "total burial wealth" [total goods value] for each time period represented in the individual cemeteries, were calculated for every cemetery. Each wealth index [W], was computed as:

$$W = \frac{1}{N}\sum_{i=1}^{N} V_i$$

where V_i is the total value of burial goods associated with the ith grave, and N is the number of graves in the particular sample being analysed. For each i, V_i was calculated from the formula

$$V_i = \sum_{k=1}^{m} n_k v_k$$

where m is the number of types or classes of burial objects associated with a grave, n_k is the number of grave goods of type k, and v_k is the value of a grave good of type k. With the exception of pottery, the values of which were assessed in terms of the elaboration perceived in a particular vessel, artefact values were established primarily on the material used in an object's manufacture. The "values" of individual ceramic and other burial offerings were estimated by weighting objects in the manner listed in Appendix B, while the sources of the materials most commonly found in C-Group burials are given below [Table 6.4 and Table 6.5]. Like electrum, the so-called 'silver' is probably a naturally occurring alloy of gold and silver "so rich in silver [that it was] silver-white ... [or] 'white gold,' which is what the Egyptians called silver. This seems to be proved by the fact that all the early silver from Egypt... contains gold." On analysis, pre-Eighteenth Dynasty Egyptian silver specimens have been shown to contain from 0.7 percent to thirty-eight percent gold (Lucas and Harris 1989: 234-235, 245-249). About twenty-five percent of the Egyptian silver artefacts analysed by Gale and Stos-Gale were found to be more than twenty-five percent gold. Because "these fit well within the range of analyses of naturally occurring Eastern Desert aurian silver reported [in 1900] by Alford ... [the researchers concluded that there is] a considerable body of evidence suggesting that a large part of Egyptian silver was ... natural aurian silver or, put another way, a natural silver-rich gold ore probably coming from the same mines that provided Egypt with the majority of its gold" (1981: 113). Imported Near Eastern silver was found to contain lead. An Egyptian silver *ankh* from the C-Group Cemetery 2, Burial 54, at Faras showed it was seventy-five percent silver, twenty percent gold and five percent copper. The other analysed Nubian silver artefacts were all from the Napatan Period. Like the C-Group period *ankh*, their composition suggests "... the practice of deliberate addition of copper, and perhaps suggest[s] that aurian silver occurred also in the Nubian gold mines ... [and that [m]odern analyses of white silver-gold alloys from the Egyptian and Sudanese gold deposits are clearly desirable" (Gale and Stos-Gale 1981: 112-115).

Although gold, 'silver,' electrum, carnelian, and perhaps ivory, are native to 'Nubia,' they were classified as C-Group "luxury goods" because of their relative scarcity, and on the basis of the known values of different classes of material, including copper, wood, goats, coffins, 'silver' and gold, from Twentieth Dynasty and earlier Egyptian contexts (Kemp 1991: 248-260; Lucas and Harris 1989: 224-235, 247). Both alabaster and copper were regarded as "luxury goods" for the reasons already given and because of their place of discovery relative to their source of origin.

Local and imported products

In addition to the wealth indices computed for each cemetery, assessments of local production, as well as estimates of Egyptian and other foreign "exchange" over time were calculated using the following formulae. Each was expressed as an index or indicator of production and exchange.

Each production indicator [P], was computed as:

$$P = \frac{1}{N}\sum_{i=1}^{N} O_i$$

where

$$O_i = \begin{cases} L_i + S_i + H_i + G_i + C_i & \text{if superstructure} \\ R_i + G_i + C_i & \text{if no superstructure,} \end{cases}$$

where L_i is the total value of locally produced goods [both superstructure offerings and grave inclusions] in the ith grave, R_i is the total value of locally produced goods [grave inclusions alone] in the ith grave, S_i is the valuation of the superstructure size associated with the ith grave, H_i is the rating of the superstructure construction reported for the ith grave, G_i is the valuation of the grave size of the ith grave, C_i is the rating of the grave construction reported for the ith grave, and N is the number of graves in the particular sample being analysed. For each i, L_i was calculated from the formula

$$L_i = \sum_{k=1}^{m} n_k l_k$$

where m is the number of types or classes of burial objects associated with a grave, n_k is the number of burial goods of type k, and l_k is the value of a burial good of type k. Similarly, for each i, R_i was calculated from the formula

$$R_i = \sum_{k=1}^{m} n_k r_k$$

where m is the number of types or classes of grave goods in a grave, n_k is the number of grave goods of type k, and r_k is the value of a grave good of type k. The valuations for grave and superstructure size and construction are listed in Table 6.3. Estimations of superstructure sizes were determined in the following manner: in *Stage Ia* [*ca.* 2200-2100 B.C.] the average height was approximately 100 cm (Steindorff 1935: 34); in *Stage Ib* [*ca.* 2100-1900 B.C.] it was 75 cm; the average height during *Stage IIa* [*ca.* 1900-1750 B.C.], based on seven values from Adindan, was 57 cm; in *Stage IIb* [*ca.* 1750-1600 B.C.], based on sixteen values from Adindan, the average height was 48 cm.

Table 6.3: Evaluations of superstructure and grave sizes, and ratings of superstructure and grave construction in Middle Nubian cemeteries

	Valuation
superstructures:	
present without measurements	25
superstructures:	
stone enclosure	15
brick enclosure	20
stone enclosure and brick chapel	25
brick enclosure and brick chapel	30
stone enclosure and stone chapel	25
grave pits:	
under 1 sq.m.	5
between 1 and 2 sq.m.	10
between 2 and 3 sq.m.	15
between 3 and 4 sq.m.	20
between 4 and 5 sq.m.	25
between 5 and 6 sq.m.	30
grave chambers:	
unlined	5
unlined with stone offering slab	7
unlined with brick vault	25
unlined with vault and stone offering slab	30
Kermastyle	15
stone slab lined	20
quarrystone lined	30
rock 'cut' tomb	40
brick lined	25
brick lined with vault	50

Each local non-utility barter index [Q], was computed as:

$$Q = \frac{1}{N}\sum_{i=1}^{N} U_i$$

where U_i is the total value of locally made, and probably "traded," non-utility burial goods associated with the ith grave, and N is the number of graves in the particular sample being analysed. For each i, U_i was calculated from the formula

$$U_i = \sum_{k=1}^{m} n_k u_k$$

where m is the number of types or classes of burial objects associated with a tomb, n_k is the number of burial goods of type k, and u_k is the value of a locally produced non-utility burial good of type k. An Egyptian exchange index (E) and a foreign exchange index (F) that excluded Egyptian materials were computed in an identical manner.

It was therefore necessary to identify burial goods either as imports or as locally produced artefacts [Table 6.4 and Table 6.5]. At Adindan, Bruce Williams was able to separate the excavated material into two distinct groups: one consisting of locally manufactured items and the other of objects imported from Egypt. He states that apart from locally made ivory, metal, bone or shell rings and bracelets, shell hair rings, occasional pendants, pottery, textile bags, and leather items such as sandals, cloaks, belts, caps and "pierced-'mesh' garments," C-Group burial offerings consisted of both locally made beads of bone and perhaps ostrich eggshell, and of "imported objects that are mostly beads made of faience, stone, gold, silver, and copper. [Williams also asserts that] almost all of [the beads] ... furnish evidence of trade - either for raw materials from the south or for finished products from Egypt," (1983: 68, 71, 81, 83, 91) despite the fact that both gold and 'silver' are native to Nubia (Lucas and Harris 1989: 234-235, 245-249), and in spite of the fact that the stones utilized in the C-Group beads from Adindan were identified as carnelian, diorite, garnet and haematite (Williams 1983), all of which are available in Nubia (Krzyżaniak 1977: 32-33).

Carnelian could not be traced to a specific Nubian locality. However, Vercoutter states that "raw carnelian is plentiful in the Nubian desert" (1968: 270).

Krzyżaniak lists Nubia as a source for this stone and also reports the discovery of a necklace of carnelian ring beads and 'spade'-like pendants from the fourth-fifth millennium neolithic grave Number 3 at Kadero in the Sudan (1978: 170-171). Chalcedony, of which carnelian is a form, occurs near Abu Simbel, and Lucas and Harris state that "natural carnelian pebbles ... occur abundantly in Egypt... in the eastern desert and ... in the western desert" (1989: 43, 391). Various forms of chalcedony, especially agate and carnelian, also were used in the manufacture of some possibly Middle Nubian stone tools that were recovered from burials in northern Sudanese Nubia (Säve-Söderbergh 1989: 124-125). Diorite is found in the western desert, about forty miles [sixty-four kilometres] north-west of Abu Simbel (Lucas and Harris 1989: 409, 392) and garnet occurs at Aswan (Lucas and Harris 1989: 394-395). During the Roman period haematite was mined in the eastern desert, but its source in earlier times remains undiscovered (Lucas and Harris 1989: 395). Jewelery from C-Group tombs in other vicinities that also is assumed to be of local manufacture includes items fashioned from quartzite, which exists at Fagirdib, and quartz, that occurs near Gerf Husein and elsewhere in the form of pebbles (Crosthwaite 1910: 355; Firth 1912, 2: Plan 10; Firth 1915: 19; Williams 1983: 77). Amethyst is found in the western desert, about forty miles [sixty-four kilometres] north-west of Abu Simbel, as well as in the Wadi el Hudi, about twenty miles [thirty-two kilometres] southeast of Aswan (Lucas and Harris 1989:388-389). Steatite occurs near Aswan (Lucas and Harris 1989: 421).

Williams suggests that the ostrich eggshell in the C-Group graves at Adindan was imported from the south, because "it is difficult to believe that inhabitants of the valley in Lower Nubia collected enough eggs to manufacture the large number of shell beads found in these cemeteries" and also because the "representations of ostriches are rare ... [which indicates that] these birds may have been sighted only occasionally and therefore probably existed in ... [Lower Nubia in] insufficient numbers (1983: 77, 91). Nevertheless, since it is found in some Middle Kingdom graves, and because exchanges between Lower and Upper Nubians must have been minimal during that time period, in this thesis it is reckoned that whatever its place of origin as a raw material ostrich eggshell was available locally. Ivory is also considered to have been locally available because it is included on the list of tribute from Wawat for the year

39 as well as for the year 41 in *The Annals of Thutmosis III* (Emery and Kirwan 1935: 15). Gold occurs in the Nile valley between Wadi Halfa and Kerma, in the Wadi Alaqi and in the Wadi Gabgaba (Lucas and Harris 1989: 225). On the other hand, slate is found in the eastern desert, and malachite was traded from its source in Sinai and the eastern desert of Egypt where "at first [it was obtained] probably merely from surface outcrops for use as an eye-paint and later by mining for the production of copper" (Lucas and Harris 1989: 401). Mother-of-pearl was procured from the Red Sea, and, although "a large turtle is found in the Nile" tortoiseshell probably was obtained from the same region. Since both of these materials are more commonly found in Lower Nubian than in Egyptian graves (Lucas and Harris 1989: 38-39), it presumably was acquired through exchanges with non-Egyptian traders.

Although C-Group burials normally only contain manufactured goods, on some occasions unfinished products or unworked materials are present. Apart from galena, which is frequently found as a component of the burial provisions, the raw materials encountered consist of several varieties of copper, haematite, chalcedony, quartz and shell. Burial 64 in Cemetery 113/50 yielded copper oxide (Firth 1927: 128); Burial 273 in Cemetery 7 at Shellal and Burial 429 in Cemetery 41 at Meris both contained "fragments of malachite" (Reisner 1910: 56, 224); and malachite was recovered from the superstructure of Burial 143 in Cemetery 118 at Qurta (Firth 1927: 146), as well as from Burial T107, a Period III grave at Adindan (Williams 1983: 76). At Aniba N, Steindorff recovered copper from Burial 459, red ochre from Burial 561, and red ochre and graphite from an offering jar beside the superstructure at 656 (Steindorff 1935: 155, 163, 170). At Shellal, an agate pebble was removed from Burial 174 in Cemetery 7 (Reisner 1910: 53-54); at Debeira East, an agate flake was retrieved from Burial 15 in Cemetery 184; a "stone flake of agate" was unearthed from Burial 28 in the same cemetery, and several agate chips were found in Burial 44 in Cemetery 246 at Abka (Säve-Söderbergh 1989: 124-125). A carnelian pebble was recovered from Burial 184 in Cemetery 7 at Shellal; a carnelian chip was found in Burial 46 in Cemetery 23 at Dabod (Reisner 1910: 53-54, 163), and "two debitage fragments of carnelian" were excavated from Burial 5 in Cemetery 183 at Ashkeit (Säve-Söderbergh 1989: 124). Uncut amethyst was recovered from Burial

62 in Cemetery 189 at Tumas (Emery and Kirwan 1935: 221) and a portion of a tooth from a hippopotamus was found in Burial 142 in Cemetery 87 at Koshtemna (Firth 1912: 184). Quartz pebbles occurred in several graves at Adindan, and an "unworked fragment" of ostrich eggshell was found at the same locality (Williams 1983: 77). Lastly, at Ashkeit, the Middle Nubian tent circles uncovered at Site 347 were dated to *Stage IIa/b*. Agate, quartz, chert, quartzite, ostrich eggshell, bone, diorite, faience beads, and animal bones were found at the site along with two borers (Säve-Söderbergh 1989: 268-269).

Furthermore, it was noted that certain materials were consistently deposited in Lower Nubian burials of the Early Dynastic, Middle Nubian, New Kingdom and X-Group periods. Thus, objects fashioned from locally available materials in the Early Dynastic graves in Cemetery 73 at Gerf Husein included quartz palettes, as well as items made of black and white stone, carnelian, sandstone, and steatite. Imports consisted of serpentine, *Oliva* and *Conus* shells, cowries, mother-of-pearl, ivory and alabaster. In one Eighteenth Dynasty tomb at Kuban [Burial 27] Firth discovered locally available black and white stone, carnelian, and gold. Imports were serpentine, copper, slate and ivory. In another [Burial 248] he found black and white stone, silver, carnelian and imported tortoiseshell. In yet another [Burial 267] he found black and white stone, carnelian, and imported alabaster and copper. In the Twenty-Sixth Dynasty shaft and chamber tomb [Burial 1] at Arabi Hilla he recovered quartz, black and white stone, carnelian, and imported sepentine; among the seventh and eighth century B.C. materials from the same chamber tomb were objects of gold, black and white stone, carnelian and white shell. Similarly, in the X-Group graves in Cemetery 122 at Maharraqa, Firth discovered artefacts made of locally available quartz, black and white stone, carnelian and silver (Firth 1927: 64-65, 52, 90, 156-165, 187-188). Faience beads were also a part of the funeral equipment in all of these cemeteries. More recently, Säve-Söderbergh and Troy have observed that in the New Kingdom graves from Lower Nubia "the materials are much the same as for the Middle Nubian sites, [namely] ostrich egg shell, faience, bone, gold, silver, fused faience, and the various semi-precious stones, dominated by carnelian" (1991: 77-78).

Moreover, the continual presence of gold, silver, carnelian, black and white stone, quartz and faience appears to contrast sharply with the intermittent appearance of certainly imported Red Sea shells and items of copper, alabaster, serpentine, tortoiseshell, and mother-of-pearl. Their continual presence also suggests these local materials were worked by Lower Nubians rather than by Egyptians living in Nubia. Furthermore, the stone and metal beads retrieved from Middle Nubian burials are almost always simple ring or disk beads [Figure 2b and Figure 2c]. In the absence of chemical tests, therefore, it was decided that a relatively reliable method of distinguishing between local and imported objects on other than stylistic grounds would be to determine whether the material used in artefact construction was available locally or not. The sources of the materials most commonly encountered in Middle Nubian contexts are mainly those identified by Lucas and Harris (1989) and Krzyżaniak (1977); they are listed in Table 6.4 and Table 6.5.

Table 6.4: Sources of raw materials recovered from C-Group burials in the Nile Valley [Adapted from Firth 1912; Krzyżaniak 1977: 32-33; Lucas and Harris 1989]

Raw materials	**Sources**				
	Egypt	**Western Desert**	**Eastern Desert and Red Sea coasts**	**Nubia**	**Sinai**
agate		x	x	x	x
alabaster			x		x
carnelian		x	x	x	
chalcedony		x	x		x
clay	x			x	
copper			x	x	x
diorite		x	x	x	x
electrum			x	x	
flint	x	x	x	x	
gold			x	x	
ivory				x	
limestone	x	x	x		
malachite			x		x
marble			x		
quartz			x	x	x
quartzite				x	
rock crystal		x			x
sandstone	x			x	
shells	x		x	x	
silver			x	x	
slate			x		
steatite			x	x	

Table 6.5: Sources of shells recovered from C-Group burials in the Nile Valley [Adapted from Brunton and Caton Thompson 1928: 38, 62; Lucas and Harris 1989; Nordström 1972: 122; Steindorff 1935: 49; Williams 1983: 75]

Shells	**Sources**
Aetheria calliaudi	Nile Valley
Aetheria elliptica	Nile Valley
Ancillaria cinnamomea	Red Sea
Chicoreus virgineus	Red Sea
Conus quercinus	Red Sea
Cypraea	Red Sea
Mutela dubia	Nile Valley
Natica mamilla	Red Sea
Natica melanostoma	Gulf of Suez
Nerita polita	Gulf of Akaba
Oliva inflata	Gulf of Suez
Polynices mamilla [Mamma]	Red Sea
Spatha rubens	Nile Valley

Counts of Egyptian products

Even amongst those researchers who suspect that Egyptian-Lower Nubian exchange was subject to politically motivated fluctuation, it is difficult to tell whether they based their conclusions on counts of the same objects. Differences in their opinions on this issue might result from estimations of different categories of Egyptian trade goods. Steindorff claimed to find fluctuations in the occurrence of a very specific Egyptian artefact, namely *'grain jugs,'* in the cemetery at Aniba North. By using black, incised, Middle Nubian bowls to detect a chronological ordering amongst these Egyptian imports, he pointed out that in the oldest period, *NM1,* grain jugs are only seldom encountered, for they were associated with only three graves. He noted that almost all belong to *NM2,* or the middle of the C-Group era, and that they are completely absent in *NM3,* or the latest epoch (1935: 99). Bietak discovered fluctuations in the occurrence of Egyptian *pottery* throughout Lower Nubia. He stated that with few exceptions, in the earliest C-Group, imported Egyptian pottery is scanty, but in

Stage Ib, when the forms of these vessels indicate dates throughout the First Intermediate Period and into the beginning of the Middle Kingdom, it becomes very frequent (1968: 134-135). Most other researchers have argued for fluctuations in the occurrence of Egyptian *imports* throughout Lower Nubia. For instance, Säve-Söderbergh states that "[w]hereas Egyptian imports are still comparatively rare in I/a before more lively connections with Egypt were established they are very frequent in I/b with forms of the 1st Intermediate Period and early Middle Kingdom (11th Dynasty) . . ." However, he also claims that "imitations of Egyptian pottery are common in the C-Group from the very beginning . . ." (1989: 8-9). Whether or not these 'imitations' were factored into the trade relationship is unclear. In this thesis, fluctuations in the quantity of all *artefacts* defined as Egyptian were monitored.

Chapter 7

Data Analysis

7.0.1 Descriptive statistics: Ginari, Cemetery 58, *ca.* 1650 B.C. to *ca.* 1600 B.C.

Cemetery 58 [Figure 3 and Figure 4] was situated on two, sand and gravel covered, alluvial, west bank mounds northwest of Ginari village. Cemetery 58/1, dug in the mound closest to the village, "contained a cemetery of the C-group, [and] the second mound about 300 metres away, a cemetery of the same period [Cemetery 58/100], possibly a continuation of it, with the addition ... of a dozen graves of the early New Empire (Dynasty XVII)" (Firth 1912: 27).

A preliminary analysis of the Middle Nubian cemeteries at Ginari revealed that 994 grave goods were distributed among fifty-one burials in fifty graves. Nine of these were subadults' burials; twenty-nine were those of males; eleven were those of females and eleven belonged to persons whose sex was unknown. It also was discovered that twenty-three of the twenty-seven burials dated to 1650 B.C. contained 739 of the offerings, while four of them, or eight percent of the total number of burials at Ginari, lacked grave goods [Table 7.1]. With thirteen of the fifteen burials dated to 1600 B.C., 255 grave goods had been deposited; two burials of the same date, representing four percent of the total number of Ginari burials, contained no goods. The remaining nine graves, which were undated, lacked burial offerings. In 1650 B.C. the mean number of offerings deposited with a burial was 27.37, but by 1600 B.C. this had slipped to seventeen objects [Table 7.2]. The decrease was largely due to a decline in the local production of beads and pottery. Moreover, although there was practically no change in the mean number of goods remaining in the graves of females [19.00 and 18.75] and males [16.27 and 16.36] in 1650 and 1600 B.C., the mean number of offerings deposited with subadults dropped from 94.40 in 1650 B.C. to 0.50 in 1600 B.C. [Table 7.3].

It was further established that eighty-three percent of the burial offerings in the C-Group graves at Ginari consisted of beads. Seventy-nine percent of the beads had been distributed in graves that were mid-Second Intermediate Period [1650 B.C.] in date; the rest, twenty-one percent, were found with the late Second Intermediate Period [1600 B.C.] burials. Seven percent of the beads had been fashioned locally from shell, and all were found with mid-Second Intermediate Period entombments. Eighty-nine percent of the beads were glazed, and whereas eighty-six percent of these had been produced locally [sixty-six percent in mid-Second Intermediate Period and twenty percent with late Second Intermediate Period burials], three percent [twenty-six beads] were Egyptian in origin. Twenty-five of these were made of coloured glass and had been deposited with a mid-Second Intermediate Period burial; the last, a glazed crystal bead, was removed from a late Second Intermediate Period grave [Table 7.4]. Bead offerings at Ginari slipped from eighty-eight percent of the mid-Second Intermediate Period burial inclusions to sixty-eight percent of those from the late Second Intermediate Period [Table 7.6]. Non-luxury bead variety from the mid-Second Intermediate Period tombs also was slightly greater than that from the later burials: whereas ninety-nine percent of all the late Second Intermediate Period beads were glazed, eighty-seven percent of those from the earlier graves were glazed and nine percent were shell.

Forty-two luxury items were recovered from the Middle Nubian burials at Ginari. Twenty-seven, or sixty-four percent, of these luxury objects were carnelian beads. Other locally made luxury items include six artefacts of gold; two of silver and one of ivory. Whereas the mid-Second Intermediate Period luxury objects were restricted to one burial that contained twenty-five of the carnelian beads [2.5 percent of the total goods recovered from Ginari], the remaining seventeen artefacts, of which fifty-five percent was Egyptian in origin, were distributed among seven late Second Intermediate Period graves [Table 7.5]. The Egyptian imports in these late Second Intermediate Period graves [14.29 percent of the total number of luxury goods] consisted of four objects of alabaster, one of silver and one of copper. It was also from the late Second Intermediate Period graves that sixteen red ware pots, which comprise the total amount of imported Egyptian pottery unearthed in the Middle Nubian context at Ginari, were removed. The forty-seven local pots, of which forty-one, or eighty-seven percent, were from mid-Second Intermediate Period burials and six, or thirteen percent, were from late Second Intermediate Period interments, account for five percent of the total number of burial goods encountered at Ginari [Table 7.6]. Thus, while local pottery at Ginari decreased from six percent of all mid-Second Intermediate Period goods to two percent of all goods from 1600 B.C., the percentage of Egyptian pottery increased from zero to six percent. Similarly, locally produced artefacts declined from ninety-four percent in 1650 B.C. to seventy-nine percent in 1600 B.C., while Egyptian imports for the same time periods rose from five to eighteen percent.

A quantitative analysis of the Ginari cemetery goods showed that the largest number of burial goods had been deposited in the mid-Second Intermediate Period graves. However, when the values of burial goods were estimated by giving weighted scores to the artefacts, it was found that the late Second Intermediate Period graves registered a wealth index of 426 per grave while that for the mid-Second Intermediate Period graves was eighty-three. It also was discovered that the mid-Second Intermediate Period foreign exchange index was two, while that for the late Second Intermediate Period was four, and local production indicators for these two time periods were thirty-five and twenty-nine respectively [Table 7.7 and Table 7.8]. Because "grave condition" was only reported for four tombs at Ginari, the prevalence of plundering in Cemetery 58 could not be determined.

Although the mean grave area in Cemetery 58 [Table 7.9] was 1.20 square metres, and an initial frequency distribution of the thirty-one available grave areas indicated that the graves varied in size from 0.47 to 2.00 square metres, it was revealed that this variation occurred entirely among the fourteen late Second Intermediate

Period graves. The average size of these graves was 1.46 square metres, whereas the mid-Second Intermediate Period graves were smaller than average [0.96 square metres] and less variable. The largest was only 1.4 square metres, but the smallest was 0.56 square metres. Similarly, four empty graves from that portion of the cemetery in which burials were dated to the middle of the Second Intermediate Period had an average grave area of 0.92 square metres. The smallest was 0.55 and the largest 1.2 square metres.

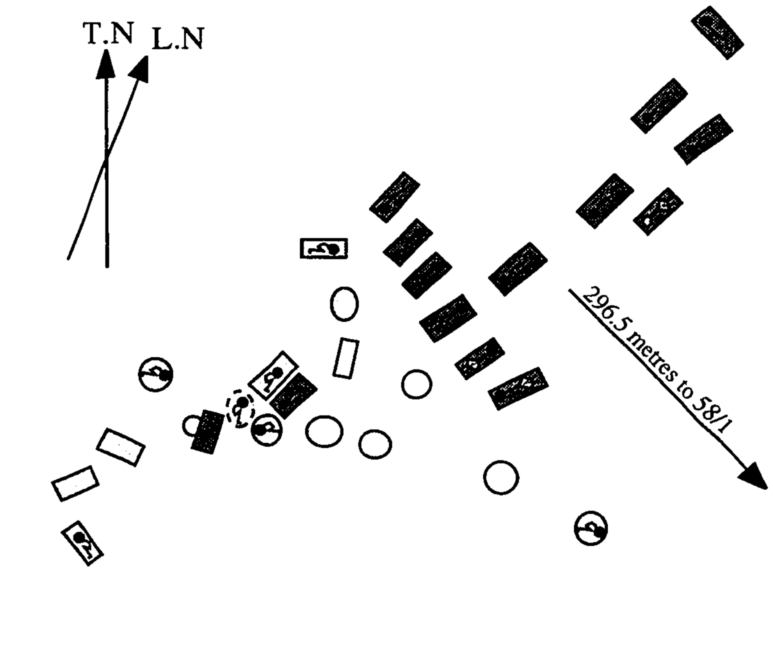


Figure 3. Ginari, Cemetery 58/100: distribution of middle and late Second Intermediate Period Middle Nubian graves [After Firth 1912: Plan 7]

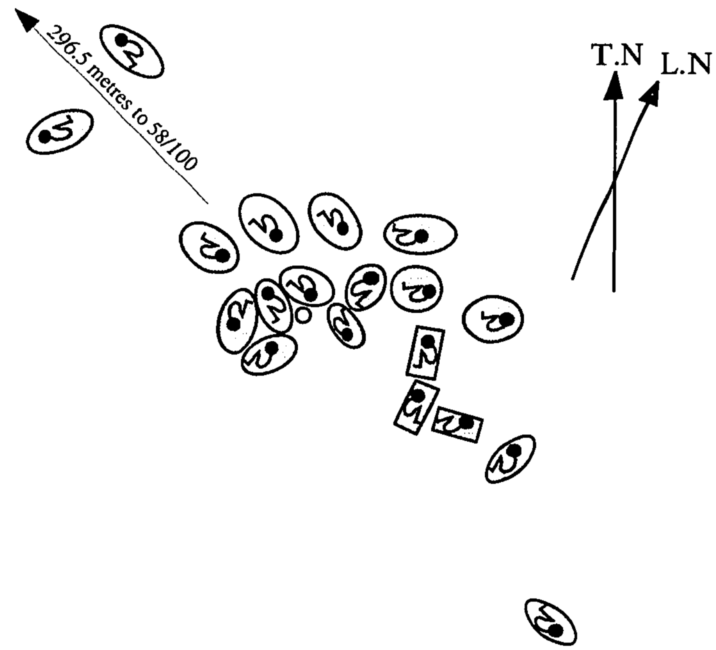


Figure 4. Ginari, Cemetery 58/1: distribution of mid-Second Intermediate Period Middle Nubian graves [After Firth 1912: Plan 7]

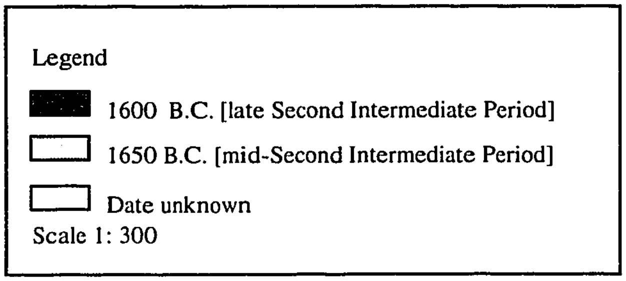


Table 7.1: Frequency distribution of grave goods from C-Group graves at Ginari [Percentages are based on the total number of dated and undated graves in each time period from the two cemeteries]

	1650 BC		1600 BC	
	Number	Percent	Number	Percent
Graves with no burial goods	4	14.81	2	14.29
Graves with 1 burial good	4	14.81	2	14.29
Graves with 2 burial goods	6	22.22	2	14.29
Graves with between 3 and 9 burial goods	5	18.52	5	35.71
Graves with between 10 and 38 burial goods	4	14.81	0	0
Graves with between 39 and 77 burial goods	0	0	2	14.29
Graves with between 78 and 116 burial goods	3	11.11	1	7.14
Graves with between 117 and 390 burial goods	1	3.70	0	0
Total number of graves with burial goods	23	85.19	12	85.71
Total number of graves	27		14	
Total number of burial goods	739		255	

Table 7.2: Descriptive statistics for middle and late Second Intermediate Period grave goods from Middle Nubian burials in Cemetery 58 at Ginari

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of grave goods:				
In 1650 BC	27.37	76.93	27	739
In 1600 BC	17.00	31.34	15	255
Date unknown	0.00	0.00	9	0
Number of luxury goods:				
In 1650 BC	0.93	4.81	27	25
In 1600 BC	1.13	1.46	15	17
Date unknown	0.00	0.00	9	0
Number of grave beads:				
In 1650 BC	24.11	75.19	27	651
In 1600 BC	11.33	28.65	15	170
Date unknown	0.00	0.00	9	0
Number of Nubian pottery vessels:				
In 1650 BC	1.52	2.05	27	41
In 1600 BC	0.40	1.30	15	6
Date unknown	0.00	0.00	9	0
Number of Egyptian pottery vessels:				
In 1650 BC	0.00	0.00	27	0
In 1600 BC	1.07	0.96	15	16
Date unknown	0.00	0.00	9	0
Total number of Egyptian goods:				
In 1650 BC	1.44	5.09	27	39
In 1600 BC	3.07	4.08	15	46
Date unknown	0.00	0.00	9	0

Table 7.3: Descriptive statistics for grave goods from Middle Nubian C-Group burials at Ginari in 1650 B.C. and 1600 B.C.

	1650 B.C.		1600 B.C.	
	Mean	Standard Deviation	Mean	Standard Deviation
Burial goods found with subadults	94.40	168.78	0.50	0.71
Burial goods found with adults	13.00	25.31	19.54	33.07
Burial goods found with occupants of unknown age	3.50	0.71	-	-
Burial goods found with females	19.00	34.61	18.75	36.18
Burial goods found with males	16.27	28.52	16.36	31.31
Burial goods found with occupants of unknown sex	57.14	146.78	-	-
Burial goods in plundered graves	2.00	1.83	-	-
Burial goods in graves, condition unrecorded	31.78	82.80	18.14	32.19

Table 7.4: Bead occurrences in Cemetery 58 at Ginari [Percentages are based on the total number of grave beads in burials that date from 1650 B.C. and 1600 B.C.]

	1650 B.C.		1600 B.C.	
	Number	Percent	Number	Percent
Carnelian beads	25	3.84	2	1.18
Shell beads	60	9.22	0	0
Glazed Nubian beads	541	83.10	167	98.24
Glazed Egyptian beads	25	3.84	1	0.59
Total glazed beads	566	86.94	168	98.82
Total local grave beads	626	96.16	169	99.41
Total imported grave beads	25	3.84	1	0.59
Total grave beads	651		170	

Table 7.5: Luxury goods from Cemetery 58 at Ginari [Percentages within each date category are based on the total number of luxury goods found with burials of that date]

	1650 B.C.		1600 B.C.	
	Number	**Percent**	**Number**	**Percent**
Alabaster	0	0	4	23.53
Carnelian	25	100.00	2	11.76
Copper	0	0	1	5.88
Gold	0	0	6	54.55
Ivory	0	0	1	5.88
Silver	0	0	3	27.27
Total local luxury goods	25	100.00	11	64.71
Total imported luxury goods	0	0	6	54.55
Total luxury goods	25		17	

Table 7.6: Burial goods from Cemetery 58 at Ginari [Percentages are based on the total number of grave goods with burials that date from 1650 B.C. and 1600 B.C.]

	1650 B.C.		1600 B.C.	
	Number	**Percent**	**Number**	**Percent**
Beads	651	88.09	170	66.67
Local pottery	41	5.55	6	2.35
Imported pottery	0	0	16	6.27
Total local goods	695	94.05	201	78.82
Total Egyptian goods	39	5.28	46	18.04
Total grave goods	739		255	

Table 7.7: Descriptive statistics for assessments of economic production, exchange, goods value and grave wealth in middle and late Second Intermediate Period Middle Nubian burials from Cemetery 58 at Ginari

	Mean per Burial	Standard Deviation	Total Number of Burials
Total local production:			
In 1650 BC	34.96	75.47	27
In 1600 BC	28.57	29.71	14
Date unknown	8.89	3.86	9
Total foreign exchange:			
In 1650 BC	1.63	5.61	27
In 1600 BC	3.60	5.37	15
Date unknown	0.00	0	9
Total goods value:			
In 1650 BC	82.89	170.63	27
In 1600 BC	425.93	549.25	15
Date unknown	0.00	0	9
Total tomb wealth:			
In 1650 BC	92.11	170.09	27
In 1600 BC	469.93	557.97	14
Date unknown	8.89	3.86	9

Table 7.8: Goods indices from Cemetery 58 at Ginari in 1650 B.C. and 1600 B.C.

	1650 B.C. Number	1600 B.C. Number
Total goods value	2238	6389
Local production index	35	29
Foreign exchange index	2	4
Wealth index	83	426

Table 7.9: Areas, in sq. metres, of Middle Nubian C-Group graves in Cemetery 58 at Ginari

	Grave size
In 1650 BC:	
Maximum	1.40
Minimum	0.56
Mean	1.00
	[13 graves]
In 1600 BC:	
Maximum	2.00
Minimum	0.47
Mean	1.46
	[14 graves]
In graves of unknown date:	
Maximum	1.21
Minimum	0.55
Mean	0.92
	[4 graves]

7.0.2 Nonparametric tests: Ginari, Cemetery 58

Despite the slight variation in grave size between middle and late Second Intermediate Period graves, and despite the lack of sufficient data to determine whether there was any association between grave goods and grave area or between grave area and date, it was apparent that there *was* some diversity in the number and nature of grave goods associated with the various burials, since more goods had been deposited with the mid-Second Intermediate Period burials and, with the exception of carnelian, luxury items had been restricted to the late Second Intermediate Period entombments. Therefore, the cemetery data were further examined in an attempt to establish whether there were any *significant* differences between the graves from the two time periods in terms of the number and type of burial goods recovered.

Unfortunately, because small sample sizes that resulted in correspondingly low expected cell frequencies would make the results invalid, cross-tabulations could not be employed to determine whether dependence or association existed between the number of grave goods, including locally made and imported luxury objects or beads, and the date of a particular grave. Instead, the Mann-Whitney U tests conducted for these variables are reported below. In Table 7.10 the mean number of locally made grave goods occurring in 1650 B.C. was compared with the mean number that occurred in 1600 B.C. Similar comparisons were created for Egyptian goods, grave beads, glazed beads and luxury artefacts [Table 7.11- Table 7.15]. The non-parametric tests indicate that no significant difference exists between the mean number of locally crafted artefacts [Table 7.10], such as glazed beads [Table 7.13] and locally made luxury objects [Table 7.14], present in 1650 B.C. and the mean number present in 1600 B.C. However, there is a significant difference between the mean number of Egyptian goods [Table 7.11] in the mid-Second Intermediate Period graves and the mean number in the late Second Intermediate Period graves. There also is a significant difference between the mean number of local and imported luxury offerings [Table 7.15] from the mid-Second Intermediate Period interments and the mean number in burials that are late Second Intermediate Period in date.

U statistic:	171.000
p-value:	0.4035

	Mean rank of locally made goods	Burial count
1650 BC	22.67	27
1600 BC	19.40	15

Table 7.10: Ginari, Cemetery 58: Mann-Whitney rank information for total locally made grave goods and date

U statistic:	65.50
p-value:	< 0.0001

	Mean rank of Egyptian goods	Burial count
1650 BC	16.43	27
1600 BC	30.63	15

Table 7.11: Ginari, Cemetery 58: Mann-Whitney rank information for total Egyptian goods and date

U statistic:	191.000
p-value:	0.7627

	Mean rank of grave beads	Burial count
1650 BC	21.93	27
1600 BC	20.73	15

Table 7.12: Ginari, Cemetery 58: Mann-Whitney rank information for total grave beads and date

U statistic:	198.500
p-value:	0.9164

	Mean rank of total glazed beads	Burial count
1650 BC	21.65	27
1600 BC	21.23	15

Table 7.13: Ginari, Cemetery 58: Mann-Whitney rank information for total glazed beads and date

U statistic:	158.000
p-value:	0.2428

	Mean rank of local luxury items	Burial count
1650 BC	19.85	27
1600 BC	24.47	15

Table 7.14: Ginari, Cemetery 58: Mann-Whitney rank information for locally made luxury goods and date

U statistic:	119.000
p-value:	0.0284

	Mean rank of total luxury items	Burial count
1650 BC	18.41	27
1600 BC	27.07	15

Table 7.15: Ginari, Cemetery 58: Mann-Whitney rank information for total luxury items and date

7.0.3 Descriptive statistics: Gerf Husein, Cemeteries 72, 73 and 74, *ca.* 2100 B.C. to *ca.* 1550 B.C.

Data from the three badly plundered Middle Nubian cemeteries at Gerf Husein showed that 1,811 grave goods remained in the ninety-nine graves excavated by Firth during the 1908-1909 season [Table 7.16 and Table 7.17]. Six local objects were recovered from the 2100 B.C. grave of an adult male at Gerf Husein North [Cemetery 72], and in the 1850 B.C. grave of an adult female at the same cemetery, eleven artefacts, or 0.61 percent of the total burial goods, were found. 11.21 percent [203] of the remaining grave goods was distributed among eleven graves dated to 1650 B.C., whereas eighty percent, or 1,457 burial goods, was discovered with the fifty-seven late Second Intermediate Period burials [1600 B.C.], and eighty burial offerings, or 4.42 percent, were with the thirteen New Kingdom [1550 B.C.] graves. The sixteen graves of unknown date contained fifty-four, or 2.98 percent, of the total burial goods. Seventy-two percent [1,603] of the total number of burial goods were of local manufacture, and eighty-two percent [1,312] of these were late Second Intermediate Period artefacts.

Seven percent [132] of the total number of burial goods from Gerf Husein was marine in origin and the largest percentage of it [84.85] occurred in the late Second Intermediate Period graves. Thirty-four percent of these late Second Intermediate Period artefacts had been fashioned from tortoise shell and thirty-one percent from mother-of-pearl. Mostly split cowrie shells accounted for twenty-one percent; nine percent consisted of presumably unmodified *Natica* and four percent consisted of *Conus* shells. All were probably imports from the Red Sea. Furthermore, 101 of these artefacts, or seventy-seven percent of the marine shell total, were retrieved from the late Second Intermediate Period burials at Gerf Husein North. Sixty-five percent of the marine shell [sixty-six objects] in this Gerf Husein cemetery had been deposited in the tombs of adult females; sixteen items, or sixteen percent, were found with subadults of unknown sex, eighteen items were recovered from graves that lacked bodies and one artefact occurred in the grave of an adult male. The only marine shell objects recovered from the mid-Second Intermediate Period burials consisted of fifteen cowrie shells. Lastly, five *Natica* shells were discovered in a grave of unknown date. These twenty objects account for 11.36 percent and 3.79 percent of the total cemetery offerings respectively. Marine shell items were absent from graves dated to 2100 B.C., 1850 B.C. and 1550 B.C. [Table 7.20 and Table 7.21].

At Gerf Husein, seventy-seven graves, or seventy-eight percent of the total number of graves in the three cemeteries, lacked both local and imported luxury artefacts. Neither the single burial from 2100 B.C., nor that from 1850 B.C., nor nine of the graves dated to 1650 B.C., contained luxury items. In addition, forty-two, or 42.42 percent, of the tombs from 1600 B.C., nine of the burials from 1550 B.C., and fifteen graves of unknown date were without luxury goods. However, twenty-two percent of the graves contained a total of 103 luxury goods [Table 7.22]. Six objects, or six percent of the total, were recovered from graves dated to 1650 B.C. Fifty-four, or fifty-two percent, were found in the late Second Intermediate Period tombs [1600 B.C.]; forty, or thirty-nine percent, were discovered in New Kingdom [1550 B.C.] graves, and there were three luxury goods in graves of unknown date.

Eighty percent of the late Second Intermediate Period graves lacked locally produced luxury goods, and ninety-five percent of these same graves lacked imported luxury objects. Likewise, in 1550 B.C. seventy-five percent of the graves contained no Middle Nubian luxury objects and in ninety-two percent of the burials imported luxury goods were lacking. Ninety-seven, or ninety-four percent, of the total luxury goods recovered from the burials near Gerf Husein had been manufactured locally, and eighty-two percent of these items had been fashioned from carnelian: Eighty percent [forty-three] of the late Second Intermediate Period luxury offerings and ninety-three percent [thirty-seven] of those from the Eighteenth Dynasty were carnelian artefacts. The remaining carnelian tomb goods had been deposited with a mid-Second Intermediate Period burial [1650 B.C.] Both electrum [four percent of the luxury offerings from 1600 B.C.] and gold [four percent] were present in late Second Intermediate Period graves whereas ivory spanned three time periods. In 1650 B.C. one ivory artefact, or seventeen percent of the total number of mid-Second Intermediate Period luxury goods, still remained in a grave; in 1600 B.C. there were three [six percent of the late Second Intermediate Period luxury artefacts] and in 1550 B.C. there were two [five percent of the luxury offerings from that period] ivory objects. The only imported luxury material recovered from the Middle Nubian tombs at Gerf Husein was copper [5.82 percent of the total luxury goods in the three cemeteries] which was discovered with five burials. One [0.97 percent] copper artefact was in a grave of unknown date; one [0.97 percent] was in a grave dated to 1550 B.C. and the rest [3.88 percent of the Gerf Husein total and seven percent of the late Second Intermediate Period luxury offerings] was in 1600 B.C. graves [Table 7.22].

Analysis of the Gerf Husein cemetery offerings revealed that the largest proportion had been deposited with the late Second Intermediate Period graves. The total goods value obtained for these burials [6,921] was also higher than that obtained for burials from the other periods. The late Second Intermediate Period burials also possessed the highest local production [36], foreign exchange[3] and wealth [121] indices recorded at Gerf Husein [Table 7.25]. Likewise, a frequency distribution of grave areas indicated that the largest tomb [2.88 square metres] was late Second Intermediate Period in date. The graves with the largest mean grave area [1.26 square metres] also belonged to this time period [Table 7.26].

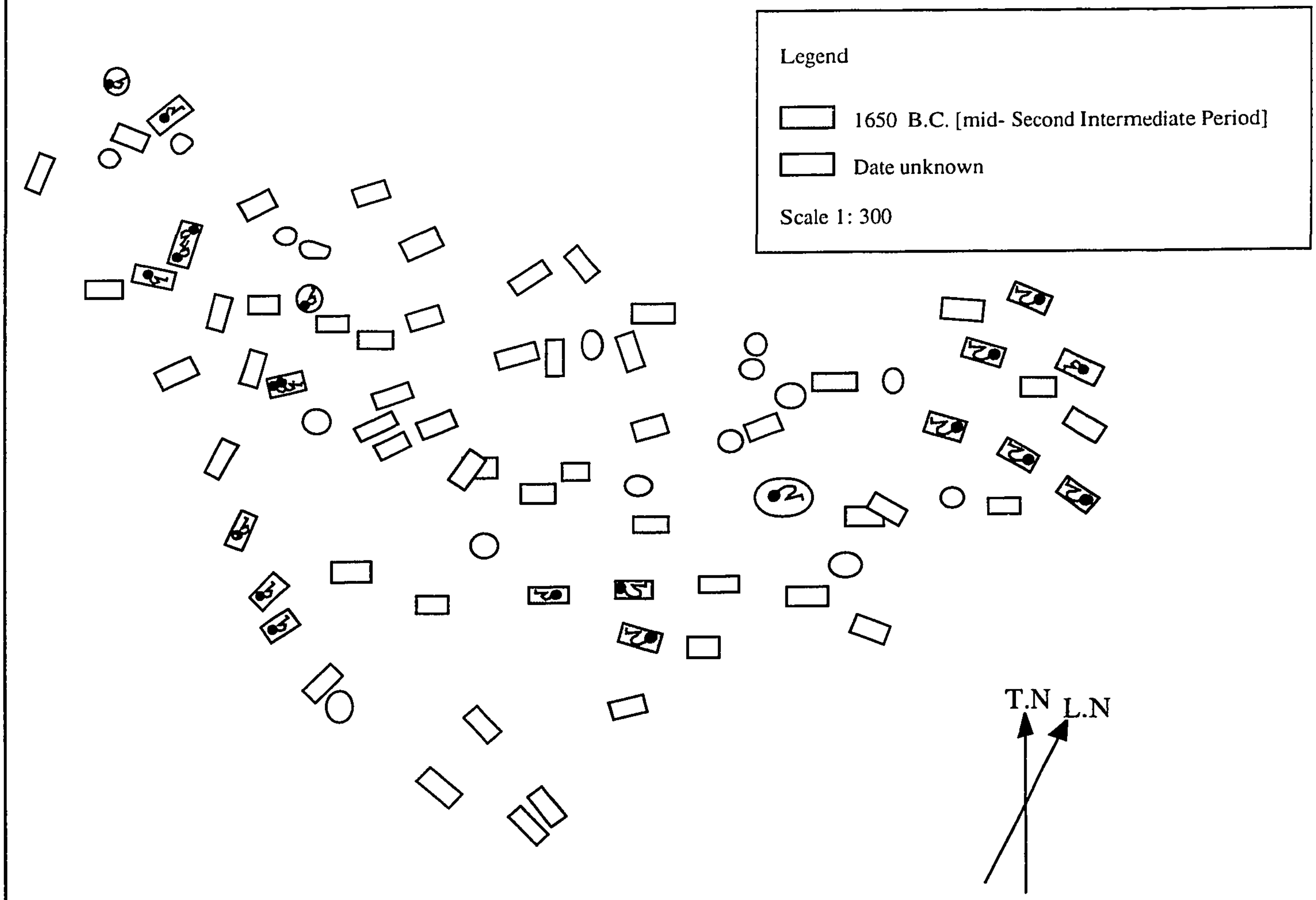


Figure 5. Gerf Husein, Cemetery 73: distribution of middle Second Intermediate Period Middle Nubian graves [After Firth 1912, 2: Plan 13]

Table 7.16: Frequency distribution of grave goods from Middle Nubian C-Group graves in Cemeteries 72, 73 and 74 at Gerf Husein [Percentages are based on the total number of dated and undated graves from each time period in the three cemeteries]

	1650 BC		1600 BC	
	Number	Percent	Number	Percent
Graves with no burial goods	1	9.09	4	7.02
Graves with 1 burial good	0	0	2	3.51
Graves with 2 burial goods	1	9.09	2	3.51
Graves with between 3 and 9 burial goods	3	27.27	25	43.86
Graves with between 10 and 24 burial goods	3	27.27	14	24.56
Graves with between 25 and 49 burial goods	2	18.18	4	7.02
Graves with between 50 and 248 burial goods	1	9.09	6	10.53
Total number of graves with burial goods	10	90.90	53	92.98
Total number of graves	11		57	
Total number of burial goods	203		1457	

	1550 BC		Date unknown	
	Number	Percent	Number	Percent
Graves with no burial goods	3	23.08	11	68.75
Graves with 1 burial good	3	23.08	1	6.25
Graves with 2 burial goods	0	0	1	6.25
Graves with between 3 and 9 burial goods	6	46.15	2	12.50
Graves with between 10 and 24 burial goods	0	0	4	25.00
Graves with between 25 and 49 burial goods	2	15.38	4	25.00
Graves with between 50 and 248 burial goods	1	7.69	0	0
Total number of graves with burial goods	10	76.92	5	31.25
Total number of graves	13		16	
Total number of burial goods	80		54	

Table 7.17: Descriptive statistics for grave goods from Middle Nubian burials in Cemeteries 72, 73 and 74 at Gerf Husein

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of grave goods:				
In 2100 BC	6.00	.	1	6
In 1850 BC	11.00	.	1	11
In 1650 BC	18.46	20.34	11	203
In 1600 BC	25.56	50.65	57	1457
In 1550 BC	6.15	13.93	13	80
Date unknown	3.38	8.67	16	54
Number of luxury goods:				
In 2100 BC	0.00	.	1	0
In 1850 BC	0.00	.	1	0
In 1650 BC	0.55	1.51	11	6
In 1600 BC	0.95	2.20	57	54
In 1550 BC	3.08	9.34	13	40
Date unknown	0.19	0.75	16	3
Number of grave beads:				
In 2100 BC	5.00	.	1	5
In 1850 BC	0.00	.	1	0
In 1650 BC	15.00	20.62	11	165
In 1600 BC	20.83	49.63	57	1187
In 1550 BC	3.85	13.87	13	50
Date unknown	2.25	5.69	16	36
Number of imported Egyptian vessels:				
In 2100 BC	0.00	.	1	0
In 1850 BC	5.00	.	1	5
In 1650 BC	0.27	0.47	11	3
In 1600 BC	0.02	0.13	57	1
In 1550 BC	1.23	1.23	13	16
Date unknown	0.00	0.00	16	0
Total number of Egyptian goods:				
In 2100 BC	0.00	.	1	0
In 1850 BC	5.00	.	1	5
In 1650 BC	0.36	0.51	11	4
In 1600 BC	0.46	1.21	57	26
In 1550 BC	1.69	1.89	13	22
Date unknown	0.38	1.50	16	6

Table 7.18: Descriptive statistics for grave goods associated with C-Group burials in Cemeteries 72, 73 and 74 at Gerf Husein in 1650 B.C., 1600 B.C. and 1550 B.C.

	1650 B.C.		**1600 B.C.**	
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**
Burial goods found with subadults	23.00	18.39	15.50	8.02
Burial goods found with adults	18.38	22.95	32.75	62.66
Burial goods found with females	32.67	33.20	32.56	65.84
Burial goods found with males	9.25	12.84	46.25	72.11
Burial goods found with subadult male	-	-	2.00	.
Burial goods found with subadults of unknown sex	23.00	18.39	18.20	5.07
Burial goods found with adult females	32.67	33.20	32.56	65.84
Burial goods found with adult males	9.25	12.84	50.27	74.20
Burial goods found with adults of unknown sex	12.00	.	5.71	5.19
Goods found with person of unknown age and sex	10.00	.	-	-
Burial goods found in graves without occupants	-	-	12.33	7.75
Burial goods in plundered graves	30.33	35.35	81.60	91.93
Burial goods in undisturbed graves	26.00	11.14	176.00	.

	1550 B.C.	
	Mean	**Standard Deviation**
Burial goods found with adults	14.00	25.36
Burial goods found with subadults of unknown sex	2.75	1.26
Burial goods found with adult females	0.50	0.71
Burial goods found with adult males	-	-
Burial goods found with adults of unknown sex	52.00	-
Goods found with person of unrecorded sex	3.00	.
Goods found with person of unknown age and sex	2.60	3.13
Burial goods in plundered graves	4.33	2.89
Burial goods in undisturbed graves	15.00	24.70

Table 7.19: Bead occurrences in Cemeteries 72, 73 and 74 at Gerf Husein [Percentages are based on the total number of grave beads in burials from 2100 B.C., 1850 B.C., 1650 B.C., 1600 B.C. and 1550 B.C. The sixteen burials of unknown date contained thirty-six beads]

	2100 B.C.		1850 B.C.	
	Number	**Percent**	**Number**	**Percent**
Carnelian beads	0	0	0	0
Shell beads	5	100.00	0	0
Glazed Nubian beads	0	0	0	0
Glazed Egyptian beads	0	0	0	0
Total glazed beads	0	0	0	0
Total local grave beads	5	100.00	0	0
Total imported grave beads	0	0	0	0
Total grave beads	5		0	

	1650 B.C.		1600 B.C.	
	Number	**Percent**	**Number**	**Percent**
Gold beads	0	0	2	0.17
Carnelian beads	5	3.03	37	3.12
Shell beads	130	78.79	30	2.53
Other local beads	15	9.09	50	4.21
Glazed Nubian beads	15	9.09	1068	89.97
Glazed Egyptian beads	0	0	0	0
Total glazed beads	15	9.09	1068	89.97
Total local grave beads	165	100.00	1187	100.00
Total imported grave beads	0	0	0	0
Total grave beads	165		1187	

	1550 B.C.	
	Number	**Percent**
Gold beads	0	0
Carnelian beads	34	68.00
Shell beads	0	0
Other local beads	16	32.00
Glazed Nubian beads	0	0
Glazed Egyptian beads	0	0
Total glazed beads	0	0
Total local grave beads	50	100.00
Total imported grave beads	0	0
Total grave beads	50	

Table 7.20: Marine shell occurrences in Cemeteries 72, 73 and 74 at Gerf Husein [Percentages are based on the total number of marine shell items, 132, in burials from 1650 B.C. and 1600 B.C. No marine shell artefacts were recovered from the Tenth, mid-Twelfth, or Eighteenth Dynasty graves. Five *Natica* shells were found in an undated grave]

	1650 B.C.		1600 B.C.	
	Number	**Percent**	**Number**	**Percent**
Tortoise shell	0	0	38	28.79
Mother-of-pearl	0	0	35	26.52
Cowrie shells	15	11.36	24	18.18
Conus	0	0	5	3.79
Natica	0	0	10	7.58
Total marine shell items	15	11.36	112	84.85

Table 7.21: Marine shell occurrences in Cemeteries 72, 73 and 74 at Gerf Husein [Percentages within each date category are based on the total number of marine shell items found with burials of that date. No marine shell artefacts occurred in 2100 B.C., 1850 B.C. or in 1550 B.C. Five *Natica* shells were found in an undated grave]

	1650 B.C.		1600 B.C.	
	Number	**Percent**	**Number**	**Percent**
Tortoise shell	0	0	38	33.93
Mother-of-pearl	0	0	35	31.25
Cowrie shells	15	100.00	24	21.43
Conus	0	0	5	4.46
Natica	0	0	10	8.93
Total marine shell items	15		112	

Table 7.22: Luxury goods from all three C-Group cemeteries near Gerf Husein [Percentages within each date category are based on the total number of luxury goods found with burials of that date. No luxury artefacts were recovered from the Tenth (2100 B.C.) or mid-Twelfth (1850 B.C.) Dynasty graves. Three luxury items were discovered in an undated grave]

	2100 B.C.		1850 B.C.	
	Number	**Percent**	**Number**	**Percent**
Carnelian	0	0	0	0
Copper	0	0	0	0
Electrum	0	0	0	0
Gold	0	0	0	0
Ivory	0	0	0	0
Total luxury goods	0		0	
	1650 B.C.		**1600 B.C.**	
	Number	**Percent**	**Number**	**Percent**
Carnelian	5	83.33	43	79.63
Copper	0	0	4	7.41
Electrum	0	0	2	3.70
Gold	0	0	2	3.70
Ivory	1	16.67	3	5.56
Total luxury goods	6		54	
	1550 B.C.		**Date unknown**	
	Number	**Percent**	**Number**	**Percent**
Carnelian	37	92.50	0	0
Copper	1	2.50	1	33.33
Electrum	0	0	0	0
Gold	0	0	0	0
Ivory	2	5.00	2	66.67
Total luxury goods	40		3	

Table 7.23: Burial goods from Cemeteries 72, 73 and 74 at Gerf Husein [Percentages are based on the total number of grave goods with burials that date from 2100 B.C., 1850 B.C., 1650 B.C., 1600 B.C. and 1550 B.C.]

	2100 B.C.		**1850 B.C.**	
	Number	**Percent**	**Number**	**Percent**
Beads	5	83.88	0	0
Local pottery	1	16.67	5	45.45
Egyptian pottery	0	0	5	45.45
Total local goods	6	100.00	6	54.55
Total Egyptian goods	0	0	5	45.45
Total other imports	0	0	0	0
Total grave goods	6		11	
	1650 B.C.		**1600 B.C.**	
	Number	**Percent**	**Number**	**Percent**
Beads	165	81.28	1187	81.47
Local pottery	4	1.97	58	3.98
Egyptian pottery	3	1.48	1	0.07
Total local goods	183	90.15	1312	90.05
Total Egyptian goods	4	1.97	26	1.78
Total other imports	16	7.88	123	8.44
Total grave goods	203		1457	
	1550 B.C.			
	Number	**Percent**		
Beads	50	62.50		
Local pottery	3	3.75		
Egyptian pottery	16	20.00		
Total local goods	56	70.00		
Total Egyptian goods	22	27.50		
Total other imports	2	2.50		
Total grave goods	80			

Table 7.24: Descriptive statistics for assessments of economic production, exchange, goods value and burial wealth in Tenth Dynasty, Twelfth Dynasty, middle and late Second Intermediate Period and Eighteenth Dynasty Middle Nubian graves at Gerf Husein

	Mean per Burial	**Standard Deviation**	**Total Number of Burials**
Total local production:			
In 2100 BC	21.00	.	1
In 1850 BC	21.00	.	1
In 1650 BC	27.55	21.89	11
In 1600 BC	36.29	50.52	56
In 1550 BC	15.31	17.09	13
Total foreign exchange:			
In 2100 BC	0.00	.	1
In 1850 BC	5.00	.	1
In 1650 BC	1.82	2.52	11
In 1600 BC	2.61	3.77	57
In 1550 BC	1.85	2.15	13
Total goods value:			
In 2100 BC	20.00	.	1
In 1850 BC	78.00	.	1
In 1650 BC	82.27	100.55	11
In 1600 BC	121.42	166.78	57
In 1550 BC	93.77	149.03	13
Total tomb wealth:			
In 2100 BC	35.00	.	1
In 1850 BC	93.00	.	1
In 1650 BC	93.18	102.37	11
In 1600 BC	135.61	167.77	56
In 1550 BC	104.77	157.83	13

Table 7.25: Goods indices from Cemeteries 72, 73 and 74 at Gerf Husein in 1650 B.C., 1600 B.C. and 1550 B.C.

	1650 B.C. Number	1600 B.C. Number
Total goods value	905	6921
Local production index	28	36
Foreign exchange index	2	3
Wealth index	82	121
	1550 B.C. Number	**Date unknown Number**
Total goods value	1219	703
Local production index	15	13
Foreign exchange index	2	1
Wealth index	94	44

Table 7.26: Areas, in sq. metres, of Middle Nubian C-Group graves at Gerf Husein [The grave from 2100 B.C. had an area of 1.53 sq.m.; the area of the grave from 1850 B.C was 1.44 sq.m.]

	Grave size
In 1650 BC:	
Maximum	1.53
Minimum	0.38
Mean	0.88
	[11 graves]
In 1600 BC:	
Maximum	2.88
Minimum	0.50
Mean	1.26
	[49 graves]
In 1550 BC:	
Maximum	1.98
Minimum	0.57
Mean	1.20
	[3 graves]
In graves of unknown date:	
Maximum	1.26
Minimum	0.38
Mean	0.74
	[16 graves]

7.0.4 Nonparametric tests: Gerf Husein, Cemeteries 72, 73 and 74

As at Ginari, at Gerf Husein it was apparent that despite the small differences in size exhibited by the mid-Second Intermediate Period, late Second Intermediate Period and Eighteenth Dynasty graves, there *was* some disparity in the number and nature of burial offerings that accompanied the various burials since far more objects, including eighty-five percent of the marine shell items and fifty-two percent of the luxury artefacts, had been distributed amongst the late Second Intermediate Period interments. Consequently, the data from the three cemeteries were further analysed to determine whether or not the differences among them were *significant*. Because of small sample sizes that are probably the result of extensive plundering, cross-tabulations could not be used to establish whether any dependence existed between grave area and date or between grave goods and date. However, wherever appropriate, Kruskal-Wallis H tests or Mann-Whitney U tests were conducted for total grave beads, Egyptian artefacts, marine shell artefacts and luxury goods in those time periods in which the number of artefacts numbered five or more [Tables 7.30 - 7.36]. The null hypothesis, that the same mean number of goods was present in each time period, could be rejected for locally made goods [Table 7.30], shell beads [Table 7.31], grave beads [Table 7.32] and Egyptian items [Table 7.34]. The null hypothesis could not be rejected for either marine shell objects [Table 7.35], luxury goods [Table 7.36] or Nubian glazed beads. The data therefore suggest that at Gerf Husein, a *significant* difference exists between both the mean number of Egyptian artefacts and the mean number of local objects, including grave beads, and shell beads in particular, present at different time periods. However, the data indicate no significant difference in either the mean number of Nubian glazed beads, or in the mean number of marine shell artefacts or luxury items, present. Since there were fewer than five Tenth [2100 B.C.] and mid-Twelfth [1850 B.C.] Dynasty graves, and because there were less than five Egyptian pottery artefacts in graves from 2100 B.C., 1650 B.C. and 1600 B.C., it was not possible to determine whether the increase in Egyptian pottery that occurred in the Eighteenth Dynasty graves was significant.

DF:	2
H statistic:	12.886
p-value:	0.0016

	Mean rank of grave goods	Burial count
1650 BC	48.18	11
1600 BC	44.47	57
1550 BC	19.73	13

Table 7.27: Gerf Husein, Cemeteries 72, 73 and 74: Kruskal-Wallis rank information for total grave goods and date [Burial 72-330 from 2100 B.C., Burial 72-225 from 1850 B.C. and burials of unknown date were excluded]

U statistic:	279.500
p-value:	0.5712

	Mean rank of grave goods	Burial count
1650 BC	37.59	11
1600 BC	33.90	57

Table 7.28: Gerf Husein, Cemeteries 72, 73 and 74: Mann-Whitney rank information for total grave goods and date [Burial 72-330 from 2100 B.C., Burial 72-225 from 1850 B.C. and burials of unknown date were excluded]

U statistic:	139.000
p-value:	0.0005

	Mean rank of grave goods	Burial count
1600 BC	39.56	57
1550 BC	17.69	13

Table 7.29: Gerf Husein, Cemeteries 72, 73 and 74: Mann-Whitney rank information for total grave goods and date [Burial 72-330 from 2100 B.C., Burial 72-225 from 1850 B.C. and burials of unknown date were excluded]

DF:	2
H statistic:	16.436
p-value:	0.0003

	Mean rank of locally made goods	Burial count
1650 BC	49.55	11
1600 BC	44.82	57
1550 BC	17.04	13

Table 7.30: Gerf Husein, Cemeteries 72, 73 and 74: Kruskal-Wallis rank information for total locally made grave goods and date [Burial 72-330 from 2100 B.C., Burial 72-225 from 1850 B.C. and burials of unknown date were excluded]

U statistic:	166.500
p-value:	0.0144

	Mean rank of shell beads	Burial count
1650 BC	47.86	11
1600 BC	31.92	57

Table 7.31: Gerf Husein, Cemeteries 72, 73 and 74: Mann-Whitney rank information for total locally made shell beads and date [Burial 72-330 from 2100 B.C., Burial 72-225 from 1850 B.C., burials from 1550 B.C. and burials of unknown date were excluded]

DF:	2
H statistic:	10.203
p-value:	0.0061

	Mean rank of grave beads	Burial count
1650 BC	50.91	11
1600 BC	43.23	57
1550 BC	22.85	13

Table 7.32: Gerf Husein, Cemeteries 72, 73 and 74: Kruskal-Wallis rank information for total grave beads and date [Burial 72-330 from 2100 B.C., Burial 72-225 from 1850 B.C. and burials of unknown date were excluded]

U statistic:	184.000
p-value:	0.0049

	Mean rank of grave beads	Burial count
1600 BC	38.77	57
1550 BC	21.15	13

Table 7.33: Gerf Husein, Cemeteries 72, 73 and 74: Mann-Whitney rank information for total grave beads and date

U statistic:	205.000
p-value:	0.0124

	Mean rank of Egyptian goods	Burial count
1600 BC	32.60	57
1550 BC	48.23	13

Table 7.34: Gerf Husein, Cemeteries 72, 73 and 74: Mann-Whitney rank information for total imported Egyptian goods and date [Burial 72-330 from 2100 B.C., Burial 72-225 from 1850 B.C., burials from 1650 B.C. and burials of unknown date were excluded]

U statistic:	290.500
p-value:	0.7017

	Mean rank of marine shell items	Burial count
1650 BC	32.41	11
1600 BC	34.90	57

Table 7.35: Gerf Husein, Cemeteries 72, 73 and 74: Mann-Whitney rank information for total marine shell artefacts and date [Burial 72-330 from 2100 B.C., Burial 72-225 from 1850 B.C., burials from 1550 B.C. and those of unknown date were excluded]

DF:	2
H statistic:	0.336
p-value:	0.8452

	Mean rank of luxury goods	Burial count
1650 BC	37.64	11
1600 BC	41.16	57
1550 BC	43.15	13

Table 7.36: Gerf Husein, Cemeteries 72, 73 and 74: Kruskal-Wallis rank information for total luxury goods and date [Burial 72-330 from 2100 B.C., Burial 72-225 from 1850 B.C. and burials of unknown date were excluded]

DF:	2
H statistic:	0.338
p-value:	0.8444

	Mean rank of carnelian artefacts	Burial count
1650 BC	38.73	11
1600 BC	40.73	57
1550 BC	44.12	13

Table 7.37: Gerf Husein, Cemeteries 72, 73 and 74: Kruskal-Wallis rank information for total carnelian artefacts and date [Burial 72–330 from 2100 B.C., Burial 72-225 from 1850 B.C. and burials of unknown date were excluded]

U statistic:	201.500
p-value:	0.0621

	Mean rank of glazed beads	Burial count
1650 BC	24.32	11
1600 BC	36.47	57

Table 7.38: Gerf Husein, Cemeteries 72, 73 and 74: Mann-Whitney rank information for Nubian glazed beads and date [Burial 72-330 from 2100 B.C., Burial 72-225 from 1850 B.C. and burials of unknown date were excluded]

7.0.5 Descriptive statistics: Koshtemna, Cemetery 87, *ca.* 2000 B.C. to *ca.* 1700 B.C.

Cemetery 87 [Figure 6], excavated by Firth during the 1908-1909 season of the First Archaeological Survey of Nubia, was located on the west bank of the Nile, south of Gerf Husein, near Naga el Gama (Firth 1912: 4).

Sixty-one burials [one in 2000 B.C., twenty-three in 1900 B.C., twenty in 1800 B.C., eleven in 1750 B.C. and six of unknown date] were undisturbed, while ninety-three, or fifty-four percent of the graves, had been plundered. Forty-two, or forty-five percent, of these plundered graves dated to 1900 B.C. Twenty percent [nineteen graves] were from 1800 B.C., twenty percent were from 1750 B.C., two percent were from 1700 B.C. and the dates of ten percent [nine plundered graves] were unknown. Of the remaining nineteen burials, eight had been damaged by *sebakh*-diggers and the dates of the rest could not be determined. When grave condition within each date category was studied, it was discovered that sixty-three percent of the graves dated to 1900 B.C. had been plundered, as were forty-eight percent of those from 1800 B.C., and fifty-six percent of those from 1750 B.C. Both burials from 1700 B.C. had been looted.

Further analysis of these 171 burials revealed that 3,833 artefacts were associated with thirty-nine pits from which bodies had been removed, as well as with the graves of ninety-three adults [forty-nine males, forty females and four of unknown sex], twenty-five subadults [two males, four females and nineteen of unknown sex] and fourteen individuals of undetermined age. The largest number of burial goods,1,441, or thirty-eight percent of the total superstructure and grave offerings, was found with the late Twelfth Dynasty [1800 B.C.] graves.

The analysis also established that during the 1900 B.C. to 1750 B.C. time period at Koshtemna the mean number of burial offerings increases with time [Table 7.40]. While the mean number of objects associated with burials in 1900 B.C. was 15.75, in 1800 B.C. it was 36.03 and in 1750 B.C. it was 37.21. Over the same period the mean number of adult offerings was 17.95, 30.76 and 16.36. The corresponding subadult burial offerings increased from 28.25 in 1900 B.C. to 76.50 in 1800 B.C. and

82.50 in 1750 B.C. [Table 7.41].

This increase in grave offerings was due entirely to increases in the deposition of beads. Seventy-two percent of the mid-Twelfth Dynasty offerings consisted of beads of which almost half were glazed. Ninety percent of the late Twelfth Dynasty burial goods were beads of which sixty-nine percent were glazed, and ninety-one percent of the Thirteenth Dynasty goods consisted of beads of which sixty-eight percent were glazed. Shell beads accounted for seventeen, fifteen and ten percent of the offerings over the same period of time, while other Nubian beads accounted for twenty-one, ten and eighteen percent of the offerings in 1900 B.C., 1800 B.C. and 1750 B.C. respectively [Table 7.42].

These beads comprised eighty-five percent of the total cemetery offerings. All had been Nubian made. Sixty-four percent of them were glazed, thirteen percent [435] were shell and eight percent [256] were fashioned from local luxury materials. Forty-three percent [125] of the total number of luxury objects discovered in the cemetery [291] were locally crafted beads of gold and carnelian that were retrieved from the mid-Twelfth Dynasty [1900 B.C.] graves [Table 7.42].

In 1900 B.C., 2.27 percent of the luxury objects in the cemetery were Egyptian in origin. In the late Twelfth Dynasty [1800 B.C.], 2.15 percent of all luxury artefacts were Egyptian. This proportion increased to twenty-three percent in the Thirteenth Dynasty [1750 B.C.] graves. Other Egyptian goods exhibited a somewhat similar distribution pattern. In 1900 B.C. 3.41 percent of the burial goods in the cemetery were Egyptian; in 1800 B.C. Egyptian artefacts accounted for 1.04 percent of the total offerings and in 1750 B.C. 2.61 percent of the offerings were of Egyptian origin. All of the middle and late Twelfth Dynasty Egyptian luxury objects were made of copper but only seven percent of the Thirteenth Dynasty luxury offerings had been crafted from this metal. The remaining ninety-three percent [thirteen] of the objects had been sculpted from alabaster. The non-luxury Egyptian artefacts consisted largely of scarabs, linen and kohl [Table 7.43 and Table 7.44].

Unlike beads, pottery deposits at Koshtemna declined over time. However, whereas local ceramics fell from fifteen to six to four percent in the mid-Twelfth, late Twelfth and Thirteenth Dynasties respectively, Egyptian pottery declined from

2.37 percent in 1900 B.C. to 0.76 percent in 1800 B.C., but increased slightly to 0.95 percent of the Thirteenth Dynasty offerings [Table 7.44].

The wealth indices calculated for Cemetery 87 were twenty, eighty, 126, 154 and fifteen in 2000 B.C., 1900 B.C., 1800 B.C., 1750 B.C. and 1700 B.C. respectively. The highest mean tomb wealth [199.94] also was obtained for the Thirteenth Dynasty [1750 B.C.] graves, and the foreign exchange index computed for these burials was higher than that obtained for the other four time periods. However, the highest local production index [ninety-one] was obtained for the late Twelfth Dynasty burials, while the largest total goods value [5356] was calculated for those from the mid-Twelfth Dynasty [1900 B.C.] [Table 7.46].

Both superstructure and grave sizes at Koshtemna were largest in 1750 B.C. when the mean superstructure size was 4.87 cubic metres and the average grave size was 0.91 square metres [Table 7.47].

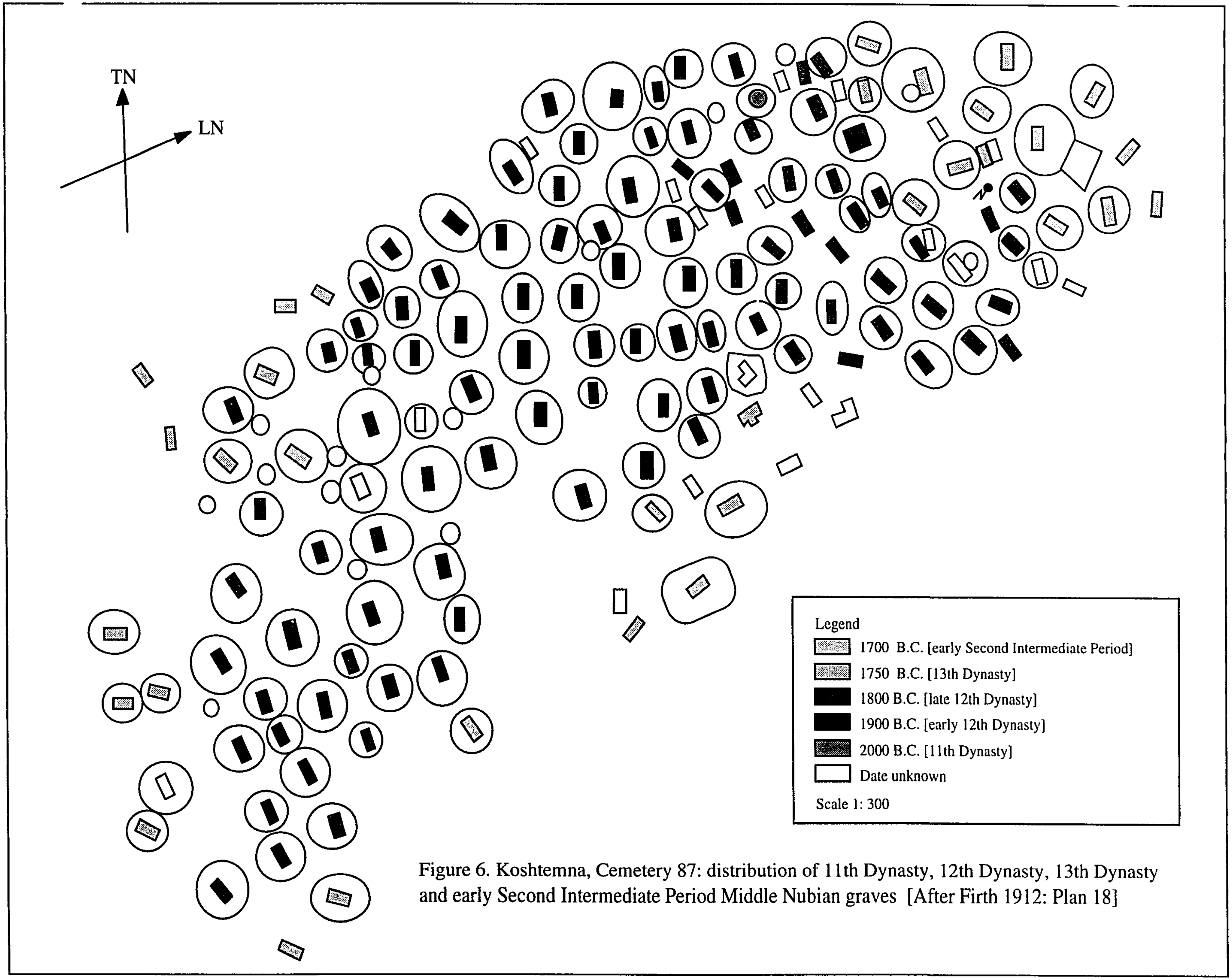


Figure 6. Koshtemna, Cemetery 87: distribution of 11th Dynasty, 12th Dynasty, 13th Dynasty and early Second Intermediate Period Middle Nubian graves [After Firth 1912: Plan 18]

Table 7.39: Frequency distribution of superstructure and grave offerings from C-Group graves at Koshtemna [Percentages are based on the total number of dated graves from each time period in Cemetery 87. Five offerings remained with the single burial from 2000 B.C.]

	1900 BC		1800 BC	
	Number	Percent	Number	Percent
Graves with no burial goods	6	8.96	5	12.50
Graves with 1 burial good	5	7.46	3	7.50
Graves with 2 burial goods	4	5.97	2	5.00
Graves with between 3 and 9 burial goods	30	44.78	18	45.00
Graves with between 10 and 38 burial goods	16	23.88	3	7.50
Graves with between 39 and 77 burial goods	3	4.48	3	7.50
Graves with between 78 and 311 burial goods	3	4.48	5	12.50
Graves with between 312 and 389 burial goods	0	0.00	1	2.50
Graves with burial goods	61	91.04	35	87.50
Total number of graves	67		40	
Total number of burial goods	1055		1441	

	1750 BC		1700 BC	
	Number	Percent	Number	Percent
Graves with no burial goods	7	20.59	0	0.00
Graves with 1 burial good	1	2.94	0	0.00
Graves with 2 burial goods	1	2.94	1	50.00
Graves with between 3 and 9 burial goods	8	23.53	1	50.00
Graves with between 10 and 38 burial goods	12	35.29	0	0.00
Graves with between 39 and 77 burial goods	1	2.94	0	0.00
Graves with between 78 and 311 burial goods	3	8.82	0	0.00
Graves with between 312 and 389 burial goods	1	2.94	0	0.00
Graves with burial goods	27	79.41	2	100.00
Total number of graves	34		2	
Total number of burial goods	1265		6	

Table 7.40: Descriptive statistics for burial [superstructure and grave] goods from Middle Nubian burials in Cemetery 87 at Koshtemna

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of burial goods:				
In 2000 BC	5	-	1	5
In 1900 BC	15.75	31.01	67	1055
In 1800 BC	36.03	73.77	40	1441
In 1750 BC	37.21	84.75	34	1265
In 1700 BC	3	1.41	2	6
Date unknown	2.54	10.24	24	61
Number of luxury goods:				
In 2000 BC	5	-	1	5
In 1900 BC	1.97	8.70	67	132
In 1800 BC	2.33	10.37	40	93
In 1750 BC	1.79	3.52	34	61
In 1700 BC	0	0	2	0
Number of grave beads:				
In 2000 BC	5	-	1	5
In 1900 BC	11.28	30.11	67	756
In 1800 BC	32.60	73.32	40	1304
In 1750 BC	33.88	84.24	34	1152
In 1700 BC	0	0	2	0
Number of local goods:				
In 2000 BC	5	-	1	5
In 1900 BC	14.87	30.68	67	996
In 1800 BC	35.58	73.58	40	1423
In 1750 BC	35.88	84.21	34	1220
In 1700 BC	3	1.41	2	6
Date unknown	2.54	10.24	24	61
Total number of Egyptian goods:				
In 2000 BC	0	0	1	0
In 1900 BC	0.54	0.75	67	36
In 1800 BC	0.38	0.71	40	15
In 1750 BC	0.97	2.62	34	33
In 1700 BC	0	0	2	0

Table 7.41: Descriptive statistics for superstructure and grave goods associated with C-Group burials in Cemetery 87 at Koshtemna in 2000 B.C., 1900 B.C., 1800 B.C., 1750 B.C. and 1700 B.C. [Superstructure offerings were excluded from calculations for plundered and undisturbed graves. There were five objects in the undisturbed grave from 2000 B.C.]

	1900 B.C.		1800 B.C.	
	Mean	Standard Deviation	Mean	Standard Deviation
Burial goods found with subadults	28.25	54.60	76.50	111.24
Burial goods found with adults	17.95	31.77	30.76	60.93
Burial goods found with females	19.05	24.85	55.42	80.98
Burial goods found with males	16.50	39.03	13.00	29.41
Burial goods found with subadult females	6.00	-	58.33	90.01
Burial goods found with subadults of unknown sex	35.67	62.52	84.29	124.99
Burial goods found with adult females	19.70	25.31	54.44	83.59
Burial goods found with adult males	17.12	40.14	13.00	29.41
Burial goods found with adults of unknown sex	15.00	-	-	-
Burial goods found in graves without occupants	6.71	8.10	3.00	3.03
Burial goods in plundered graves	3.95	6.41	7.42	23.20
Burial goods in undisturbed graves	30.30	47.46	59.90	95.83
	1750 B.C.		**1700 B.C.**	
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**
Burial goods found with subadults	82.50	102.53	-	-
Burial goods found with adults	16.36	19.82	3.00	1.41
Burial goods found with females	27.50	40.25	3.00	1.41
Burial goods found with males	13.44	13.10	-	-
Burial goods found with subadult females	10.00	-	-	-
Burial goods found with subadults of unknown sex	82.50	102.53	-	-
Burial goods found with adult females	27.50	40.25	3.00	1.41
Burial goods found with adult males	13.44	13.10	-	-
Burial goods found with adults of unknown sex	8.00	-	-	-
Burial goods found in graves without occupants	4.40	9.29	-	-
Burial goods in plundered graves	8.74	8.39	0	0
Burial goods in undisturbed graves	94.46	132.95		

Table 7.42: Bead occurrences in Cemetery 87 at Koshtemna [Percentages are based on the grave bead totals in burials from 1900 B.C., 1800 B.C., 1750 B.C. and 1700 B.C. The single burial from 2000 B.C. contained five local carnelian beads; the twenty-four undated graves contained fifty locally made beads]

	1900 B.C.		1800 B.C.	
	Number	Percent	Number	Percent
Gold beads	50	6.61	5	0.38
Carnelian beads	75	9.92	81	6.21
Total luxury beads	125	16.53	86	6.60
Shell beads	130	17.20	195	14.95
Glazed Nubian beads	345	45.63	895	68.63
Glazed Egyptian beads	0	0.00	0	0.00
Total glazed beads	345	45.63	895	68.63
Other Nubian beads	156	20.63	128	9.82
Total local grave beads	756	100.00	1304	100.00
Total imported grave beads	0	0.00	0	0.00
Total grave beads	756		1304	
	1750 B.C.		**1700 B.C.**	
	Number	Percent	Number	Percent
Gold beads	25	2.17	0	0.00
Carnelian beads	15	1.30	0	0.00
Total luxury beads	40	3.47	0	0.00
Shell beads	110	9.55	0	0.00
Glazed Nubian beads	780	67.71	0	0.00
Glazed Egyptian beads	0	0.00	0	0.00
Total glazed beads	780	67.71	0	0.00
Other Nubian beads	210	18.23	0	0.00
Total local grave beads	1140	98.96	0	0.00
Total imported grave beads	12	1.04	0	0.00
Total grave beads	1152		0	

Table 7.43: Luxury goods from Cemetery 87 at Koshtemna in 1900 B.C., 1800 B.C. and 1750 B.C. [Percentages within each date category are based on the total number of luxury goods found with burials of that date. The single burial from 2000 B.C. contained 5 carnelian beads]

	1900 B.C.		1800 B.C.		1750 B.C.	
	Number	Percent	Number	Percent	Number	Percent
Alabaster	0	0.00	0	0.00	13	21.31
Carnelian	75	56.82	81	87.10	15	24.59
Copper	3	2.27	2	2.15	1	1.64
Gold beads	50	37.88	5	5.38	25	40.98
Ivory	4	3.03	5	5.38	7	11.48
Silver	0	0.00	0	0.00	0	0.00
Local luxury goods	129	97.73	91	97.85	47	77.05
Egyptian luxury goods	3	2.27	2	2.15	14	22.96
Total luxury goods	132		93		61	

Table 7.44: Burial goods from Cemetery 87 at Koshtemna [Percentages are based on the total number of grave goods with burials that date from 1900 B.C., 1800 B.C. and 1750 B.C.]

	1900 B.C.		1800 B.C.		1750 B.C.	
	Number	Percent	Number	Percent	Number	Percent
Beads	756	71.66	1304	90.49	1152	91.07
Local pottery	162	15.36	84	5.83	49	3.87
Egyptian pottery	25	2.37	11	0.76	12	0.95
Total local goods	996	94.41	1423	98.75	1220	96.44
Total Egyptian goods	36	3.41	15	1.04	33	2.61
Goods *in* graves	863	81.80	1339	92.92	1226	96.92
Total burial goods	1055		1441		1265	

Table 7.45: Descriptive statistics for assessments of economic production, exchange, goods value and tomb wealth in Twelfth and Thirteenth Dynasty Middle Nubian C-Group burials from Cemetery 87 at Koshtemna

	Mean per Burial	Standard Deviation	Total Number of Burials
Total local production:			
In 1900 BC	77.33	34.82	67
In 1800 BC	91.20	71.60	40
In 1750 BC	82.21	92.40	34
In 1700 BC	58.00	8.49	2
Total foreign exchange:			
In 1900 BC	0.88	0.96	67
In 1800 BC	0.45	0.75	40
In 1750 BC	1.32	2.79	34
In 1700 BC	0	0	2
Total goods value:			
In 1900 BC	79.94	130.73	67
In 1800 BC	126.35	221.58	40
In 1750 BC	153.62	222.82	34
In 1700 BC	15.00	7.07	2
Total tomb wealth:			
In 2000 BC	100.00	-	1
In 1900 BC	142.40	134.88	67
In 1800 BC	181.98	219.88	40
In 1750 BC	199.94	234.42	34
In 1700 BC	70.00	14.14	2
Date unknown	18.29	22.67	24

Table 7.46: Goods indices from Cemetery 87 at Koshtemna in 1900 B.C., 1800 B.C., 1750 B.C. and 1700 B.C.

	1900 B.C. Number	1800 B.C. Number
Total goods value	5356	5054
Local production index	77	91
Egyptian exchange index	0.54	0.38
Wealth index	80	126
	1750 B.C. Number	**1700 B.C. Number**
Total goods value	5223	30
Local production index	82	58
Egyptian exchange index	0.97	0
Wealth index	154	15

Table 7.47: Estimated superstructure [cairn] volumes and measured grave areas, in cubic metres and sq. metres respectively, of Middle Nubian C-Group burials in Cemetery 87 at Koshtemna

	Superstructure size	Grave size
In 1900 BC:		
Maximum	8.91	1.36
Minimum	0.52	0.24
Mean	3.50	0.71
	[63 cairns]	[66 graves]
In 1800 BC:		
Maximum	5.48	1.30
Minimum	0.37	0.25
Mean	3.32	0.76
	[33 cairns]	[39 graves]
In 1750 BC:		
Maximum	7.59	1.70
Minimum	1.08	0.27
Mean	4.87	0.91
	[19 cairns]	[32 graves]
In 1700 BC:		
Maximum	2.41	0.75
Minimum	0.94	0.52
Mean	1.68	0.63
	[2 cairns]	[2 graves]

7.0.6 Nonparametric tests: Koshtemna, Cemetery 87

Burials from 2000 B.C. and 1700 B.C., as well as those of unknown date, were omitted from the cross-tabulations which were employed to determine whether there was any statistical dependence between the date of a given grave and the variables being studied. It was found that the Koshtemna contingency table data do not indicate any dependence between the date of a grave and the mean number of burial offerings that accompany it [Table 7.49], or between the date of a grave and its size [Table 7.48].

Once again, the hypothesis that the variable means of each population or time period are equal was tested by conducting tests of comparison for each variable at different time periods. The three burials from 2000 B.C. and 1700 B.C., as well as those of unknown date, were omitted from the analysis. For locally made burial goods, locally made grave beads, Egyptian imports, and both local and imported luxury items, the null hypothesis that the means of these variables were the same in 1900 B.C, in 1800 B.C. and in 1750 B.C. could not be rejected. The data suggest that no *significant* difference exists between the mean number of locally made burial goods, including shell and other beads, occurring in 1900 B.C. and the mean number that occurred in graves from either 1800 B.C. or 1750 B.C. The data also suggest that no *significant* difference exists between the mean number of Egyptian objects in 1900 B.C. and the mean number that occurred in either 1800 B.C. or in 1750 B.C. The Kruskal-Wallis tests therefore support the contingency table data that indicate no relationship between the date of a grave and either the number of locally fashioned [Table 7.50], or Egyptian made [Table 7.51] burial goods that are associated with it. Kruskal-Wallis tests also show that no significant difference exists between the number of Nubian glazed beads, or luxury objects, in mid-Twelfth [1900 B.C.] Dynasty graves and the mean number in graves from the late Twelfth [1800 B.C.] and Thirteenth [1750 B.C.] Dynasties [Table 7.52 and Table 7.53].

DF:	4
Total Chi-square:	5.675
p-value:	0.2248
Contingency coefficient:	0.197
Missing observations:	31

	Cell frequencies	1900BC	1800BC	1750BC	Totals
Small	Observed	14	10	4	28
	Expected	13.40	7.80	6.80	28
Medium	Observed	47	23	22	92
	Expected	44.03	25.63	22.34	92
Large	Observed	6	6	8	20
	Expected	9.57	5.57	4.86	20
Totals		67	39	34	140

Table 7.48: Koshtemna, Cemetery 87: grave area and date

DF:	4
Total Chi-square:	7.292
p-value:	0.1212
Contingency coefficient:	0.220
Missing observations:	27

	Cell frequencies	1900BC	1800BC	1750BC	Totals
Goods =0	Observed	6	5	7	18
	Expected	8.50	5.00	4.50	18
Goods =1-10	Observed	42	24	13	79
	Expected	37.31	24.94	19.75	79
Goods> 10	Observed	20	11	16	47
	Expected	22.19	13.06	11.75	47
Totals		68	40	36	144

Table 7.49: Koshtemna, Cemetery 87: burial goods and date

DF:	2
H statistic:	1.033
p-value:	0.5967
Missing observations:	27

	Mean rank of burial goods	Burial count
1900 BC	69.21	68
1800 BC	73.28	40
1750 BC	77.86	36

Table 7.50: Koshtemna, Cemetery 87: Kruskal-Wallis rank information for total locally made burial goods and date

DF:	2
H statistic:	1.272
p-value:	0.5293
Missing observations:	27

	Mean rank of Egyptian objects	Burial count
1900 BC	76.60	68
1800 BC	68.10	40
1750 BC	69.64	36

Table 7.51: Koshtemna, Cemetery 87: Kruskal-Wallis rank information for total Egyptian artefacts and date

DF:	2
H statistic:	4.545
p-value:	0.1030

	Mean rank of Nubian glazed beads	Burial count
1900 BC	64.41	67
1800 BC	72.13	40
1750 BC	82.66	34

Table 7.52: Koshtemna, Cemetery 87: Kruskal-Wallis rank information for total Nubian glazed beads and date

DF:	2
H statistic:	0.865
p-value:	0.6490

	Mean rank of luxury goods	Burial count
1900 BC	68.81	67
1800 BC	69.89	40
1750 BC	76.62	34

Table 7.53: Koshtemna, Cemetery 87: Kruskal-Wallis rank information for total luxury artefacts and date

7.0.7 Descriptive statistics: Dakka, Cemetery 101, *ca.* 2000 B.C. to *ca.* 1600 B.C.

Cemetery 101 [Figure 7, Figure 8, Figure 9 and Figure 10], excavated by Firth during the 1909-1910 season of the First Archaeological Survey of Nubia, was located at Dakka on the west bank of the Nile. The earliest Middle Nubian graves had been dug in hard, blown sand that concealed a cemetery of largely undisturbed Early Dynastic burials. Firth, who reported that the Middle Nubian cemetery had been badly plundered, suggested that "at some period, universal cemetery robbing must have been practised, and the *complete* removal of the grave contents seems to indicate that the damage was done by *sebbakhîn* unprovided with effective tools, who were attracted to the graves by the softness of the fillings, since old alluvial Nile mud is extremely hard..." (1915: 81-82).

An analysis of those 241 tombs in Cemetery 101 at Dakka with which artefacts were associated revealed that 2,405 offerings had been distributed amongst seventeen burials from the Eleventh Dynasty [2000 B.C.], forty-eight from the Twelfth [1800 B.C.], 133 from the Thirteenth [1750 B.C.], forty from the middle of the Second Intermediate Period [1650 B.C.] and three from the late Second Intermediate Period [1600 B.C.]. One subadult was recovered from a mid-Second Intermediate Period burial and two were found in late Second Intermediate Period graves. There were six adults [two males and four of unknown sex] in Eleventh Dynasty tombs; nine [six males and three females] in Twelfth Dynasty graves; sixteen [three males, six females and seven of unknown sex] in Thirteenth Dynasty graves; twelve [three males, two females and seven of unknown sex] in tombs from the middle of the Second Intermediate Period and one adult female in a late Second Intermediate Period burial pit. Eight bodies were of unknown age. Two of these were males from the Twelfth, one was a female from the Thirteenth and five [one male and four of unknown sex] were from the middle of the Second Intermediate Period. The remaining 186 graves, or seventy-seven percent of the tombs in Cemetery 101, lacked bodies. Eleven, or sixty-five percent of the Eleventh Dynasty burials, had been removed, as had thirty-seven, or seventy-seven percent, of those from the Twelfth Dynasty. Bodies also were missing from 116, or eighty-seven percent, of those from the Thirteenth, and twenty-two, or fifty-five percent, of those from the middle of the Second Intermediate Period.

With the majority of burials in this cemetery less than ten burial goods remained. For 2000 B.C. forty-one percent of the burials had between three and nine burial goods; for 1800 B.C. it was fifty-four percent and for 1750 B.C. it was sixty-two percent. Fifty-three percent of the mid-Second Intermediate Period graves fell into this category [Table 7.54]. In 2000 B.C. the mean number of objects associated with burials was 9.94. In 1800 B.C. it fell to 5.17 and in 1750 B.C. it rose to 6.56. It increased to 27.68 in 1650 B.C. but slipped to three objects per burial in 1600 B.C. [Table 7.55].

Unlike most other C-Group cemeteries, beads comprised only forty-nine percent of the total number of burial offerings in Cemetery 101: sixty-five percent of the grave goods from 2000 B.C. were beads, as were twenty-three percent in 1800 B.C., seventeen percent in 1750 B.C., seventy-eight percent in 1650 B.C. and fifty-six percent in 1600 B.C. Glazed beads accounted for sixty-four percent of the Eleventh Dynasty beads. All the Twelfth Dynasty beads were glazed, as were eighty-nine percent of those from the Thirteenth and nine percent of those from the middle of the Second Intermediate Period. The five beads retrieved from late Second Intermediate Period burials also were glazed. Shell beads occurred only with the Thirteenth Dynasty and mid-Second Intermediate Period burials where they comprised ten and eighty percent of the bead total respectively [Table 7.57].

In Cemetery 101 the proportions of both locally produced and imported luxury objects fluctuated over time. No luxury artefacts were recovered from the Twelfth Dynasty or the late Second Intermediate Period graves. In 2000 B.C. ninety-eight percent of the luxury offerings were locally produced. In 1750 B.C. the percentage had dropped to eighty-one and by 1650 B.C. it had fallen to sixty-eight. Egyptian luxury goods for the same date categories amounted to two, eighteen, and thirty-two percent. Carnelian [ninety-eight percent in 2000 B.C. and sixty-eight percent in 1650 B.C.] and ivory [seventy-three percent in 1750 B.C. and fourteen percent in 1650 B.C.] were the predominant raw materials used in the production of local luxury items. Two other local luxury artefacts had been modeled from gold [ten percent of the Thirteenth Dynasty luxury offerings and two percent of those from 1650 B.C.]. The Egyptian luxury goods had been crafted mostly from alabaster [eighteen and two percent of the luxury items from Thirteenth Dynasty and mid-Second Intermediate Period graves respectively] and copper [two percent of the luxury artefacts in 2000 B.C. and fourteen percent in 1650 B.C.] [Table 7.58].

In Cemetery 101 deposits of local pottery climbed from twenty percent of the offerings in 2000 B.C. to sixty percent of the offerings in 1800 B.C. The percentage fell to fifty-six in 1750 B.C. and eight in 1650 B.C. The late Second Intermediate Period burials contained no locally made ceramics. Egyptian pottery was absent from the Eleventh Dynasty [2000 B.C.] graves but it comprised eleven percent of the burial offerings from 1800 B.C. and fourteen percent of those from the Thirteenth Dynasty. The proportion of Egyptian pottery found with mid-Second Intermediate Period burials was only three percent. By 1600 B.C. the percentage had increased to eleven percent of the late Second Intermediate Period burial offerings [Table 7.59].

The wealth indices calculated for Cemetery 101 were eighty-six, thirty-nine, sixty-four, 173 and nine in 2000 B.C., 1800 B.C., 1750 B.C., 1650 B.C. and 1600 B.C. respectively. The highest mean tomb wealth [281] also was obtained for the mid-Second Intermediate Period [1650 B.C.] graves. While the foreign exchange index [4.43] as well as the local production index [131] computed for these burials was higher than that obtained for the other four time periods, the largest total goods value [8563] was calculated for the Thirteenth Dynasty graves [1750 B.C.] [Table 7.61].

While grave sizes at Dakka varied from a mean of 0.55 square metres in the Eleventh Dynasty to a mean of 2.16 square metres in the Thirteenth, the largest grave size [6.40 square metres] was attained in the middle of the Second Intermediate Period. The largest superstructures were also mid-Second Intermediate Period in date. While the average size of these enclosures was 4.32 cubic metres in 2000 B.C., 5.08 cubic metres in 1800 B.C. and 6.34 cubic metres in 1750 B.C., in 1650 B.C. average cairn size in Cemetery 101 had reached 22.31 cubic metres. The volume of the largest mid-Second Intermediate Period superstructure at Dakka was 136 cubic metres [Table 7.62].

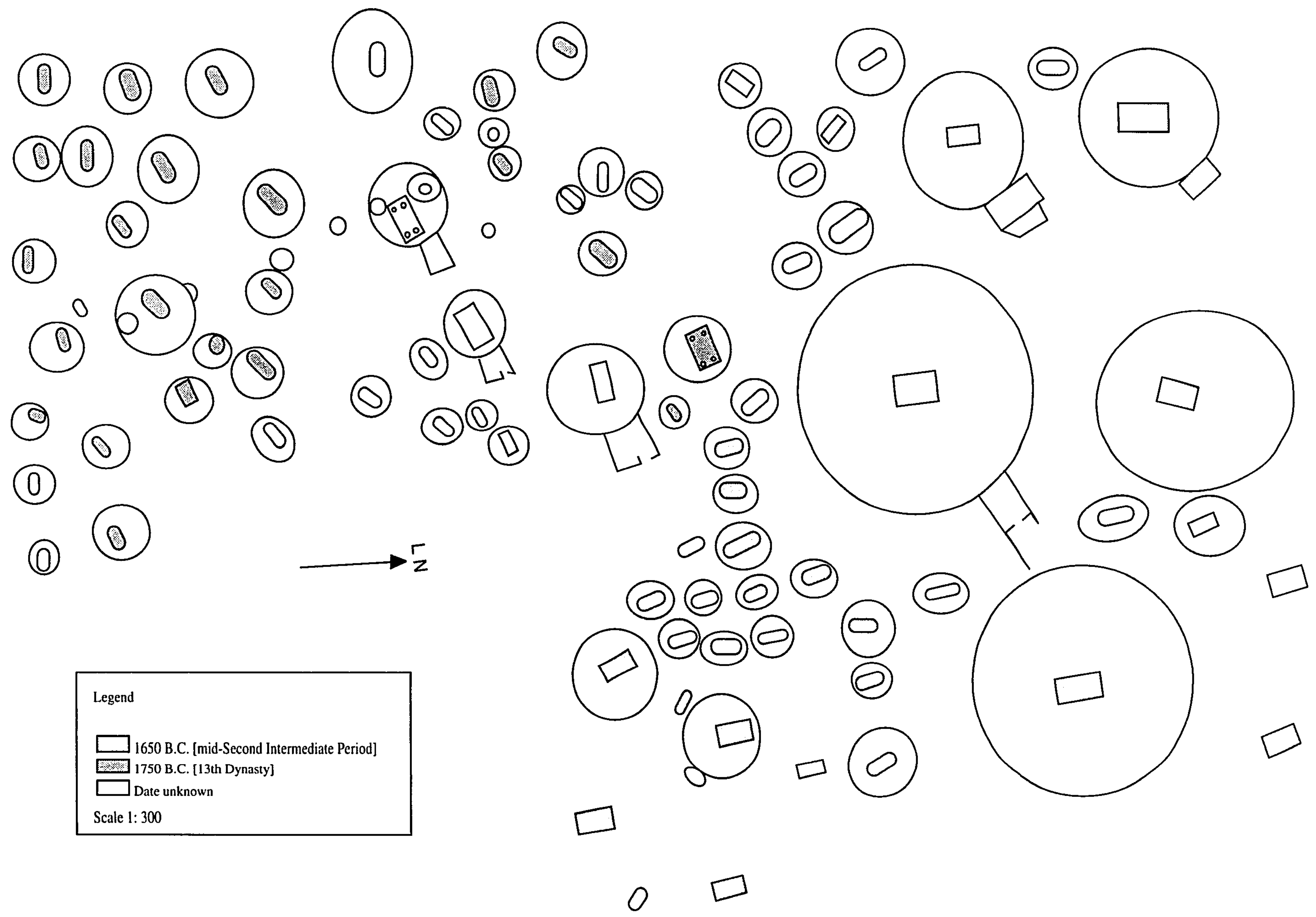


Figure 7. Dakka, Cemetery 101- northeastern section: distribution of 13th Dynasty and mid-Second Intermediate Period Middle Nubian graves [After Firth 1915: Plan 3]

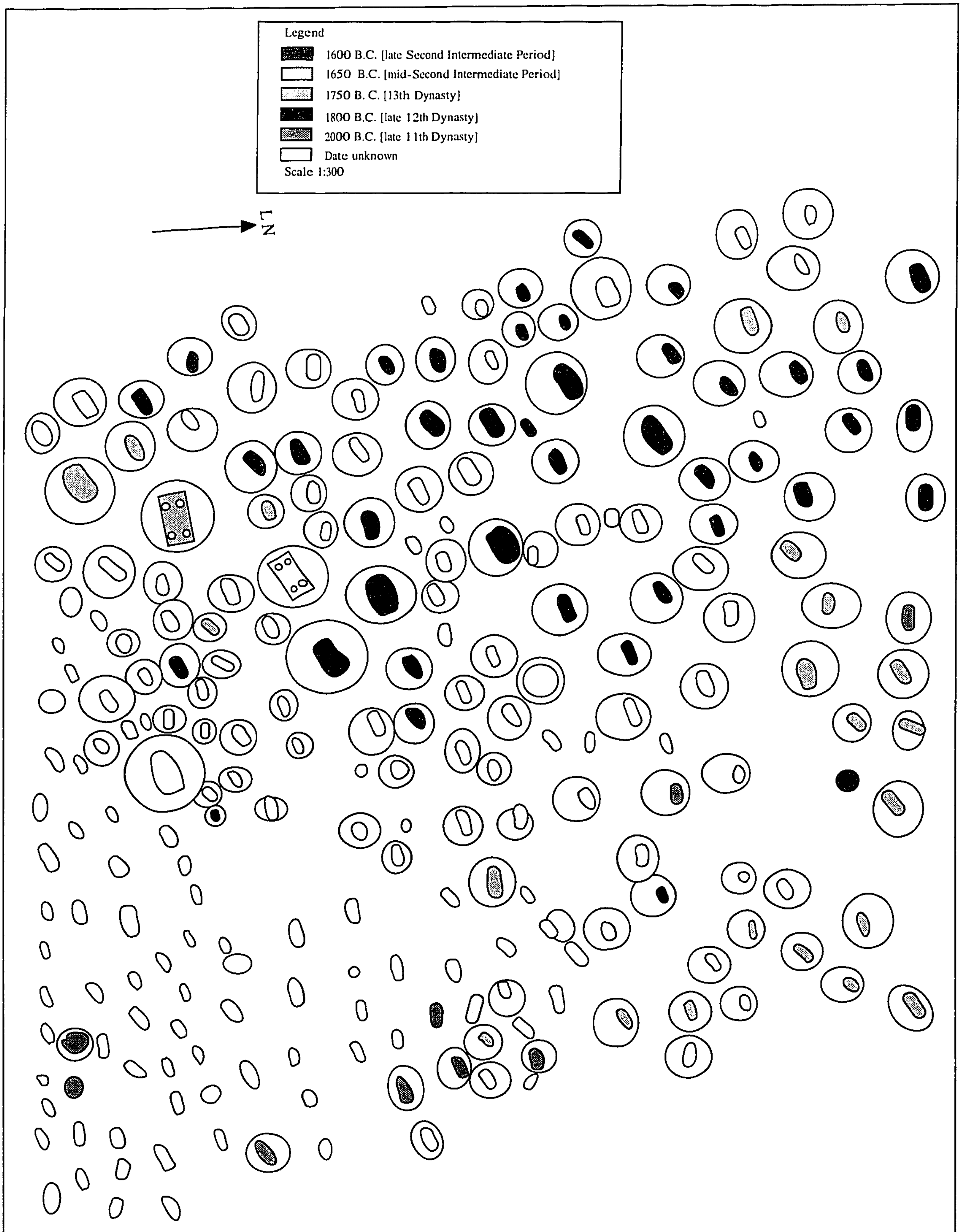


Figure 8. Dakka, Cemetery 101- west/central section: distribution of 11th Dynasty, 12th Dynasty, 13th Dynasty and Second Intermediate Period Middle Nubian graves [After Firth 1915: Plan 3]

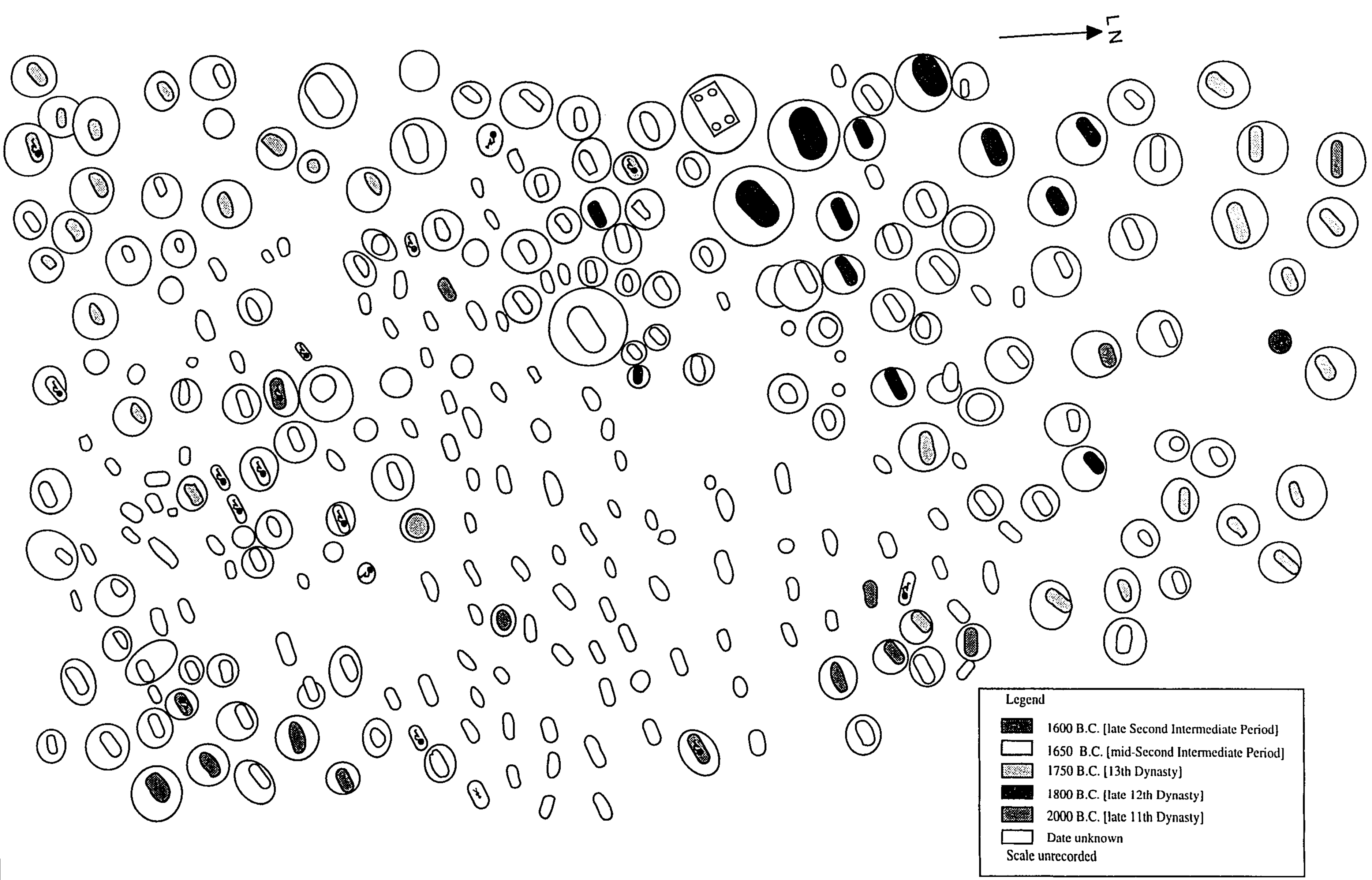


Figure 9. Dakka, Cemetery 101- south/central section: distribution of 11th Dynasty, 12th Dynasty, 13th Dynasty and Second Intermediate Period Middle Nubian graves [After Firth 1915: Plan 3]

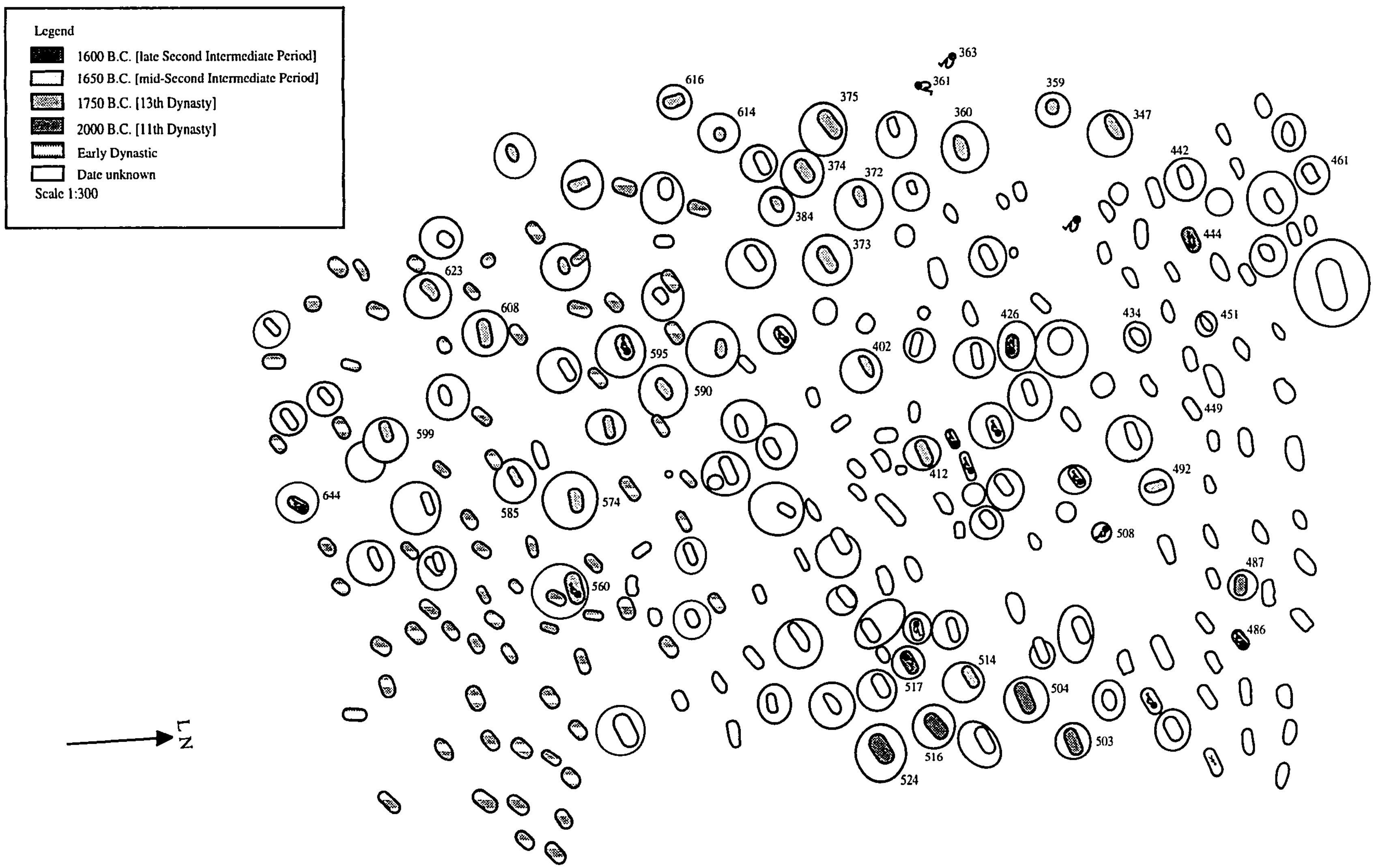


Figure 10. Dakka, Cemetery 101- southern section: distribution of 11th Dynasty, 13th Dynasty and Second Intermediate Period Middle Nubian graves [After Firth 1915: Plan 3]

Table 7.54: Frequency distribution of superstructure and grave offerings from C-Group graves at Dakka [Percentages are based on the total number of dated graves from each time period in Cemetery 101]

	2000 BC		1800 BC	
	Number	**Percent**	**Number**	**Percent**
Graves with 1 burial good	3	17.65	5	10.42
Graves with 2 burial goods	4	23.53	12	25.00
Graves with between 3 and 9 burial goods	7	41.18	26	54.17
Graves with between 10 and 25 burial goods	1	5.88	4	8.33
Graves with between 26 and 85 burial goods	2	11.76	1	2.08
Graves with between 86 and 253 burial goods	0	0	0	0
Graves with between 254 and 281 burial goods	0	0	0	0
Total number of graves	17		48	
Total number of burial goods	169		248	
	1750 BC		**1650 BC**	
	Number	**Percent**	**Number**	**Percent**
Graves with 1 burial good	7	5.26	0	0
Graves with 2 burial goods	20	15.04	3	7.50
Graves with between 3 and 9 burial goods	83	62.41	21	52.50
Graves with between 10 and 25 burial goods	21	15.79	10	25.00
Graves with between 26 and 85 burial goods	2	1.50	3	7.50
Graves with between 86 and 253 burial goods	0	0	2	5.00
Graves with between 254 and 281 burial goods	0	0	1	2.50
Total number of graves	133		40	
Total number of burial goods	872		1107	

Table 7.55: Descriptive statistics for burial [superstructure and grave] goods from Middle Nubian burials in Cemetery 101 at Dakka

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of burial goods:				
In 2000 BC	9.94	16.99	17	169
In 1800 BC	5.17	7.45	48	248
In 1750 BC	6.56	7.15	133	872
In 1650 BC	27.68	60.91	40	1107
In 1600 BC	3.00	2.65	3	9
Number of luxury goods:				
In 2000 BC	2.41	9.69	17	41
In 1800 BC	0	0	48	0
In 1750 BC	0.08	0.49	133	11
In 1650 BC	1.10	4.66	40	44
In 1600 BC	0	0	3	0
Number of grave beads:				
In 2000 BC	6.47	16.47	17	110
In 1800 BC	1.17	7.24	48	56
In 1750 BC	1.14	5.33	133	151
In 1650 BC	21.45	59.83	40	858
In 1600 BC	1.67	2.89	3	5
Number of local goods:				
In 2000 BC	9.18	16.14	17	156
In 1800 BC	4.52	7.33	48	217
In 1750 BC	5.41	6.73	133	720
In 1650 BC	23.25	57.41	40	930
In 1600 BC	2.67	3.06	3	8
Total number of Egyptian goods:				
In 2000 BC	0.12	0.49	17	2
In 1800 BC	0.63	0.94	48	30
In 1750 BC	0.97	1.24	133	129
In 1650 BC	2.80	10.68	40	112
In 1600 BC	0.33	0.58	3	1

Table 7.56: Descriptive statistics for superstructure and grave goods associated with C-Group burials in Cemetery 101 at Dakka in 2000 B.C., 1800 B.C., 1750 B.C., 1650 B.C. and 1600 B.C. Grave condition for all periods is unknown

	2000 B.C.		1800 B.C.	
	Mean	Standard Deviation	Mean	Standard Deviation
Burial goods found with adults	12.50	20.15	10.56	15.61
Burial goods found with females	-	-	5.75	5.91
Burial goods found with males	30.00	32.53	12.17	19.13
Burial goods found with females of unknown age	-	-	4.00	-
Burial goods found with persons of unknown age	-	-	2.50	2.12
Burial goods found with persons of unknown sex	3.75	4.19	4.00	-
Burial goods found with adult females	-	-	7.33	6.11
Burial goods found with adult males	30.00	32.53	12.17	19.13
Burial goods found with adults of unknown sex	3.75	4.19	4.00	-
Burial goods found in graves without occupants	8.55	15.90	4.00	3.01

	1750 B.C.		1650 B.C.	
	Mean	Standard Deviation	Mean	Standard Deviation
Burial goods found with subadults	-	-	281.00	-
Burial goods found with adults	5.88	6.72	48.75	76.60
Burial goods found with females	3.33	3.01	41.50	43.13
Burial goods found with males	3.00	1.00	109.25	113.25
Burial goods found with males of unknown age	-	-	8.00	-
Burial goods found with persons of unknown age	8.00	-	10.60	7.02
Burial goods found with subadults of unknown sex	-	-	281.00	-
Burial goods found with persons of unknown sex	9.13	8.34	33.25	78.62
Burial goods found with adult females	3.33	3.01	41.50	43.13
Burial goods found with adult males	3.00	1.00	143.00	111.37
Burial goods found with adults of unknown sex	9.29	8.96	10.43	11.79
Burial goods found in graves without occupants	6.64	7.25	8.55	6.75

Table 7.57: Bead occurrences in Cemetery 101 at Dakka [Percentages are based on the total number of grave beads in burials from 2000 B.C., 1800 B.C., 1750 B.C. and 1650 B.C. Five glazed beads occurred in 1600 B.C.]

	2000 B.C.		1800 B.C.	
	Number	Percent	Number	Percent
Gold beads	0	0	0	0
Carnelian beads	40	36.36	0	0
Total luxury beads	40	36.36	0	0
Shell beads	0	0	0	0
Glazed Nubian beads	70	63.64	56	100.00
Glazed Egyptian beads	0	0	0	0
Total glazed beads	70	63.64	56	100.00
Other Nubian beads	0	0	0	0
Total local grave beads	110	100.00	56	100.00
Total imported grave beads	0	0	0	0
Total grave beads	110		56	
	1750 B.C.		1650 B.C.	
	Number	Percent	Number	Percent
Gold beads	1	0.66	1	0.12
Carnelian beads	0	0	30	3.50
Total luxury beads	1	0.66	25	2.91
Shell beads	15	9.93	690	80.42
Glazed Nubian beads	135	89.40	75	8.74
Glazed Egyptian beads	0	0	0	0
Total glazed beads	135	89.40	75	8.74
Other Nubian beads	0	0	0	0
Total local grave beads	151	100.00	790	92.07
Total imported grave beads	0	0	68	7.93
Total grave beads	151		858	

Table 7.58: Luxury goods from Cemetery 101 at Dakka in 2000 B.C., 1750 B.C. and 1650 B.C. [Percentages within each date category are based on the total number of luxury goods found with burials of that date. There were no luxury offerings in either 1800 B.C. or 1600 B.C.]

	2000 B.C.		1750 B.C.		1650 B.C.	
	Number	Percent	Number	Percent	Number	Percent
Alabaster	0	0	2	18.18	1	2.27
Carnelian	40	97.56	0	0	30	68.18
Copper	1	2.44	0	0	6	13.64
Gold beads	0	0	1	9.10	1	2.27
Ivory	0	0	8	72.73	6	13.64
Silver	0	0	0	0	0	0
Local luxury goods	40	97.56	9	81.82	30	68.18
Egyptian luxury goods	1	2.44	2	18.18	14	31.82
Total luxury goods	41		11		44	

Table 7.59: Burial goods from Cemetery 101 at Dakka [Percentages are based on the total number of grave goods with burials that date from 2000 B.C., 1800 B.C., 1750 B.C., 1650 B.C. and 1600 B.C.]

	2000 B.C.		**1800 B.C.**		**1750 B.C.**	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Beads	110	65.09	56	22.58	151	17.32
Local pottery	34	20.12	149	60.08	491	56.31
Egyptian pottery	0	0	28	11.29	119	13.65
Total local goods	156	92.31	217	87.50	720	82.57
Total Egyptian goods	2	1.18	30	12.10	129	14.79
Goods *in* graves	135	79.88	63	25.40	214	24.54
Total burial goods	169		248		872	
	1650 B.C.		**1600 B.C.**			
	Number	**Percent**	**Number**	**Percent**		
Beads	858	77.51	5	55.56		
Local pottery	89	8.04	0	0		
Egyptian pottery	29	2.62	1	11.11		
Total local goods	930	84.01	8	88.89		
Total Egyptian goods	112	10.12	1	11.11		
Goods *in* graves	1022	92.32	9	100.00		
Total burial goods	1107		9			

Table 7.60: Descriptive statistics for assessments of economic production, exchange, goods value and tomb wealth in Eleventh Dynasty, Twelfth Dynasty, Thirteenth Dynasty, and middle and late Second Intermediate Period Middle Nubian C-Group burials from Cemetery 101 at Dakka

	Mean per Burial	Standard Deviation	Total Number of Burials
Total local production:			
In 2000 BC	62.12	29.31	17
In 1800 BC	63.54	16.35	48
In 1750 BC	74.24	15.71	133
In 1650 BC	131.00	165.79	40
In 1600 BC	12.67	15.14	3
Total foreign exchange:			
In 2000 BC	0.77	1.68	17
In 1800 BC	0.65	0.93	48
In 1750 BC	1.14	1.51	133
In 1650 BC	4.43	10.86	40
In 1600 BC	0.33	0.58	3
Total goods value:			
In 2000 BC	86.00	125.30	17
In 1800 BC	38.67	31.86	48
In 1750 BC	64.38	81.85	133
In 1650 BC	172.90	274.87	40
In 1600 BC	9.00	6.56	3
Total tomb wealth:			
In 2000 BC	138.94	122.91	17
In 1800 BC	97.83	38.41	48
In 1750 BC	133.56	85.30	133
In 1650 BC	280.90	315.05	40
In 1600 BC	19.00	19.31	3

Table 7.61: Goods indices from Cemetery 101 at Dakka in 2000 B.C., 1800 B.C., 1750 B.C. and 1650 B.C.

	2000 B.C.	**1800 B.C.**
	Number	**Number**
Total goods value	1462	1856
Local production index	62	64
Egyptian exchange index	0.12	0.63
Foreign exchange index	0.77	0.65
Wealth index	86	39
	1750 B.C.	**1650 B.C.**
	Number	**Number**
Total goods value	8563	6916
Local production index	74	131
Egyptian exchange index	0.97	2.80
Foreign exchange index	1.14	4.43
Wealth index	64	173

Table 7.62: Estimated superstructure [cairn] volumes and measured grave areas, in cubic metres and sq. metres respectively, of Middle Nubian C-Group burials in Cemetery 101 at Dakka

	Superstructure size	**Grave size**
In 2000 BC:		
Maximum	8.04	0.81
Minimum	1.43	0.32
Mean	4.32	0.55
	[15 cairns]	[4 graves (13 missing)]
In 1800 BC:		
Maximum	10.32	0.63
Minimum	1.37	0.28
Mean	5.08	0.46
	[45 cairns]	[2 graves (46 missing)]
In 1750 BC:		
Maximum	17.59	3.75
Minimum	1.07	0.58
Mean	6.34	2.16
	[133 cairns]	[8 graves (125 missing)]
In 1650 BC:		
Maximum	136.09	6.40
Minimum	1.83	0.52
Mean	22.31	2.05
	[26 cairns]	[29 graves (11 missing)]

7.0.8 Nonparametric tests: Dakka, Cemetery 101

Cross-tabulations were employed to determine whether there was any statistical dependence between the date of a given grave and any of the variables being studied. However, because of low expected cell frequencies, invalid results were obtained in all but one instance [Table 7.63], where the contingency table data indicate that the null hypothesis could be rejected. Some association between the date of a grave and the number of burial offerings that accompany it is therefore indicated.

Tests of comparison were conducted for each variable at three of the five different time periods represented in Cemetery 101. For locally made burial goods, the null hypothesis that the means of this variable were the same in 1800 B.C, in 1750 B.C. and in 1650 B.C., could be rejected [Table 7.64]. The data suggest that a *significant* difference exists between the mean number of locally made burial goods occurring in 1650 B.C. and the mean number that occurred in both 1800 B.C. and in 1750 B.C. The data also suggest that a *significant* difference exists between the mean number of imported non-Egyptian burial goods that occurred in both 1800 B.C. and in 1750 B.C. and the mean number that occurred in 1650 B.C. [Table 7.65] However, no *significant* difference exists between the mean number of Egyptian-made burial offerings that remain in tombs from 1800 B.C. and the mean number from either 1750 B.C. or 1650 B.C. [Table 7.67]. Lastly, no significant difference exists between the mean number of Nubian glazed beads, total luxury goods or local luxury beads that occurred in 1650 B.C. and the mean number that occurred at other time periods in Cemetery 101.

DF:	4
Total Chi-square:	22.833
p-value:	< 0.0001
Contingency coefficient:	0.294

	Cell frequencies	2000BC-1800BC	1750BC	1650BC-1600BC	Totals
Goods=5	Observed	46	78	14	138
	Expected	37.22	76.16	24.62	138
Goods=6-10	Observed	14	37	13	64
	Expected	17.26	35.32	11.42	64
Goods> 10	Observed	5	18	16	39
	Expected	10.52	21.52	6.96	39
Totals		65	133	43	241

Table 7.63: Dakka, Cemetery 101: burial goods and date

DF:	3
H statistic:	16.374
p-value:	0.0010

	Mean rank of local burial goods	Burial count
2000 BC	108.65	17
1800 BC	95.80	48
1750 BC	118.96	133
1650 BC	154.36	40

Table 7.64: Dakka, Cemetery 101: Kruskal-Wallis rank information for total locally made burial goods and date [The three burials from 1600 B.C. were omitted from the analysis]

DF:	2
H statistic:	6.351
p-value:	0.0418

	Mean rank of burial goods	Burial count
1800 BC	101.67	48
1750 BC	107.60	133
1650 BC	133.50	40

Table 7.65: Dakka, Cemetery 101: Kruskal-Wallis rank information for total imported non-Egyptian burial goods and date

U statistic:	1778.500
p-value:	0.0015

	Mean rank of shell beads	Burial count
1750 BC	80.37	133
1650 BC	109.04	40

Table 7.66: Dakka, Cemetery 101: Mann-Whitney rank information for total shell beads and date

DF:	2
H statistic:	4.627
p-value:	0.1353

	Mean rank of Egyptian-made grave goods	Burial count
1800 BC	95.50	48
1750 BC	113.62	133
1650 BC	120.89	40

Table 7.67: Dakka, Cemetery 101: Kruskal-Wallis rank information for total Egyptian manufactured grave offerings and date [Burials from 2000 B.C. and 1600 B.C. were omitted from the analysis]

DF:	3
H statistic:	4.556
p-value:	0.2073

	Mean rank of glazed beads	Burial count
2000 BC	134.09	17
1800 BC	112.82	48
1750 BC	114.68	133
1650 BC	137.35	40

Table 7.68: Dakka, Cemetery 101: Kruskal-Wallis rank information for Nubian glazed beads and date

DF:	2
H statistic:	3.205
p-value:	0.2014

	Mean rank of grave beads	Burial count
1800 BC	98.04	48
1750 BC	116.81	133
1650 BC	107.25	40

Table 7.69: Dakka, Cemetery 101: Kruskal-Wallis rank information for Egyptian pottery and date

7.0.9 Descriptive statistics: Areika, Cemetery 167, *ca.* 1850 B.C. to *ca.* 1650 B.C.

Cemetery 167 [Figure 11 and Figure 12], excavated by Emery and Kirwan as part of the salvage operations conducted during the Second Archaeological Survey of Nubia, was located on the west riverbank, east of Amada temple and not far from the remains of several C-Group settlements. Only forty-two, or thirty-seven percent of the 114 graves, were used for analysis since the remainder lacked artefacts [Table 7.70]. Thirteen burials [four in 1850 B.C., five in 1750 B.C. and four in 1650 B.C.] were undisturbed, but twenty-nine, or sixty-nine percent of the forty-two graves, were no longer intact. Eighteen, or eighty-two percent of the twenty-two graves dated to 1850 B.C., had been plundered, as had fifty percent of the ten 1750 B.C. burials and sixty percent of the ten from 1650 B.C.

Six subadults [two females and four of unknown sex], twenty-nine adults [eleven males, ten females and eight of unknown sex] and seven bodies of unknown age and sex were removed from the forty-two graves from which 925 superstructure and grave offerings were recovered. The mean number of objects associated with subadult burials increased from 4.33 in 1850 B.C. to five in 1750 B.C. and fifty-one in 1650 B.C. The mean number of adult offerings over the same period was 14.93, 44.50 and 33.50.

The largest number of burial goods, 367, or forty percent of the total superstructure and grave offerings, was found with the Thirteenth Dynasty [1750 B.C.] graves. Ninety-five percent of these offerings were locally made beads [Table 7.73]. Almost all were glazed, but fourteen percent [fifty] was shell, seven percent [twenty-five] was carnelian, and three beads had been fashioned in silver. The largest proportion of the luxury items, thirty artefacts or ninety-four percent of the total number of luxury objects discovered in the cemetery, also was of local manufacture, and also was found in the Thirteenth Dynasty graves. The remaining six percent [two Egyptian copper mirrors] was found in mid-Second Intermediate Period burials [Table 7.74]. Two percent [four] of the artefacts dated to 1850 B.C., or 0.43 percent of the total number of burial offerings from Cemetery 167, were Egyptian in origin. In 1750 B.C. this percentage fell to less than one percent of the total cemetery offerings [0.27 percent of the Thirteenth Dynasty artefacts], but it again rose to 0.43 percent of the total Middle Nubian offerings in the cemetery in 1650 B.C. or one percent of the Second Intermediate Period burial goods [Table 7.75].

Locally manufactured pottery at Areika declined from five percent of the total burial offerings in Cemetery 167 in 1850 B.C. to three percent in 1750 B.C. and approximately one percent in 1650 B.C. Egyptian pottery declined from two percent in 1850 B.C. to less than one percent in 1650 B.C. [Table 7.75]. Egyptian ceramics were absent from the Thirteenth Dynasty burials. While the largest graves in this cemetery are Second Intermediate Period [1650 B.C.] in date and the smallest Twelfth Dynasty [1850 B.C.] in date, the largest superstructures were constructed during the earlier period [Table 7.76].

The wealth indices calculated for Cemetery 167 were thirty, 183 and 117 in 1850 B.C., 1750 B.C. and 1650 B.C. respectively. Total goods value [1826] and mean tomb wealth [196.10] were also highest for the Thirteenth Dynasty graves. However, although the highest local production index [forty-nine] also was obtained for the Thirteenth Dynasty burials, the foreign exchange index computed for the Second Intermediate Period interments was higher than that obtained for the other two periods [Table 7.77].

The maximum superstructure volume [9.31 cubic metres] occurred in 1850 B.C. The largest mean volume [3.52 cubic metres] was obtained for the mid-Twelfth Dynasty [1850 B.C.] superstructures, while the largest mean grave size [1.42 square metres] occurred in the middle of the Second Intermediate Period. The next largest mean grave size [1.31 square metres] was computed for graves from the Thirteenth Dynasty. However, whereas the smallest [0.55 square metres] grave was found among those from the mid-Twelfth Dynasty, the smallest superstructure [0.85 cubic metres] dated from the Thirteenth Dynasty [Table 7.78].

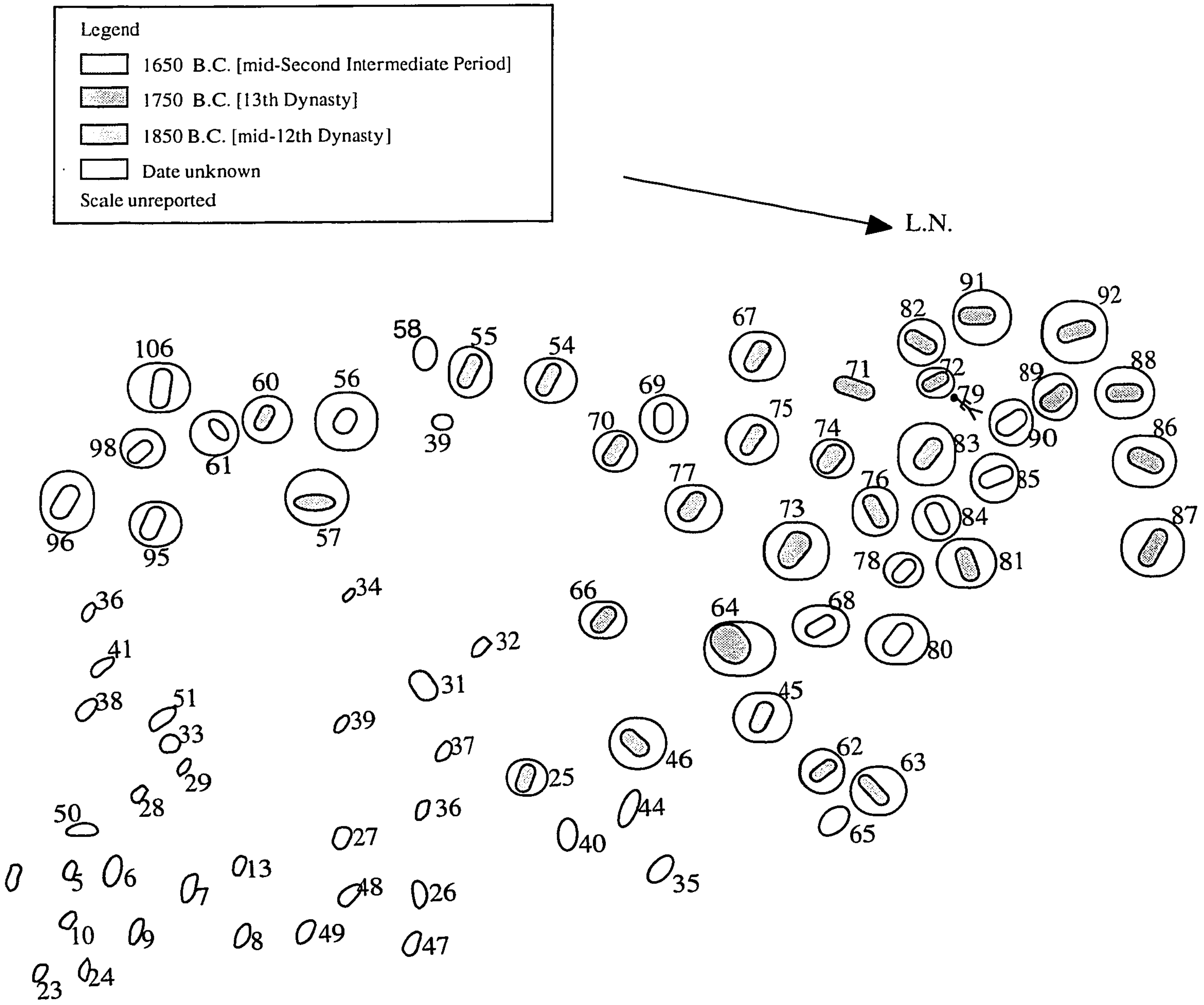


Figure 11. Areika, Cemetery 167 - northern section: distribution of 12th Dynasty, 13th Dynasty and mid-Second Intermediate Period Middle Nubian graves [After Emery and Kirwan 1935, 2: Plate 45]

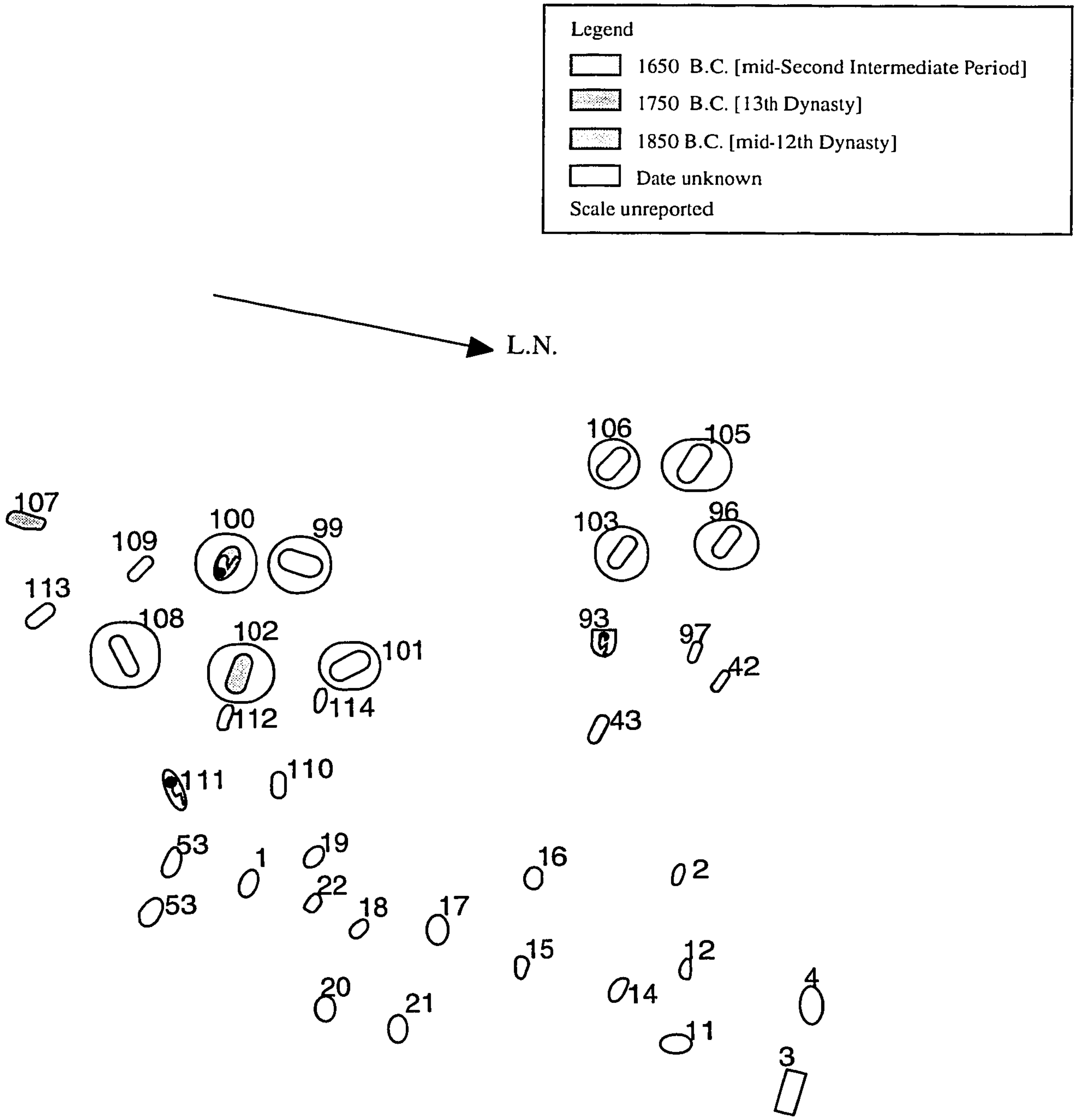


Figure 12. Areika, Cemetery 167 - southern section: distribution of 12th Dynasty, 13th Dynasty and mid-Second Intermediate Period Middle Nubian graves [After Emery and Kirwan 1935, 2: Plate 45]

Table 7.70: Frequency distribution of superstructure and grave offerings from C-Group graves at Areika [Percentages are based on the total number of dated graves from each time period in Cemetery 167]

	1850 BC		1750 BC	
	Number	Percent	Number	Percent
Graves with 1 burial good	8	36.36	1	10.00
Graves with 2 burial goods	3	13.64	0	0
Graves with between 3 and 9 burial goods	9	40.91	5	50.00
Graves with between 10 and 55 burial goods	0	0	1	10.00
Graves with between 56 and 73 burial goods	0	0	1	10.00
Graves with between 74 and 110 burial goods	2	9.09	1	10.00
Graves with between 111 and 183 burial goods	0	0	1	10.00
Total number of graves	22		10	
Total number of burial goods	250		367	

	1650 BC	
	Number	Percent
Graves with 1 burial good	3	30.00
Graves with 2 burial goods	0	0
Graves with between 3 and 9 burial goods	5	50.00
Graves with between 10 and 73 burial goods	0	0
Graves with between 74 and 110 burial goods	1	10.00
Graves with between 111 and 183 burial goods	1	10.00
Total number of graves	10	
Total number of burial goods	308	

Table 7.71: Descriptive statistics for grave goods from Middle Nubian burials in Cemetery 167 at Areika

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of grave goods:				
In 1850 BC	11.36	26.27	22	250
In 1750 BC	36.70	45.53	10	367
In 1650 BC	30.80	61.05	10	308
Number of luxury goods:				
In 1850 BC	0.00	0.00	22	0
In 1750 BC	3.00	9.49	10	30
In 1650 BC	0.20	0.42	10	2
Number of grave beads:				
In 1850 BC	10.00	25.54	22	220
In 1750 BC	34.80	45.86	10	348
In 1650 BC	29.50	60.39	10	295
Number of local goods:				
In 1850 BC	11.18	26.33	22	246
In 1750 BC	36.60	45.61	10	366
In 1650 BC	30.40	61.25	10	304
Total number of Egyptian goods:				
In 1850 BC	0.18	0.40	22	4
In 1750 BC	0.10	0.32	10	1
In 1650 BC	0.40	0.70	10	4

Table 7.72: Descriptive statistics for superstructure and grave goods associated with C-Group burials in Cemetery 167 at Areika in 1850 B.C., 1750 B.C. and 1650 B.C. [Superstructure offerings were excluded from calculations for plundered and undisturbed graves]

	1850 B.C.		1750 B.C.	
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**
Burial goods found with subadults	4.33	4.93	5.00	-
Burial goods found with adults	14.93	31.42	44.50	48.14
Burial goods found with females	33.67	45.39	94.67	34.93
Burial goods found with males	3.50	3.00	16.25	23.34
Burial goods found with subadult females	10.00	-	-	-
Burial goods found with subadults of unknown sex	1.50	0.71	5.00	-
Burial goods found with adult females	38.40	49.06	94.67	34.93
Burial goods found with adult males	3.50	3.00	16.25	23.34
Burial goods found with adults of unknown sex	3.00	2.76	7.00	-
Burial goods found in graves without occupants	3.25	2.06	6.00	-
Burial goods in plundered graves	2.83	3.05	16.00	22.94
Burial goods in undisturbed graves	46.00	53.20	55.80	57.25

	1650 B.C.	
	Mean	**Standard Deviation**
Burial goods found with subadults	51.00	65.05
Burial goods found with adults	33.50	73.27
Burial goods found with females	63.00	103.94
Burial goods found with males	4.00	2.65
Burial goods found with subadult females	5.00	-
Burial goods found with subadults of unknown sex	97.00	-
Burial goods found with adult females	92.00	128.69
Burial goods found with adult males	4.00	2.65
Burial goods found with adults of unknown sex	5.00	-
Burial goods found in graves without occupants	2.50	2.12
Burial goods in plundered graves	2.83	2.04
Burial goods in undisturbed graves	72.75	85.22

Table 7.73: Bead occurrences in Cemetery167 at Areika [Percentages within each date category are based on the total number of grave beads in burials from 1850 B.C., 1750 B.C. and 1650 B.C.]

	1850 B.C.		1750 B.C.	
	Number	Percent	Number	Percent
Carnelian beads	0	0	25	7.18
Shell beads	5	2.27	50	14.37
Glazed Nubian beads	165	75.00	270	77.59
Glazed Egyptian beads	0	0	0	0
Total glazed beads	165	75.00	270	77.59
Total local grave beads	220	100.00	348	100.00
Total imported grave beads	0	0	0	0
Total grave beads	220		348	
	1650 B.C.			
	Number	Percent		
Carnelian beads	0	0		
Shell beads	70	23.73		
Glazed Nubian beads	225	76.27		
Glazed Egyptian beads	0	0		
Total glazed beads	225	76.27		
Total local grave beads	295	100.00		
Total imported grave beads	0	0		
Total grave beads	295			

Table 7.74: Luxury goods from Cemetery 167 at Areika [Percentages within each date category are based on the total number of luxury items found with burials of that date]

	1850 B.C.		1750 B.C.		1650 B.C.	
	Number	Percent	Number	Percent	Number	Percent
Alabaster	0	0	0	0	0	0
Carnelian	0	0	25	83.33	0	0
Copper	0	0	0	0	2	100.00
Gold	0	0	0	0	0	0
Ivory	0	0	0	0	0	0
Silver	0	0	5	16.67	0	0
Local luxury goods	0	0	30	83.33	0	0
Egyptian luxury goods	0	0	0	0	2	100.00
Total luxury goods	0		30		2	

Table 7.75: Burial goods from Cemetery 167 at Areika [Percentages are based on the total number of grave goods with burials that date from 1850 B.C., 1750 B.C. and 1650 B.C.]

	1850 B.C.		1750 B.C.		1650 B.C.	
	Number	Percent	Number	Percent	Number	Percent
Beads	220	88.00	348	94.82	295	95.78
Local pottery	12	4.80	12	3.27	3	0.97
Egyptian pottery	4	1.60	0	0	2	0.65
Total local goods	246	98.40	366	99.73	304	98.70
Total Egyptian goods	4	1.60	1	0.27	4	1.30
Goods *in* graves	235	94.00	359	97.82	308	100.00
Total burial goods	250		367		308	

Table 7.76: Descriptive statistics for assessments of economic production, exchange, goods value and tomb wealth in Twelfth Dynasty, Thirteenth Dynasty and Second Intermediate Period Middle Nubian C-Group burials from Cemetery 167 at Areika

	Mean per Burial	Standard Deviation	Total Number of Burials
Total local production:			
In 1850 BC	23.64	28.48	22
In 1750 BC	49.30	46.13	10
In 1650 BC	44.90	61.72	10
Total foreign exchange:			
In 1850 BC	0.18	0.40	22
In 1750 BC	0.10	0.32	10
In 1650 BC	0.40	0.70	10
Total goods value:			
In 1850 BC	29.68	57.76	22
In 1750 BC	182.60	314.47	10
In 1650 BC	117.20	143.82	10
Total tomb wealth:			
In 1850 BC	42.64	59.70	22
In 1750 BC	196.10	314.91	10
In 1650 BC	131.70	145.16	10

Table 7.77: Goods indices from Cemetery 167 at Areika in 1850 B.C., 1750 B.C. and 1650 B.C.

	1850 B.C. Number	1750 B.C. Number	1650 B.C. Number
Total goods value	653	1826	1172
Local production index	24	49	45
Local barter index	10	35	30
Egyptian exchange index	0.2	0.1	0.4
Wealth index	30	183	117

Table 7.78: Estimated superstructure [cairn] volumes and measured grave areas, in cubic metres and sq. metres respectively, of Middle Nubian C-Group burials in Cemetery 167 at Areika

	Superstructure size	Grave size
In 1850 BC:		
Maximum	9.31	3.48
Minimum	1.37	0.55
Mean	3.52	1.16
	[22 cairns]	[22 graves]
In 1750 BC:		
Maximum	3.98	2.19
Minimum	0.85	0.65
Mean	2.27	1.31
	[10 cairns]	[10 graves]
In 1650 BC:		
Maximum		3.83
Minimum		0.70
Mean		1.42
		[10 graves]

7.0.10 Nonparametric tests: Areika, Cemetery 167

Cross-tabulations were employed to establish whether there was any statistical association between the date of a given grave and any of the variables being monitored. Unfortunately, because of low expected cell frequencies, invalid results were obtained in all but two instances. In both, the null hypothesis could not be rejected. In the first situation [Table 7.79], the contingency table data do not indicate any association between the date of a grave and the number of burial offerings that accompany it. In the second [Table 7.80], the data do not indicate any association between the date of a grave and the number of beads that are deposited within it.

Tests of comparison also were conducted for each variable at different time periods. In each case the null hypothesis states that the variable means of each population or time period are equal. For locally made burial goods and locally made grave beads, the null hypothesis that the means of these variables were the same in 1850 B.C, in 1750 B.C. and in 1650 B.C., could not be rejected. The data suggest that no *significant* difference exists between the mean number of locally made burial goods, including beads, occurring in 1850 B.C. and the mean number that occurred in either 1750 B.C. or in 1650 B.C. In other words, the Kruskal-Wallis tests support the contingency table data that indicate no relationship between the date of a grave and the number of locally made burial goods that are associated with it [Table 7.81 and Table 7.82]. Because there were less than five luxury goods in graves dated to 1850 B.C. and to 1650 B.C., and because there were less than five Egyptian artefacts from all three time periods, unreliable results were obtained for these variables.

DF:	1
Total Chi-square:	1.437
p-value:	0.2306
Contingency coefficient:	0.182

	Cell frequencies	1850BC	1750BC-1650BC	Totals
Goods =1-5	Observed	15	10	25
	Expected	13.10	11.91	25
Goods ≥ 6	Observed	7	10	17
	Expected	8.91	8.10	17
Totals		22	20	42

Table 7.79: Areika, Cemetery 167: burial goods and date

DF:	1
Total Chi-square:	2.577
p-value:	0.1084
Contingency coefficient:	0.240

	Cell frequencies	1850BC	1750BC-1650BC	Totals
Beads =0	Observed	12	6	18
	Expected	9.43	8.57	18
Beads ≥ 5	Observed	10	14	24
	Expected	12.57	11.43	24
Totals		22	20	42

Table 7.80: Areika, Cemetery 167: grave beads and date

DF:	2
H statistic:	5.553
p-value:	0.0623

	Mean rank of burial goods	Burial count
1850 BC	18.55	22
1750 BC	29.40	10
1650 BC	20.10	10

Table 7.81: Areika, Cemetery 167: Kruskal-Wallis rank information for total locally made burial goods and date

DF:	2
H statistic:	3.721
p-value:	0.1556

	Mean rank of grave beads	Burial count
1850 BC	18.48	22
1750 BC	27.45	10
1650 BC	22.20	10

Table 7.82: Areika, Cemetery 167: Kruskal-Wallis rank information for total locally made grave beads and date

7.0.11 Descriptive statistics: Tumas, Cemetery 189, *ca.* 1800 B.C. to *ca.* 1550 B.C.

Cemetery 189 [Figure 13, Figure 14 and Figure 15], partly excavated by Emery and Kirwan during the 1929-1931 survey of Lower Nubia, was located about one kilometer west of the Nile in the desert south of Tumas (Emery and Kirwan 1935: 212).

At Tumas 1,551 artefacts had been dispersed among 364 burials in 362 graves in Cemetery 189. Thirty-eight burials [six in 1800 B.C., three in 1750 B.C., nineteen in 1650 B.C., four in 1600 B.C. and six in 1550 B.C.], or ten percent of the total, belonged to subadults; 272 burials [ninety-three in 1800 B.C., thirty-four in 1750 B.C., fifty-seven in 1650 B.C., twenty-five in 1600 B.C., fifty-eight in 1550 B.C. and five of unknown date], or seventy-five percent of the total number, were those of adults. Fifty-six individuals were classified as female [fourteen in 1800 B.C., six in 1750 B.C., eleven in 1650 B.C., nine in 1600 B.C. and sixteen in 1550 B.C.], while one hundred [fourteen in 1800 B.C., twelve in 1750 B.C., thirty-nine in 1650 B.C., thirteen in 1600 B.C., twenty-one in 1550 B.C. and one in an undated grave] were listed as male. The sex of 154 individuals was undetermined and twenty-six graves lacked occupants altogether. It was to the Twelfth Dynasty graves [1800 B.C.] that sixty-nine percent of these missing bodies [eighteen corpses] had once belonged. Fifteen percent were those from Thirteenth Dynasty burials [1750 B.C.] while the remaining sixteen percent [four corpses] was equally divided amongst graves that were 1650 B.C. and 1600 B.C. in date. These percentages maintain their proportions when the presumably missing individuals, from twenty-eight grave reports that lack information on human remains, are included.

Further study of the Tumas burial data showed that only seven percent, or twenty-six, of the burials in Cemetery 189 were undisturbed whereas ninety-three percent [330] had been plundered. Thirty-nine percent, or 128 of the plundered burials, were dated to 1800 B.C.; fifteen percent, or forty-nine, were from 1750 B.C.; twenty-two percent [seventy-four burials] were from 1650 B.C.; eight percent, or twenty-seven, were from 1600 B.C. and sixteen percent [fifty-two burials] were Eighteenth Dynasty

[1550 B.C.] in date.

In Cemetery 189 fifty-two percent of the Twelfth Dynasty burials lacked grave offerings, as did fifty-five percent of those from the Thirteenth Dynasty, thirty-seven percent of those from the the middle of the Second Intermediate Period [1650 B.C.], forty-two percent of those from the late Second Intermediate Period [1600 B.C.] and thirty-three percent of those from the Eighteenth Dynasty. The mean number of goods deposited with burials increased from 1.53 in 1800 B.C. to 2.39 in 1750 B.C. and to 12.76 in 1650 B.C. It then dropped to 2.87 in 1600 B.C. and to 2.22 in 1550 B.C. [Table 7.83 and Table 7.84].

Seventy-three percent of the total burial goods in this cemetery consisted of beads. They were twenty-nine percent of the Twelfth Dynasty grave offerings, forty-six percent of those from 1750 B.C., ninety-four percent of those from 1650 B.C., fifty-six percent of those from 1600 B.C. and twenty-one percent of the Eighteenth Dynasty offerings [Table 7.88]. In the mid-Second Intermediate Period burials, where the largest percentage had been deposited, forty-three percent of the beads had been made of shell while twenty-two percent had been constructed from other local materials such as quartz [Table 7.86].

Luxury artefacts [328] accounted for twenty-one percent of the total burial goods from Cemetery 189. In 1800 B.C. fifty-eight percent of the luxury offerings had been produced locally; this increased to sixty-seven percent in 1750 B.C., to seventy-six percent in 1650 B.C. and to ninety-three percent in 1600 B.C., but declined to forty-two percent in 1550 B.C. In 1800 B.C. Egyptian imports made up forty-two percent of the luxury offerings. Furthermore, thirty-three percent of the Thirteenth Dynasty luxury goods were of Egyptian origin, as were twenty-four percent of the mid-Second Intermediate Period luxury objects. Egyptian luxury imports decreased to seven percent in 1600 B.C., then soared to fifty-eight percent during the Eighteenth Dynasty. The major proportion of the Twelfth Dynasty and middle Second Intermediate Period luxury artefacts consisted of carnelian, but in 1600 B.C. gold replaces it as the most abundant remaining luxury material and in 1550 B.C. the largest percentage of luxury items was fashioned from Egyptian alabaster [Table 7.87].

Thirty-nine percent of the offerings associated with the Twelfth Dynasty burials and forty-two percent of the offerings found with Thirteenth Dynasty burials consisted of locally manufactured pottery. However, for the remaining three time periods, only two percent of the offerings in each period consisted of Middle Nubian ceramics. The percentages of Egyptian pottery associated with burials were eleven, seven, two, twenty and thirty-four in the Twelfth Dynasty, Thirteenth Dynasty, middle and late Second Intermediate Period and Eighteenth Dynasty respectively [Table 7.88].

The wealth indices obtained for Cemetery 189 were forty-four in 1800 B.C., seventeen in 1750 B.C., fifty-two in 1650 B.C., ninety in 1600 B.C. and ninety-five in 1550 B.C. The highest mean tomb wealth [108.59] and the largest total goods value [6080] also was calculated for the Eighteenth Dynasty burials. However, the highest local production index [sixty-four] was calculated for those from the Twelfth Dynasty while the largest foreign exchange index [1.67] was computed for the mid-Second Intermediate Period burials [Table 7.90].

At Tumas the largest superstructures and the largest graves in Cemetery 189 were constructed during the Twelfth Dynasty but average cairn size was greatest [5.51 cubic metres] during the middle of the Second Intermediate Period. The Eighteenth Dynasty was the time period in which the largest mean grave size [1.34 square metres] occurred [Table 7.91].

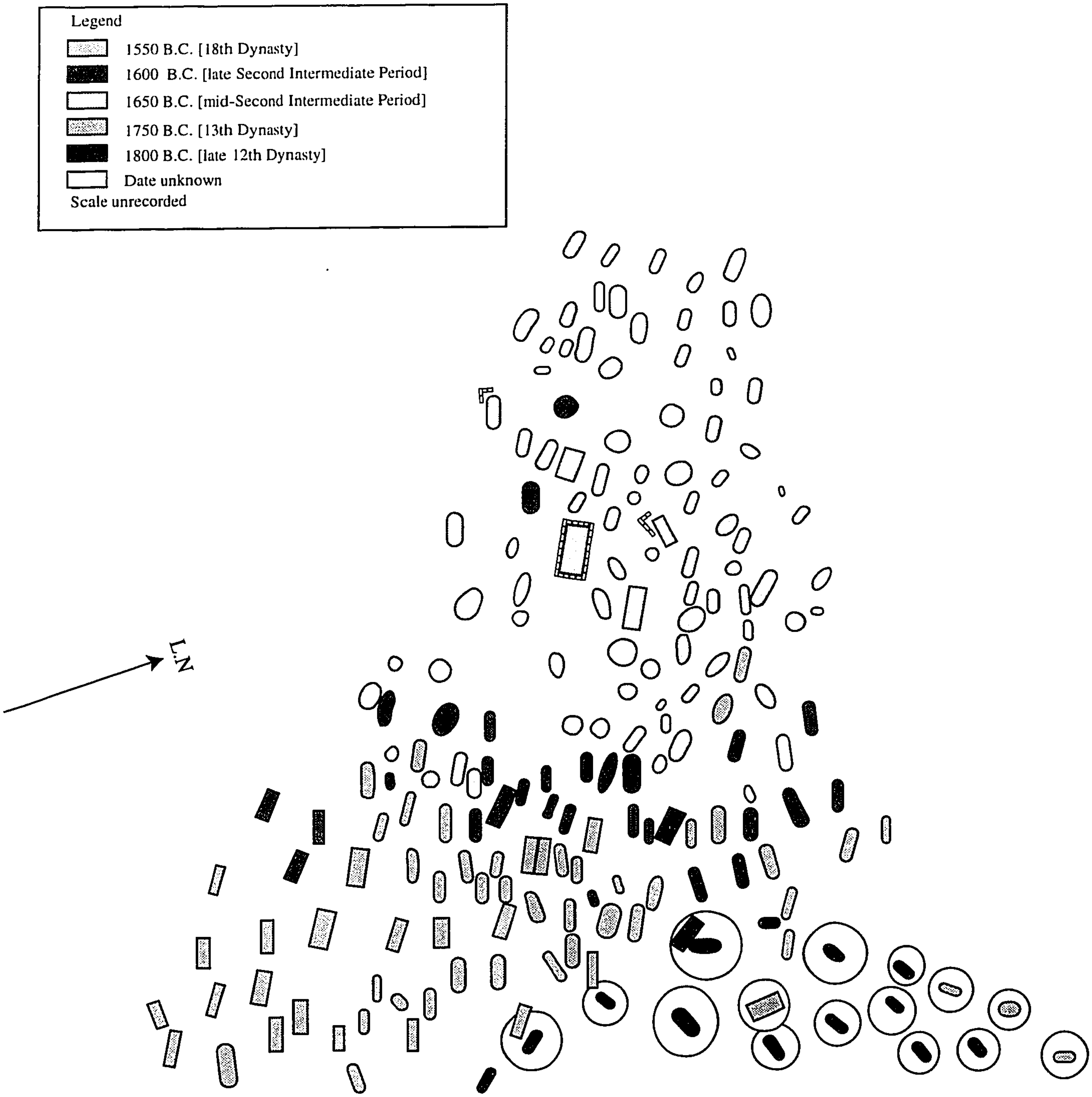


Figure 13. Tumas, Cemetery 189 - western section: distribution of 12th Dynasty, 13th Dynasty, middle and late Second Intermediate Period and 18th Dynasty Middle Nubian graves
[After Emery and Kirwan 1935, 2: Plate 49]

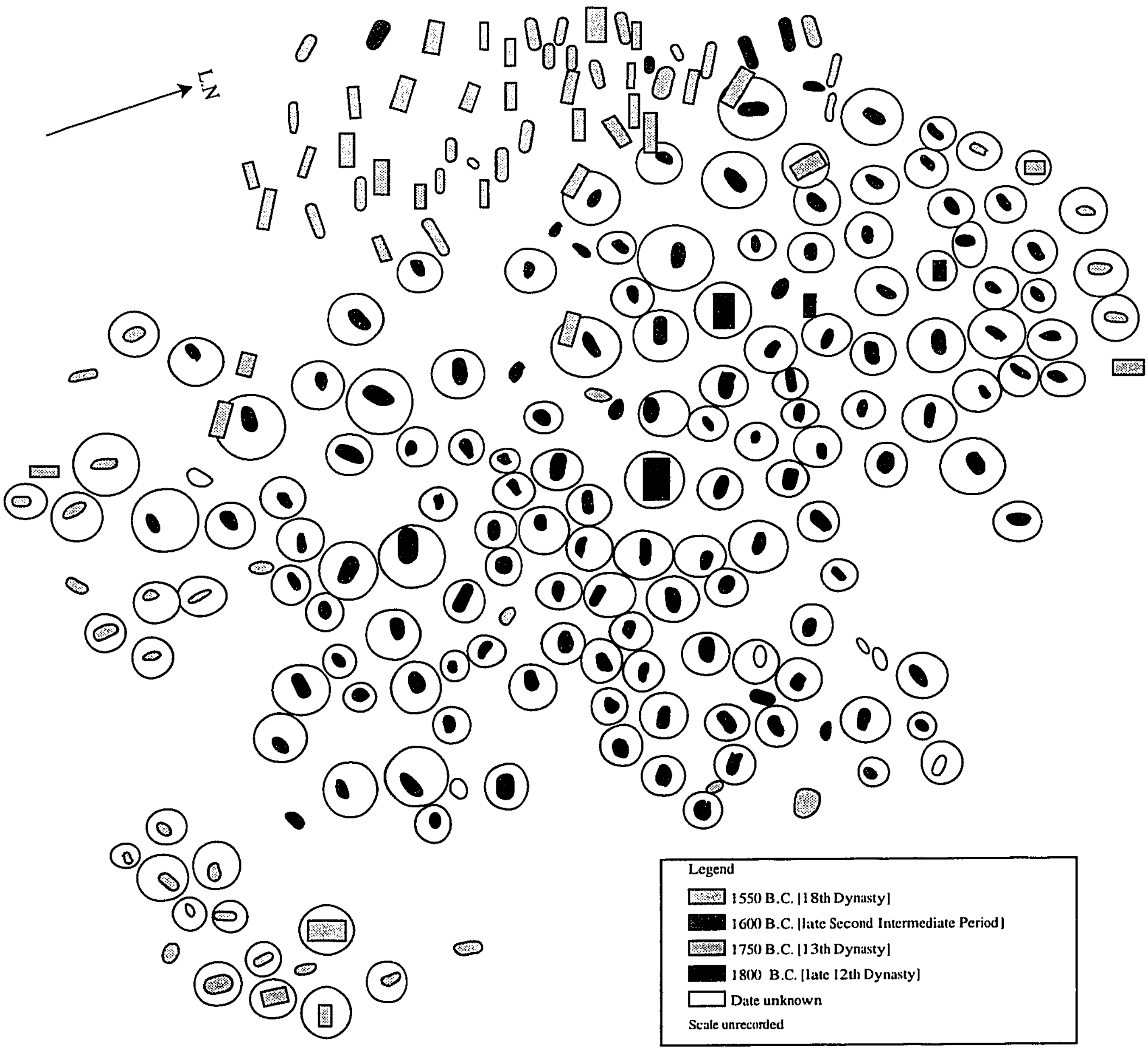


Figure 14. Tumas, Cemetery 189 - central section: distribution of 12th Dynasty, 13th Dynasty and 18th Dynasty Middle Nubian graves [After Emery and Kirwan 1935, 2: Plate 49]

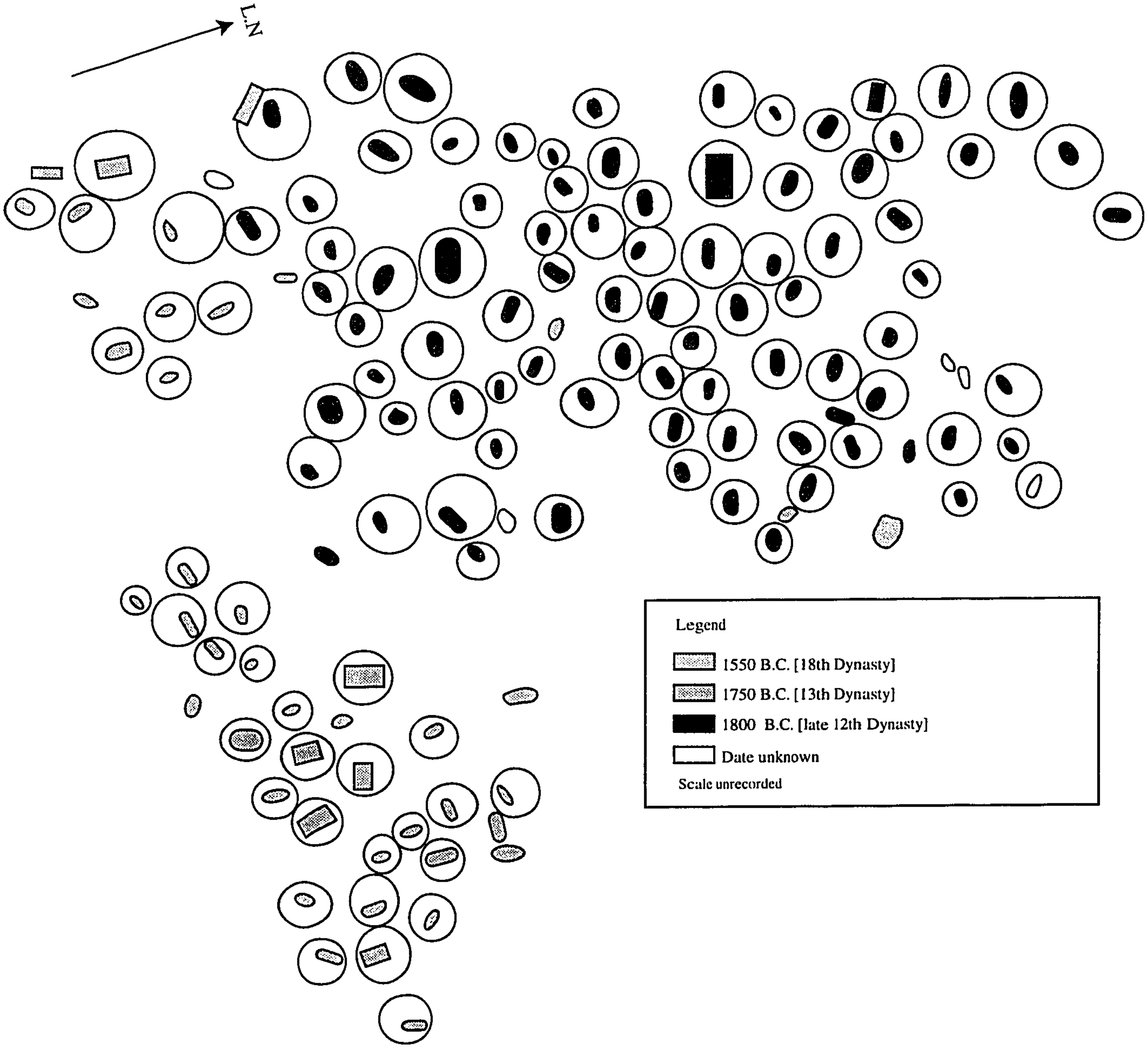


Figure 15. Tumas, Cemetery 189 - eastern section: distribution of 12th Dynasty, 13th Dynasty and 18th Dynasty Middle Nubian graves [After Emery and Kirwan 1935, 2: Plate 49]

Table 7.83: Frequency distribution of superstructure and grave offerings from C-Group graves at Tumas [Percentages are based on the total number of dated graves from each time period in Cemetery 189]

	1800 BC		1750 BC	
	Number	Percent	Number	Percent
Graves with no burial goods	69	51.88	28	54.90
Graves with 1 burial good	26	19.55	3	5.88
Graves with 2 burial goods	8	6.02	3	5.88
Graves with between 3 and 9 burial goods	27	20.30	14	27.45
Graves with between 10 and 25 burial goods	2	1.50	3	5.88
Graves with between 26 and 57 burial goods	1	0.75	0	0
Graves with between 58 and 520 burial goods	0	0	0	0
Graves with between 521 and 578 burial goods	0	0	0	0
Graves with burial goods	64	48.12	23	45.10
Total number of burials	133		51	
Total number of burial goods	203		122	
	1650 BC		**1600 BC**	
	Number	**Percent**	**Number**	**Percent**
Graves with no burial goods	29	37.18	13	41.94
Graves with 1 burial good	14	17.95	7	22.58
Graves with 2 burial goods	4	4.13	4	12.90
Graves with between 3 and 9 burial goods	25	32.05	6	19.35
Graves with between 10 and 25 burial goods	4	5.13	0	0
Graves with between 26 and 57 burial goods	0	0	1	3.23
Graves with between 58 and 520 burial goods	1	1.28	0	0
Graves with between 521 and 578 burial goods	1	1.28	0	0
Graves with burial goods	49	62.82	18	58.06
Total number of burials	78		31	
Total number of burial goods	995		89	

Table 7.83 continued

	1550 BC	
	Number	**Percent**
Graves with no burial goods	21	32.81
Graves with 1 burial good	14	21.88
Graves with 2 burial goods	10	15.63
Graves with between 3 and 9 burial goods	17	26.56
Graves with between 10 and 25 burial goods	1	1.56
Graves with between 26 and 57 burial goods	1	1.56
Graves with between 58 and 520 burial goods	0	0
Graves with between 521 and 578 burial goods	0	0
Graves with burial goods	43	67.19
Total number of graves	64	
Total number of burial goods	142	

Table 7.84: Descriptive statistics for burial [superstructure and grave] goods from Middle Nubian burials in Cemetery 189 at Tumas

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of burial goods:				
In 1800 BC	1.53	2.99	133	203
In 1750 BC	2.39	3.31	51	122
In 1650 BC	12.76	68.80	78	995
In 1600 BC	2.87	9.40	31	89
In 1550 BC	2.22	3.74	64	142
Number of luxury goods:				
In 1800 BC	0.20	1.43	133	26
In 1750 BC	0.06	0.24	51	3
In 1650 BC	2.83	15.98	78	221
In 1600 BC	1.74	8.97	31	54
In 1550 BC	0.38	0.90	64	24
Number of grave beads:				
In 1800 BC	0.44	1.72	133	58
In 1750 BC	1.10	2.34	51	56
In 1650 BC	12.00	67.89	78	936
In 1600 BC	1.61	8.98	31	50
In 1550 BC	0.47	2.78	64	30
Number of local goods:				
In 1800 BC	1.26	2.34	133	168
In 1750 BC	2.20	3.12	51	112
In 1650 BC	11.09	58.05	78	865
In 1600 BC	1.90	8.94	31	59
In 1550 BC	0.94	3.23	64	60
Total number of Egyptian goods:				
In 1800 BC	0.26	0.98	133	35
In 1750 BC	0.20	0.40	51	10
In 1650 BC	1.63	11.53	78	127
In 1600 BC	0.97	1.22	31	30
In 1550 BC	1.28	1.44	64	82

Table 7.85: Descriptive statistics for superstructure and grave goods associated with C-Group burials in Cemetery 189 at Tumas in 1800 B.C., 1750 B.C., 1650 B.C., 1600 B.C. and 1550 B.C. [Superstructure offerings were excluded from calculations for plundered and undisturbed graves]

	1800 B.C.		1750 B.C.	
	Mean	Standard Deviation	Mean	Standard Deviation
Burial goods found with subadults	0.83	1.17	1.67	2.89
Burial goods found with adults	1.68	3.27	3.00	3.64
Burial goods found with females	1.79	3.04	6.17	3.43
Burial goods found with males	1.93	2.13	2.92	3.63
Burial goods found with subadult females	-	-	-	-
Burial goods found with subadults of unknown sex	0.83	1.17	1.67	2.89
Burial goods found with adult females	1.79	3.04	6.17	3.43
Burial goods found with adult males	1.93	2.13	2.92	3.63
Burial goods found with adults of unknown sex	1.60	3.55	1.88	3.20
Burial goods found in graves without occupants	1.89	2.83	0.25	0.50
Burial goods in plundered graves	0.73	2.81	1.35	2.53
Burial goods in undisturbed graves	1.80	1.30	0.50	0.71

	1650 B.C.		1600 B.C.	
	Mean	Standard Deviation	Mean	Standard Deviation
Burial goods found with subadults	2.68	4.69	1.25	1.50
Burial goods found with adults	16.54	80.30	3.36	10.43
Burial goods found with females	3.36	3.72	7.67	17.07
Burial goods found with males	22.31	96.90	0.85	0.80
Burial goods found with subadult females	0	0	-	-
Burial goods found with subadults of unknown sex	3.62	5.46	1.25	1.50
Burial goods found with adult females	4.11	3.72	7.67	17.07
Burial goods found with adult males	24.74	102.15	0.85	0.80
Burial goods found with adults of unknown sex	3.08	2.90	1.33	2.31
Burial goods found in graves without occupants	0.50	0.71	-	-
Burial goods in plundered graves	2.77	3.50	1.07	1.39
Burial goods in undisturbed graves	197.50	270.63	15.00	25.34

Table 7.85 continued

	1550 B.C.	
	Mean	Standard Deviation
Burial goods found with subadults	5.33	10.17
Burial goods found with adults	1.90	2.29
Burial goods found with females	3.38	2.92
Burial goods found with males	0.95	1.28
Burial goods found with subadult females	-	-
Burial goods found with subadults of unknown sex	5.33	10.17
Burial goods found with adult females	3.38	2.92
Burial goods found with adult males	0.95	1.28
Burial goods found with adults of unknown sex	1.80	2.07
Burial goods found in graves without occupants	-	-
Burial goods in plundered graves	1.65	2.05
Burial goods in undisturbed graves	5.09	7.54

Table 7.86: Bead occurrences in Cemetery 189 at Tumas [Percentages are based on the total number of grave beads in burials from 1800 B.C., 1750 B.C., 1650 B.C., 1600 B.C. and 1550 B.C.]

	1800 B.C.		1750 B.C.	
	Number	**Percent**	**Number**	**Percent**
Gold beads	0	0	1	1.79
Carnelian beads	12	20.69	0	0
Total luxury beads	12	20.69	1	1.79
Shell beads	10	17.24	10	17.86
Glazed Nubian beads	25	43.10	45	80.36
Glazed Egyptian beads	0	0	0	0
Total glazed beads	25	43.10	45	80.36
Other Nubian beads	11	18.97	0	0
Total local grave beads	56	96.55	56	100.00
Total imported grave beads	2	3.45	0	0
Total grave beads	58		56	
	1650 B.C.		**1600 B.C.**	
	Number	**Percent**	**Number**	**Percent**
Gold beads	0	0	50	100.00
Carnelian beads	165	17.63	0	0
Total luxury beads	215	22.97	50	100.00
Shell beads	405	43.27	0	0
Glazed Nubian beads	61	6.52	0	0
Glazed Egyptian beads	0	0	0	0
Total glazed beads	61	6.52	0	0
Other Nubian beads	205	21.90	0	0
Total local grave beads	836	89.32	50	100.00
Total imported grave beads	100	10.68	0	0
Total grave beads	936		50	

Table 7.86 continued

	1550 B.C.	
	Number	Percent
Gold beads	0	0
Carnelian beads	5	16.67
Total luxury beads	5	16.67
Shell beads	5	16.67
Glazed Nubian beads	0	0
Glazed Egyptian beads	0	0
Total glazed beads	0	0
Other Nubian beads	20	66.67
Total local grave beads	30	100.00
Total imported grave beads	0	0
Total grave beads	30	

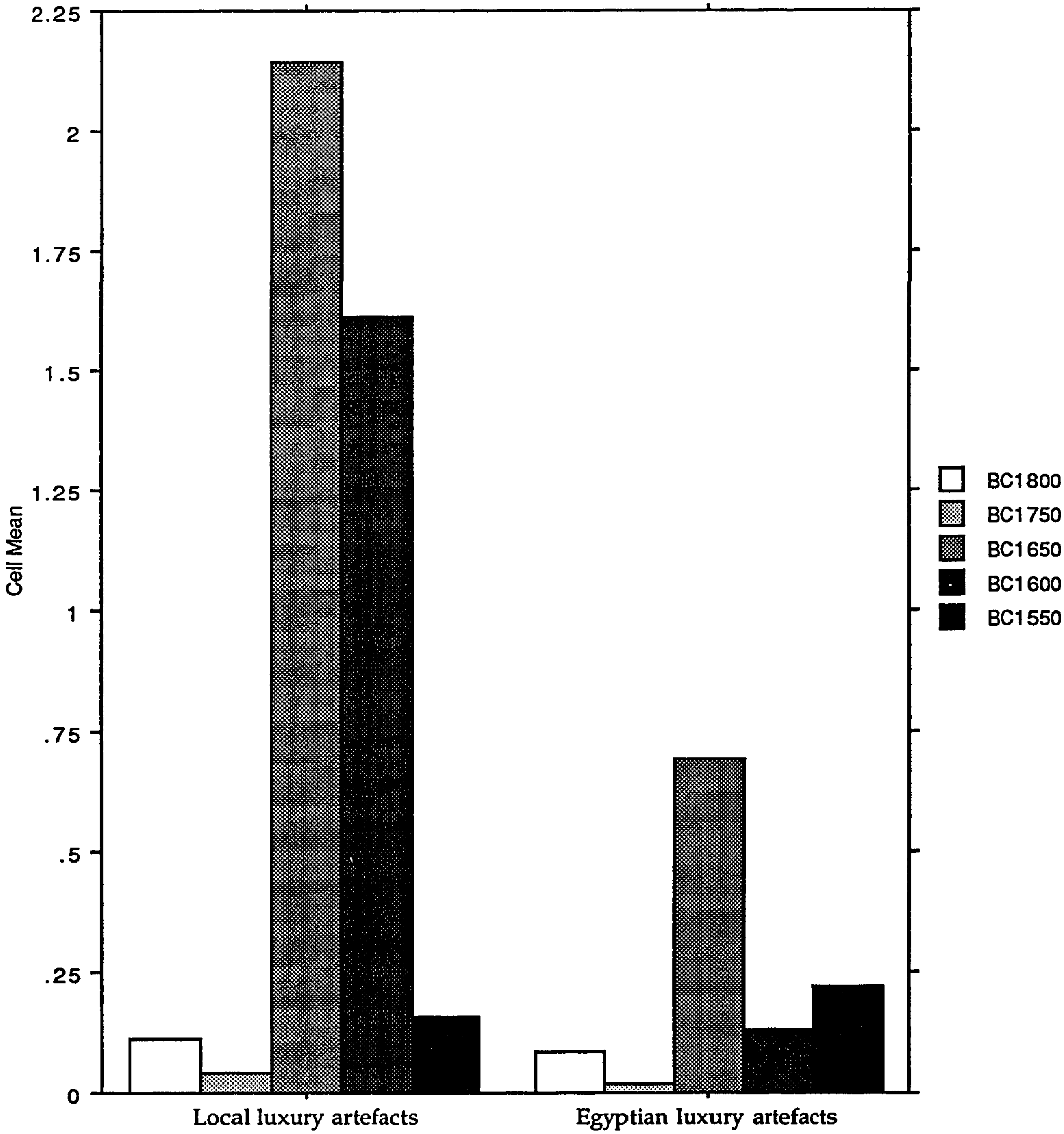


Figure 16. Tumas, Cemetery 189 - Histogram: frequency distribution of luxury artefacts in 12th Dynasty, 13th Dynasty, Second Intermediate Period and 18th Dynasty Middle Nubian graves

Table 7.87: Luxury goods from Cemetery 189 at Tumas in 1800 B.C., 1750 B.C., 1650 B.C., 1600 B.C. and 1550 B.C. [Percentages within each date category are based on the total number of luxury goods found with burials of that date]

	1800 B.C.		1750 B.C.		1650 B.C.	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Alabaster	1	3.85	1	33.33	1	0.45
Carnelian	17	65.38	0	0	165	74.66
Copper	0	0	0	0	1	0.45
Gold	8	30.77	1	33.33	0	0
Ivory	0	0	1	33.33	2	0.90
Silver	0	0	0	0	1	0.45
Local luxury goods	15	57.69	2	66.67	167	75.57
Egyptian luxury goods	11	42.31	1	33.33	54	24.43
Total luxury goods	26		3		221	
	1600 B.C.		**1550 B.C.**			
	Number	**Percent**	**Number**	**Percent**		
Alabaster	3	5.56	11	45.83		
Carnelian	0	0	5	20.83		
Copper	0	0	2	8.33		
Gold	50	92.59	2	8.33		
Ivory	0	0	0	0		
Silver	0	0	4	16.67		
Local luxury goods	50	92.54	10	41.67		
Egyptian luxury goods	4	7.41	14	58.33		
Total luxury goods	54		24			

Table 7.88: Burial goods from Cemetery 189 at Tumas [Percentages are based on the total number of grave goods with burials that date from 1800 B.C., 1750 B.C., 1650 B.C., 1600 B.C. and 1550 B.C.]

	1800 B.C.		1750 B.C.		1650 B.C.	
	Number	Percent	Number	Percent	Number	Percent
Beads	58	28.57	56	45.90	936	94.07
Local pottery	80	39.41	51	41.80	18	1.81
Egyptian pottery	23	11.33	8	6.56	21	2.11
Total local goods	168	82.76	112	91.80	865	86.93
Total Egyptian goods	35	17.24	10	8.20	127	12.76
Goods *in* graves	103	50.74	67	54.92	995	100.00
Total burial goods	203		122		995	
	1600 B.C.		1550 B.C.			
	Number	Percent	Number	Percent		
Beads	50	56.18	30	21.13		
Local pottery	2	2.25	3	2.11		
Egyptian pottery	18	20.22	48	33.80		
Total local goods	59	66.29	60	42.25		
Total Egyptian goods	30	33.71	82	57.75		
Goods *in* graves	89	100.00	142	100.00		
Total burial goods	89		142			

Table 7.89: Descriptive statistics for assessments of economic production, exchange, goods value and tomb wealth in Twelfth Dynasty, Thirteenth Dynasty, middle and late Second Intermediate Period and Eighteenth Dynasty Middle Nubian C-Group burials from Cemetery 189 at Tumas

	Mean per Burial	Standard Deviation	Total Number of Burials
Total local production:			
In 1800 BC	64.41	17.71	133
In 1750 BC	60.16	26.57	51
In 1650 BC	28.92	60.02	78
In 1600 BC	15.71	9.52	31
In 1550 BC	14.19	5.08	64
Total foreign exchange:			
In 1800 BC	0.26	0.98	133
In 1750 BC	0.20	0.40	51
In 1650 BC	1.67	11.53	78
In 1600 BC	0.97	1.22	31
In 1550 BC	1.28	1.44	64
Total goods value:			
In 1800 BC	44.35	382.52	133
In 1750 BC	16.80	29.68	51
In 1650 BC	52.22	215.63	78
In 1600 BC	90.16	283.03	31
In 1550 BC	95.00	168.15	64
Total tomb wealth:			
In 1800 BC	107.70	382.57	133
In 1750 BC	74.84	36.07	51
In 1650 BC	70.17	215.68	78
In 1600 BC	104.19	283.19	31
In 1550 BC	108.59	168.83	64

Table 7.90: Goods indices from Cemetery 189 at Tumas in 1800 B.C., 1750 B.C., 1650 B.C., 1600 B.C. and 1550 B.C.

	1800 B.C.	**1750 B.C.**	**1650 B.C.**
	Number	**Number**	**Number**
Total goods value	5899	857	4073
Local production index	64	60	29
Egyptian exchange index	0.26	0.20	1.63
Wealth index	44	17	52
	1600 B.C.	**1550 B.C.**	
	Number	**Number**	
Total goods value	2795	6080	
Local production index	16	14	
Egyptian exchange index	0.97	1.28	
Wealth index	90	95	

Table 7.91: Estimated superstructure [cairn] volumes and measured grave areas, in cubic metres and sq. metres respectively, of Middle Nubian C-Group burials in Cemetery 189 at Tumas

	Superstructure size	**Grave size**
In 1800 BC:		
Maximum	9.47	3.64
Minimum	0.88	0.32
Mean	3.43	1.06
	[123 cairns]	[132 graves]
In 1750 BC:		
Maximum	6.66	1.68
Minimum	0.82	0.30
Mean	3.09	0.99
	[39 cairns]	[51 graves]
In 1650 BC:		
Maximum	7.63	2.98
Minimum	3.39	0.30
Mean	5.51	1.22
	[4 cairns]	[77 graves]
In 1600 BC:		
Maximum	-	2.34
Minimum	-	0.60
Mean	-	1.29
	[- cairns]	[31 graves]
In 1550 BC:		
Maximum	-	3.00
Minimum	-	0.36
Mean	-	1.34
	[- cairns]	[58 graves]

7.0.12 Nonparametric tests: Tumas, Cemetery 189

Since the preliminary study of tomb sizes indicated first, that the late Twelfth Dynasty grave areas varied in size from 0.32 square metres to 3.64 square metres, and second, that mean grave area ranged from 0.99 square metres in 1750 B.C. to 1.34 in 1550 B.C., cross-tabulations were conducted to determine whether any statistical association existed between the size of a grave and its date. The contingency table results [Table 7.92] suggest some dependence between the two variables. Dependence between burial goods and date [Table 7.93] also is suggested by the contingency table data for this variable although one of the expected cell frequencies for late Second Intermediate Period artefacts is below the recommended level for validity of the test.

Following the discovery that some dependence existed between the date of a grave and both its size and the number of offerings associated with it, Kruskal-Wallis tests were conducted for each variable at different time periods. In five instances, for grave area [Table 7.95], total burial goods [Table 7.96], locally made burial goods [Table 7.97], Egyptian goods [Table 7.98] and total grave beads [Table 7.99], it was possible to reject the null hypothesis that the variable means of the population under study were equal at each of the five time intervals from 1800 B.C. to 1550 B.C. The data indicate that a significant difference exists between the mean size of a grave in 1550 B.C. and the mean size at other dates. These data indicate also that a significant difference exists between the mean number of goods that are present in 1650 B.C. and the mean number that occurred at other time periods. The data further show that a significant difference exists between the mean number of Egyptian imports occurring in 1550 B.C. [Table 7.98] and the mean number occurring from 1800 B.C. to 1600 B.C. No significant difference between the mean number of Nubian glazed beads [Table 7.100] or the mean number of luxury objects [Table 7.101] occurring from 1800 B.C. to 1550 B.C. is indicated by the Kruskal-Wallis tests.

DF:	4
Total Chi-square:	21.343
p-value:	0.0003
Contingency coefficient:	0.240
Missing observations:	15

	Cell frequencies	1800BC	1750BC	1650BC	1600	1550	Totals
Small	Observed	114	49	55	21	41	280
	Expected	105.90	40.92	61.78	24.87	46.53	280
Large	Observed	18	2	22	10	17	69
	Expected	26.10	10.08	15.22	6.13	11.47	69
Totals		132	51	77	31	58	349

Table 7.92: Tumas, Cemetery 189: grave area and date

DF:	8
Total Chi-square:	36.393
p-value:	< 0.0001
Contingency coefficient:	0.304

	Cell frequencies	1800BC	1750BC	1650BC	1600BC	1550BC	Totals
Goods=0	Observed	69	28	29	13	21	160
	Expected	59.61	22.86	34.96	13.89	28.68	160
Goods=1-5	Observed	57	11	32	17	38	155
	Expected	57.75	22.14	33.87	13.46	27.79	155
Totals		133	51	78	31	64	357

Table 7.93: Tumas, Cemetery 189: burial goods and date

DF:	4
Total Chi-square:	50.314
p-value:	< 0.0001
Contingency coefficient:	0.351

	Cell frequencies	1800BC	1750BC	1650BC	1600BC	1550BC	Totals
Beads =0	Observed	124	41	49	30	62	306
	Expected	114.00	43.71	66.86	26.57	54.86	306
Beads ≥ 5	Observed	9	10	29	1	2	51
	Expected	19.00	7.29	11.14	4.43	9.14	51
Totals		133	51	78	31	64	357

Table 7.94: Tumas, Cemetery 189: total grave beads and date

DF:	4
H statistic:	29.006
p-value:	< 0.0001
Missing observations:	15

	Mean rank of grave areas	Burial count
1800 BC	150.90	132
1750 BC	144.11	51
1650 BC	188.58	77
1600 BC	212.13	31
1550 BC	219.14	58

Table 7.95: Tumas, Cemetery 189: Kruskal-Wallis rank information for grave area and date

DF:	4
H statistic:	10.269
p-value:	0.0361
Missing observations:	7

	Mean rank of burial goods	Burial count
1800 BC	160.14	133
1750 BC	176.49	51
1650 BC	203.92	78
1600 BC	172.94	31
1550 BC	192.77	64

Table 7.96: Tumas, Cemetery 189: Kruskal-Wallis rank information for total burial goods and date

DF:	4
H statistic:	12.646
p-value:	0.0131
Missing observations:	7

	Mean rank of burial goods	Burial count
1800 BC	176.20	133
1750 BC	191.81	51
1650 BC	206.76	78
1600 BC	146.34	31
1550 BC	156.60	64

Table 7.97: Tumas, Cemetery 189: Kruskal-Wallis rank information for total locally made burial goods and date

DF:	4
H statistic:	38.899
p-value:	< 0.0001
Missing observations:	7

	Mean rank of Egyptian offerings	Burial count
1800 BC	152.68	133
1750 BC	156.59	51
1650 BC	171.85	78
1600 BC	220.84	31
1550 BC	240.02	64

Table 7.98: Tumas, Cemetery 189: Kruskal-Wallis rank information for total Egyptian made grave offerings and date

DF:	4
H statistic:	17.915
p-value:	0.0013
Missing observations:	7

	Mean rank of grave beads	Burial count
1800 BC	165.59	133
1750 BC	187.87	51
1650 BC	219.47	78
1600 BC	160.00	31
1550 BC	159.68	64

Table 7.99: Tumas, Cemetery 189: Kruskal-Wallis rank information for total grave beads and date

DF:	4
H statistic:	3.489
p-value:	0.4796
Missing observations:	7

	Mean rank of Nubian glazed beads	Burial count
1800 BC	175.19	133
1750 BC	199.91	51
1650 BC	184.61	78
1600 BC	168.50	31
1550 BC	168.50	64

Table 7.100: Tumas, Cemetery 189: Kruskal-Wallis rank information for total Nubian glazed beads and date

DF:	3
H statistic:	4.545
p-value:	0.2101

	Mean rank of luxury goods	Burial count
1800 BC	142.76	133
1650 BC	155.99	78
1600 BC	157.74	31
1550 BC	170.74	64

Table 7.101: Tumas, Cemetery 189: Kruskal-Wallis rank information for total luxury offerings and date

DF:	2
H statistic:	13.528
p-value:	0.0012

	Mean rank of shell beads	Burial count
1800 BC	119.45	133
1750 BC	122.58	51
1650 BC	157.89	78

Table 7.102: Tumas, Cemetery 189: Kruskal-Wallis rank information for total locally made shell beads and date

DF:	2
H statistic:	3.890
p-value:	0.1430

	Mean rank of Egyptian luxury goods	Burial count
1800 BC	131.12	133
1650 BC	135.97	78
1550 BC	154.77	64

Table 7.103: Tumas, Cemetery 189: Kruskal-Wallis rank information for Egyptian made luxury items and date

DF:	4
H statistic:	18.974
p-value:	0.0008

	Mean rank of Egyptian pottery	Burial count
1800 BC	160.39	133
1750 BC	161.46	51
1650 BC	176.88	78
1600 BC	202.66	31
1550 BC	222.77	64

Table 7.104: Tumas, Cemetery 189: Kruskal-Wallis rank information for total Egyptian pottery and date

7.0.13 Descriptive statistics: Aniba North, *ca.* 2000 B.C. to *ca.* 1600 B.C.

Aniba North [Figure 17, Figure 18 and Figure 19], in the Nubian township of Aniba that lies on the left bank of the Nile south of Tumas and north of Masmas, was probably first attributed to the Pangrave people by Arthur Weigall in the first decade of the twentieth century. The cemetery was located on the desert edge west of the ancient Egyptian settlement at Aniba (Steindorff 1935, 1: 17). At Aniba, local north is forty-five degrees east of magnetic north (Bietak 1968: 23).

Analysis of the burial data from Aniba North revealed that 19,206 offerings were associated with 867 graves. Thirty-three, or four percent of these burials, belonged to adults. Twelve were male and eighteen were female. In thirty-eight instances, a further four percent of the burials, the occupants were identified as subadults. Three of these were female and the sex of the rest was unknown. In 513 cases, or fifty-nine percent of the burials, the age and sex of the skeletal remains are unknown, mainly because only partial skeletons, consisting of nothing more than a "few bones," survived. A further 278 graves, or thirty-two percent of the burial total, lacked corpses altogether.

Three percent of the offerings [499 objects] had been deposited with twenty-six burials dated to 2000 B.C. and another three percent [617 items] was associated with twenty-nine burials, 1900 B.C. in date. With the ninety burials from 1850 B.C. nine percent of the offerings [1,673 artefacts] had been apportioned; the 104 Thirteenth Dynasty [1750 B.C.] graves yielded 1,240 artefacts and twenty-seven percent of the Aniba North assemblage [5,164 burial offerings] had been distributed amongst 226 graves from the early Second Intermediate Period [1700 B.C.]. The 282 mid-Second Intermediate Period [1650 B.C.] burials contained thirty-five percent [6,651] of the grave offerings, and 3,362 grave goods were recovered from burials that were late Second Intermediate Period [1600 B.C.] in date [Table 7.105].

One grave offering had been deposited with fifteen percent of the 2000 B.C. burials, with thirty-one percent of those dated to 1900 B.C., with eleven percent of those from 1850 B.C., with three percent of the 1750 B.C. graves, with twelve percent of the burials from 1700 B.C., with eleven percent of the 1650 B.C. burials and with nine percent of those assigned to 1600 B.C. The analysis also showed that between two and forty-three grave goods had been deposited in the majority of graves, namely, with eighty-five percent of burials that were 2000 B.C. in date, with seventy-nine percent of those from 1850 B.C., with ninety-three percent of the 1750 B.C. burials, with seventy-nine percent of the 1700 B.C. interments, with eighty-seven percent of the 1650 B.C. burials and with seventy-seven percent of those that dated to 1600 B.C. On the other hand, more than 290 offerings had been deposited with only two burials. One, which represented 0.35 percent of the burials from that date, was from 1650 B.C. and the other from 1600 B.C. where it accounted for 0.91 percent of the burials [Table 7.105].

The mean number of artefacts found with Aniba North burials in 2000 B.C. was 19.19. In 1900 B.C., it was 21.28 and in 1850 B.C. it was 18.59. By 1750 B.C., it had fallen to 11.92, but it increased to 22.85 in 1700 B.C. and to 23.59 in 1650 B.C. In 1600 B.C., the mean number of objects accompanying a burial was 30.56 [Table 7.106]. An analysis of the mean number of burial offerings discovered in plundered graves shows an increase from 18.46 per burial in 2000 B.C. to 20.21 per burial in 1900 B.C., and a decrease to 14.51 per burial in 1850 B.C. and 7.74 per burial in 1750 B.C. The mean number of goods from plundered 1700 B.C. graves was 20.58 and from similar graves in 1650 B.C. it was 19.95. The mean number of objects recovered from plundered 1600 B.C. graves was 26.83. No undisturbed graves were identified from either 2000 B.C. or 1900 B.C. The pattern of increases and decreases revealed by the undisturbed Aniba North grave data differs markedly from that obtained for the plundered burials. In 1850 B.C. [mid-Twelfth Dynasty], the mean number of offerings deposited with a Middle Nubian burial was 68.67. This average fell, first to 60.00 in 1750 B.C., and then to 40.00 in 1700 B.C., but increased to 72.09 in 1650 B.C. before decreasing to 69.50 in 1600 B.C. The standard deviations computed for undisturbed burials indicate that the greatest variation [131.82] in tomb goods occurred amongst burials from the middle of the Second Intermediate Period, while the lowest [33.29] occurred amongst early Second Intermediate Period [1700 B.C.] burials [Table 7.107].

The data analysis also showed that, whereas subadults from 1850 B.C. and

1750 B.C. had the largest number of offerings, during the Second Intermediate Period the largest mean number of burial artefacts was found in the graves of females. In 1700 B.C., the mean number of offerings with females was 132.50; in 1650 B.C. it was 117.55 and in 1600 B.C. it was 84.67. Amongst adult females from the same time interval the mean number of offerings was 49, 128.10 and 90.60. Standard deviations of 118.09 and 119.24 suggest that the greatest disparity in grave goods distribution occurred amongst females from 1700 B.C. and 1650 B.C. respectively [Table 7.107].

At Aniba North, as elsewhere, the largest percentage of burial goods consisted of beads. In 2000 B.C., they comprised seventy-nine percent of the offerings; likewise, in 1900 B.C., they accounted for eighty-eight percent of the offerings. However, the bead percentage fell to eighty-one percent of the mid-Twelfth Dynasty [1850 B.C.] offerings, dropped to sixty-three percent in the Thirteenth Dynasty [1750 B.C.], rose to eighty-five percent in 1700 B.C., declined slightly to eighty-one percent in 1650 B.C. and increased to eighty-six percent in 1600 B.C. Glazed beads made up only seventeen percent of the beads recovered from the 2000 B.C. burials, but seventy-five percent of those from 1900 B.C., seventy-one percent of the 1850 B.C. bead total and eighty-one percent of those from 1750 B.C. The occurrence of glazed beads decreased to forty-six percent of the beads from 1700 B.C. but increased to fifty-two percent of the bead total from both 1650 B.C. and 1600 B.C. [Table 7.108]. Glazed Egyptian beads, or "crumb beads," accounted for 0.25 percent of the bead objects from 1750 B.C., 0.27 percent of those from 1700 B.C., 1.49 percent of the beads from 1650 B.C. and 0.17 percent of the 1600 B.C. bead total.

The Aniba North burial data also showed that 4,274 luxury objects had been apportioned amongst the 867 burials. Sixty-three items, or 1.50 percent, remained in burials dated to 2000 B.C.; three percent was found in 1900 B.C. graves; six percent came from 1850 B.C. burials and three percent was retrieved from graves dated to 1750 B.C. Early Second Intermediate Period [1700 B.C.] burials contained 1,358 luxury artefacts, or thirty-two percent of the total; thirty-eight percent of the luxury goods were associated with burials that were 1650 B.C. in date and the late Second Intermediate Period [1600 B.C.] graves contained 741 luxury goods, or seventeen percent of the total number of luxury items discovered in the cemetery. The largest number of luxury goods and the largest average number of luxury goods, as well as the largest degree of unequal distribution of luxury objects as indicated by the standard deviations, occurred during the Second Intermediate Period [i.e. 1700 B.C., 1650 B.C. and 1600 B.C.]

Closer study of the luxury artefact data showed that carnelian accounted for fifty-six percent of the total number of luxury objects unearthed at Aniba North. In fact, eighty-nine percent of the luxury items in graves from 2000 B.C. was carnelian, as was ninety-two percent of those from 1900 B.C., sixty-two percent of those from 1850 B.C., sixty-six percent of the 1750 B.C. luxury objects, seventy-seven percent of those from 1700 B.C., forty percent of the 1650 B.C. artefacts and thirty-nine percent of the late Second Intermediate Period [1600 B.C.] luxury offerings. Gold was the next most commonly encountered luxury material. It had been used to fashion eight percent of the luxury objects from 2000 B.C., thirty-five percent of those from 1850 B.C., ten percent of those from 1750 B.C., eighteen percent of the 1700 B.C. luxury artefacts, twenty-seven percent of those from 1650 B.C. and twenty-three percent of those from 1600 B.C. These data also revealed that whereas carnelian and ivory are present in entombments from all time periods at Aniba North, and whereas all six major categories of luxury material were represented in the Thirteenth Dynasty and Second Intermediate Period burials, those from 2000 B.C. lacked copper, those from 1900 B.C. lacked alabaster and gold, and silver was absent from all three of the earlier time periods [Table 7.109].

At Aniba North, most of the luxury assemblage from each time period was of local manufacture. Egyptian imports, mainly of alabaster and copper, accounted for 1.59 percent of the luxury objects in graves that dated to 2000 B.C., 0.83 percent of those that were 1900 B.C. in date, 2.48 percent of the luxury items in 1850 B.C. graves, nine percent of the luxury objects in the 1750 B.C. burials, 2.36 percent of the luxury artefacts that date to 1700 B.C., six percent of the 1650 B.C. luxury objects and nine percent of the luxury artefacts that are 1600 B.C. in date [Table 7.109].

Local pottery increased steadily from two percent of the burial goods in 2000 B.C. to twenty-three percent of the early Second Intermediate Period offerings before declining to two percent of the offerings from 1600 B.C. Egyptian pottery showed a similar trend. It comprised less than one percent of the 2000 B.C. grave goods, two percent of those from 1900 B.C. and 1850 B.C., six percent of the Thirteenth Dynasty offerings, one percent of the 1700 B.C. tomb goods, two percent of those from 1650 B.C. and one percent of those from 1600 B.C.

Over the same time period, the total number of Egyptian artefacts associated with the Middle Nubian burials in the cemetery fluctuated considerably. They declined from fifteen percent in 2000 B.C. to three percent in 1850 B.C., rose to eight percent in the Thirteenth Dynasty, but declined once more to three percent in 1700 B.C. before increasing to five percent for the rest of the Second Intermediate Period [Table 7.110].

At Aniba North, the highest mean tomb wealth [270.01] and the highest total goods value [52,712] were obtained for the mid-Second Intermediate Period [1650 B.C.] burials. Local production indices fluctuated from sixty-seven in 2000 B.C. to seventy-four in 1900 B.C. and seventy-six in 1850 B.C., reached their highest level, at 113, in 1750 B.C., decreased to seventy-nine in 1700 B.C. and increased in 1650 B.C. to 104 before falling to their lowest [56] in 1600 B.C. The local barter index was highest [26] in 1600 B.C. and lowest [8] in 1750 B.C. Egyptian exchange was highest [2.92] in 2000 B.C. and lowest [0.50] in 1850 B.C. [Table 7.111 and Table 7.112].

Wealth indices for Aniba North were ninety-six, 120, eighty-four, eighty-three, 118, 187 and 239 in 2000 B.C., 1900 B.C., 1850 B.C., 1750 B.C., 1650 B.C. and 1600 B.C. respectively [Table 7.112].

At Aniba North, while the largest mean superstructure size [24.66 cubic metres] dates to 1600 B.C., the largest mean grave area [1.65 square metres] and volume [1.44 cubic metres] was obtained for burials from 1850 B.C. However, although both the maximum grave area [9.86 square metres] and the maximum grave volume [5.28 cubic metres] occurred in 1750 B.C., the largest superstructure size [281.49 cubic metres] was obtained for a structure from 1650 B.C.

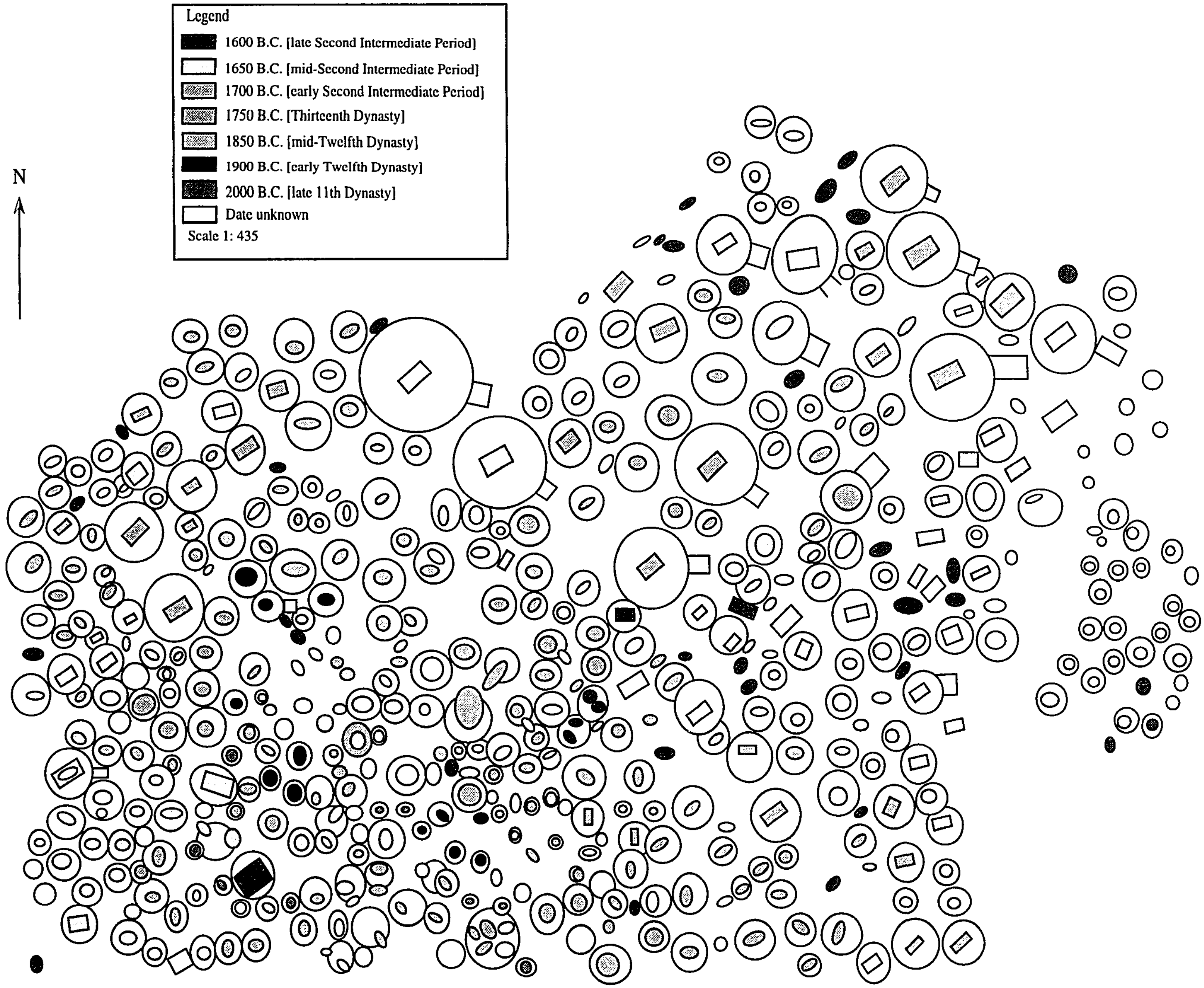


Figure 17. Aniba North - northern section: distribution of 11th Dynasty, 12th Dynasty, 13th Dynasty and Second Intermediate Period Middle Nubian graves [After Steindorff 1935: Plate 2]

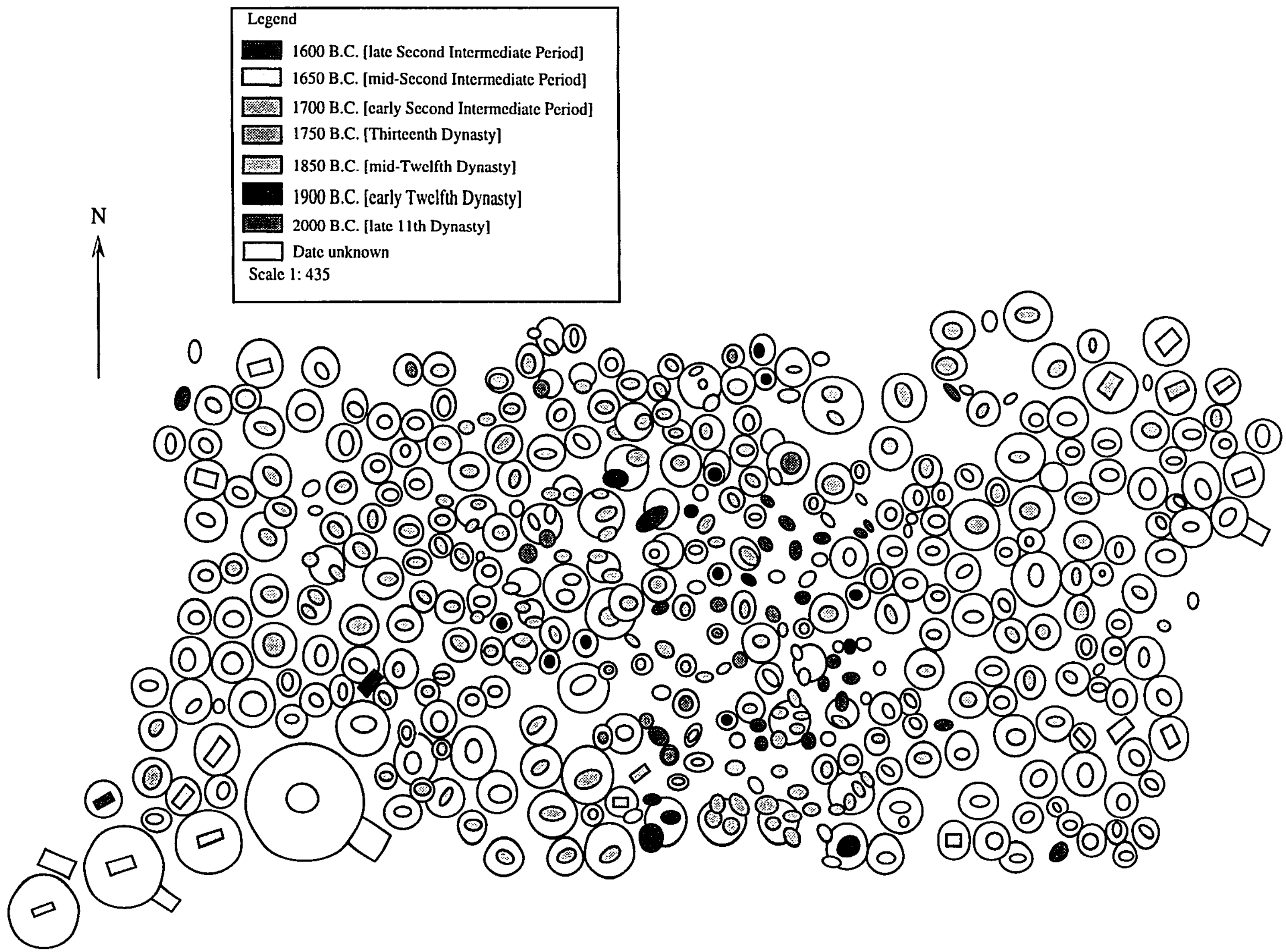


Figure 18. Aniba North - central section: distribution of 11th Dynasty, 12th Dynasty, 13th Dynasty and Second Intermediate Period Middle Nubian graves [After Steindorff 1935: Plate 2]

Figure 19. Aniba North - southern section: distribution of 11th Dynasty, 12th Dynasty, 13th Dynasty and Second Intermediate Period Middle Nubian graves [After Steindorff 1935: Plate 2]

Table 7.105: Frequency distribution of superstructure and grave offerings from C-Group graves at Aniba North [Percentages are based on the total number of dated graves from each time period in the cemetery]

	2000 BC		1900 BC	
	Number	Percent	Number	Percent
Graves with 1 burial good	4	15.38	9	31.03
Graves with 2-42 burial goods	18	69.23	14	48.27
Graves with between 43 and 83 burial goods	3	11.54	4	13.79
Graves with between 84 and 124 burial goods	1	3.85	1	3.44
Graves with between 125 and 165 burial goods	0	0.00	1	3.44
Graves with between 166 and 289 burial goods	0	0.00	0	0.00
Graves with between 290 and 413 burial goods	0	0.00	0	0.00
Total number of graves	26		29	
Total number of burial goods	499		617	
	1850 BC		1750 BC	
	Number	Percent	Number	Percent
Graves with 1 burial good	10	11.11	3	2.88
Graves with 2-42 burial goods	69	76.67	94	90.38
Graves with between 43 and 83 burial goods	6	6.67	5	4.81
Graves with between 84 and 124 burial goods	1	1.11	1	0.96
Graves with between 125 and 165 burial goods	3	3.33	1	0.96
Graves with between 166 and 289 burial goods	1	1.11	0	0.00
Graves with between 290 and 413 burial goods	0	0.00	0	0.00
Total number of graves	90		104	
Total number of burial goods	1673		1240	

Table 7.105 continued

	1700 BC		1650 BC	
	Number	**Percent**	**Number**	**Percent**
Graves with 1 burial good	27	11.95	32	11.35
Graves with 2-42 burial goods	152	67.26	212	75.18
Graves with between 43 and 83 burial goods	36	15.93	20	7.09
Graves with between 84 and 124 burial goods	4	1.77	4	1.42
Graves with between 125 and 165 burial goods	5	2.21	4	1.42
Graves with between 166 and 289 burial goods	2	0.88	9	3.19
Graves with between 290 and 413 burial goods	0	0.00	1	0.35
Total number of graves	226		282	
Total number of burial goods	5164		6651	

	1600 BC	
	Number	**Percent**
Graves with 1 burial good	10	9.09
Graves with 2-42 burial goods	75	68.18
Graves with between 43 and 83 burial goods	12	10.90
Graves with between 84 and 124 burial goods	7	6.36
Graves with between 125 and 165 burial goods	3	2.73
Graves with between 166 and 289 burial goods	2	1.82
Graves with between 290 and 413 burial goods	1	0.91
Total number of graves	110	
Total number of burial goods	3362	

Table 7.106: Descriptive statistics for burial [superstructure and grave] goods from Middle Nubian burials at Aniba North

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of burial goods:				
In 2000 BC	19.19	25.10	26	499
In 1900 BC	21.28	35.29	29	617
In 1850 BC	18.59	37.17	90	1673
In 1750 BC	11.92	20.69	104	1240
In 1700 BC	22.85	36.60	226	5164
In 1650 BC	23.59	49.47	282	6651
In 1600 BC	30.56	50.01	110	3362
Number of luxury goods:				
In 2000 BC	2.42	9.80	26	63
In 1900 BC	4.14	11.54	29	120
In 1850 BC	2.69	10.22	90	242
In 1750 BC	1.07	3.40	104	111
In 1700 BC	6.01	17.45	226	1358
In 1650 BC	5.81	18.39	282	1639
In 1600 BC	6.74	18.36	110	741
Number of grave beads:				
In 2000 BC	15.19	24.60	26	395
In 1900 BC	18.62	34.22	29	540
In 1850 BC	15.06	35.57	90	1355
In 1750 BC	7.54	20.26	104	784
In 1700 BC	19.46	35.96	226	4398
In 1650 BC	19.22	47.34	282	5419
In 1600 BC	26.33	49.01	110	2896

Table 7.106 continued

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of local goods:				
In 2000 BC	16.27	24.46	26	423
In 1900 BC	20.38	35.46	29	591
In 1850 BC	17.51	35.65	90	1576
In 1750 BC	10.95	20.48	104	1139
In 1700 BC	21.85	36.27	226	4937
In 1650 BC	21.45	47.71	282	6049
In 1600 BC	27.32	48.48	110	3005
Total number of Egyptian goods:				
In 2000 BC	2.92	10.44	26	76
In 1900 BC	0.69	1.00	29	20
In 1850 BC	0.50	0.88	90	45
In 1750 BC	0.95	1.49	104	99
In 1700 BC	0.60	1.90	226	136
In 1650 BC	1.23	4.26	282	346
In 1600 BC	1.45	5.46	110	159

Table 7.107: Descriptive statistics for superstructure and grave goods associated with C-Group burials at Aniba North in 2000 B.C., 1900 B.C., 1850 B.C., 1750 B.C., 1700 B.C., 1650 B.C. and 1600 B.C.

	2000 B.C.		1900 B.C.	
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**
Burial goods found with subadults of unknown sex	14.00	10.15	10.00	12.73
Burial goods found with adult males	–	–	54	–
Burial goods found with occupants, sex unknown	23.65	27.10	29.83	41.25
Burial goods with occupants, age and sex unknown	25.35	28.96	32.31	43.11
Burial goods found in graves without occupants	4.33	3.93	2.60	2.72
Burial goods in plundered graves	18.46	25.47	20.21	35.64
Burial goods in undisturbed graves	–	–		

	1850 B.C.		1750 B.C.	
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**
Burial goods found with adults	3.20	2.68	–	–
Burial goods found with subadults of unknown sex	53.00	–	37.67	23.97
Burial goods found with adult females	3.00	2.83	–	–
Burial goods found with adult males	4.50	3.54	–	–
Burial goods found with adults of unknown sex	1.00	–	–	–
Burial goods with occupants, sex unknown	26.77	46.74	16.57	27.53
Burial goods with occupants, age and sex unknown	26.76	47.41	15.30	27.42
Burial goods found in graves without occupants	8.37	13.04	7.10	6.85
Burial goods in plundered graves	14.51	35.13	7.74	20.54
Burial goods in undisturbed graves	68.67	76.71	60.00	–

Table 7.107 continued

	1700 B.C. Mean	1700 B.C. Standard Deviation	1650 B.C. Mean	1650 B.C. Standard Deviation
Burial goods found with subadults	51.82	70.50	63.00	91.11
Burial goods found with adults	59.20	36.93	101.69	115.60
Burial goods found with females	132.50	118.09	117.55	119.24
Burial goods found with males	61.75	42.13	2.00	–
Burial goods found with subadult females	–	–	12.00	–
Burial goods found with subadults of unknown sex	–	–	68.67	94.75
Burial goods found with adult females	49.00	–	128.10	120.16
Burial goods found with adult males	–	–	2.00	–
Burial goods found with adults of unknown sex	–	–	19.50	3.54
Burial goods with occupants, sex unknown	26.68	37.46	25.09	45.40
Burial goods with occupants, age and sex unknown	26.11	36.86	22.78	40.63
Burial goods found in graves without occupants	5.53	9.61	10.01	27.37
Burial goods in plundered graves	20.58	37.09	19.95	42.54
Burial goods in undisturbed graves	40.00	33.29	72.09	131.82

	1600 B.C. Mean	1600 B.C. Standard Deviation
Burial goods found with subadults	13.63	17.27
Burial goods found with adults	69.00	63.71
Burial goods found with females	84.67	49.28
Burial goods found with males	42.00	73.34
Burial goods found with subadult females	55.00	–
Burial goods found with subadults of unknown sex	7.71	4.68
Burial goods found with adult females	90.60	52.65
Burial goods found with adult males	42.00	73.34
Burial goods found with occupants of unknown sex	32.27	54.98
Burial goods with occupants, age and sex unknown	35.00	57.32
Burial goods found in graves without occupants	14.69	18.26
Burial goods in plundered graves	26.83	48.54
Burial goods in undisturbed graves	69.50	57.46

Table 7.108: Bead occurrences at Aniba North [Percentages are based on the total number of grave beads in burials from 2000 B.C., 1900 B.C., 1850 B.C., 1750 B.C., 1700 B.C., 1650 B.C. and 1600 B.C.]

	2000 B.C.		1900 B.C.	
	Number	**Percent**	**Number**	**Percent**
Gold beads	5	1.27	0	0.00
Carnelian beads	55	13.92	105	19.44
Total luxury beads	60	15.19	108	20.00
Shell beads	122	30.89	10	1.85
Glazed Nubian beads	66	16.71	406	75.19
Glazed Egyptian beads	0	0.00	0	0.00
Total glazed beads	66	16.71	406	75.19
Other Nubian beads	147	37.22	16	2.96
Total local grave beads	395	100.00	540	100.00
Total imported grave beads	0	0.00	0	0.00
Total grave beads	395		540	

	1850 B.C.		1750 B.C.	
	Number	**Percent**	**Number**	**Percent**
Gold beads	84	6.20	7	0.89
Carnelian beads	148	10.92	70	8.93
Total luxury beads	232	17.12	88	11.22
Shell beads	100	7.38	30	3.83
Glazed Nubian beads	964	71.14	633	80.74
Glazed Egyptian beads	0	0.00	2	0.25
Total glazed beads	964	71.14	635	80.99
Other Nubian beads	59	4.35	31	3.95
Total local grave beads	1355	100.00	782	99.74
Total imported grave beads	0	0.00	2	0.26
Total grave beads	1355		784	

Table 7.108 continued

	1700 B.C.		1650 B.C.	
	Number	Percent	Number	Percent
Gold beads	220	5.00	426	7.86
Carnelian beads	1036	23.56	638	11.77
Total luxury beads	1297	29.49	1488	27.46
Shell beads	380	8.64	606	11.18
Glazed Nubian beads	2017	45.86	2754	50.82
Glazed Egyptian beads	12	0.27	81	1.49
Total glazed beads	2029	46.13	2835	52.32
Other Nubian beads	692	15.73	490	9.04
Total local grave beads	4386	99.73	5305	97.90
Total imported grave beads	12	0.27	114	2.10
Total grave beads	4398		5419	

	1600 B.C.	
	Number	Percent
Gold beads	162	5.59
Carnelian beads	285	9.84
Total luxury beads	699	24.14
Shell beads	550	18.99
Glazed Nubian beads	1503	51.90
Glazed Egyptian beads	5	0.17
Total glazed beads	1508	52.07
Other Nubian beads	119	4.11
Total local grave beads	2821	97.41
Total imported grave beads	75	2.59
Total grave beads	2896	

Table 7.109: Luxury goods from Aniba North in 2000 B.C., 1900 B.C., 1850 B.C., 1750 B.C., 1700 B.C., 1650 B.C. and 1600 B.C. [Percentages within each date category are based on the total number of luxury goods found with burials of that date]

	2000 B.C.		1900 B.C.		1850 B.C.	
	Number	Percent	Number	Percent	Number	Percent
Alabaster	1	1.59	0	0.00	3	1.24
Carnelian	56	88.89	110	91.67	149	61.57
Copper	0	0.00	1	0.83	2	0.82
Gold	5	7.94	0	0.00	84	34.71
Ivory	1	1.59	9	15.83	4	1.65
Silver	0	0.00	0	0.00	0	0.00
Local luxury goods	62	98.41	119	99.17	236	97.52
Egyptian luxury goods	1	1.59	1	0.83	6	2.48
Total luxury goods	63		120		242	

	1750 B.C.		1700 B.C.		1650 B.C.	
	Number	Percent	Number	Percent	Number	Percent
Alabaster	1	0.90	1	0.07	10	0.61
Carnelian	73	65.77	1039	76.51	660	40.27
Copper	3	2.70	9	0.66	26	1.59
Gold	11	9.91	240	17.67	441	26.91
Ivory	16	14.41	68	5.01	65	3.97
Silver	7	6.31	1	0.07	437	26.67
Local luxury goods	101	90.99	1326	97.64	1546	94.33
Egyptian luxury goods	10	9.00	32	2.36	93	5.67
Total luxury goods	111		1358		1639	

	1600 B.C.	
	Number	Percent
Alabaster	50	6.75
Carnelian	289	39.00
Copper	10	1.35
Gold	174	23.48
Ivory	16	2.16
Silver	202	27.26
Local luxury goods	676	91.23
Egyptian luxury goods	65	8.77
Total luxury goods	741	

Table 7.110: Burial goods from Aniba North [Percentages are based on the total number of grave goods with burials that date from 2000 B.C., 1900 B.C., 1850 B.C., 1750 B.C., 1700 B.C., 1650 B.C. and 1600 B.C.]

	2000 B.C.		1900 B.C.		1850 B.C.	
	Number	Percent	Number	Percent	Number	Percent
Beads	395	79.16	540	87.52	1355	80.99
Local pottery	12	2.40	18	2.92	154	9.21
Egyptian pottery	3	0.60	12	1.94	39	2.33
Total local goods	423	84.77	591	95.79	1576	94.20
Total Egyptian goods	76	15.23	20	3.24	45	2.69
Goods *in* graves	480	96.19	586	94.98	1468	87.75
Total burial goods	499		617		1673	

	1750 B.C.		1700 B.C.		1650 B.C.	
	Number	Percent	Number	Percent	Number	Percent
Beads	784	63.23	4398	85.17	5419	81.48
Local pottery	288	23.23	322	6.24	420	6.31
Egyptian pottery	79	6.37	68	1.32	134	2.01
Total local goods	1139	91.85	4937	95.60	6049	90.95
Total Egyptian goods	99	7.98	136	2.63	346	5.20
Goods *in* graves	857	69.11	4748	91.94	6200	93.22
Total burial goods	1240		5164		6651	

	1600 B.C.	
	Number	Percent
Beads	2896	86.14
Local pottery	65	1.93
Egyptian pottery	43	1.28
Total local goods	3005	89.38
Total Egyptian goods	159	4.73
Goods *in* graves	3293	97.95
Total burial goods	3362	

Table 7.111: Descriptive statistics for assessments of economic production, exchange, goods value and tomb wealth in Middle Nubian C-Group burials at Aniba North

	Mean per Burial	Standard Deviation	Total Number of Burials
Total local production:			
In 2000 BC	67.15	34.05	26
In 1900 BC	73.83	49.40	29
In 1850 BC	76.14	57.16	90
In 1750 BC	112.94	100.07	104
In 1700 BC	79.38	52.43	226
In 1650 BC	104.38	131.54	282
In 1600 BC	55.93	98.06	110
Total foreign exchange:			
In 2000 BC	2.92	10.44	26
In 1900 BC	0.90	1.11	29
In 1850 BC	1.08	4.78	90
In 1750 BC	0.97	1.50	104
In 1700 BC	1.00	4.03	226
In 1650 BC	2.14	6.53	282
In 1600 BC	3.25	9.15	110

Table 7.111 continued

	Mean per Burial	Standard Deviation	Total Number of Burials
Total goods value:			
In 2000 BC	96.15	169.13	26
In 1900 BC	120.17	187.31	29
In 1850 BC	84.06	173.87	90
In 1750 BC	83.15	144.73	104
In 1700 BC	118.31	241.34	226
In 1650 BC	186.92	394.19	282
In 1600 BC	238.78	461.53	110
Total tomb wealth:			
In 2000 BC	147.12	174.58	26
In 1900 BC	173.62	190.30	29
In 1850 BC	142.83	185.45	90
In 1750 BC	185.32	184.24	104
In 1700 BC	175.96	241.00	226
In 1650 BC	270.01	410.01.	282
In 1600 BC	267.46	464.81	110

Table 7.112: Goods indices at Aniba North in 2000 B.C., 1900 B.C., 1850 B.C., 1750 B.C., 1700 B.C., 1650 B.C. and 1600 B.C.

	2000 B.C.	**1900 B.C.**	**1850 B.C.**	**1750 B.C.**
	Number	**Number**	**Number**	**Number**
Total goods value	2500	3485	7565	8648
Local production index	67	74	76	113
Local barter index	15	19	15	8
Egyptian exchange index	2.92	0.69	0.50	0.95
Wealth index	96	120	84	83
	1700 B.C.	**1650 B.C.**	**1600 B.C.**	
	Number	**Number**	**Number**	
Total goods value	26739	52712	26266	
Local production index	79	104	56	
Local barter index	20	19	26	
Egyptian exchange index	0.60	1.23	1.45	
Wealth index	118	187	239	

Table 7.113: Estimated superstructure [cairn] volumes and measured grave areas, in cubic metres and sq. metres respectively, of Middle Nubian C-Group burials at Aniba North

	Superstructure size	Grave size
In 2000 BC:		
Maximum	4.52	2.52
Minimum	0.60	0.36
Mean	2.10	1.14
	[21 cairns]	[20 graves]
In 1900 BC:		
Maximum	28.27	3.60
Minimum	1.39	0.45
Mean	4.88	1.55
	[18 cairns]	[23 graves]
In 1850 BC:		
Maximum	37.27	5.69
Minimum	0.74	0.44
Mean	7.52	1.65
	[55 cairns]	[61 graves]
In 1750 BC:		
Maximum	98.18	9.86
Minimum	0.76	0.55
Mean	10.32	1.47
	[92 cairns]	[73 graves]

Table 7.113 continued

	Superstructure size	Grave size
In 1700 BC:		
Maximum	62.42	3.60
Minimum	0.18	0.32
Mean	5.78	1.37
	[145 cairns]	[174 graves]
In 1650 BC:		
Maximum	281.49	5.25
Minimum	0.32	0.20
Mean	8.77	1.43
	[217 cairns]	[206 graves]
In 1600 BC:		
Maximum	147.32	4.29
Minimum	2.08	0.48
Mean	24.66	1.52
	[9 cairns]	[75 graves]

Table 7.114: Measured grave volumes, in cubic metres, of Middle Nubian C-Group tombs at Aniba North

	Grave volume
In 2000 BC:	
Maximum	2.52
Minimum	0.25
Mean	1.08
	[18 graves]
In 1900 BC:	
Maximum	2.34
Minimum	0.30
Mean	1.36
	[21 graves]
In 1850 BC:	
Maximum	3.98
Minimum	0.15
Mean	1.44
	[54 graves]
In 1750 BC:	
Maximum	5.28
Minimum	0.18
Mean	1.00
	[63 graves]

Table 7.114 continued

	Grave volume
In 1700 BC:	
Maximum	3.60
Minimum	0.13
Mean	1.16
	[160 graves]
In 1650 BC:	
Maximum	5.15
Minimum	0.05
Mean	0.96
	[189 graves]
In 1600 BC:	
Maximum	4.62
Minimum	0.17
Mean	1.05
	[62 graves]

7.0.14 Nonparametric tests: Aniba North

Cross-tabulations were employed to establish whether there was any statistical association between the date of a given grave and any of the variables being monitored. Although no association could be established between the date of a grave and the number of locally produced artefacts it contained [Table 7.121], the null hypothesis could be rejected in all other instances. Some association between grave size, both area and volume, was revealed by the contingency table results [Table 7.115 and Table 7.116]. The contingency table data also indicate some association between the date of a grave and the number of burial offerings that accompany it [Table 7.117], the date of a grave and the number of beads, including glazed specimens, that had been deposited within it [Table 7.119 and Table 7.120], the date of a grave and the number of Egyptian artefacts it contains [Table 7.122], and the date of a grave and the number of luxury objects found in it [Table 7.123].

Tests of comparison also were carried out for each variable at different time periods. In each instance, the null hypothesis states that the variable means of each population or time period are equal. For locally made burial goods, the null hypothesis that the means for this variable were the same in 2000 B.C., in 1900 B.C., in 1850 B.C., in 1750 B.C., in 1700 B.C., in 1650 B.C. and in 1600 B.C., could not be rejected. The data suggest that no significant difference exists between the mean number of locally manufactured objects occurring in 2000 B.C. and the mean number that occurred in any of the other time periods. In other words, the Kruskal-Wallis test supports the contingency table data that indicate no relationship between the two variables [Table 7.128]. Kruskal-Wallis tests also support the contingency table data that indicate some association between grave date and burial offerings [Table 7.126], glazed beads [Table 7.127], Egyptian objects [Table 7.131] and luxury artefacts [Table 7.138]. These data indicate that a significant difference exists between the mean number of local and imported burial offerings, including glazed beads, luxury artefacts and Egyptian-made goods, that were deposited with burials from different time periods at Aniba North.

DF:	8
Total Chi-square:	15.707
p-value:	0.0468
Contingency coefficient:	0.156

	Cell frequencies	2000BC-1850BC	1750BC	1700BC	1650BC	1600BC	Totals
Small	Observed	54	47	116	136	49	402
	Expected	66.15	46.43	110.68	131.03	47.71	402
Medium	Observed	39	21	43	50	13	166
	Expected	27.32	19.17	45.70	54.11	19.70	166
Large	Observed	11	5	15	20	13	64
	Expected	10.53	7.39	17.62	20.86	7.60	64
Totals		104	73	174	206	75	632

Table 7.115: Aniba North: grave area and date

DF:	8
Total Chi-square:	28.252
p-value:	0.0004
Contingency coefficient:	0.218

	Cell frequencies	2000BC-1850BC	1750BC	1700BC	1650BC	1600BC	Totals
Small	Observed	42	42	88	138	41	351
	Expected	57.57	39.00	99.05	117.00	38.38	351
Medium	Observed	35	17	56	35	14	157
	Expected	25.75	17.44	44.30	52.33	17.17	157
Large	Observed	16	4	16	16	7	59
	Expected	9.68	6.56	16.65	19.67	6.45	59
Totals		93	63	160	189	62	567

Table 7.116: Aniba North: grave volume and date

DF:	12
Total Chi-square:	38.088
p-value:	0.0001
Contingency coefficient:	0.205

	Cell frequencies	2000BC	1900BC	1850BC	1750BC	1700BC	1650BC	1600BC	Totals
Goods=1-2	Observed	4	12	16	16	56	54	16	174
	Expected	5.22	5.82	18.06	20.87	45.36	56.60	22.08	174
Goods=3-10	Observed	9	5	50	59	79	118	44	364
	Expected	10.92	12.18	37.79	43.66	94.88	118.39	46.18	364
Goods > 10	Observed	13	12	24	29	91	110	50	329
	Expected	9.87	11.01	34.15	39.47	85.76	107.01	41.74	329
Totals		26	29	90	104	226	282	110	867

Table 7.117: Aniba North: total burial goods and date

DF:	12
Total Chi-square:	56.529
p-value:	<0.0001
Contingency coefficient:	0.247

	Cell frequencies	2000BC	1900BC	1850BC	1750BC	1700BC	1650BC	1600BC	Totals
Beads=0	Observed	8	14	46	63	113	118	28	390
	Expected	11.70	13.05	40.48	46.78	101.66	126.85	49.48	390
Beads=1-10	Observed	12	5	26	27	39	95	45	249
	Expected	7.47	8.33	25.85	29.87	64.91	80.99	31.59	249
Beads > 10	Observed	6	10	18	14	74	69	37	228
	Expected	6.84	7.63	23.67	27.35	59.43	74.16	28.93	228
Totals		26	29	90	104	226	282	110	867

Table 7.118: Aniba North: total grave beads and date

DF:	10
Total Chi-square:	25.933
p-value:	0.0038
Contingency coefficient:	0.170

	Cell frequencies	2000BC-1900BC	1850BC	1750BC	1700BC	1650BC	1600BC	Totals
Beads=0	Observed	32	51	70	128	143	45	469
	Expected	29.75	48.69	56.26	122.25	152.55	59.50	469
Beads=1-20	Observed	17	29	27	62	110	45	290
	Expected	18.40	30.10	34.79	75.59	94.33	36.79	290
Beads >20	Observed	6	10	7	36	29	20	108
	Expected	6.85	11.21	12.96	28.15	35.13	13.70	108
Totals		55	90	104	226	282	110	867

Table 7.119: Aniba North: total glazed beads and date

DF:	10
Total Chi-square:	33.019
p-value:	0.0003
Contingency coefficient:	0.192

	Cell frequencies	2000BC-1900BC	1850BC	1750BC	1700BC	1650BC	1600BC	Totals
Beads=0	Observed	32	51	70	128	143	46	470
	Expected	29.82	48.79	56.38	122.51	152.87	59.63	470
Beads=1-10	Observed	16	27	26	50	103	38	260
	Expected	16.49	26.99	31.19	67.77	84.57	32.99	260
Beads >10	Observed	7	12	8	48	36	26	137
	Expected	8.69	14.22	16.43	35.71	44.56	17.38	137
Totals		55	90	104	226	282	110	867

Table 7.120: Aniba North: glazed Nubian beads and date

DF:	10
Total Chi-square:	17.399
p-value:	0.0660
Contingency coefficient:	0.140

	Cell frequencies	2000BC-1900BC	1850BC	1750BC	1700BC	1650BC	1600BC	Totals
Goods=0-10	Observed	32	67	80	141	187	69	576
	Expected	36.54	59.79	69.09	150.15	187.35	73.08	576
Goods=11-50	Observed	15	13	17	46	63	21	175
	Expected	11.10	18.17	20.99	45.62	56.92	22.20	175
Goods >50	Observed	8	10	7	39	32	20	116
	Expected	7.36	12.04	13.92	30.24	37.73	14.72	116
Totals		55	90	104	226	282	110	867

Table 7.121: Aniba North: total local goods and date

DF:	10
Total Chi-square:	22.248
p-value:	0.0139
Contingency coefficient:	0.158

	Cell frequencies	2000BC-1900BC	1850BC	1750BC	1700BC	1650BC	1600BC	Totals
Goods=0	Observed	34	62	50	160	165	69	540
	Expected	34.26	56.06	64.78	140.76	175.64	68.51	540
Goods=1	Observed	16	16	32	41	67	24	196
	Expected	12.43	20.35	23.51	51.09	63.75	24.87	196
Goods>2	Observed	5	12	22	25	50	17	131
	Expected	8.31	13.60	15.71	34.15	42.61	16.62	131
Totals		55	90	104	226	282	110	867

Table 7.122: Aniba North: total Egyptian goods and date

DF:	10
Total Chi-square:	27.202
p-value:	0.0024
Contingency coefficient:	0.174

	Cell frequencies	2000BC-1900BC	1850BC	1750BC	1700BC	1650BC	1600BC	Totals
Goods=0	Observed	43	73	84	166	180	69	615
	Expected	39.01	63.84	73.77	160.31	200.04	78.03	615
Goods=1-5	Observed	8	10	14	26	58	24	140
	Expected	8.88	14.53	16.79	36.49	45.54	17.76	140
Goods>5	Observed	4	7	6	34	44	17	112
	Expected	7.11	11.63	13.44	29.20	36.43	14.21	112
Totals		55	90	104	226	282	110	867

Table 7.123: Aniba North: total luxury goods and date

DF:	6
H statistic:	9.482
p-value:	0.1482

	Mean rank of grave area	Burial count
2000 BC	235.43	26
1900 BC	368.20	29
1850 BC	359.47	90
1750 BC	313.40	104
1700 BC	312.83	226
1650 BC	313.09	282
1600 BC	308.23	110

Table 7.124: Aniba North: Kruskal-Wallis rank information for grave area and date

DF:	6
H statistic:	31.881
p-value:	<0.0001

	Mean rank of grave volume	Burial count
2000 BC	285.53	26
1900 BC	374.38	29
1850 BC	346.53	90
1750 BC	261.72	104
1700 BC	312.62	226
1650 BC	244.59	282
1600 BC	267.42	110

Table 7.125: Aniba North: Kruskal-Wallis rank information for grave volume and date

DF:	6
H statistic:	13.020
p-value:	0.0427

	Mean rank of burial goods	Burial count
2000 BC	465.00	26
1900 BC	372.36	29
1850 BC	397.30	90
1750 BC	399.46	104
1700 BC	427.14	226
1650 BC	443.98	282
1600 BC	494.10	110

Table 7.126: Aniba North: Kruskal-Wallis rank information for total burial goods and date

DF:	6
H statistic:	12.902
p-value:	0.0446

	Mean rank of glazed beads	Burial count
2000 BC	390.94	26
1900 BC	447.48	29
1850 BC	423.69	90
1750 BC	374.91	104
1700 BC	433.83	226
1650 BC	439.00	282
1600 BC	492.46	110

Table 7.127: Aniba North: Kruskal-Wallis rank information for Nubian glazed beads and date

DF:	6
H statistic:	9.812
p-value:	0.1328

	Mean rank of local goods	Burial count
2000 BC	447.50	26
1900 BC	368.67	29
1850 BC	404.15	90
1750 BC	396.69	104
1700 BC	438.52	226
1650 BC	440.75	282
1600 BC	481.13	110

Table 7.128: Aniba North: Kruskal-Wallis rank information for total local goods and date

DF:	6
H statistic:	33.152
p-value:	<0.0001

	Mean rank of local goods	Burial count
2000 BC	484.48	26
1900 BC	404.29	29
1850 BC	397.04	90
1750 BC	336.89	104
1700 BC	435.11	226
1650 BC	444.82	282
1600 BC	521.92	110

Table 7.129: Aniba North: Kruskal-Wallis rank information for local goods, excluding pottery, and date

DF:	6
H statistic:	93.216
p-value:	<0.0001

	Mean rank of local pottery	Burial count
2000 BC	288.19	26
1900 BC	320.14	29
1850 BC	444.99	90
1750 BC	591.64	104
1700 BC	435.32	226
1650 BC	452.00	282
1600 BC	291.61	110

Table 7.130: Aniba North: Kruskal-Wallis rank information for local pottery and date

DF:	6
H statistic:	15.972
p-value:	0.0139

	Mean rank of Egyptian goods	Burial count
2000 BC	377.92	26
1900 BC	472.59	29
1850 BC	405.32	90
1750 BC	494.57	104
1700 BC	395.89	226
1650 BC	452.14	282
1600 BC	435.08	110

Table 7.131: Aniba North: Kruskal-Wallis rank information for total Egyptian goods and date

DF:	6
H statistic:	6.420
p-value:	0.3779

	Mean rank of Egyptian goods	Burial count
2000 BC	445.96	26
1900 BC	435.79	29
1850 BC	400.28	90
1750 BC	414.14	104
1700 BC	419.52	226
1650 BC	447.79	282
1600 BC	471.47	110

Table 7.132: Aniba North: Kruskal-Wallis rank information for Egyptian goods, excluding pottery, and date

DF:	5
H statistic:	20.408
p-value:	0.0010

	Mean rank of Egyptian pottery	Burial count
1900 BC	447.59	29
1850 BC	417.47	90
1750 BC	504.92	104
1700 BC	391.41	226
1650 BC	429.98	282
1600 BC	375.32	110

Table 7.133: Aniba North: Kruskal-Wallis rank information for Egyptian pottery and date

DF:	4
H statistic:	0.905
p-value:	0.9239

	Mean rank of Egyptian goods	Burial count
1850 BC	398.68	90
1750 BC	400.01	104
1700 BC	399.77	226
1650 BC	416.75	282
1600 BC	406.59	110

Table 7.134: Aniba North: Kruskal-Wallis rank information for Egyptian luxury goods and date

DF:	4
H statistic:	12.641
p-value:	0.0132

	Mean rank of luxury goods	Burial count
1850 BC	358.82	90
1750 BC	359.51	104
1700 BC	403.91	226
1650 BC	427.36	282
1600 BC	441.78	110

Table 7.135: Aniba North: Kruskal-Wallis rank information for total local luxury goods and date

DF:	4
H statistic:	2.272
p-value:	0.6859

	Mean rank of local luxury goods	Burial count
1900 BC	379.07	29
1750 BC	366.21	104
1700 BC	361.18	226
1650 BC	387.50	282
1600 BC	385.42	110

Table 7.136: Aniba North: Kruskal-Wallis rank information for local luxury goods, excluding luxury beads, and date

DF:	6
H statistic:	10.422
p-value:	0.1080

	Mean rank of luxury beads	Burial count
2000 BC	389.25	26
1900 BC	415.67	29
1850 BC	397.48	90
1750 BC	386.08	104
1700 BC	441.74	226
1650 BC	448.11	282
1600 BC	472.52	110

Table 7.137: Aniba North: Kruskal-Wallis rank information for local luxury beads and date

DF:	6
H statistic:	13.893
p-value:	0.0309

	Mean rank of luxury objects	Burial count
2000 BC	387.23	26
1900 BC	414.50	29
1850 BC	388.85	90
1750 BC	385.31	104
1700 BC	429.33	226
1650 BC	462.74	282
1600 BC	469.09	110

Table 7.138: Aniba North: Kruskal-Wallis rank information for total luxury objects and date

The Significance of Middle Nubian C-Group Mortuary Variability, *ca.* 2200 B.C. to *ca.* 1500 B.C.

Volume II

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7.0.15 Descriptive statistics: Aniba, Cemetery 195, *ca.* 1800 B.C. to *ca.* 1650 B.C.

Cemetery 195 [Figure 20, Figure 21 and Figure 22], excavated by Emery and Kirwan during the 1929-1931 survey of Lower Nubia and described as "badly plundered," was located south of Aniba on the west bank of the Nile (Emery and Kirwan 1935: 277). Bietak observed that the graves with superstructures are almost without exception oriented to the local north-south and assigned them to Stages *IIb* and *III* (1968: 75).

In the fifty-four graves in Cemetery 195 that contained burial offerings, 594 artefacts had been dispersed among six early Second Intermediate Period [1700 B.C.], thirty-three mid-Second Intermediate Period [1650 B.C.] and fifteen late Second Intermediate Period [1600 B.C.] tombs. These fifty-four burials contained the skeletons of five subadults [two from 1700 B.C. and three from 1650 B.C.] and forty-eight adults [four from 1700 B.C., twenty-nine from 1650 B.C. and fifteen from 1600 B.C.]. Forty-four percent of the grave occupants were male; forty-three percent was female and the sex of eleven percent was undetermined. One subadult was male and the sex of the rest was undetermined. Of the remaining twenty-three males in the sample, three were found in early Second Intermediate Period graves and thirteen in graves from the mid-Second Intermediate Period. Eight were late Second Intermediate Period interments. Two females were from the early, fourteen were from the middle and seven were from the late part of the Period. The burial from one late Second Intermediate Period grave, or two percent of the grave occupants, was missing.

Nineteen percent [ten] of the burials were undisturbed; eighty-one percent [forty-four] had been plundered. All [six] from the early, eighty-one percent of those from the middle [twenty-seven] and seventy-three percent of those from the late Second Intermediate Period [eleven] fell into the latter category. In 1700 B.C. the mean number of offerings deposited with a burial was 19.83; this fell to 9.61 artefacts per burial in 1650 B.C. but increased to 10.53 during the later years of the Period.

Eighty-six percent of the total grave offerings in Cemetery 195 consisted of glazed and shell beads that in turn constituted ninety-two percent of the 1700 B.C.

offerings, eighty-six percent of those from 1650 B.C. and eighty-two percent of those from 1600 B.C. [Table 7.140]. Half of the early Second Intermediate Period beads were glazed and half had been manufactured from shell; seventy-nine percent of those from the middle years of the Period had been glazed and only six percent was shell; and sixty-nine percent of the late Second Intermediate Period beads were glazed while twenty-three percent had been made from shell.

Luxury artefacts were absent from the early Second Intermediate Period burials. Eighty-one percent of the total number of luxury objects discovered in Cemetery 195 were retrieved from the mid-Second Intermediate Period burials; the remaining eleven objects, or nineteen percent of the total, were found in late Second Intermediate Period entombments. Seventy percent of the mid-Second Intermediate Period luxury artefacts had been fashioned from silver; eleven percent had been made of gold; eleven percent had been made from carnelian and three percent from ivory. In the late Second Intermediate Period graves forty-six percent of the luxury offerings had been fashioned from silver and forty-six percent had been chiseled from carnelian. Luxury items of Egyptian manufacture accounted for seven and nine percent of the middle and late Second Intermediate Period luxury offerings respectively [Table 7.143].

Local pottery accounted for six percent of the total number of 1700 B.C. burial goods, for five percent of the 1650 B.C. total and for nine percent of the 1600 B.C. total. Egyptian pottery comprised two percent of the 1700 B.C. total, two percent of the 1650 B.C. total and three percent of the 1600 B.C. total [Table 7.144].

The wealth indices computed for Cemetery 195 were forty-nine, seventy-one and sixty-three in 1700 B.C., 1650 B.C. and 1600 B.C. respectively. The total goods value [2330] also was highest for the mid-Second Intermediate Period burials, while the highest local production index [85] was calculated for those from the early Second Intermediate Period. The highest Egyptian exchange index was obtained for burials that date to the late Second Intermediate Period [Table 7.146].

The largest mean volume [3.61 cubic metres] was obtained for the late Second Intermediate Period superstructures, and, while the maximum grave size [2.60 square metres] also was reached during this time period, the smallest grave size [0.50

square metres] also was recorded for a late Second Intermediate Period grave. The largest mean grave size [1.30 square metres] was achieved during the early Second Intermediate Period [Table 7.147].

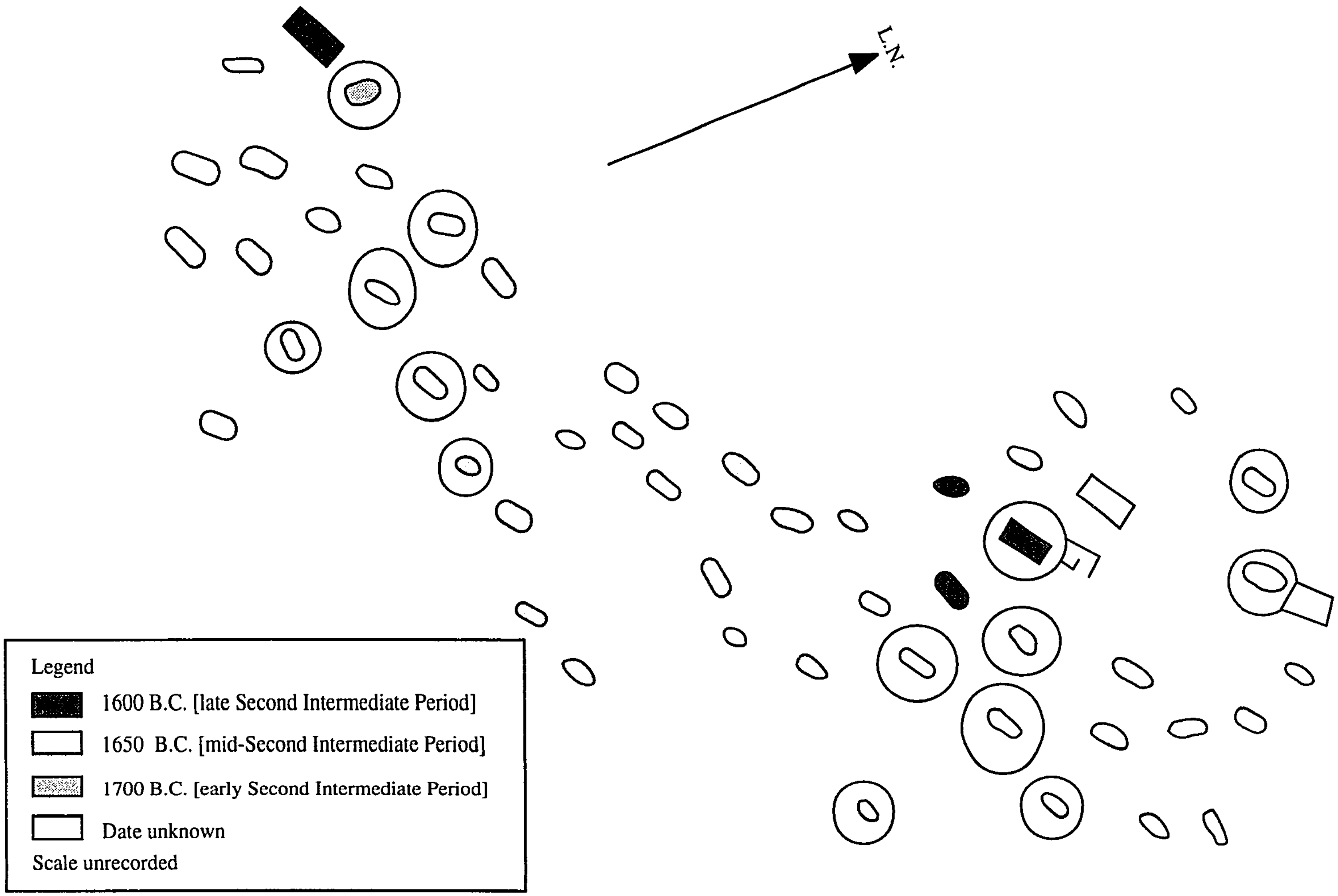


Figure 20. Aniba, Cemetery 195 - northern section: distribution of early, middle and late Second Intermediate Period Middle Nubian graves [After Emery and Kirwan 1935, 2: Plate 50]

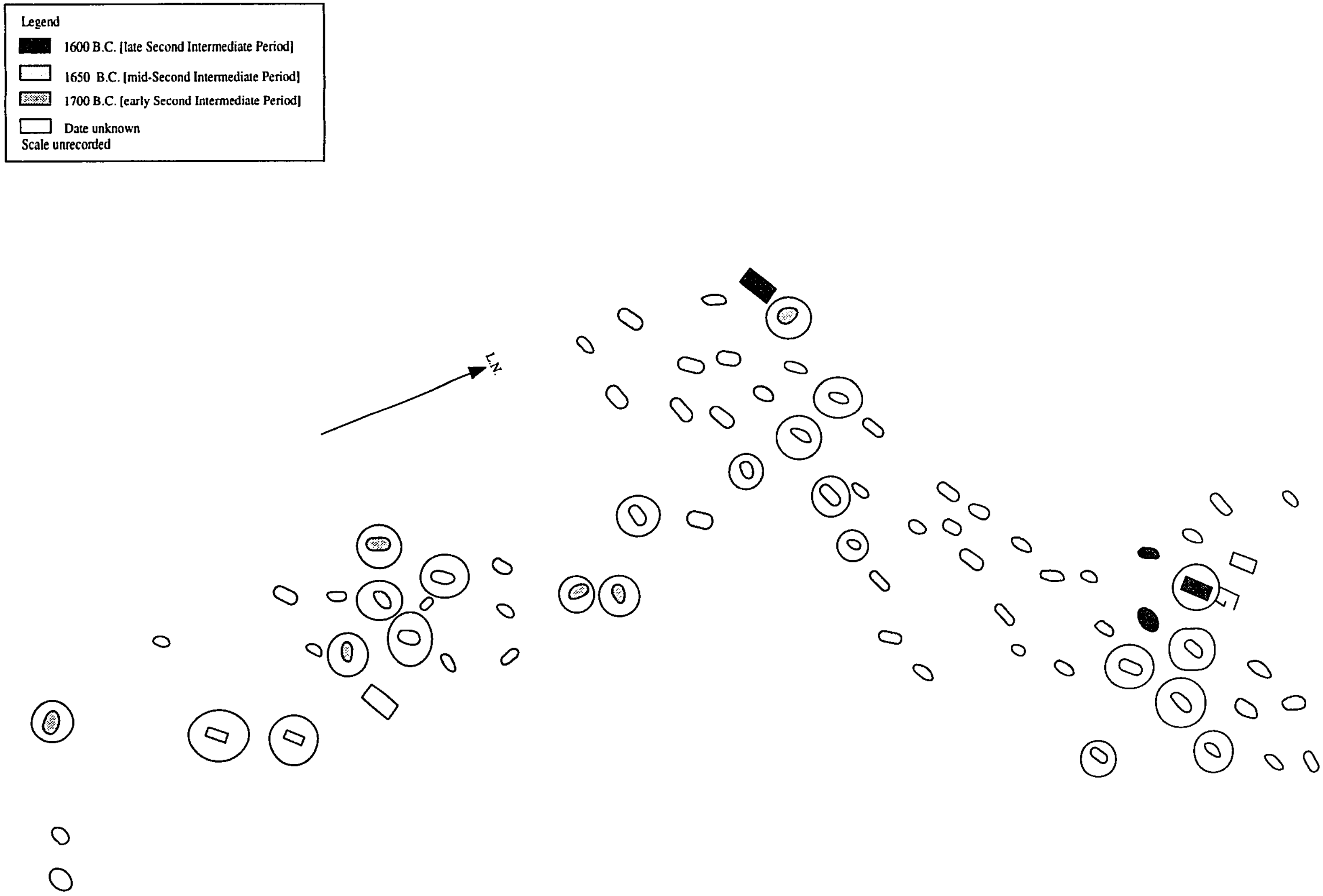


Figure 21. Aniba, Cemetery 195 - northern and southern sections: distribution of early, middle and late Second Intermediate Period Middle Nubian graves [After Emery and Kirwan 1935, 2: Plate 50]

Figure 22. Aniba, Cemetery 195 - southeastern section: distribution of early, middle and late Second IntermediatePeriod Middle Nubian graves [After Emery and Kirwan 1935, 2: Plate 50]

Table 7.139: Frequency distribution of superstructure and grave offerings from C-Group graves at Aniba [Percentages are based on the total number of dated graves from each time period in Cemetery 195]

	1700 BC		1650 BC	
	Number	Percent	Number	Percent
Graves with 1 to 10 burial goods	5	83.33	26	78.79
Graves with between 11 and 20 burial goods	0	0	4	12.12
Graves with between 21 and 50 burial goods	0	0	0	0
Graves with between 51 and 80 burial goods	0	0	3	9.10
Graves with between 81 and 110 burial goods	1	16.67	0	0
Total number of graves	6		33	
Total number of burial goods	119		317	

	1600 BC	
	Number	Percent
Graves with 1 to 10 burial goods	12	80.00
Graves with between 11 and 20 burial goods	0	0
Graves with between 21 and 50 burial goods	2	13.33
Graves with between 51 and 80 burial goods	1	6.67
Graves with between 81 and 110 burial goods	0	0
Total number of graves	15	
Total number of burial goods	158	

Table 7.140: Descriptive statistics for burial [superstructure and grave] goods from Middle Nubian burials in Cemetery 195 at Aniba

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of burial goods:				
In 1700 BC	19.83	39.89	6	119
In 1650 BC	9.61	16.34	33	317
In 1600 BC	10.53	17.07	15	158
Number of luxury goods:				
In 1700 BC	0	0	6	0
In 1650 BC	1.39	3.91	33	46
In 1600 BC	0.73	2.58	15	11
Number of grave beads:				
In 1700 BC	18.33	40.21	6	110
In 1650 BC	8.24	16.28	33	272
In 1600 BC	8.67	17.57	15	130
Number of local goods:				
In 1700 BC	19.50	39.58	6	117
In 1650 BC	9.30	16.25	33	307
In 1600 BC	10.00	17.01	15	150
Total number of Egyptian goods:				
In 1700 BC	0.33	0.52	6	2
In 1650 BC	0.30	0.68	33	10
In 1600 BC	0.47	0.52	15	7

Table 7.141: Descriptive statistics for superstructure and grave goods associated with C-Group burials in Cemetery 195 at Aniba in 1700 B.C., 1650 B.C. and 1600 B.C. [Superstructure offerings were excluded from calculations for plundered and undisturbed graves]

	1700 B.C.		1650 B.C.	
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**
Burial goods found with subadults	51.50	70.00	3.33	1.53
Burial goods found with adults	4.00	4.00	10.38	17.31
Burial goods found with females	6.00	5.66	14.36	20.91
Burial goods found with males	2.00	0	7.46	13.61
Burial goods found with subadult males	2.00	-	-	-
Burial goods found with subadults of unknown sex	101.00	-	3.33	1.53
Burial goods found with adult females	6.00	5.66	14.36	20.91
Burial goods found with adult males	2.00	0	7.46	13.61
Burial goods found with adults of unknown sex	-	-	1.50	0.71
Burial goods found in graves without occupants	-	-	6.00	-
Burial goods in plundered graves	18.83	40.44	4.74	4.53
Burial goods in undisturbed graves	-	-	29.83	31.80

	1600 B.C.	
	Mean	**Standard Deviation**
Burial goods found with subadults	-	-
Burial goods found with adults	10.53	17.07
Burial goods found with females	10.71	17.90
Burial goods found with males	10.38	17.55
Burial goods found with subadult males	-	-
Burial goods found with subadults of unknown sex	-	-
Burial goods found with adult females	10.71	17.90
Burial goods found with adult males	10.38	17.55
Burial goods found with adults of unknown sex	-	-
Burial goods found in graves without occupants	-	-
Burial goods in plundered graves	8.64	15.06
Burial goods in undisturbed graves	15.75	23.54

Table 7.142: Bead occurrences in Cemetery 195 at Aniba [Percentages are based on the total number of grave beads in burials from 1700 B.C., 1650 B.C. and 1600 B.C.]

	1700 B.C.		1650 B.C.	
	Number	**Percent**	**Number**	**Percent**
Gold beads	0	0	5	1.84
Carnelian beads	0	0	5	1.84
Total luxury beads	0	0	42	15.44
Shell beads	55	50.00	15	5.51
Glazed Nubian beads	55	50.00	215	79.04
Glazed Egyptian beads	0	0	0	0
Total glazed beads	55	50.00	215	79.04
Other Nubian beads	0	0	0	0
Total local grave beads	110	100.00	272	100.00
Total imported grave beads	0	0	0	0
Total grave beads	110		272	

	1600 B.C.	
	Number	**Percent**
Gold beads	0	0
Carnelian beads	5	3.85
Total luxury beads	10	7.69
Shell beads	30	23.08
Glazed Nubian beads	90	69.23
Glazed Egyptian beads	0	0
Total glazed beads	90	69.23
Other Nubian beads	0	0
Total local grave beads	130	100.00
Total imported grave beads	0	0
Total grave beads	130	

Table 7.143: Luxury goods from Cemetery 195 at Aniba in 1700 B.C., 1650 B.C. and 1600 B.C. [Percentages within each date category are based on the total number of luxury goods found with burials of that date]

	1700 B.C.		1650 B.C.		1600 B.C.	
	Number	Percent	Number	Percent	Number	Percent
Alabaster	0	0	0	0	0	0
Carnelian	0	0	5	10.87	5	45.45
Copper	0	0	3	6.52	1	9.09
Gold beads	0	0	5	10.87	0	0
Ivory	0	0	1	2.17	0	0
Silver	0	0	32	69.57	5	45.45
Local luxury goods	0	0	43	93.48	10	90.91
Egyptian luxury goods	0	0	3	6.52	1	9.09
Total luxury goods	0		46		11	

Table 7.144: Burial goods from Cemetery 195 at Aniba [Percentages are based on the total number of grave goods with burials that date from 1700 B.C., 1650 B.C. and 1600 B.C.]

	1700 B.C.		1650 B.C.		1600 B.C.	
	Number	Percent	Number	Percent	Number	Percent
Beads	110	92.44	272	85.80	130	82.28
Local pottery	7	5.88	15	4.73	14	8.86
Egyptian pottery	2	1.68	5	1.58	5	3.16
Total local goods	117	98.32	307	96.85	150	94.94
Total Egyptian goods	2	1.68	10	3.15	7	4.43
Goods *in* graves	113	94.96	307	96.85	158	100.00
Total burial goods	119		317		158	

Table 7.145: Descriptive statistics for assessments of economic production, exchange, goods value and tomb wealth in early, middle and late Second Intermediate Period Middle Nubian C-Group burials from Cemetery 195 at Aniba

	Mean per Burial	Standard Deviation	Total Number of Burials
Total local production:			
In 1700 BC	85.33	39.39	6
In 1650 BC	35.36	28.80	33
In 1600 BC	28.67	25.20	15
Total foreign exchange:			
In 1700 BC	0.33	0.52	6
In 1650 BC	0.30	0.68	33
In 1600 BC	0.53	0.64	15
Total goods value:			
In 1700 BC	49.17	78.83	6
In 1650 BC	70.61	148.82	33
In 1600 BC	63.20	79.08	15
Total tomb wealth:			
In 1700 BC	115.00	78.55	6
In 1650 BC	96.67	154.46	33
In 1600 BC	81.87	87.61	15

Table 7.146: Goods indices from Cemetery 195 at Aniba in 1700 B.C., 1650 B.C. and 1600 B.C.

	1700 B.C. Number	1650 B.C. Number	1600 B.C. Number
Total goods value	295	2330	948
Local production index	85	35	29
Egyptian exchange index	0.33	0.30	0.47
Wealth index	49	71	63

Table 7.147: Estimated superstructure [cairn] volumes and measured grave areas, in cubic metres and sq. metres respectively, of Middle Nubian C-Group burials in Cemetery 195 at Aniba

	Superstructure size	Grave size
In 1700 BC:		
Maximum	4.00	1.60
Minimum	2.40	0.78
Mean	2.87	1.30
	[6 cairns]	[6 graves]
In 1650 BC:		
Maximum	5.40	2.60
Minimum	1.84	0.50
Mean	3.61	1.15
	[7 cairns (26 missing)]	[33 graves]
In 1600 BC:		
Maximum		2.48
Minimum		0.60
Mean		1.06
		[15 graves]

7.0.16 Nonparametric tests: Aniba, Cemetery 195

The six burials from 1700 B.C. were added to those in the 1650 B.C. date category when cross-tabulations were employed to determine if any statistical dependence existed between the date of a given grave and the variables being monitored. However, because of low expected cell frequencies, unreliable results were obtained in all cases but one in which the contingency table data do not indicate any dependence between the date of a grave and the number of grave offerings that are associated with it [Table 7.148].

Tests of comparison also were conducted for each variable at different periods of time. In each instance, the hypothesis adopted states that the variable means of each population are equal. For total burial goods [Table 7.149] and total locally made goods [Table 7.151], the null hypothesis that the means of these variables were the same in 1700 B.C. as in 1650 B.C. and in 1600 B.C. could not be rejected. Thus, the data indicate that no significant difference exists between the mean number of burial offerings that were produced locally in 1700 B.C. and those produced in 1650 B.C. or in 1600 B.C. There also is no significant difference in the mean number of luxury objects recovered from the middle and late Second Intermediate Period burials [Table 7.150]. It also was not possible to reject the hypothesis that the mean number of imported Egyptian objects in the mid-Second Intermediate Period graves was equal to the mean number in the late Second Intermediate Period graves. A Mann-Whitney U test indicates that no significant difference exists between the mean number of Egyptian made grave goods in Middle Nubian burials from the time periods represented in Cemetery 195 [Table 7.152].

DF:	1
Total Chi-square:	0.031
p-value:	0.8597
Contingency coefficient:	0.024

	Cell frequencies	1700BC-1650BC	1600BC	Totals
Goods = 1-5	Observed	25	10	35
	Expected	25.28	9.72	35
Goods > 5	Observed	14	5	19
	Expected	13.72	5.28	19
Totals		39	15	54

Table 7.148: Aniba, Cemetery 195: total burial goods and date

DF:	2
H statistic:	0.215
p-value:	0.8979

	Mean rank of burial goods	Burial count
1700 BC	29.17	6
1650 BC	27.86	33
1600 BC	26.03	15

Table 7.149: Aniba, Cemetery 195: Kruskal-Wallis rank information for total burial goods and date

U statistic:	234.500
p-value:	0.7725

	Mean rank of luxury goods	Burial count
1650 BC	24.89	33
1600 BC	23.63	15

Table 7.150: Aniba, Cemetery 195: Mann-Whitney rank information for total luxury goods and date [Burials from 1700 B.C. were excluded]

DF:	2
H statistic:	0.490
p-value:	0.7826

	Mean rank of local burial goods	Burial count
1700 BC	28.92	6
1650 BC	28.33	33
1600 BC	25.10	15

Table 7.151: Aniba, Cemetery 195: Kruskal-Wallis rank information for total locally made burial goods and date

U statistic:	191.500
p-value:	0.2129

	Mean rank of Egyptian goods	Burial count
1650 BC	22.80	33
1600 BC	28.23	15

Table 7.152: Aniba, Cemetery 195: Mann-Whitney rank information for Egyptian made burial goods and date

7.0.17 Descriptive statistics: Aniba, Cemetery 200, *ca.* 2000 B.C. to *ca.* 1650 B.C.

Cemetery 200 [Figure 23], discovered by Emery and Kirwan during the 1929-1931 survey of Lower Nubia, and only partially excavated because it had been badly pillaged, was located south of the village of Aniba on the west bank of the Nile (Emery and Kirwan 1935: 294). Thirty-nine, or forty percent of the excavated graves, contained no artefacts, but 901 burial offerings were recovered from sixty percent [fifty-eight] of the gravepits in this cemetery. Ten artefacts were extracted from the five Eleventh Dynasty [2000 B.C.] interments; 261 objects, or twenty-nine percent of the total cemetery offerings, were removed from twenty-nine late Twelfth Dynasty [1800 B.C.] graves and the bulk of the offerings, namely seventy percent of the total, was taken from the twenty-four mid-Second Intermediate Period [1650 B.C.] tombs.

Only sixteen percent [nine] of the graves utilized in this analysis were undisturbed. The condition of one burial was unrecorded; the rest [eighty percent of those from 2000 B.C., eighty-six percent of those from 1800 B.C. and seventy-nine percent of those from 1650 B.C.] were plundered. Nevertheless, artefacts were recovered from the graves of fourteen subadults, all of undetermined sex, and forty-one adults [fourteen males, twenty-five females and two of unknown sex]. Three objects remained with two late Twelfth Dynasty tombs from which bodies had been removed and two artefacts remained in a mid-Second Intermediate Period grave that lacked a body. The analysis shows that the mean number of artefacts retrieved from burials dated to 2000 B.C. is two. This increases to nine in the late Twelfth Dynasty and to 26.25 objects in the middle of the Second Intermediate Period [Table 7.154].

Eighty-nine percent [805] of the total burial goods in this cemetery were composed of beads that contributed eighty-four percent [220] of the late Twelfth Dynasty goods and ninety-three percent of those from the middle years of the Second Intermediate Period [Table 7.156]. Whereas luxury offerings were absent from the Eleventh Dynasty graves and five carnelian beads remained with a plundered Twelfth Dynasty subadult burial, the bulk of the luxury offerings in this cemetery remained in the mid-Second Intermediate Period tombs. Ninety-nine percent of these objects had been manufactured locally from carnelian [72.22 percent], ivory [twenty-five percent] and silver [1.39 percent] [Table 7.157], while an Egyptian copper mirror, entombed with an adult female, was the sole remaining import.

Both local and imported pottery declined over time in Cemetery 200 at Aniba. The proportion of local ceramics decreased from seventy percent of the offerings in 2000 B.C. to nine percent in 1800 B.C. and three percent in 1650 B.C. Over the same time interval, Egyptian pottery fell from ten, to one, to less than one percent of the burial offerings in each date category [Table 7.158].

Wealth indices for Cemetery 200 were thirty, twenty-six and 101 in 2000 B.C., 1800 B.C. and 1650 B.C. respectively. The highest mean tomb wealth [148.21] as well as the highest total goods value [2422] also were obtained for the mid-Second Intermediate Period burials. Local production indices declined from seventy-one in the Eleventh to fifty-one in the late Twelfth Dynasty but rose slightly to fifty-two in the middle of the Second Intermediate Period. The foreign exchange index increased from 0.20 in 2000 B.C. to 0.31 in 1800 B.C., but fell to 0.29 in 1650 B.C. [Table 7.160]

A statistical summary of the forty available superstructure volumes shows that their sizes range from a maximum of 8.55 cubic metres in 2000 B.C. to a minimum of 0.53 cubic metres in 1800 B.C. Mean cairn sizes are 3.68 in 2000 B.C., 2.13 in 1800 B.C. and 3.42 cubic metres in 1650 B.C. The smallest grave area was recorded for 2000 B.C.; the largest [3.34 square metres] and the largest mean [1.33 square metres] areas occurred in 1650 B.C. [Table 7.161].

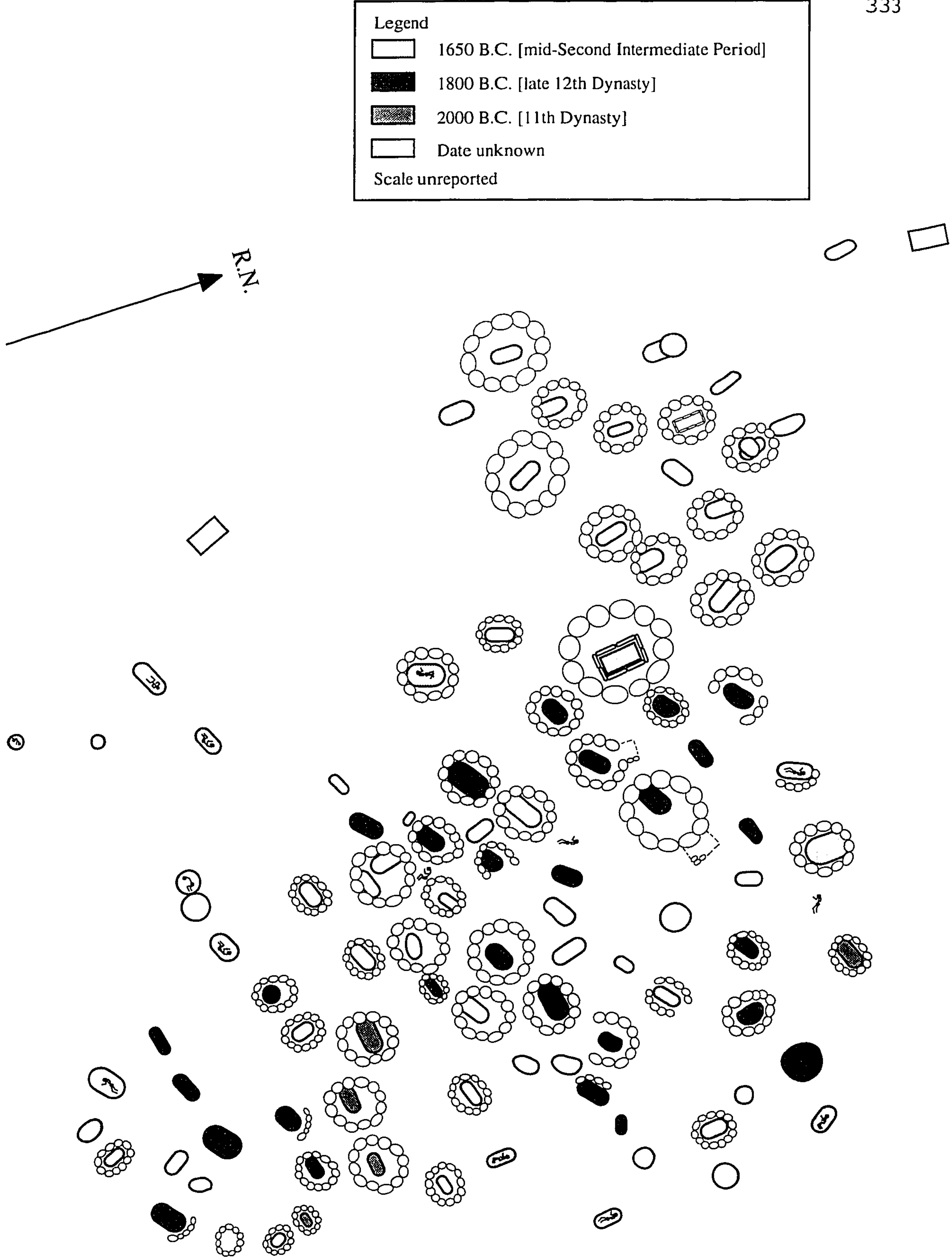


Figure 23. Aniba, Cemetery 200: distribution of 11th Dynasty, late 12th Dynasty and mid-Second Intermediate Period Middle Nubian graves [After Emery and Kirwan 1935, 2: Plate 51]

Table 7.153: Frequency distribution of superstructure and grave offerings from C-Group graves at Aniba [Percentages are based on the total number of dated graves from each time period in Cemetery 200]

	2000 BC		1800 BC	
	Number	**Percent**	**Number**	**Percent**
Graves with 1 burial good	2	40.00	9	31.03
Graves with 2 burial goods	2	40.00	5	17.24
Graves with between 3 and 40 burial goods	1	20.00	13	44.83
Graves with between 41 and 60 burial goods	0	0	1	3.45
Graves with between 61 and 80 burial goods	0	0	0	0
Graves with between 81 and 100 burial goods	0	0	1	3.45
Graves with between 101 and 200 burial goods	0	0	0	0
Total number of graves	5		29	
Total number of burial goods	10		261	
	1650 BC			
	Number	**Percent**		
Graves with 1 burial good	4	16.67		
Graves with 2 burial goods	5	20.83		
Graves with between 3 and 40 burial goods	8	33.33		
Graves with between 41 and 60 burial goods	5	20.83		
Graves with between 61 and 80 burial goods	1	4.17		
Graves with between 81 and 100 burial goods	0	0		
Graves with between 101 and 200 burial goods	1	4.17		
Total number of graves	24			
Total number of burial goods	630			

Table 7.154: Descriptive statistics for burial [superstructure and grave] goods from Middle Nubian burials in Cemetery 200 at Aniba

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of burial goods:				
In 2000 BC	2.00	1.23	5	10
In 1800 BC	9.00	19.84	29	261
In 1650 BC	26.25	43.33	24	630
Number of luxury goods:				
In 2000 BC	0	0	5	0
In 1800 BC	0.17	0.93	29	5
In 1650 BC	3.00	8.44	24	72
Number of grave beads:				
In 2000 BC	0	0	5	0
In 1800 BC	7.59	20.25	29	220
In 1650 BC	24.38	43.67	24	585
Number of local goods:				
In 2000 BC	1.80	0.84	5	9
In 1800 BC	8.69	19.93	29	252
In 1650 BC	25.96	43.40	24	623
Total number of Egyptian goods:				
In 2000 BC	0.20	0.45	5	1
In 1800 BC	0.31	1.00	29	9
In 1650 BC	0.29	0.55	24	7

Table 7.155: Descriptive statistics for superstructure and grave goods associated with C-Group burials in Cemetery 200 at Aniba in 2000 B.C., 1800 B.C. and 1650 B.C. [Superstructure offerings were excluded from calculations for plundered and undisturbed graves]

	2000 B.C.		1800 B.C.	
	Mean	Standard Deviation	Mean	Standard Deviation
Burial goods found with subadults	1.00	-	15.50	34.27
Burial goods found with adults	2.25	1.26	7.05	11.24
Burial goods found with females	2.33	1.53	8.91	14.52
Burial goods found with males	2.00	-	4.43	3.55
Burial goods found with subadults of unknown sex	1.00	-	15.50	34.27
Burial goods found with adults of unknown sex	-	-	5.00	-
Burial goods found in graves without occupants	-	-	1.50	0.71
Burial goods in plundered graves	0	0	3.28	4.26
Burial goods with plundered adult females	2.33	1.53	5.50	5.71
Burial goods with plundered adult males	2.00	-	4.43	3.55
Burial goods in undisturbed graves	0	.	38.25	47.11
Burial goods found with undisturbed subadults	1.00	-	100.00	-
Burial goods with undisturbed adult females	-	-	18.00	27.73

	1650 B.C.	
	Mean	Standard Deviation
Burial goods found with subadults	51.20	85.88
Burial goods found with adults	20.67	23.53
Burial goods found with females	30.18	25.82
Burial goods found with males	5.83	6.05
Burial goods found with subadults of unknown sex	51.20	85.88
Burial goods found with adults of unknown sex	5.00	-
Burial goods found in graves without occupants	2.00	-
Burial goods in plundered graves	11.42	18.43
Burial goods with plundered adult males	5.83	6.05
Burial goods in undisturbed graves	82.75	82.08
Burial goods found with undisturbed subadults	200.00	-
Burial goods found with undisturbed females	43.67	30.67

Table 7.156: Bead occurrences in Cemetery 200 at Aniba [Percentages are based on the total number of grave beads in burials from 2000 B.C., 1800 B.C. and 1650 B.C.]

	2000 B.C.		1800 B.C.	
	Number	Percent	Number	Percent
Gold beads	0	0	0	0
Carnelian beads	0	0	5	2.27
Total luxury beads	0	0	5	2.27
Shell beads	0	0	5	2.27
Glazed Nubian beads	0	0	200	90.91
Glazed Egyptian beads	0	0	0	0
Total glazed beads	0	0	200	90.91
Other Nubian beads	0	0	10	4.55
Total local grave beads	0	0	220	100.00
Total imported grave beads	0	0	0	0
Total grave beads	0		220	

	1650 B.C.	
	Number	Percent
Gold beads	0	0
Carnelian beads	52	8.89
Total luxury beads	69	11.79
Shell beads	15	2.56
Glazed Nubian beads	501	85.64
Glazed Egyptian beads	0	0
Total glazed beads	501	85.64
Other Nubian beads	0	0
Total local grave beads	585	100.00
Total imported grave beads	0	0
Total grave beads	585	

Table 7.157: Luxury goods from Cemetery 200 at Aniba in 2000 B.C., 1800 B.C. and 1650 B.C. [Percentages within each date category are based on the total number of luxury goods found with burials of that date]

	2000 B.C.		1800 B.C.		1650 B.C.	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Alabaster	0	0	0	0	0	0
Carnelian	0	0	5	100.00	52	72.22
Copper	0	0	0	0	1	1.39
Gold beads	0	0	0	0	0	0
Ivory	0	0	0	0	18	25.00
Silver	0	0	0	0	1	1.39
Local luxury goods	0	0	5	100.00	71	98.61
Egyptian luxury goods	0	0	0	0	1	1.39
Total luxury goods	0		5		72	

Table 7.158: Burial goods from Cemetery 200 at Aniba [Percentages are based on the total number of grave goods with burials that date from 2000 B.C., 1800 B.C. and 1650 B.C.]

	2000 B.C.		1800 B.C.		1650 B.C.	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Beads	0	0	220	84.29	585	92.86
Local pottery	7	70.00	23	8.81	19	3.02
Egyptian pottery	1	10.00	3	1.15	6	0.95
Total local goods	9	90.00	252	96.56	623	98.89
Total Egyptian goods	1	10.00	9	3.45	7	1.11
Goods *in* graves	0	0	235	90.04	599	95.08
Total burial goods	10		261		630	

Table 7.159: Descriptive statistics for assessments of economic production, exchange, goods value and tomb wealth in Eleventh Dynasty, Twelfth Dynasty and Second Intermediate Period Middle Nubian C-Group burials from Cemetery 200 at Aniba

	Mean per Burial	Standard Deviation	Total Number of Burials
Total local production:			
In 2000 BC	71.40	19.63	5
In 1800 BC	51.24	23.35	29
In 1650 BC	51.92	32.99	24
Total foreign exchange:			
In 2000 BC	0.20	0.45	5
In 1800 BC	0.31	1.00	29
In 1650 BC	0.29	0.55	24
Total goods value:			
In 2000 BC	29.80	21.06	5
In 1800 BC	25.55	40.29	29
In 1650 BC	100.92	153.10	24
Total tomb wealth:			
In 2000 BC	99.80	24.16	5
In 1800 BC	75.03	44.84	29
In 1650 BC	148.21	154.73	24

Table 7.160: Goods indices from Cemetery 200 at Aniba in 2000 B.C., 1800 B.C. and 1650 B.C.

	2000 B.C. Number	1800 B.C. Number	1650 B.C. Number
Total goods value	149	741	2422
Local production index	71	51	52
Egyptian exchange index	0.2	0.3	0.3
Wealth index	30	26	101

Table 7.161: Estimated superstructure [cairn] volumes and measured grave areas, in cubic metres and sq. metres respectively, of Middle Nubian C-Group burials in Cemetery 200 at Aniba

	Superstructure size	**Grave size**
In 2000 BC:		
Maximum	8.55	2.26
Minimum	1.06	0.18
Mean	3.68	1.15
	[5 cairns]	[5 graves]
In 1800 BC:		
Maximum	3.14	2.63
Minimum	0.53	0.24
Mean	2.13	1.24
	[21 cairns]	[26 graves]
In 1650 BC:		
Maximum	7.34	3.34
Minimum	0.58	0.42
Mean	3.42	1.33
	[14 cairns]	[22 graves]

7.0.18 Nonparametric tests: Aniba, Cemetery 200

As with practically all the Middle Nubian burial data, low expected cell frequencies were almost always obtained when cross-tabulations were conducted to establish whether statistical dependence existed between the date of a particular grave and the variables being studied. No association between grave area and date was found [Table 7.162]. However, in the case of total burial goods [Table 7.163], it was possible to reject the null hypothesis. Thus, the contingency table data suggest some dependence between the date of a grave and the number of objects that are present within it.

When Kruskal-Wallis tests were conducted for each variable at different periods of time, the null hypothesis that the means for the total burial goods [Table 7.164] were the same in 2000 B.C., 1800 B.C. and in 1650 B.C. could be rejected. These data indicate that a *significant* difference exists between the mean number of burial goods present in 2000 B.C. and the mean number present during the other two time periods. A Mann-Whitney U test further revealed that whereas the increase in artefacts that occurred between 1800 B.C. and 1650 B.C. *is* statistically significant, the earlier increase between 2000 B.C. and 1800 B.C. is not [Table 7.158, Table 7.165 and Table 7.166].

When further comparisons were made of the mean number of local beads present among the grave offerings from 1800 B.C. and 1650 B.C. [Table 7.168], Mann-Whitney test results show that the differences are not statistically significant. A similar test revealed that no significant difference exists between the mean number of Nubian glazed beads from 1800 B.C. and the mean number from 1650 B.C. [Table 7.169].

A Mann-Whitney test also established that no significant difference exists between the mean number of Egyptian artefacts occurring in this cemetery in 1800 B.C. and the mean number occurring in 1650 B.C. [Table 7.171].

DF:	1
Total Chi-square:	$1.143E-3$
p-value:	0.9730
Contingency coefficient:	$4.644E-3$

	Cell frequencies	2000BC-1800BC	1650BC	Totals
Small	Observed	21	15	36
	Expected	21.06	14.93	36
Large	Observed	10	7	17
	Expected	9.94	7.06	17
Totals		31	22	53

Table 7.162: Aniba, Cemetery 200: grave area and date

DF:	1
Total Chi-square:	5.717
p-value:	0.0168
Contingency coefficient:	0.300

	Cell frequencies	2000BC-1800BC	1650BC	Totals
Goods = 1-5	Observed	26	11	37
	Expected	21.69	15.31	37
Goods > 5	Observed	8	13	21
	Expected	12.31	8.68	21
Totals		34	24	58

Table 7.163: Aniba, Cemetery 200: total burial goods and date

DF:	2
H statistic:	6.377
p-value:	0.0412

	Mean rank of burial goods	Burial count
2000 BC	17.80	5
1800 BC	26.52	29
1650 BC	35.54	24

Table 7.164: Aniba, Cemetery 200: Kruskal-Wallis rank information for total burial goods and date

U statistic:	48.000
p-value:	0.2335

	Mean rank of burial goods	Burial count
2000 BC	12.60	5
1800 BC	18.35	29

Table 7.165: Aniba, Cemetery 200: Mann-Whitney rank information for burial goods and date

U statistic:	237.000
p-value:	0.0473

	Mean rank of burial goods	Burial count
1800 BC	23.17	29
1650 BC	31.63	24

Table 7.166: Aniba, Cemetery 200: Mann-Whitney rank information for burial goods and date

U statistic:	248.000
p-value:	0.0740

	Mean rank of grave beads	Burial count
1800 BC	23.55	29
1650 BC	31.17	24

Table 7.167: Aniba, Cemetery 200: Mann-Whitney rank information for total grave beads and date

U statistic:	248.000
p-value:	0.0740

	Mean rank of grave beads	Burial count
1800 BC	23.55	29
1650 BC	31.17	24

Table 7.168: Aniba, Cemetery 200: Mann-Whitney rank information for total locally made grave beads and date

U statistic:	254.000
p-value:	0.0930

	Mean rank of Nubian glazed beads	Burial count
1800 BC	23.76	29
1650 BC	30.92	24

Table 7.169: Aniba, Cemetery 200: Mann-Whitney rank information for total Nubian glazed beads and date

DF:	2
H statistic:	5.717
p-value:	0.0573

	Mean rank of burial goods	Burial count
2000 BC	19.80	5
1800 BC	26.24	29
1650 BC	35.46	24

Table 7.170: Aniba, Cemetery 200: Kruskal-Wallis rank information for total locally made burial goods and date

U statistic:	313.500
p-value:	0.5376

	Mean rank of Egyptian goods	Burial count
1800 BC	25.81	29
1650 BC	28.44	24

Table 7.171: Aniba, Cemetery 200: Mann-Whitney rank information for total Egyptian made grave goods and date

7.0.19 Descriptive statistics: Masmas, Cemetery 201, *ca.* 1600 B.C. to *ca.* 1550 B.C.

Cemetery 201 [Figure 24], excavated by Emery and Kirwan during the 1929-1931 survey of Lower Nubia, was located on the west bank of the Nile near the village of Masmas (Emery and Kirwan 1935: 312). Seventy-three of the eighty-six graves in the cemetery were associated with offerings; the thirteen that lacked objects were omitted from the data analysis.

Fifteen percent [eleven graves] of the tombs in Cemetery 201 were undisturbed. Eighty-two percent of these intact burials were dated to the late Second Intermediate Period [1600 B.C.]; eighteen percent were Eighteenth Dynasty [1550 B.C.] in date. Equal numbers [thirty-one] of late Second Intermediate Period and Eighteenth Dynasty tombs, or eighty-five percent of the graves, had been plundered. The analysis of the seventy-three burials with which grave offerings had been deposited showed that 1,528 objects had been distributed amongst forty burials from the Second Intermediate Period and thirty-three from the Eighteenth Dynasty. Twenty-three percent of the grave population consisted of subadults [eight from 1600 B.C. and nine from 1550 B.C.]; sixty-six percent [forty-eight individuals] were adults, of whom twenty-five came from late Second Intermediate Period tombs and twenty-three from Eighteenth Dynasty graves. In the Second Intermediate Period graves, eight, or twenty percent of the occupants, were male; forty percent were female. Twenty-seven percent of the Eighteenth Dynasty tombs contained male burials; thirty-nine percent contained female entombments. The sex of twenty-six percent of the grave occupants [nineteen bodies, of which nine were Second Intermediate Period and ten were Eighteenth Dynasty in date] was undetermined. Eleven percent of the graves in this cemetery contained no bodies.

Almost all categories of grave artefacts at Masmas decreased over time. Total offerings fell from an average of 25.23 per burial in 1600 B.C. to 15.73 per burial in 1550 B.C. Over the same time period, luxury objects decreased from 5.03 to 1.30 per burial and Egyptian goods declined from 4.25 to 1.58 per burial [Table 7.173]. While thirteen percent [201 items] of the total cemetery offerings in 1600 B.C.

were luxury objects, in 1550 B.C. only three percent [forty-three objects] of the total cemetery offerings were luxury items. Ninety-five percent of the Second Intermediate Period luxury goods were local products of which twenty-five percent were silver and sixty-nine percent were carnelian. Ninety-eight percent of the carnelian was in the form of beads. The remaining five percent of the luxury objects were imports from Egypt. Two percent of these were alabaster and one percent was copper. Eighteenth Dynasty production of local luxury goods, crafted mainly of carnelian, dropped to seventy-five percent of the total. On the other hand, Egyptian made objects increased to twenty-six percent of the luxury goods total. Sixteen percent of these Egyptian artefacts had been manufactured from alabaster, five percent were made of copper and the rest were silver [Table 7.176]. Egyptian pottery also increased from two percent to four percent [Table 7.177] during these two time periods. Nevertheless, the total percentage of Egyptian made artefacts remaining in Cemetery 201 fell from seventeen percent in 1600 B.C. to ten percent in 1550 B.C. [Table 7.177].

The wealth indices obtained for Cemetery 201 were 172 and 123 in 1600 B.C. and 1550 B.C. respectively. The late Second Intermediate Period burials also exhibited the highest mean tomb wealth [214.50] as well as the highest local production index [63], the highest total goods value [6889], the highest foreign exchange index [4.30] and the highest Egyptian exchange index [4.25] [Table 7.179].

Superstructures remained above twenty-five percent [ten] of the Second Intermediate Period graves. Their average size was 2.11 cubic metres. The largest mean grave size [1.33 square metres] was obtained for the Eighteenth Dynasty graves. However, both the smallest [0.24 square metres] and the largest [3.60 square metres] graves were late Second Intermediate Period in date [Table 7.180].

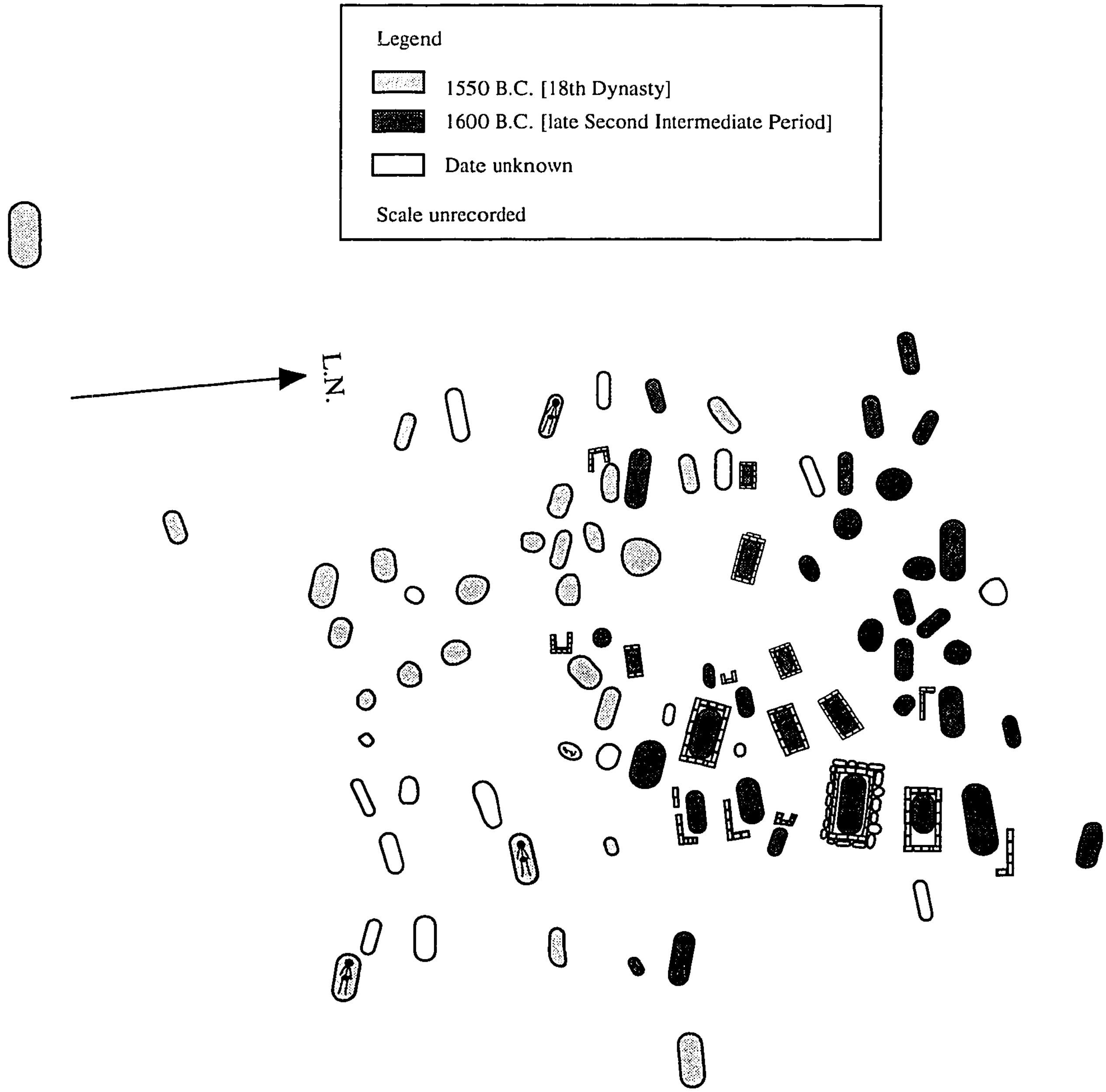


Figure 24. Masmas, Cemetery 201: distribution of late Second Intermediate Period and 18th Dynasty Middle Nubian graves [After Emery and Kirwan 1935, 2: Plate 52]

Table 7.172: Frequency distribution of superstructure and grave offerings from C-Group graves at Masmas[Percentages are based on the total number of dated graves from each time period in Cemetery 201]

	1600 BC		1550 BC	
	Number	**Percent**	**Number**	**Percent**
Graves with 1 burial good	6	15.00	3	9.09
Graves with 2 burial goods	2	5.00	1	3.03
Graves with between 3 and 10 burial goods	20	50.00	16	48.48
Graves with between 11 and 35 burial goods	7	17.50	10	30.30
Graves with between 36 and 69 burial goods	1	2.50	1	3.03
Graves with between 70 and 104 burial goods	2	5.00	2	6.06
Graves with between 105 and 207 burial goods	1	2.50	0	0
Graves with between 208 and 345 burial goods	1	2.50	0	0
Total number of burials	40		33	
Total number of burial goods	1009		519	
Total goods value	6889		4047	
Local production index	63		27	
Egyptian exchange index	4.25		1.58	
Wealth index	172		123	

Table 7.173: Descriptive statistics for burial [superstructure and grave] goods from Middle Nubian burials in Cemetery 201 at Masmas

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of burial goods:				
In 1600 BC	25.23	62.46	40	1009
In 1550 BC	15.73	23.44	33	519
Number of luxury goods:				
In 1600 BC	5.03	18.09	40	201
In 1550 BC	1.30	4.59	33	43
Number of grave beads:				
In 1600 BC	19.13	47.62	40	765
In 1550 BC	8.79	11.86	33	290
Number of local goods:				
In 1600 BC	20.93	47.98	40	837
In 1550 BC	13.73	22.95	33	453
Total number of Egyptian goods:				
In 1600 BC	4.25	18.24	40	170
In 1550 BC	1.58	2.66	33	52

Table 7.174: Descriptive statistics for superstructure and grave goods associated with C-Group burials in Cemetery 201 at Masmas in 1600 B.C. and in 1550 B.C. [Superstructure offerings were excluded from calculations for plundered and undisturbed graves]

	1600 B.C.		1550 B.C.	
	Mean	Standard Deviation	Mean	Standard Deviation
Burial goods found with subadults	52.50	119.34	23.22	34.22
Burial goods found with adults	22.88	42.18	13.17	18.44
Burial goods found with females	52.63	93.00	23.54	33.51
Burial goods found with males	6.75	4.06	8.67	6.19
Burial goods found with subadult females	345.00	-	102.00	-
Burial goods found with subadults of unknown sex	10.71	17.90	13.38	18.45
Burial goods found with adult females	33.13	52.48	17.00	24.87
Burial goods found with adult males	6.75	4.06	8.67	6.19
Burial goods found with adults of unknown sex	10.50	7.78	10.50	0.71
Burial goods found in graves without occupants	2.43	1.81	7.00	-
Burial goods in plundered graves	17.45	38.42	8.58	5.35
Burial goods in undisturbed graves	48.67	112.18	80.00	31.11

Table 7.175: Bead occurrences in Cemetery 201 at Masmas [Percentages are based on the total number of grave beads in burials from 1600 B.C. and 1550 B.C.]

	1600 B.C.		1550 B.C.	
	Number	**Percent**	**Number**	**Percent**
Gold beads	0	0	0	0
Carnelian beads	135	17.65	30	10.34
Total luxury beads	190	24.84	30	10.34
Shell beads	385	50.33	160	55.17
Glazed Nubian beads	100	13.07	75	25.86
Glazed Egyptian beads	0	0	0	0
Total glazed beads	100	13.07	75	25.86
Other Nubian beads	90	11.76	25	8.62
Total local grave beads	765	100.00	290	100.00
Total imported grave beads	0	0	0	0
Total grave beads	765		290	

Table 7.176: Luxury goods from Cemetery 201 at Masmas in 1600 B.C. and 1550 B.C. [Percentages within each date category are based on the total number of luxury goods found with burials of that date]

	1600 B.C.		1550 B.C.	
	Number	**Percent**	**Number**	**Percent**
Alabaster	5	2.49	7	16.28
Carnelian	138	68.66	30	69.77
Copper	3	1.49	2	4.65
Gold beads	0	0	0	0
Ivory	0	0	0	0
Silver	50	24.88	4	9.30
Local luxury goods	190	94.53	32	74.42
Egyptian luxury goods	11	5.47	11	25.58
Total luxury goods	201		43	

Table 7.177: Burial goods from Cemetery 201 at Masmas [Percentages are based on the total number of grave goods with burials that date from 1600 B.C. and 1550 B.C.]

	1600 B.C.		1550 B.C.	
	Number	**Percent**	**Number**	**Percent**
Beads	765	75.82	290	55.88
Local pottery	43	4.26	15	2.89
Egyptian pottery	20	1.98	21	4.05
Total local goods	837	82.95	453	87.28
Total Egyptian goods	170	16.85	52	10.02
Goods *in* graves	979	97.03	426	82.08
Total burial goods	1009		519	

Table 7.178: Descriptive statistics for assessments of economic production, exchange, goods value and tomb wealth in late Second Intermediate Period and Eighteenth Dynasty Middle Nubian C-Group burials from Cemetery 201 at Masmas

	Mean per Burial	Standard Deviation	Total Number of Burials
Total local production:			
In 1600 BC	62.93	62.22	40
In 1550 BC	27.27	18.92	33
Total Egyptian exchange:			
In 1600 BC	4.25	18.24	40
In 1550 BC	1.58	2.66	33
Total foreign exchange:			
In 1600 BC	4.30	18.24	40
In 1550 BC	2.00	2.95	33
Total goods value:			
In 1600 BC	172.23	507.59	40
In 1550 BC	122.64	239.94	33
Total tomb wealth:			
In 1600 BC	214.50	506.59	40
In 1550 BC	138.85	239.92	33

Table 7.179: Goods indices from Cemetery 201 at Masmas in 1600 B.C. and 1550 B.C.

	1600 B.C. Number	1550 B.C. Number
Total goods value	6889	4047
Local production index	63	27
Egyptian exchange index	4.25	1.58
Wealth index	172	123

Table 7.180: Estimated superstructure [cairn] volumes and measured grave areas, in cubic metres and sq. metres respectively, of Middle Nubian C-Group burials in Cemetery 201 at Masmas

	Superstructure size	Grave size
In 1600 BC:		
Maximum	5.51	3.60
Minimum	0.50	0.24
Mean	2.11	1.29
	[10 'cairns']	[39 graves]
In 1550 BC:		
Maximum	-	3.58
Minimum	-	0.30
Mean	-	1.33
	[- cairns]	[32 graves]

7.0.20 Nonparametric tests: Masmas, Cemetery 201

Low expected cell frequencies resulted when cross-tabulations were employed to determine if statistical dependence existed between the date of a given grave and all of the variables being studied except total burial goods and total grave beads. For both variables, the null hypothesis could not be rejected. Thus, the contingency table data do not indicate any dependence between the date of a grave and the number of burial offerings associated with it [Table 7.181] and [Table 7.182].

Similarly, Mann-Whitney tests of comparison for each variable at the two different time periods represented in Cemetery 201 established that no significant difference exists between the mean number of local or imported Egyptian burial goods associated with tombs from 1600 B.C. and those from 1550 B.C. For total burial goods, total local goods [Table 7.183], shell beads, total grave beads, total Egyptian goods [Table 7.186], local luxury beads, total luxury items [Table 7.185] and Nubian glazed beads [Table 7.184], the null hypothesis that the means of the variables in 1600 B.C. and in 1550 B.C. were equal could not be rejected.

DF:	1
Total Chi-square:	1.828
p-value:	0.1763
Contingency coefficient:	0.156

	Cell frequencies	1600BC	1550BC	Totals
Goods < 5	Observed	17	9	26
	Expected	14.25	11.75	26
Goods > 5	Observed	23	24	47
	Expected	25.75	21.25	47
Totals		40	33	73

Table 7.181: Masmas, Cemetery 201: burial goods and date

DF:	1
Total Chi-square:	1.028
p-value:	0.3107
Contingency coefficient:	0.118

	Cell frequencies	1600BC	1550BC	Totals
Beads=0	Observed	18	11	29
	Expected	15.89	13.11	29
Beads $\geq$= 5	Observed	22	22	44
	Expected	24.11	19.89	44
Totals		40	33	73

Table 7.182: Masmas, Cemetery 201: grave beads and date

U statistic:	575.50
p-value:	0.3490

	Mean rank of burial goods	Burial count
1600 BC	34.89	40
1550 BC	39.56	33

Table 7.183: Masmas, Cemetery 201: Mann-Whitney rank information for total locally made burial goods and date

U statistic:	491.000
p-value:	0.0610

	Mean rank of grave beads	Burial count
1600 BC	32.78	40
1550 BC	42.12	33

Table 7.184: Masmas, Cemetery 201: Mann-Whitney rank information for Nubian glazed beads and date

U statistic:	650.000
p-value:	0.9117

	Mean rank of luxury goods	Burial count
1600 BC	37.25	40
1550 BC	36.70	33

Table 7.185: Masmas, Cemetery 201: Mann-Whitney rank information for total luxury artefacts and date

U statistic:	656.000
p-value:	0.9646

	Mean rank of Egyptian goods	Burial count
1600 BC	36.90	40
1550 BC	37.12	33

Table 7.186: Masmas, Cemetery 201: Mann-Whitney rank information for total Egyptian made goods and date

7.0.21 Descriptive statistics: Tushka, Cemetery 209, *ca.* 1900 B.C. to *ca.* 1650 B.C.

Cemetery 209 [Figure 25 and Figure 26], situated on the west bank of the Nile about 600 metres due west of Naga Abdu Hilla in the Tushka district, was partially excavated by Herman Junker in 1912. Unfortunately, most of Junker's report on the approximately 200 burials in the western section of Cemetery 209 was devoted to the "anthropology" of the Nubian skulls of the eighteen males, fourteen females, six subadults and two persons of unknown age and sex he had unearthed. Information on grave sizes, objects encountered and plundering activity tended to be imprecise or lacking. Thus, because of its extreme brevity, and because of the difficulty encountered in assigning "calendar" dates to the graves, data from this site report were not included in the analysis. However, the term 'Junker's tombs' is used in this thesis to refer to this far western section of the cemetery. The 277 burials utilized in this study were excavated by Emery and Kirwan some time between 1929 and 1931. Twenty percent of the graves [fifty-five] were dated to 1900 B.C.; twenty-four percent percent [sixty-seven] were assigned to 1800 B.C.; forty percent [111] were 1750 B.C. in date and the remaining nine percent [twenty-four] to which dates could be assigned were dated to 1650 B.C.

Analysis of this cemetery shows that a total of 3,041 superstructure and grave offerings were associated with the burials of 193 adults, or seventy percent of the total number of burials, twenty-seven subadults [ten percent] and fifty-seven graves [twenty percent] that lacked bodies. Sixty-two, or thirty-two percent of the adults were male; forty-two percent [eighty-two] were female and the sex of the rest is unknown. Two of the subadults were male, one was female and the sex of twenty-four, or eighty-nine percent, was unknown. Ninety-two percent of these burials had been plundered: twenty percent [fifty-five] of those from 1900 B.C.; twenty-one percent [fifty-seven] from 1800 B.C.; thirty-eight percent [105] from 1750 B.C.; eight percent [twenty-one] of those from 1650 B.C. and eighteen [six percent] from an unknown period. The condition of three burials was unrecorded, and eighteen, or six percent, were listed as undisturbed. Fifty-six percent of these were late Middle Kingdom [1800

B.C.] in date.

When tomb offerings were analysed within each date category it was discovered that offerings had been recovered from ninety-eight percent of the Eleventh Dynasty burials, ninety-nine percent percent of those from the late Twelfth Dynasty, all from Dynasty Thirteen but only thirty-eight percent of those from the middle of the Second Intermediate Period.

The mean number of objects found with burials in 1900 B.C. was 2.51. However, while the amount grew to 20.58 per burial in 1800 B.C., it had decreased to 11.48 in 1750 B.C. By 1650 B.C. the mean number of offerings deposited with a burial had fallen to 9.71 [Table 7.188]. Analysis of the mean number of artefacts remaining in plundered graves shows an increase from 0.16 per burial in 1900 B.C. to 2.63 in 1800 B.C. A decrease took place in the mean number of goods associated with the 1750 B.C. burials, and a further decrease to 0.52 objects per burial had occurred by 1650 B.C. A similar trend was detected in the offerings from the undisturbed tombs. The mean number of artefacts present in an intact grave from 1800 B.C. is 106.90. In an undisturbed burial from 1750 B.C. it is 110.80 objects and in a tomb from 1650 B.C. the mean number of articles is 102.50. A comparison of the standard deviations computed for intact tombs also showed that the greatest variation in goods occurred amongst the Thirteenth Dynasty graves [Table 7.189].

The analysis further revealed that four items had been entombed with a subadult male in 1900 B.C., and also that during the same time period subadults of unknown sex were the recipients of the next largest mean number of burial goods. In 1800 B.C. subadults of unknown sex also were the recipients of the largest mean number of grave offerings [39.86], but the greatest variation in goods existed among adult females. In 1750 B.C. and in 1650 B.C., both the highest mean number [28.41 and 27.50 respectively] and the largest variation [standard deviations of 106.58 and 71.75 respectively] in goods was detected amongst the burials of adult females [Table 7.189].

At Tushka, where local production [55] and Egyptian exchange [4] were highest in 1800 B.C., it was discovered that the largest number of burial goods, 1379, or forty-five percent of the total grave and superstructure offerings in Cemetery 209, had been deposited with the late Twelfth Dynasty [1800 B.C.] burials. Eighty-seven percent of these goods consisted of beads. These same beads also accounted for forty percent of the total offerings recovered from the cemetery. Seventy-nine percent of the Twelfth Dynasty beads were produced locally; sixty-six percent were glazed; one percent was shell and five percent were carnelian [Table 7.190]. The next largest percentage of beads [32.46 of the total goods] was found in the Thirteenth Dynasty graves. Ninety-eight percent were of local manufacture, of which ninety-four percent were glazed; two percent were shell and 0.51 percent was carnelian. Two percent of the Thirteenth Dynasty beads were Egyptian imports. However, whereas the largest total goods value was obtained for the Thirteenth Dynasty burials [7,504], those with the highest wealth index [103] were mid-Second Intermediate Period in date [Table7.187].

Further study of the burial data revealed that 188 luxury items had been distributed among the burials in Cemetery 209. The late Twelfth Dynasty graves contained seventy-one of these luxury objects of which seventy, or ninety-nine percent, were of local manufacture, and most, namely eighty-five percent, were carnelian beads. Eighteen percent [thirty-four] of the luxury goods, or 1.12 percent of the total number of Middle Nubian burial offerings at Tushka, were removed from the Thirteenth Dynasty burials. The greatest variety of luxury objects also was found in these tombs. Eleven of these Thirteenth Dynasty luxury items, or thirty-two percent of the offerings, had been created from gold; for seven objects, or twenty-one percent, silver had been used; six, or eighteen percent, had been carved from ivory, and five, or fifteen percent of the total Thirteenth Dynasty luxury offerings, had been made from carnelian. The mid-Second Intermediate Period [1650 B.C.] burials contained eighty-one, or forty-three percent, of the total number of luxury artefacts discovered in the cemetery. All were beads. Of the seventy-five produced locally, fifty were gold and the rest carnelian. Imported luxury items from Cemetery 209, all of alabaster, consisted of two objects in 1900 B.C., one in 1800 B.C. and five in 1750 B.C. In 1650 B.C. six objects were classified as imports. Five of these were alabaster beads and the last was an Egyptian copper mirror [Table 7.191].

Fourteen percent of the Eleventh Dynasty [1900 B.C.] offerings were Egyptian in origin, as were twenty percent of those from the late Twelfth Dynasty [1800

B.C.], four percent of those from the Thirteenth [1750 B.C.], and five percent of those from the middle of the Second Intermediate Period [1650 B.C.] [Table7.192].

Wealth indices for Cemetery 209 were twenty, seventy-two, sixty-eight and 103 in 1900 B.C., 1800 B.C., 1750 B.C. and 1650 B.C. respectively [Table 7.194]. Whereas the highest mean tomb wealth [137.50] was calculated for the mid-Second Intermediate Period burials [Table 7.193], the highest total goods value [7504] was obtained for those from the Thirteenth Dynasty. Local production indices increased from forty in 1900 B.C. to fifty-five in 1800 B.C., but fell to forty-seven in 1750 B.C. and further declined to forty-three in 1650 B.C. The local barter index, which followed the same trend, reached its peak [14] in the late Twelfth Dynasty. Egyptian exchange was also at its highest [4] during the late Twelfth Dynasty [Table 7.194].

Superstructure sizes in Cemetery 209 reached their maximum in 1650 B.C. when the average was 3.73 cubic metres and the largest was 9.07 cubic metres. Grave sizes were also at a maximum during this time period when the mean area and volume was 1.34 and 1.46 square and cubic metres respectively. Corresponding maximum sizes were 5.25 square metres and 10.50 cubic metres. However, while the second largest superstructure dimensions [a mean of 3.19 and a maximum of 8.09 cubic metres] were obtained for graves dated to the Thirteenth Dynasty [1750 B.C.], the second largest grave sizes are those from the late Twelfth Dynasty [1800 B.C]: mean grave area at this period was 1.20 square metres and the maximum was 4.80 square metres; mean grave volume was 1.46 cubic metres and the maximum was 9.60 cubic metres [Table 7.195].

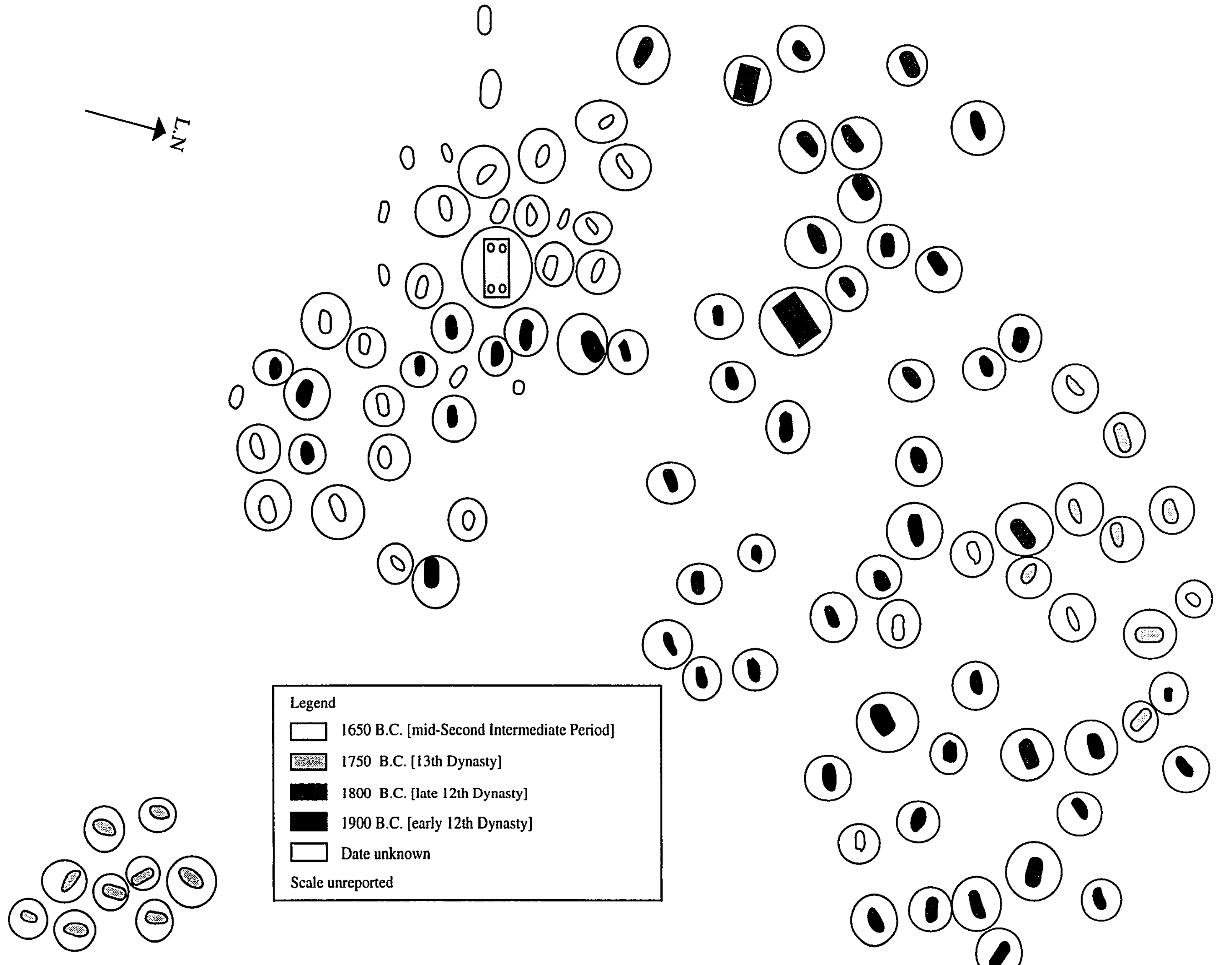


Figure 25. Tushka, Cemetery 209 - western section: distribution of 12th Dynasty, 13th Dynasty and mid-Second Intermediate Period Middle Nubian graves [After Emery and Kirwan 1935, 2: Plate 54]

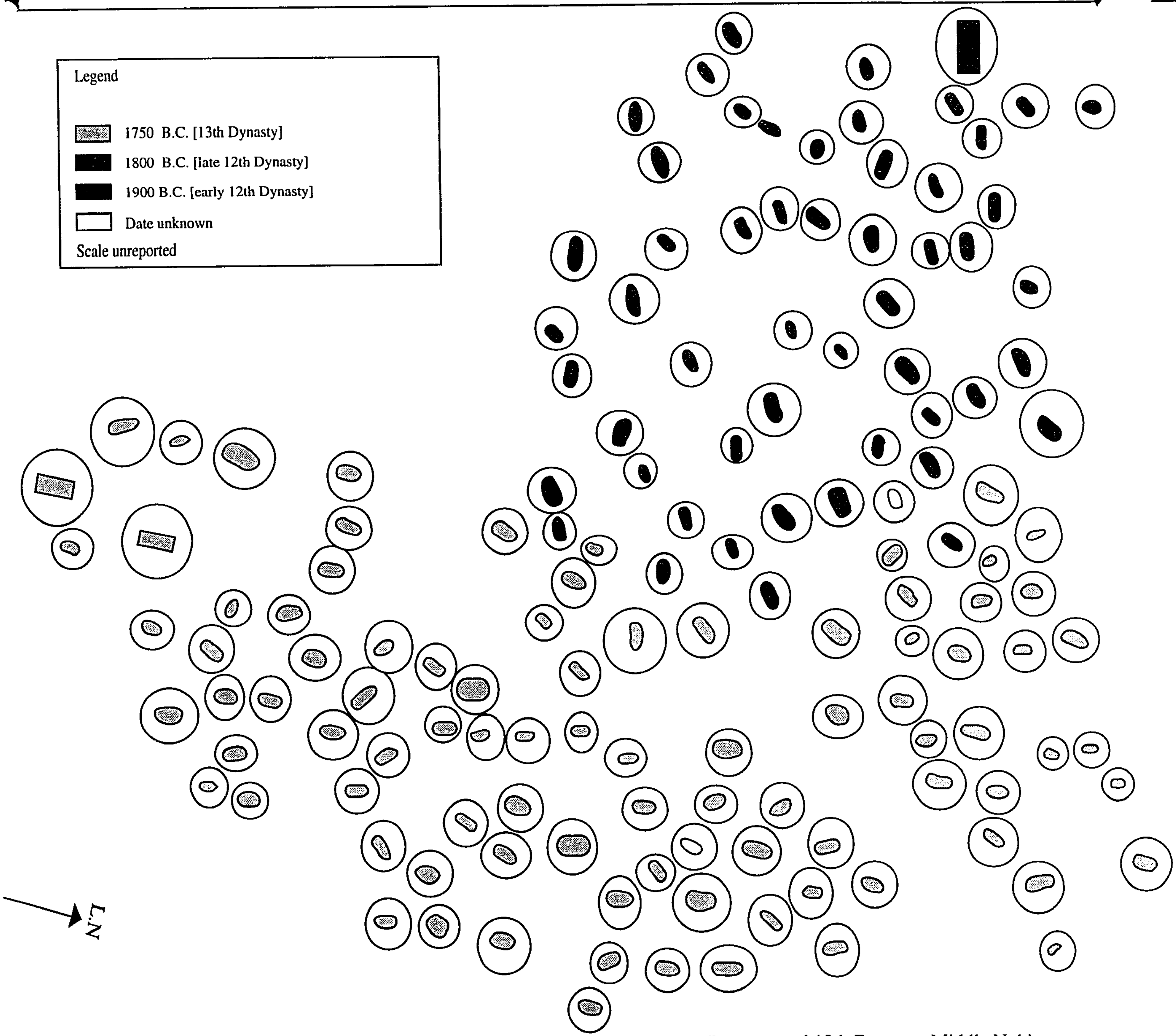


Figure 26. Tushka, Cemetery 209 - eastern section: distribution of 12th Dynasty and 13th Dynasty Middle Nubian graves [After Emery and Kirwan 1935, 2: Plate 54]

Table 7.187: Frequency distribution of superstructure and grave offerings from C-Group graves in Cemetery 209 at Tushka [Percentages are based on the total number of dated and undated graves from each time period]

	1900 BC		1800 BC	
	Number	**Percent**	**Number**	**Percent**
Graves with no burial goods	1	1.82	1	1.49
Graves with 1 burial good	17	30.91	17	25.37
Graves with 2 burial goods	13	23.64	18	26.87
Graves with between 3 and 10 burial goods	24	43.64	19	28.36
Graves with between 11 and 56 burial goods	0	0	8	11.94
Graves with between 57 and 223 burial goods	0	0	2	2.99
Graves with between 224 and 557 burial goods	0	0	2	2.99
Total number of graves with burial goods	54	98.18	66	98.51
Total number of graves	55		67	
Total number of burial goods	138		1379	
	1750 BC		**1650 BC**	
	Number	**Percent**	**Number**	**Percent**
Graves with no burial goods	0	0	15	65.22
Graves with 1 burial good	35	31.53	3	13.04
Graves with 2 burial goods	25	22.52	1	4.35
Graves with between 3 and 10 burial goods	40	36.04	3	13.04
Graves with between 11 and 56 burial goods	9	8.11	0	0
Graves with between 57 and 223 burial goods	0	0	1	4.35
Graves with between 224 and 557 burial goods	2	1.80	0	0
Total number of graves with burial goods	111	100.00	8	34.78
Total number of graves	111		23	
Total number of burial goods	1274		233	

Table 7.188: Descriptive statistics for grave goods from Middle Nubian burials in Cemetery 209 at Tushka

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of grave goods:				
In 1900 BC	2.51	1.60	55	138
In 1800 BC	20.58	75.29	67	1379
In 1750 BC	11.48	59.58	111	1274
In 1650 BC	9.71	41.67	24	233
Date unknown	0.85	1.18	20	17
Number of luxury goods:				
In 1900 BC	0.04	0.19	55	2
In 1800 BC	1.06	6.25	67	71
In 1750 BC	0.31	1.43	111	34
In 1650 BC	3.38	15.50	24	81
Date unknown	0.00	0.00	20	0
Number of grave beads:				
In 1900 BC	0.09	0.67	55	5
In 1800 BC	17.99	74.95	67	1205
In 1750 BC	8.89	59.19	111	987
In 1650 BC	8.42	38.92	24	202
Date unknown	0.00	0.00	20	0
Total number of local utilitarian goods:				
In 1900 BC	2.13	1.48	55	117
In 1800 BC	16.39	50.62	67	1098
In 1750 BC	10.78	59.32	111	1196
In 1650 BC	9.08	40.06	24	218
Date unknown	0.75	1.02	20	15
Total number of Egyptian goods:				
In 1900 BC	0.36	0.52	55	20
In 1800 BC	4.10	30.50	67	275
In 1750 BC	0.44	1.17	111	49
In 1650 BC	0.46	1.41	24	11
Date unknown	0.05	0.22	20	1
Total number of Kerma goods:				
In 1900 BC	0	0	55	0
In 1800 BC	0.03	0.17	67	2
In 1750 BC	0.11	0.31	111	12
In 1650 BC	0.42	0.20	24	1

Table 7.189: Descriptive statistics for grave goods associated with C-Group burials in Cemetery 209 at Tushka in 1900 B.C., 1800 B.C., 1750 B.C. and 1650 B.C. [Superstructure offerings were excluded from calculations for plundered and undisturbed graves]

	1900 B.C.		1800 B.C.	
	Mean	Standard Deviation	Mean	Standard Deviation
Burial goods found with subadults	3.75	1.71	35.25	88.04
Burial goods found with adults	2.53	1.60	21.06	79.45
Burial goods found with females	2.91	2.34	27.50	108.07
Burial goods found with males	2.63	1.20	19.31	36.53
Burial goods found with subadult male	4.00	.	-	-
Burial goods found with subadult females	-	-	3.00	.
Burial goods found with subadults of unknown sex	3.67	2.08	39.86	94.05
Burial goods found with adult females	2.91	2.34	28.48	110.18
Burial goods found with adult males	2.53	1.19	19.31	36.53
Burial goods found with adults of unknown sex	2.00	0.93	5.30	5.91
Burial goods found in graves without occupants	2.18	1.51	2.88	3.36
Burial goods in plundered graves	0.16	0.71	2.63	8.87
Burial goods in undisturbed graves	-	-	106.90	175.22

	1750 B.C.		1650 B.C.	
	Mean	Standard Deviation	Mean	Standard Deviation
Burial goods found with subadults	4.09	4.61	0.00	0.00
Burial goods found with adults	14.71	70.00	14.50	50.88
Burial goods found with females	28.41	106.58	27.50	71.75
Burial goods found with males	4.26	3.19	3.00	4.69
Burial goods found with subadult male	2.00	.	-	-
Burial goods found with subadults of unknown sex	4.30	4.81	0.00	0.00
Burial goods found with adult females	28.41	106.58	27.50	71.75
Burial goods found with adult males	4.36	3.23	3.00	4.69
Burial goods found with adults of unknown sex	4.79	6.17	0.00	0.00
Burial goods found in graves without occupants	2.60	3.07	0.20	0.45
Burial goods in plundered graves	1.52	4.15	0.52	1.66
Burial goods in undisturbed graves	110.80	247.76	102.50	144.96

Table 7.190: Bead occurrences in Cemetery 209 at Tushka [Percentages are based on the total number of grave beads in burials that date from 1900 B.C., 1800 B.C., 1750 B.C. and 1650 B.C.]

	1900 B.C.		1800 B.C.	
	Number	Percent	Number	Percent
Carnelian beads	0	0	60	4.98
Shell beads	0	0	15	1.25
Glazed Nubian beads	5	100.00	800	66.39
Glazed Egyptian beads	0	0	0	0
Total glazed beads	5	100.00	800	66.39
Total local grave beads	5	100.00	955	79.25
Total imported grave beads	0	0	250	20.75
Total grave beads	5		1205	
	1750 B.C.		1650 B.C.	
	Number	Percent	Number	Percent
Carnelian beads	5	0.51	25	12.38
Shell beads	20	2.03	81	40.10
Glazed Nubian beads	930	94.22	13	6.44
Glazed Egyptian beads	7	0.71	0	0
Total glazed beads	937	94.93	13	6.44
Total local grave beads	970	98.28	197	97.52
Total imported grave beads	17	1.72	5	2.48
Total grave beads	987		202	

Table 7.191: Luxury goods from Cemetery 209 at Tushka [Percentages within each date category are based on the total number of luxury objects associated with burials of that date]

	1900 B.C.		1800 B.C.	
	Number	Percent	Number	Percent
Alabaster	2	100.00	1	1.41
Carnelian	0	0	60	84.51
Copper	0	0	0	0
Gold	0	0	5	7.04
Ivory	0	0	0	0
Silver	0	0	5	7.04
Total local luxury goods	0	0	70	98.59
Total imported luxury goods	2	100.00	1	1.41
Total luxury goods	2		71	
	1750 B.C.		**1650 B.C.**	
	Number	**Percent**	**Number**	**Percent**
Alabaster	5	15.71	5	6.17
Carnelian	5	14.71	25	30.86
Copper	0	0	1	1.23
Gold	11	32.35	50	61.73
Ivory	6	17.65	0	0
Silver	7	20.59	0	0
Total local luxury goods	29	85.29	75	92.59
Total imported luxury goods	5	14.71	6	7.41
Total luxury goods	34		81	

Table 7.192: Burial goods from Cemetery 209 at Tushka [Percentages are based on the total number of artefacts associated with burials that date from 1900 B.C., 1800 B.C., 1750 B.C. and 1650 B.C.; twenty graves of unknown date contained seventeen items]

	1900 B.C.		1800 B.C.	
	Number	Percent	Number	Percent
Beads	5	3.62	1205	87.38
Local cairn pottery	110	79.71	130	9.43
Local grave pottery	0	0	0	0
Total local pottery	110	79.71	130	9.43
Imported cairn pottery	19	13.77	28	2.03
Imported grave pottery	0	0	0	0
Total local goods	117	84.78	1098	79.62
Total Egyptian goods	20	14.49	275	19.94
Total grave goods	138		1379	
	1750 B.C.		**1650 B.C.**	
	Number	Percent	Number	Percent
Beads	987	77.47	202	86.70
Local cairn pottery	207	16.25	14	6.01
Local grave pottery	3	0.24	0	0
Total local pottery	210	16.48	14	6.01
Imported cairn pottery	51	4.00	2	0.86
Imported grave pottery	4	0.31	2	0.86
Total local goods	1196	93.88	218	93.56
Total Egyptian goods	49	3.85	11	4.72
Total grave goods	1274		233	

Table 7.193: Descriptive statistics for assessments of economic production, exchange, goods value and tomb wealth in Twelfth Dynasty, Thirteenth Dynasty and mid-Second Intermediate Period Middle Nubian burials from Cemetery 209 at Tushka

	Mean per Burial	Standard Deviation	Total Number of Burials
Total local production:			
In 1900 BC	39.86	3.34	55
In 1800 BC	54.52	50.17	67
In 1750 BC	47.21	53.27	110
In 1650 BC	43.38	40.70	24
Total foreign exchange:			
In 1900 BC	0.71	1.05	55
In 1800 BC	4.52	30.48	67
In 1750 BC	0.90	1.50	111
In 1650 BC	0.54	1.44	24
Total goods value:			
In 1900 BC	19.76	11.74	55
In 1800 BC	71.99	233.48	67
In 1750 BC	67.60	222.35	111
In 1650 BC	103.33	474.63	24
Total tomb wealth:			
In 1900 BC	57.49	12.67	55
In 1800 BC	110.12	233.05	67
In 1750 BC	101.54	216.96	110
In 1650 BC	137.50	470.88	24

Table 7.194: Goods indices from Cemetery 209 at Tushka in 1900 B.C., 1800 B.C., 1750 B.C. and 1650 B.C.

	1900 B.C. Number	1800 B.C. Number
Total goods value	1087	4823
Local production index	40	55
Local barter index	1	14
Egyptian exchange index	0.4	4
Wealth index	20	72
	1750 B.C. Number	**1650 B.C. Number**
Total goods value	7504	2480
Local production index	47	43
Local barter index	9	8
Egyptian exchange index	0.4	0.5
Wealth index	68	103

Table 7.195: Estimated superstructure [cairn] volumes and measured grave areas, in cubic metres and sq. metres respectively, of Middle Nubian C-Group tombs in Cemetery 209 at Tushka

	Superstructure size	Grave size
In 1900 BC:		
Maximum	5.80	2.25
Minimum	1.79	0.50
Mean	3.00	1.09
	[54 cairns]	[55 graves]
In 1800 BC:		
Maximum	7.16	4.80
Minimum	1.37	0.50
Mean	3.07	1.20
	[60 cairns]	[67 graves]
In 1750 BC:		
Maximum	8.09	3.13
Minimum	1.01	0.45
Mean	3.19	1.19
	[104 cairns]	[110 graves]
In 1650 BC:		
Maximum	9.07	5.25
Minimum	1.79	0.30
Mean	3.73	1.34
	[5 cairns]	[24 graves]

Table 7.196: Measured grave volumes, in cubic metres, of Middle Nubian C-Group tombs in Cemetery 209 at Tushka

	Grave volume
In 1900 BC:	
Maximum	3.60
Minimum	0.44
Mean	1.26
	[55 graves]
In 1800 BC:	
Maximum	9.60
Minimum	0.26
Mean	1.46
	[63 graves]
In 1750 BC:	
Maximum	2.40
Minimum	0.25
Mean	1.08
	[107 graves]
In 1650 BC:	
Maximum	10.50
Minimum	0.06
Mean	1.46
	[24 graves]

7.0.22 Nonparametric tests: Tushka, Cemetery 209

In spite of the discovery that grave areas and volumes varied considerably in size with time period [Table 7.195 and Table 7.196], both cross-tabulations and Kruskal-Wallis tests indicate that this variation is not statistically significant. Graves were categorized as "small" if they were less than 1.36 square metres in size; as "medium" if their area was less than 4.26 square metres and as "large" if it was equal to, or greater than, 4.26 square metres. Similarly, less than 0.50 cubic metres, less than 1.5 cubic metres, and greater than 1.5 cubic metres, corresponded to the divisions "small," "medium" and "large." Both the Chi-square and the Kruskal-Wallis p- values establish that the Cemetery 209 data indicate no dependence between grave size and date [Table 7.197 and Table 7.198].

With the exception of one variable, namely "total burial goods," [Table 7.199], invalid results were obtained as a consequence of the low expected cell frequencies generated by low artefact samples. Cross-tabulations therefore could not be employed to establish whether there was any statistical association between the date of a given grave and any of the variables being studied. However, the tests of comparison, which also were conducted for each variable at different time periods, proved quite informative. The null hypothesis in each instance states that the same mean number of objects is present in each of the time periods included in the appropriate test. For locally made burial goods, the null hypothesis could be rejected [Table 7.200]. This result is interpreted to mean that a significant difference exists between the mean number of locally made goods occurring in 1650 B.C. and the mean number occurring at other time periods. Mann-Whitney U tests disclosed that whereas no significant difference existed between the mean number of burial objects in either 1900 B.C. and 1800 B.C., or in 1800 B.C. and 1750 B.C., there was a significant difference between the mean number that occurred in 1750 B.C. and the mean number that occurred in 1650 B.C. [Table 7.208, Table 7.209 and Table 7.210]. However, when Kruskal-Wallis tests were conducted for locally made shell beads [Table 7.201], total grave beads [Table 7.202], imported Egyptian goods [Table 7.205], carnelian artefacts [Table 7.206], and total luxury items [Table 7.200], it was discovered that the null hypothesis could not be rejected in any of these situations. Thus, for locally crafted shell beads, carnelian and luxury goods in general, no significant differences exist between the mean number of these items that appear in either 1800 B.C., 1750 B.C. or 1650 B.C. Likewise, for Egyptian artefacts as well as for all grave beads [Table 7.202 and Table 7.203], the data indicate that there are no significant differences between the mean number of goods present in 1900 B.C., in 1800 B.C., in 1750 B.C. and in 1650 B.C.

DF:	4
Total Chi-square:	3.801
p-value:	0.4336
Contingency coefficient:	0.121

	Cell frequencies	1900BC	1800	1750BC-1650BC	Totals
Small	Observed	4	6	14	24
	Expected	5.16	6.28	12.56	24
Medium	Observed	42	43	83	168
	Expected	36.09	43.97	87.94	168
Large	Observed	9	18	37	64
	Expected	13.75	16.75	33.50	64
Totals		55	67	134	256

Table 7.197: Tushka, Cemetery 209: grave area and date

DF:	4
Total Chi-square:	9.123
p-value:	0.0581
Contingency coefficient:	0.188

	Cell frequencies	1900BC	1800BC	1750-1650BC	Totals
Small	Observed	3	6	20	29
	Expected	6.41	7.34	15.26	29
Medium	Observed	39	35	86	160
	Expected	35.34	40.48	84.18	160
Large	Observed	13	22	25	60
	Expected	13.25	15.18	31.57	60
Totals		55	63	131	249

Table 7.198: Tushka, Cemetery 209: grave volume and date

DF:	2
Total Chi-square:	9.493
p-value:	0.0087
Contingency coefficient:	0.189

	Cell frequencies	1900BC-1800BC	1750BC-1650BC	Totals
Goods = 0	Observed	2	15	17
	Expected	8.07	8.93	17
Goods ≥ 1	Observed	109	107	216
	Expected	102.54	113.46	216
Goods =10	Observed	11	13	24
	Expected	11.39	12.61	24
Totals		122	135	257

Table 7.199: Tushka, Cemetery 209: burial goods and date

DF:	3
H statistic:	23.220
p-value:	< 0.0001

	Mean rank of locally made goods	Burial count
1900 BC	124.41	55
1800 BC	147.01	67
1750 BC	134.51	111
1650 BC	63.79	24

Table 7.200: Tushka, Cemetery 209: Kruskal-Wallis rank information for total locally made grave goods and date

DF:	2
H statistic:	0.132
p-value:	0.9362

	Mean rank of local shell beads	Burial count
1800 BC	101.52	67
1750 BC	100.64	111
1650 BC	105.42	24

Table 7.201: Tushka, Cemetery 209: Kruskal-Wallis rank information for total locally made shell beads and date

DF:	3
H statistic:	3.672
p-value:	0.2992

	Mean rank of grave beads	Burial count
1900 BC	113.64	55
1800 BC	139.13	67
1750 BC	130.82	111
1650 BC	127.48	24

Table 7.202: Tushka, Cemetery 209: Kruskal-Wallis rank information for total grave beads and date

DF:	3
H statistic:	3.781
p-value:	0.2861

	Mean rank of glazed beads	Burial count
1900 BC	114.24	55
1800 BC	139.48	67
1750 BC	131.34	111
1650 BC	122.75	24

Table 7.203: Tushka, Cemetery 209: Kruskal-Wallis rank information for Nubian glazed beads and date

DF:	3
H statistic:	28.277
p-value:	< 0.0001

	Mean rank of burial goods	Burial count
1900 BC	145.39	55
1800 BC	135.62	67
1750 BC	133.19	111
1650 BC	53.56	24

Table 7.204: Tushka, Cemetery 209: Kruskal-Wallis rank information for total locally made pottery and date

DF:	3
H statistic:	1.981
p-value:	0.5763

	Mean rank of Egyptian goods	Burial count
1900 BC	135.87	55
1800 BC	132.67	67
1750 BC	127.08	111
1650 BC	111.88	24

Table 7.205: Tushka, Cemetery 209: Kruskal-Wallis rank information for imported Egyptian goods and date

DF:	2
H statistic:	0.185
p-value:	0.9118

	Mean rank of carnelian items	Burial count
1800 BC	103.52	67
1750 BC	99.90	111
1650 BC	103.25	24

Table 7.206: Tushka, Cemetery 209: Kruskal-Wallis rank information for carnelian artefacts and date

DF:	2
H statistic:	0.041
p-value:	0.9798

	Mean rank of luxury goods	Burial count
1800 BC	102.06	67
1750 BC	100.81	111
1650 BC	103.15	24

Table 7.207: Tushka, Cemetery 209: Kruskal-Wallis rank information for total luxury goods and date

U statistic:	1541.500
p-value:	0.1214

	Mean rank of burial goods	Burial count
1900 BC	56.03	55
1800 BC	65.99	67

Table 7.208: Tushka, Cemetery 209: Mann-Whitney rank information for total burial goods and date

U statistic:	3464.500
p-value:	0.4457

	Mean rank of burial goods	Burial count
1800 BC	93.29	67
1750 BC	87.21	111

Table 7.209: Tushka, Cemetery 209: Mann-Whitney rank information for total burial goods and date

U statistic:	548.500
p-value:	< 0.0001

	Mean rank of burial goods	Burial count
1750 BC	75.06	111
1650 BC	35.35	24

Table 7.210: Tushka, Cemetery 209: Mann-Whitney rank information for total burial goods and date

7.0.23 Descriptive statistics: Serra East, Cemetery 179, *ca.* 2000 B.C. to *ca.* 1550 B.C.

Under the supervision of Torgny Säve-Söderbergh of the Scandinavian Joint Expedition to Sudanese Nubia, the burials in Cemetery 179 [Figure 27, Figure 28, Figure 29 and Figure 30], were totally excavated between December 1961 and March 1962. The cemetery was located near Shirfadiq village, on a silt mound, in a fertile region, on the east bank of the Nile, north of the Egyptian fortress at Serra (Säve-Söderbergh 1989: 96, 205-206, 208).

At Serra East, 7,476 burial goods had been dispersed amongst 237 burials in Cemetery 179. Seventy-one burials were Eleventh Dynasty [2000 B.C.] in date; seventy-nine were late Twelfth [1800 B.C.]; eighty-four were mid-Second Intermediate Period [1650 B.C.] and two were Eighteenth Dynasty [1550 B.C.] in date. Thirty-seven percent of the Eleventh Dynasty burials lacked offerings, as did twenty-four percent of those dated to the Twelfth, and twelve percent of those from the middle of the Second Intermediate Period. Both Eighteenth Dynasty burials had been provided with offerings.

Eight subadults, twenty-eight adults and twenty-eight persons whose ages could not be determined, were found in the Eleventh Dynasty graves; ten subadults, twenty-four adults and thirty-eight individuals of unknown age had been buried in late Twelfth Dynasty tombs. The mid-Second Intermediate Period graves contained fourteen subadults, thirty-six adults and thirty individuals whose ages remain unknown. The Eighteenth Dynasty graves were occupied by one adult and one person of undetermined age. The sex of 135 skeletons remains unknown while fourteen females and sixteen males were discovered in Eleventh Dynasty graves, thirteen females and an equal number of males were removed from Twelfth Dynasty tombs, and eleven females along with nineteen males were excavated from graves that date to the middle of the Second Intermediate Period. Bodies had been removed from eighteen burials.

The mean number of offerings deposited in Eleventh Dynasty graves was 20.17. This declined during the Twelfth Dynasty to 14.70, but rose to 56.88 artefacts per burial in 1650 B.C. and declined slightly to 51.50 offerings per burial in 1550

B.C. [Table 7.212]. The average number of artefacts per burial is highest amongst subadults in both the late Twelfth Dynasty and the mid-Second Intermediate Period. Furthermore, the high average number of artefacts per burial [244.93] recorded for the fourteen mid-Second Intermediate Period subadults becomes higher still [603.40] amongst a smaller category of five subadults whose sex is unknown [Table 7.213].

In Cemetery 179 ninety-four percent of the total burial offerings consisted of beads. They comprised ninety-six percent of the Eleventh Dynasty offerings, eighty-three percent of the Twelfth Dynasty goods and ninety-six percent of the offerings from both the middle of the Second Intermediate Period and the Eighteenth Dynasty. However, whereas the majority of beads from the Eleventh, Twelfth and Eighteenth Dynasty burials were glazed [sixty, seventy-three and seventy-one percent respectively], those from the mid-Second Intermediate Period burials had been fashioned from luxury materials of which the largest percentage [sixty-eight] was silver. Gold had been used for twenty-eight percent while four percent were carnelian [Table 7.214].

All of the Eleventh Dynasty luxury objects had been made locally, as had seventy-four percent of those from the Twelfth and 99.87 percent of those from the Second Intermediate Period. Egyptian imports of alabaster, copper and carnelian accounted for twenty-six percent of the late Twelfth Dynasty luxury offerings and 0.13 percent of the mid-Second Intermediate Period luxury goods. No luxury objects were recovered from the two Eighteenth Dynasty burials [Table 7.215].

Local pottery made up two percent of the Eleventh Dynasty offerings, six percent of those from the Twelfth, two percent of those from the Second Intermediate Period and approximately one percent of the Eighteenth Dynasty goods. Over the same time period the percentage of Egyptian pottery rose from 0.14 to 1.38, fell to 0.80 and rose to 0.97. [Table 7.216].

For the Eleventh Dynasty burials the wealth index computed for this cemetery was forty-seven. It was eighty-one for burials dated to the Twelfth Dynasty, 183 for those from the Second Intermediate Period and 135 for the two from Dynasty Eighteen. The highest mean tomb wealth [229.06] and the largest total goods value [15,341] also were calculated for the Second Intermediate Period burials. Finally, the largest local production index [116], as well as the largest foreign exchange index

[1.00] was obtained for burials dated to the Eighteenth Dynasty [Table 7.218].

At Serra East in Cemetery 179, the average superstructure size in 2000 B.C. was 3.39 cubic metres. In 1800 B.C. it was 3.05 cubic metres but by 1650 B.C. it had increased to 4.66 cubic metres. The average size of the two Eighteenth Dynasty cairns was 6.57 cubic metres. The smallest superstructure [0.39 cubic metres] as well as the largest [15.13 cubic metres] was Second Intermediate Period in date. The maximum grave size [3.20 square metres] is recorded for a burial from the Twelfth Dynasty while the minimum [0.18 square metres] was listed for an interment from the Eleventh when the average size of a grave was 0.84 square metres. Average grave size increased only slightly over time from 0.98 square metres in the Twelfth Dynasty, to 1.03 in the middle of the Second Intermediate Period and 1.25 square metres in the Eighteenth Dynasty [Table 7.219].

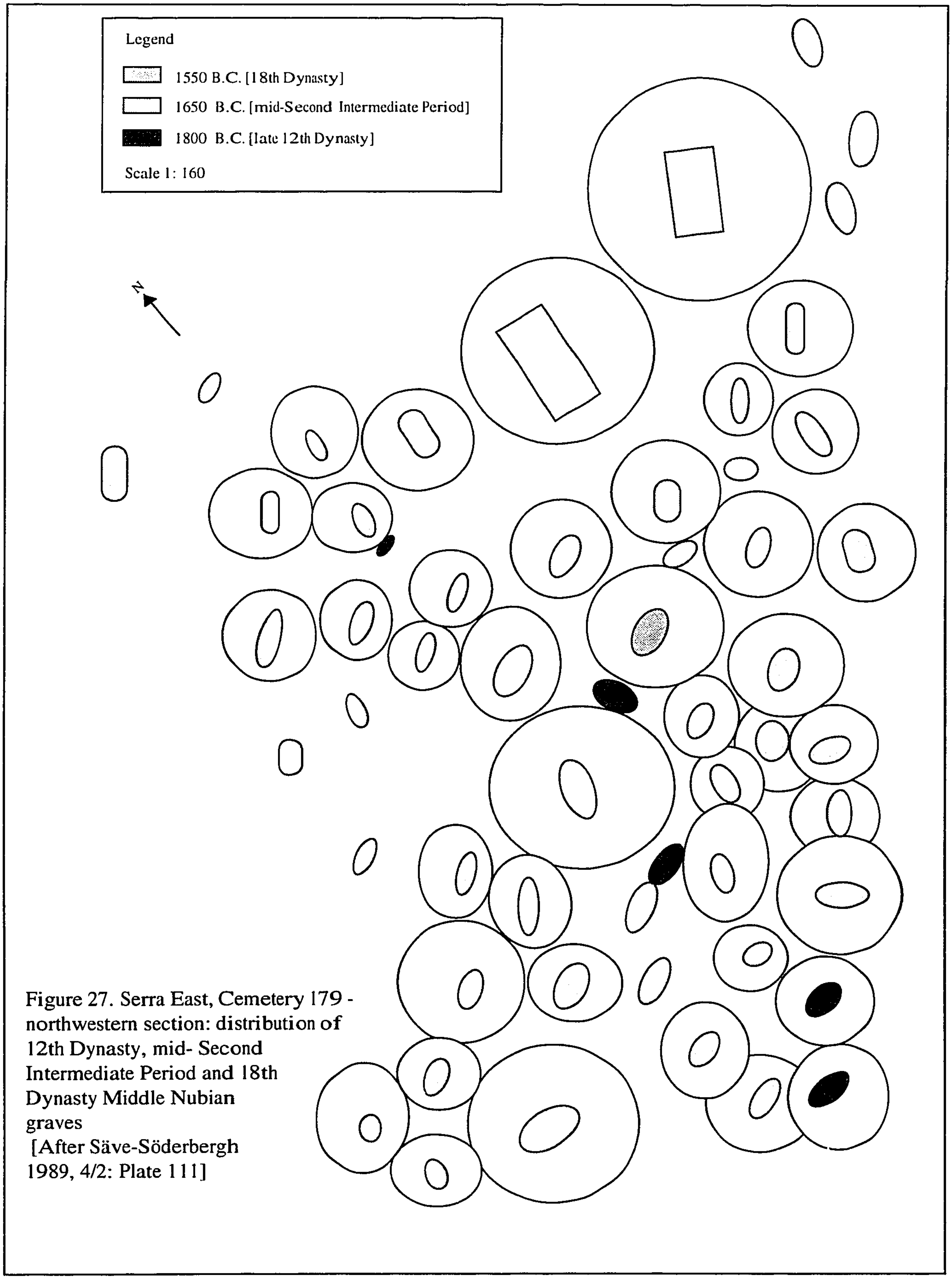


Figure 27. Serra East, Cemetery 179 - northwestern section: distribution of 12th Dynasty, mid- Second Intermediate Period and 18th Dynasty Middle Nubian graves
[After Säve-Söderbergh 1989, 4/2: Plate 111]

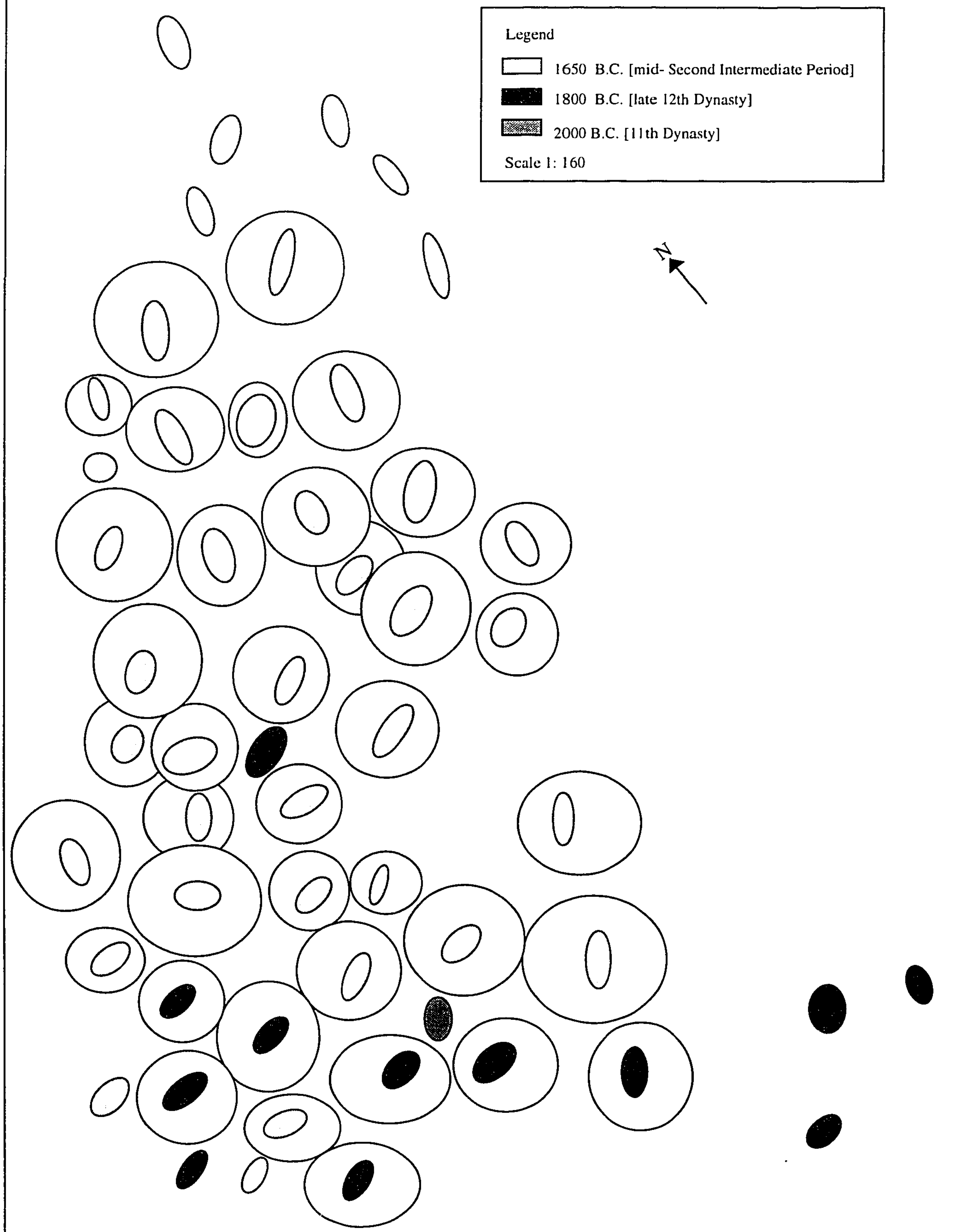


Figure 28. Serra East, Cemetery 179 - northeastern section: distribution of 11th Dynasty, 12th Dynasty and Second Intermediate Period Middle Nubian graves [After Säve-Söderbergh 1989, 4/2: Plate 112]

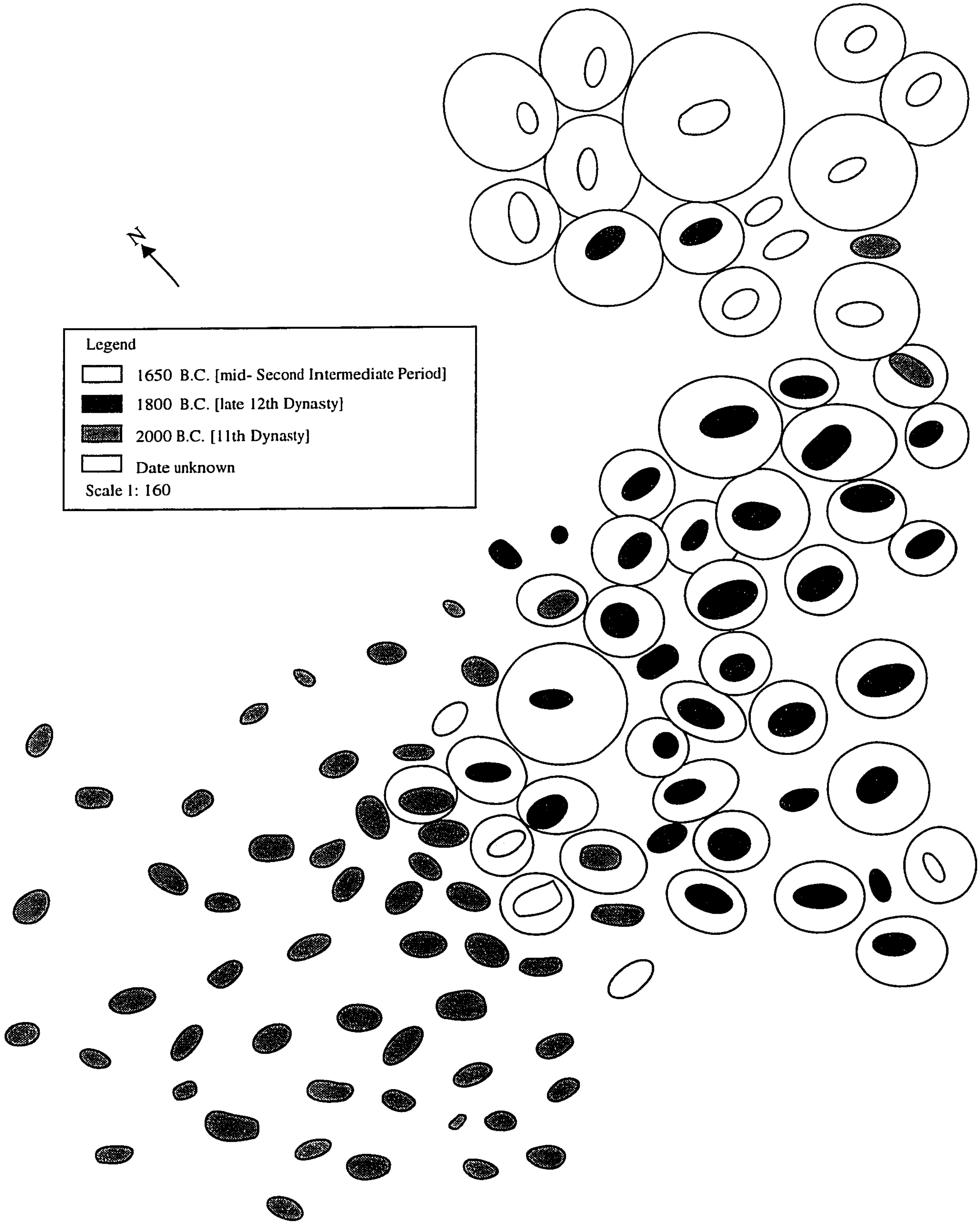


Figure 29. Serra East, Cemetery 179 - southwestern section: distribution of 11th Dynasty, 12th Dynasty and Second Intermediate Period Middle Nubian graves [After Säve-Söderbergh 1989, 4/2: Plate 113]

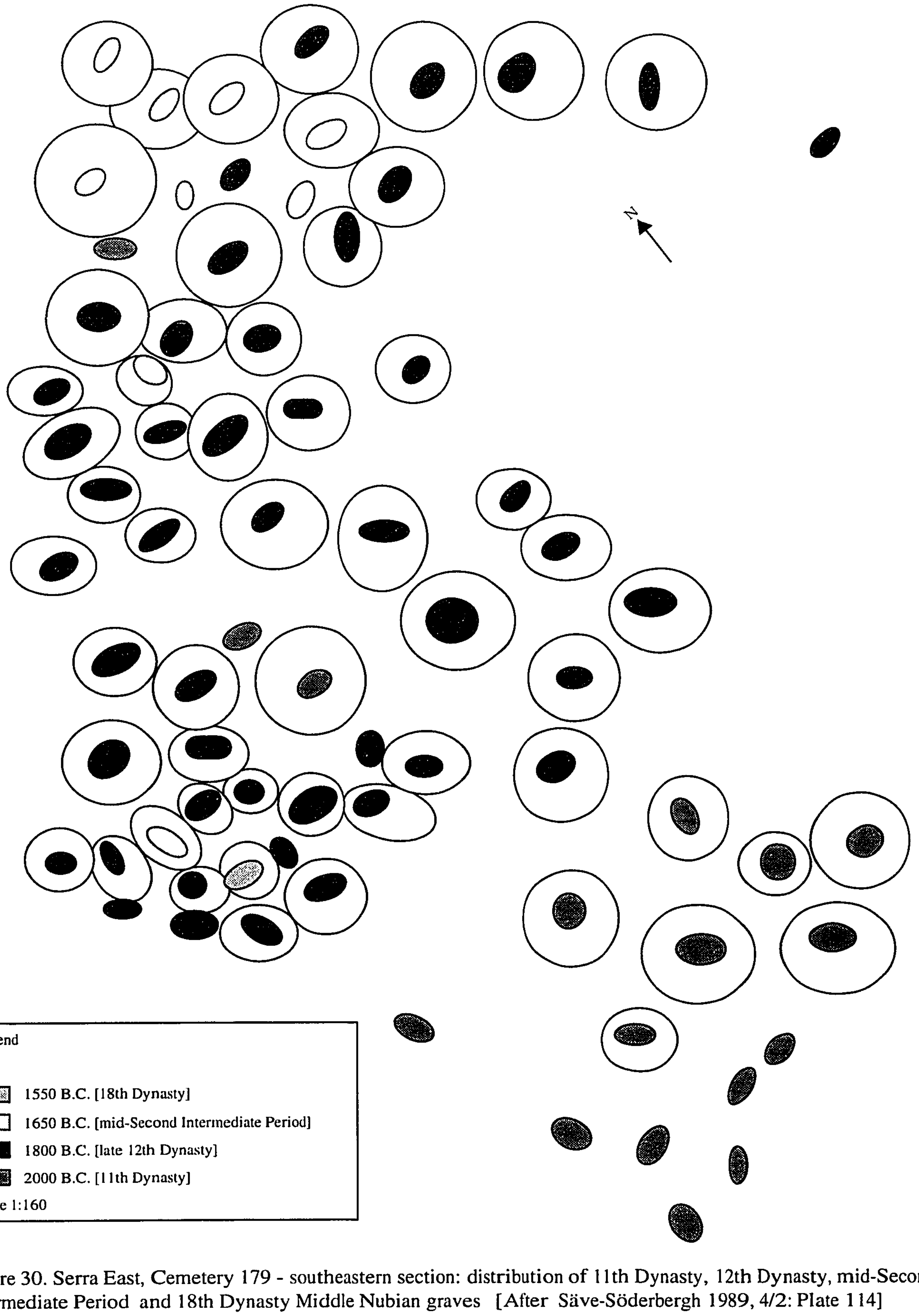


Figure 30. Serra East, Cemetery 179 - southeastern section: distribution of 11th Dynasty, 12th Dynasty, mid-Second Intermediate Period and 18th Dynasty Middle Nubian graves [After Säve-Söderbergh 1989, 4/2: Plate 114]

Table 7.211: Frequency distribution of superstructure and grave offerings from C-Group graves at Serra East [Percentages are based on the total number of dated graves from each time period in Cemetery 179]

	2000 BC		1800 BC	
	Number	**Percent**	**Number**	**Percent**
Graves with no burial goods	26	36.62	19	24.05
Graves with 1 burial good	7	9.86	7	8.86
Graves with 2 burial goods	0	0	2	2.53
Graves with between 3 and 10 burial goods	6	8.45	24	30.38
Graves with between 11 and 30 burial goods	17	23.94	17	21.52
Graves with between 31 and 150 burial goods	14	19.72	9	11.39
Graves with between 151 and 299 burial goods	1	1.41	1	1.27
Graves with between 300 and 3000 burial goods	0	0	0	0
Total number of graves	71		79	
Total number of burial goods	1434		1161	
	1650 BC		**1550 BC**	
	Number	**Percent**	**Number**	**Percent**
Graves with no burial goods	10	11.90	0	0
Graves with 1 burial good	11	13.10	0	0
Graves with 2 burial goods	9	10.71	0	0
Graves with between 3 and 10 burial goods	15	17.86	0	0
Graves with between 11 and 30 burial goods	14	16.67	0	0
Graves with between 31 and 150 burial goods	23	27.38	2	100.00
Graves with between 151 and 299 burial goods	1	1.19	0	0
Graves with between 300 and 3000 burial goods	1	1.19	0	0
Total number of graves	84		2	
Total number of burial goods	4778		103	

Table 7.212: Descriptive statistics for burial [superstructure and grave] goods from Middle Nubian burials in Cemetery 179 at Serra East

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of burial goods:				
In 2000 BC	20.17	31.66	71	1432
In 1800 BC	14.70	28.08	79	1161
In 1650 BC	56.88	314.05	84	4778
In 1550 BC	51.50	3.54	2	103
Number of luxury goods:				
In 2000 BC	1.14	8.90	71	81
In 1800 BC	1.25	4.84	79	99
In 1650 BC	35.49	301.69	84	2981
In 1550 BC	0	0	2	0
Number of grave beads:				
In 2000 BC	19.38	31.57	71	1376
In 1800 BC	12.25	24.19	79	968
In 1650 BC	54.41	313.51	84	4570
In 1550 BC	49.50	2.12	2	99
Number of local goods:				
In 2000 BC	20.11	31.68	71	1428
In 1800 BC	13.99	26.07	79	1105
In 1650 BC	56.19	314.11	84	4720
In 1550 BC	50.50	3.54	2	101
Total number of Egyptian goods:				
In 2000 BC	0.09	0.37	71	6
In 1800 BC	0.65	2.69	79	51
In 1650 BC	0.55	1.08	84	46
In 1550 BC	1.00	0	2	2

Table 7.213: Descriptive statistics for superstructure and grave goods associated with C-Group burials in Cemetery 179 at Serra East in 2000 B.C., 1800 B.C., 1650 B.C. and 1550 B.C.

	2000 B.C.		1800 B.C.	
	Mean	Standard Deviation	Mean	Standard Deviation
Burial goods found with subadults	13.63	15.03	12.10	13.84
Burial goods found with adults	15.71	30.26	13.08	19.47
Burial goods found with females	21.21	40.03	8.31	8.90
Burial goods found with males	19.31	26.53	25.46	32.69
Burial goods found with subadults of unknown sex	-	-	40.00	.
Burial goods found with adult females	18.92	40.70	5.50	6.12
Burial goods found with adult males	11.50	16.68	22.90	27.05
Burial goods found with adults of unknown sex	19.75	23.98	10.00	7.07
Burial goods found in graves without occupants	26.75	27.59	2.50	3.99
Burial goods in plundered graves	19.10	28.83	11.71	18.87
Burial goods in undisturbed graves	34.17	60.18	40.11	63.90
	1650 B.C.		**1550 B.C.**	
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**
Burial goods found with subadults	244.93	760.98	-	-
Burial goods found with adults	26.67	38.25	54.00	.
Burial goods found with females	31.00	59.88	-	-
Burial goods found with males	14.58	17.64	54.00	.
Burial goods found with subadults of unknown sex	603.40	1276.28	-	-
Burial goods found with adult females	31.00	59.88	-	-
Burial goods found with adult males	17.40	18.89	54.00	.
Burial goods found with adults of unknown sex	31.67	24.66	-	-
Burial goods found in graves without occupants	26.50	29.55	-	-
Burial goods in plundered graves	17.42	22.02	53.00	.
Burial goods in undisturbed graves	172.05	623.85	49.00	.

Table 7.214: Bead occurrences in Cemetery 179 at Serra East [Percentages are based on the total number of grave beads in burials from 2000 B.C., 1800 B.C., 1650 B.C. and 1550 B.C.]

	2000 B.C.		1800 B.C.	
	Number	Percent	Number	Percent
Gold beads	0	0	46	4.75
Carnelian beads	81	5.89	20	2.07
Total luxury beads	81	5.89	66	6.82
Shell beads	448	32.56	180	18.60
Glazed Nubian beads	821	59.67	710	73.35
Glazed Egyptian beads	0	0	8	0.83
Total glazed beads	821	59.67	718	74.17
Other Nubian beads	26	1.89	4	0.41
Total local grave beads	1376	100.00	960	99.17
Total imported grave beads	0	0	8	0.83
Total grave beads	1376		968	
	1650 B.C.		1550 B.C.	
	Number	Percent	Number	Percent
Gold beads	843	18.45	0	0
Carnelian beads	106	2.32	0	0
Total luxury beads	2964	64.86	0	0
Shell beads	427	9.34	28	28.28
Glazed Nubian beads	1179	25.80	71	71.72
Glazed Egyptian beads	0	0	0	0
Total glazed beads	1179	25.80	71	71.72
Other Nubian beads	0	0	0	0
Total local grave beads	4570	100.00	99	100.00
Total imported grave beads	0	0	0	0
Total grave beads	4570		99	

Table 7.215: Luxury goods from Cemetery 179 at Serra East in 2000 B.C., 1800 B.C. and 1650 B.C. [Percentages within each date category are based on the total number of luxury goods found with burials of that date. No luxury goods were recovered from the two Eighteenth Dynasty graves]

	2000 B.C.		1800 B.C.		1650 B.C.	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Alabaster	0	0	1	1.01	0	0
Carnelian	81	100.00	42	42.42	106	3.56
Copper	0	0	3	3.03	3	0.10
Gold	0	0	46	46.46	844	28.31
Ivory	0	0	6	6.06	10	0.34
Silver	0	0	0	0	2017	67.66
Local luxury goods	81	100.00	73	73.74	2977	99.87
Egyptian luxury goods	0	0	26	26.26	4	0.13
Total luxury goods	81		99		2981	

Table 7.216: Burial goods from Cemetery 179 at Serra East [Percentages are based on the total number of grave goods with burials that date from 2000 B.C., 1800 B.C., 1650 B.C. and 1550 B.C.]

	2000 B.C.		1800 B.C.	
	Number	**Percent**	**Number**	**Percent**
Beads	1376	95.96	968	83.38
Local pottery	33	2.30	69	5.94
Egyptian pottery	2	0.14	16	1.38
Total local goods	1428	99.58	1105	95.18
Total Egyptian goods	6	0.42	51	4.39
Goods *in* graves	1420	99.02	1114	95.95
Total burial goods	1434		1161	
	1650 B.C.		**1550 B.C.**	
	Number	**Percent**	**Number**	**Percent**
Beads	4570	95.65	99	96.12
Local pottery	85	1.78	1	0.97
Egyptian pottery	38	0.80	1	0.97
Total local goods	4720	98.79	101	98.06
Total Egyptian goods	46	0.96	2	1.94
Goods *in* graves	4707	98.51	102	99.03
Total burial goods	4778		103	

Table 7.217: Descriptive statistics for assessments of economic production, exchange, goods value and tomb wealth in Eleventh Dynasty, Twelfth Dynasty, mid-Second Intermediate Period and Eighteenth Dynasty Middle Nubian C-Group burials from Cemetery 179 at Serra East

	Mean per Burial	Standard Deviation	Total Number of Burials
Total local production:			
In 2000 BC	35.82	36.89	71
In 1800 BC	49.43	34.17	79
In 1650 BC	102.62	313.71	84
In 1550 BC	115.50	53.03	2
Total foreign exchange:			
In 2000 BC	0.09	0.37	71
In 1800 BC	0.71	2.93	79
In 1650 BC	0.69	1.15	84
In 1550 BC	1.00	0	2
Total goods value:			
In 2000 BC	46.61	69.94	71
In 1800 BC	81.30	175.68	79
In 1650 BC	182.63	485.05	84
In 1550 BC	135.00	41.01	2
Total tomb wealth:			
In 2000 BC	62.31	74.40	71
In 1800 BC	116.75	177.70	79
In 1650 BC	229.06	481.92	84
In 1550 BC	200.00	90.51	2

Table 7.218: Goods indices from Cemetery 179 at Serra East in 2000 B.C., 1800 B.C., 1650 B.C. and 1550 B.C.

	2000 B.C.	**1800 B.C.**
	Number	**Number**
Total goods value	3309	6423
Local production index	36	49
Egyptian exchange index	0.09	0.72
Wealth index	47	81
	1650 B.C.	**1550 B.C.**
	Number	**Number**
Total goods value	15,341	270
Local production index	103	116
Egyptian exchange index	0.74	1.00
Wealth index	183	135

Table 7.219: Estimated superstructure [cairn] volumes and measured grave areas, in cubic metres and sq. metres respectively, of Middle Nubian C-Group burials in Cemetery 179 at Serra East

	Superstructure size	Grave size
In 2000 BC:		
Maximum	7.35	1.53
Minimum	1.09	0.18
Mean	3.39	0.84
	[8 cairns (63 missing)]	[71 graves]
In 1800 BC:		
Maximum	11.22	3.20
Minimum	0.39	0.24
Mean	3.05	0.98
	[51 cairns (28 missing)]	[79 graves]
In 1650 BC:		
Maximum	15.13	2.99
Minimum	0.39	0.30
Mean	4.66	1.03
	[59 cairns (25 missing)]	[83 graves]
In 1550 BC:		
Maximum	12.34	1.53
Minimum	1.53	0.96
Mean	6.57	1.25
	[2 cairns]	[2 graves]

7.0.24 Nonparametric tests: Serra East, Cemetery 179

When cross-tabulations were employed to determine whether any statistical dependence existed between the date of a grave and any of the variables being monitored, it was found that the null hypothesis demanding no association between the variables could be rejected in two cases: that of grave condition [Table 7.220] and that of total burial offerings [Table 7.222].

The null hypothesis that the population means of a given variable are the same in each time period was adopted and Kruskal-Wallis tests of comparison were conducted for each variable at different time periods. For total burial goods, total local goods, Nubian glazed beads, total luxury goods and local luxury goods, the null hypothesis that the means of these variables were the same in 2000 B.C., in 1800 B.C. and in 1650 B.C., could not be rejected. The data suggest therefore that no significant difference exists between the mean number of burial goods, particularly those of local manufacture, occurring in the cemetery in these three time periods. However, since for total Egyptian artefacts the null hypothesis could be rejected, these data suggest that a significant difference exists between the mean number of Egyptian goods occurring in the cemetery in 2000 B.C. and the number that occurred in 1800 B.C. and in 1650 B.C. [Table 7.222]. Mann-Whitney tests further established that no significant difference existed between the mean number of Egyptian goods in general, or Egyptian ceramics in particular, that occurred in 1800 B.C. and the mean number that occurred in 1650 B.C [Table 7.223]. Because the number of Egyptian pots in the Eleventh Dynasty [2000 B.C.] graves was less than five, it was not possible to determine whether a significant difference existed between the mean number that occurred in 2000 B.C. and the mean number that occurred during the two other time periods.

DF:	2
Total Chi-square:	9.185
p-value:	0.0101
Contingency coefficient:	0.203

	Cell frequencies	2000BC	1800BC	1650BC	Totals
Undisturbed	Observed	6	9	21	36
	Expected	10.77	12.11	13.12	36
Plundered	Observed	58	63	57	178
	Expected	53.23	59.89	64.88	178
Totals		64	72	78	214

Table 7.220: Serra East, Cemetery 179: grave condition and date

DF:	4
Total Chi-square:	18.837
p-value:	0.0008
Contingency coefficient:	0.273

	Cell frequencies	2000BC	1800BC	1650BC	Totals
Goods=nil	Observed	26	19	10	55
	Expected	16.69	18.57	19.74	55
Goods=1-30	Observed	30	50	49	129
	Expected	39.14	43.55	46.31	129
Goods> 30	Observed	15	10	25	50
	Expected	15.17	16.88	17.95	50
Totals		71	79	84	234

Table 7.221: Serra East, Cemetery 179: total burial goods and date

DF:	2
H statistic:	9.450
p-value:	0.0089

	Mean rank of Egyptian artefacts	Burial count
2000 BC	98.29	71
1800 BC	119.78	79
1650 BC	131.60	84

Table 7.222: Serra East, Cemetery 179: Kruskal-Wallis rank information for Egyptian made artefacts and date

U statistic:	2930.000
p-value:	0.1976

	Mean rank of Egyptian pottery	Burial count
1800 BC	77.09	79
1650 BC	86.62	84

Table 7.223: Serra East, Cemetery 179: Mann-Whitney rank information for Egyptian pottery and date

7.0.25 Descriptive statistics: Debeira East, Cemetery 65, *ca.* 1750 B.C. to *ca.* 1550 B.C.

In March, November and December of 1961, several members of the Scandinavian Joint Expedition to Sudanese Nubia excavated 200 burials from 195 tombs in Cemetery 65 [Figure 31], located northeast of Komangana village at Debeira East. The cemetery, which had been dug in a silt bank near a Middle Nubian C-Group habitation site (Säve-Söderbergh 1989: 174, 267), covered an area of approximately 18,000 square metres. Although badly pillaged by tomb robbers and sebâkh diggers, it contained 2,448 burial offerings that had been distributed among ninety-four tombs. Eight of the burials could be dated to the Thirteenth Dynasty [1750 B.C.]; eighteen were mid-Second Intermediate Period [1650 B.C.] in date; twenty-six were dated to the late Second Intermediate Period [1600 B.C.] and forty-two to the Eighteenth Dynasty [1550 B.C.].

Eleven subadults of unknown sex, fifty-four adults [eleven males, six females and thirty-seven individuals of undetermined sex] and twenty-eight bodies whose age and sex remain unknown, were removed from graves associated with one or more grave offerings. However, since double burials occurred in five tombs, five burials that lacked grave offerings were included in the dataset.

The mean number of objects deposited with the Thirteenth Dynasty burials was 17.13; this increased to 37.17 objects during the mid-Second Intermediate Period, but fell to 25.15 items in the late Second Intermediate Period. By the Eighteenth Dynasty [1550 B.C.], the mean number of offerings associated with burials had decreased to 23.52. Standard deviations show that while wealth differences between individuals were greatest during the mid-Second Intermediate Period, they were least pronounced amongst the late Second Intermediate Period burials [Table 7.225].

The largest number of burial offerings, 988, or forty-one percent of the total cemetery offerings, was discovered in the Eighteenth Dynasty tombs. Ninety-three percent of these offerings were locally made beads of which sixty-four percent were glazed, twenty-two percent were gold, eight percent were carnelian, four percent were shell and one percent was diorite. The largest proportion of the luxury objects, 283, or fifty-one percent of the total number of luxury items found in the cemetery, also was of local manufacture, and also was found in the Eighteenth Dynasty graves. Forty-six percent of the luxury offerings had been deposited with graves from the mid-Second Intermediate Period [1650 B.C.]. Thirteen objects, or two percent of the total luxury offerings, were retrieved from the late Second Intermediate Period [1600 B.C.] burials. Four copper objects, or 0.72 percent of the total luxury offerings in Cemetery 65, were Egyptian in origin. While three of these had been deposited in late Second Intermediate Period graves, one was discovered in an Eighteenth Dynasty burial.

At Debeira East, Egyptian goods represented six percent of the Thirteenth Dynasty [1750 B.C.] burial offerings, one percent of those from the mid-Second Intermediate Period [1650 B.C.], five percent of the late Second Intermediate Period offerings, and three percent of the offerings from the Eighteenth Dynasty [1550 B.C.] [Table 7.229].

Local pottery formed one percent of the offerings from all periods except the Eighteenth Dynasty, when it was 0.40 percent. Over the same time span the percentage of Egyptian pottery decreased from six percent in the Thirteenth Dynasty to 0.60 percent in the mid-Second Intermediate Period. It rose to two percent in the late Second Intermediate Period and further increased to three percent by the Eighteenth Dynasty [Table 7.229].

The wealth indices calculated for Cemetery 65 were fifty-seven, 182, 175 and eighty-nine in 1750 B.C., 1650 B.C., 1600 B.C. and 1550 B.C. respectively. Total goods value [4,542] was highest for the late Second Intermediate Period burials while the mean tomb wealth [199.89] was highest for burials from the mid-Second Intermediate Period. Lastly, whereas the largest local production index [54] was obtained for burials dated to the mid-Second Intermediate Period, those from the late Second Intermediate Period had the largest foreign exchange index [3.69] [Table 7.231].

Grave and superstructure sizes at Debeira East fluctuated only minimally over time. During the Thirteenth Dynasty [1750 B.C.], the average grave area in Cemetery 65 was 2.14 square metres, while the average grave volume was 2.32 cubic metres. These measurements fell to 1.23 square metres and 0.82 cubic metres during the mid-Second Intermediate Period [1650 B.C.]. While the volume remained unchanged in the latter part of the Second Intermediate Period [1600 B.C.], the grave area further decreased to 0.91 square metres. During the Eighteenth Dynasty [1550 B.C.], both grave area and grave volume rose slightly to 1.04 square metres and 0.88 cubic metres respectively. The single datable Thirteenth Dynasty superstructure enclosed an area of 2.2 cubic metres, while the average size of those from the mid-Second Intermediate Period [1650 B.C.] was 1.22 cubic metres. Average superstructure size increased during the late Second Intermediate Period [1600 B.C.] to 1.33 cubic metres, but fell to 0.54 cubic metres during the Eighteenth Dynasty [Table 7.232 and Table 7.233].

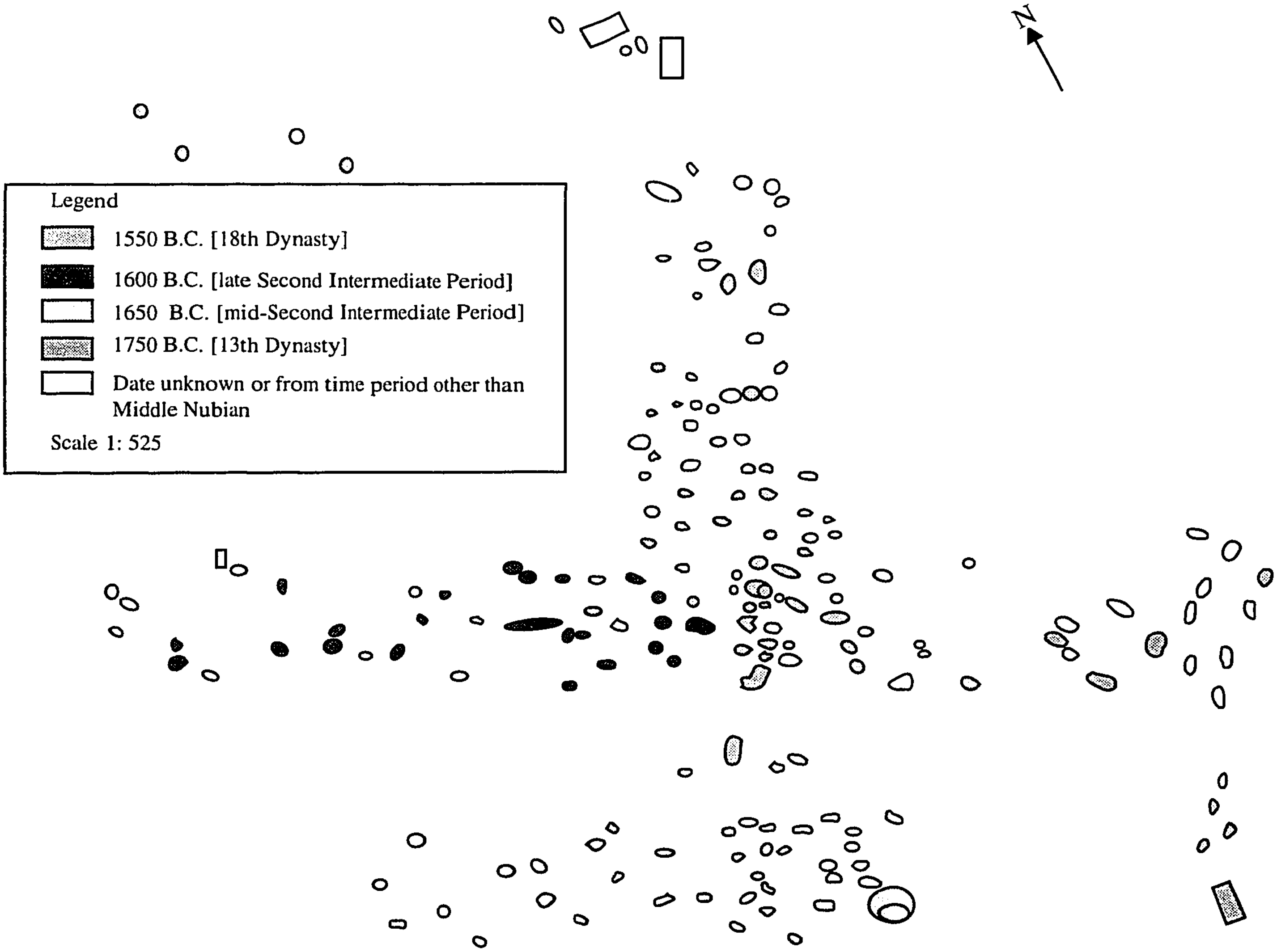


Figure 31. Debeira East, Cemetery 65: distribution of 13th Dynasty, Second Intermediate Period and 18th Dynasty Middle Nubian graves [After Säve-Söderbergh 1989, 4/2: Plate 88]

Table 7.224: Frequency distribution of superstructure and grave offerings from C-Group graves at Debeira East [Percentages are based on the total number of dated graves from each time period in Cemetery 65]

	1750 BC		1650 BC	
	Number	Percent	Number	Percent
Graves with no burial goods	1	12.50	0	0
Graves with 1 burial good	0	0	2	11.11
Graves with 2 burial goods	2	25.00	2	11.11
Graves with between 3 and 20 burial goods	4	50.00	7	38.89
Graves with between 21 and 62 burial goods	0	0	3	16.67
Graves with between 63 and 104 burial goods	0	0	2	11.11
Graves with between 105 and 166 burial goods	1	12.50	2	11.11
Total number of graves	8		18	
Total number of burial goods	137		669	
	1600 BC		1550 BC	
	Number	Percent	Number	Percent
Graves with no burial goods	2	7.69	2	4.76
Graves with 1 burial good	3	11.54	12	28.57
Graves with 2 burial goods	2	7.69	4	9.52
Graves with between 3 and 20 burial goods	8	30.77	9	21.43
Graves with between 21 and 62 burial goods	7	26.92	11	26.19
Graves with between 63 and 104 burial goods	4	15.38	3	7.14
Graves with between 105 and 166 burial goods	0	0	1	2.38
Graves with between 167 and 208 burial goods	0	0	1	2.38
Total number of graves	26		42	
Total number of burial goods	654		988	

Table 7.225: Descriptive statistics for burial [superstructure and grave] goods from Middle Nubian burials in Cemetery 65 at Debeira East

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of burial goods:				
In 1750 BC	17.13	40.00	8	137
In 1650 BC	37.17	49.90	18	669
In 1600 BC	25.15	27.24	26	654
In 1550 BC	23.52	38.45	42	988
Number of luxury goods:				
In 1750 BC	0.13	0.35	8	1
In 1650 BC	14.22	29.22	18	256
In 1600 BC	0.50	1.61	26	13
In 1550 BC	6.76	31.75	42	284
Number of grave beads:				
In 1750 BC	15.75	40.17	8	126
In 1650 BC	35.11	49.98	18	632
In 1600 BC	19.69	25.35	26	512
In 1550 BC	21.88	37.53	42	919
Number of local goods:				
In 1750 BC	16.00	40.08	8	128
In 1650 BC	36.44	50.10	18	656
In 1600 BC	21.46	25.85	26	558
In 1550 BC	22.50	37.84	42	945
Total number of Egyptian goods:				
In 1750 BC	1.00	1.20	8	8
In 1650 BC	0.44	1.04	18	8
In 1600 BC	1.27	2.72	26	33
In 1550 BC	0.69	1.00	42	29

Table 7.226: Descriptive statistics for superstructure and grave goods associated with C-Group burials in Cemetery 65 at Debeira East in 1750 B.C., 1650 B.C., 1600 B.C. and 1550 B.C.

	1750 B.C.		1650 B.C.	
	Mean	Standard Deviation	Mean	Standard Deviation
Burial goods found with subadults	-	-	6.00	-
Burial goods found with adults	60.00	79.20	24.39	34.44
Burial goods found with persons, age unknown	3.00	2.55	86.50	71.34
Burial goods found with females	-	-	2.00	-
Burial goods found with males	-	-	38.00	49.93
Burial goods found with persons, sex unknown	19.29	42.70	39.50	52.64
Burial goods found with subadults of unknown sex	-	-	6.00	-
Burial goods found with adult females	-	-	2.00	-
Burial goods found with adult males	-	-	38.00	49.93
Burial goods found with adults of unknown sex	60.00	79.20	22.23	31.91
Burial goods in plundered graves	19.29	42.70	46.17	59.31
Burial goods in undisturbed graves	-	-	18.83	12.19
	1600 B.C.		**1550 B.C.**	
	Mean	Standard Deviation	Mean	Standard Deviation
Burial goods found with subadults	20.00	32.56	30.75	48.38
Burial goods found with adults	32.62	29.76	25.73	43.27
Burial goods found with persons, age unknown	15.71	13.65	16.33	23.02
Burial goods found with females	8.00	9.90	35.00	36.78
Burial goods found with males	49.00	33.45	98.00	96.15
Burial goods found with persons, sex unknown	20.68	32.56	30.75	48.38
Burial goods found with subadults of unknown sex	20.00	32.56	30.75	48.38
Burial goods found with adult females	1.00	-	35.00	36.78
Burial goods found with adult males	49.00	33.45	98.00	96.15
Burial goods found with adults of unknown sex	25.43	23.98	12.37	16.42
Burial goods in plundered graves	23.76	26.22	18.03	22.82
Burial goods in undisturbed graves	29.80	34.75	40.40	66.43

Table 7.227: Bead occurrences in Cemetery 65 at Debeira East [Percentages are based on the total number of grave beads in burials from 1750 B.C., 1650 B.C., 1600 B.C. and 1550 B.C.]

	1750 B.C.		**1650 B.C.**	
	Number	**Percent**	**Number**	**Percent**
Gold beads	0	0	90	14.24
Carnelian beads	1	0.79	158	25.00
Total luxury beads	1	0.79	248	39.24
Shell beads	0	0	0	0
Glazed Nubian beads	125	99.21	379	59.97
Glazed Egyptian beads	0	0	0	0
Total glazed beads	125	99.21	379	59.97
Other Nubian beads	0	0	5	0.79
Total local grave beads	126	100.00	632	100.00
Total imported grave beads	0	0	0	0
Total grave beads	126		632	
	1600 B.C.		**1550 B.C.**	
	Number	**Percent**	**Number**	**Percent**
Gold beads	0	0	200	21.76
Carnelian beads	7	1.37	75	8.16
Total luxury beads	7	1.37	275	29.92
Shell beads	0	0	39	4.23
Glazed Nubian beads	481	93.95	592	64.42
Glazed Egyptian beads	0	0	0	0
Total glazed beads	481	93.95	592	64.42
Other Nubian beads	24	4.69	13	1.42
Total local grave beads	512	100.00	919	100.00
Total imported grave beads	0	0	0	0
Total grave beads	512		919	

Table 7.228: Luxury goods from Cemetery 65 at Debeira East in 1650 B.C., 1600 B.C. and 1550 B.C. [Percentages within each date category are based on the total number of luxury goods found with burials of that date. There was one carnelian bead in 1750 B.C.]

	1650 B.C.		1600 B.C.		1550 B.C.	
	Number	Percent	Number	Percent	Number	Percent
Alabaster	0	0	0	0	0	0
Carnelian	158	61.72	7	53.85	75	26.41
Copper	0	0	3	23.08	1	0.35
Gold	4	1.56	0	0	0	0
Gold beads	90	35.16	0	0	200	70.42
Ivory	4	1.56	3	23.08	9	3.17
Local luxury goods	256	100.00	10	76.92	283	99.65
Egyptian luxury goods	0	0	3	23.08	1	0.35
Total luxury goods	256		13		284	

Table 7.229: Burial goods from Cemetery 65 at Debeira East [Percentages are based on the total number of grave goods with burials that date from 1750 B.C., 1650 B.C., 1600 B.C. and 1550 B.C.]

	1750 B.C.		1650 B.C.	
	Number	**Percent**	**Number**	**Percent**
Beads	126	91.97	632	94.47
Local pottery	2	1.46	7	1.05
Egyptian pottery	8	5.84	4	0.60
Total local goods	128	93.43	656	98.06
Total Egyptian goods	8	5.84	8	1.20
Goods *in* graves	137	100.00	667	99.70
Total burial goods	137		669	
	1600 B.C.		**1550 B.C.**	
	Number	**Percent**	**Number**	**Percent**
Beads	512	78.29	919	93.02
Local pottery	7	1.07	4	0.40
Egyptian pottery	15	2.29	25	2.53
Total local goods	558	85.32	945	95.65
Total Egyptian goods	33	5.05	29	2.94
Goods *in* graves	648	99.08	981	99.29
Total burial goods	654		988	

Table 7.230: Descriptive statistics for assessments of economic production, exchange, goods value and tomb wealth in Thirteenth Dynasty, Second Intermediate Period and Eighteenth Dynasty Middle Nubian C-Group burials from Cemetery 65 at Debeira East

	Mean per Burial	Standard Deviation	Total Number of Burials
Total local production:			
In 1750 BC	41	42.69	8
In 1650 BC	54.22	50.23	18
In 1600 BC	44.92	32.16	26
In 1550 BC	40.71	43.84	42
Total foreign exchange:			
In 1750 BC	1.13	1.13	8
In 1650 BC	0.72	1.27	18
In 1600 BC	3.69	7.66	26
In 1550 BC	1.02	2.19	42
Total goods value:			
In 1750 BC	57.13	76.68	8
In 1650 BC	182.11	226.80	18
In 1600 BC	174.69	240.16	26
In 1550 BC	89.31	117.98	42
Total tomb wealth:			
In 1750 BC	82.13	74.32	8
In 1650 BC	199.89	227.89	18
In 1600 BC	198.15	235.92	26
In 1550 BC	107.52	123.11	42

Table 7.231: Goods indices from Cemetery 65 at Debeira East in 1750 B.C., 1650 B.C., 1600 B.C. and 1550 B.C.

	1750 B.C. Number	1650 B.C. Number
Total goods value	457	3278
Local production index	41	54
Foreign exchange index	1.13	0.72
Egyptian exchange index	1.00	0.44
Wealth index	57	182
	1600 B.C. Number	**1550 B.C. Number**
Total goods value	4542	3751
Local production index	45	41
Foreign exchange index	3.69	1.02
Egyptian exchange index	1.27	0.69
Wealth index	175	89

Table 7.232: Estimated superstructure [cairn] volumes and measured grave areas, in cubic metres and sq. metres respectively, of Middle Nubian C-Group burials in Cemetery 65 at Debeira East

	Superstructure size	Grave size
In 1750 BC:		
Maximum	2.2	3.52
Minimum	-	1.05
Mean	2.2	2.14
	[1 cairn]	[8 graves]
In 1650 BC:		
Maximum	1.80	6.00
Minimum	0.65	0.66
Mean	1.22	1.23
	[2 cairns]	[18 graves]
In 1600 BC:		
Maximum	2.45	2.50
Minimum	0.31	0.40
Mean	1.33	0.91
	[7 cairns]	[26 graves]
In 1550 BC:		
Maximum	1.60	2.47
Minimum	0.29	0.40
Mean	0.54	1.04
	[6 cairns]	[42 graves]

Table 7.233: Measured grave volumes, in cubic metres, of Middle Nubian C-Group tombs in Cemetery 65 at Debeira East

	Grave volume
In 1750 BC:	
Maximum	5.63
Minimum	0.74
Mean	2.32
	[8 graves]
In 1650 BC:	
Maximum	3.00
Minimum	0.13
Mean	0.82
	[18 graves]
In 1600 BC:	
Maximum	3.75
Minimum	0.14
Mean	0.82
	[26 graves]
In 1550 BC:	
Maximum	3.95
Minimum	0.12
Mean	0.88
	[42 graves]

7.0.26 Nonparametric tests: Debeira East, Cemetery 65

When cross-tabulations were used to establish whether there was any statistical association between the date of a given grave and any of the variables being monitored, reliable results were obtained in five instances. In every case, the null hypothesis could not be rejected. In the first situation [Table 7.234], the contingency table data do not indicate any association between the date of a grave and its area or volume; in the second, the data indicate no association between the date of a grave and the number of burial offerings that accompany it [Table 7.235]. In the remaining three situations [Table 7.236, Table 7.237 and Table 7.238], the data do not indicate any association between the date of a grave and the number of beads that are deposited within it.

Tests of comparison also were conducted for each variable at different time periods. In each case the null hypothesis states that the variable means of each population or time period are equal. For locally made burial goods and locally made grave beads, the null hypothesis that the means of these variables were the same in 1750 B.C., 1650 B.C., 1600 B.C. and in 1550 B.C. could not be rejected. The data suggest that no *significant* difference exists between the mean number of locally made burial goods, including beads, occurring in 1750 B.C. and the mean number that occurred in the other three time periods. The Kruskal-Wallis tests therefore support the contingency table data that indicate no relationship between the date of a grave and the number of locally made burial goods that are associated with it [Table 7.239 and Table 7.240]. A Kruskal-Wallis test also indicates no *significant* difference in the mean number of luxury objects that accompany burials from the four different time periods identified in Cemetery 65 at Debeira East [Table 7.241]. For two of these time intervals, a Mann-Whitney test demonstrates no statistical difference in the average number of gold beads that accompanied the burials [Table 7.242]. Likewise, Kruskal-Wallis tests reveal that no *significant statistical* difference exists between the mean number of Egyptian artefacts deposited in Thirteenth Dynasty graves and the mean number deposited in either middle and late Second Intermediate Period or Eighteenth Dynasty graves [Table 7.243].

DF:	1
Total Chi-square:	0.064
p-value:	0.8004
Contingency coefficient:	0.026

	Cell frequencies	1750BC-1600BC	1550BC	Totals
Small	Observed	41	34	75
	Expected	41.49	33.51	75
Large	Observed	11	8	19
	Expected	10.51	8.49	19
Totals		52	42	94

Table 7.234: Debeira East, Cemetery 65: grave area and date

DF:	2
Total Chi-square:	0.796
p-value:	0.6718
Contingency coefficient:	0.094

	Cell frequencies	1750BC-1650BC	1600BC	1550BC	Totals
Goods =1-10	Observed	13	10	21	44
	Expected	12.36	11.87	19.78	44
Goods ≥ 10	Observed	12	14	19	45
	Expected	12.64	12.14	20.23	45
Totals		25	24	40	89

Table 7.235: Debeira East, Cemetery 65: total burial goods and date

DF:	4
Total Chi-square:	3.357
p-value:	0.5000
Contingency coefficient:	0.186

	Cell frequencies	1750BC-1650BC	1600BC	1550BC	Totals
Beads=0	Observed	9	11	20	40
	Expected	11.06	11.06	17.87	40
Beads=1-20	Observed	10	5	10	25
	Expected	6.92	6.92	11.17	25
Beads $\geq$ 20	Observed	7	10	12	29
	Expected	8.02	8.02	12.96	29
Totals		26	26	42	94

Table 7.236: Debeira East, Cemetery 65: total grave beads and date

DF:	4
Total Chi-square:	3.973
p-value:	0.4097
Contingency coefficient:	0.201

	Cell frequencies	1750BC-1650BC	1600BC	1550BC	Totals
Beads=0	Observed	11	11	22	44
	Expected	12.17	12.17	19.66	44
Beads=1-20	Observed	10	6	13	29
	Expected	8.02	8.02	12.96	29
Beads $\geq$ 20	Observed	5	9	7	21
	Expected	5.81	5.81	9.38	21
Totals		26	26	42	94

Table 7.237: Debeira East, Cemetery 65: total Nubian glazed beads and date [Identical results were obtained for the variable 'total glazed beads']

DF:	2
Total Chi-square:	2.860
p-value:	0.2393
Contingency coefficient:	0.233
Missing:	39

	Cell frequencies	1750BC-1650BC	1600BC	1550BC	Totals
Beads =1-20	Observed	10	6	13	29
	Expected	8.70	8.70	11.60	29
Beads $\geq$ 20	Observed	5	9	7	21
	Expected	6.30	6.30	8.40	21
Totals		15	15	20	50

Table 7.238: Debeira East, Cemetery 65: total glazed beads and date [Only fifty of the eighty-nine dated burials at Debeira East contained glazed beads; the thirty-nine burials that contained no glazed beads were omitted from these calculations]

DF:	3
H statistic:	4.803
p-value:	0.1868

	Mean rank of burial goods	Burial count
1750 BC	32.13	8
1650 BC	55.61	18
1600 BC	50.58	26
1550 BC	45.05	42

Table 7.239: Debeira East, Cemetery 65: Kruskal-Wallis rank information for total locally made burial goods and date

DF:	3
H statistic:	1.708
p-value:	0.6351

	Mean rank of glazed beads	Burial count
1750 BC	41.00	8
1650 BC	50.67	18
1600 BC	51.65	26
1550 BC	44.81	42

Table 7.240: Debeira East, Cemetery 65: Kruskal-Wallis rank information for total Nubian glazed beads and date

DF:	2
H statistic:	4.6888
p-value:	0.0959

	Mean rank of grave beads	Burial count
1650 BC	53.89	18
1600 BC	37.42	26
1550 BC	42.81	42

Table 7.241: Debeira East, Cemetery 65: Kruskal-Wallis rank information for total luxury artefacts and date

U statistic:	366.500
p-value:	0.8528

	Mean rank of gold beads	Burial count
1650 BC BC	31.14	18
1550 BC BC	30.23	42

Table 7.242: Debeira East, Cemetery 65: Mann-Whitney rank information for locally made gold beads and date

DF:	3
H statistic:	2.321
p-value:	0.5086

	Mean rank of Egyptian goods	Burial count
1750 BC	54.19	8
1650 BC	39.22	18
1600 BC	48.71	26
1550 BC	49.02	42

Table 7.243: Debeira East, Cemetery 65: Kruskal-Wallis rank information for total Egyptian made grave goods and date

7.0.27 Descriptive statistics: Ashkeit, Cemetery 97, *ca.* 1800 B.C. to *ca.* 1600 B.C.

Cemetery 97 [Figure 32], located at Ashkeit on the right bank of the Nile between Kashkush and Amintobirki villages, was excavated partially between February and March of 1961 by T. Säve-Söderbergh and H. J. Madsen, and from November 1962 to January 1963 by E. Oldenburg, all of the Sandinavian Joint Expedition to Sudanese Nubia. The cemetery, which had been dug in a "sand-covered silt bank" near the desert margins, covered an area of 1,800 square metres (Säve-Söderbergh 1989: 185), and, although thoroughly plundered, yielded a total of 1,058 grave offerings that had been distributed amongst eighty-six burials. Twenty-two of these burials were late Twelfth Dynasty [1800 B.C.] in date; ten were Thirteenth Dynasty [1750 B.C.] in date; fifty-three were dated to the middle of the Second Intermediate Period and one was dated to the late Second Intermediate Period.

Ten subadults of unknown sex, thirty-six adults [eighteen males, fourteen females and four corpses whose sex remains unknown], eight individuals of unknown age [seven males and one female] and four bodies of unknown age and sex were excavated from the graves in Cemetery 97. Twenty-eight tombs lacked bodies.

The mean number of offerings deposited in the late Twelfth Dynasty [1800 B.C.] graves was 6.41; this average fell to 3.60 during the Thirteenth Dynasty [1750 B.C.], but rose to 16.57 during the mid-Second Intermediate Period [1650 B.C.].

Standard deviations suggest that while wealth differences amongst all Middle Nubians at Ashkeit were at a minimum during the Thirteenth Dynasty [1750 B.C.], they had reached their peak during the middle of the Second Intermediate Period [Table 7.245] when the values computed for adult males were highest [Table 7.246]. Nevertheless, amongst adults whose sex remains unknown, differences were greatest amongst those from the late Twelfth Dynasty [Table 7.246].

The largest number of burial offerings, 878, or eighty-three percent of the total offerings from Cemetery 97, were retrieved from the mid-Second Intermediate Period burials. Ninety-seven percent of these offerings were locally manufactured beads, of which eighty-five percent had been deposited in tombs from the mid-Second

Intermediate Period.

The largest number of luxury offerings, 106, or eighty percent of the total number of luxury goods discovered in Cemetery 97, were retrieved from the mid-Second Intermediate Period burials. Seventeen percent of the luxury objects remained in the late Twelfth Dynasty graves and four percent remained in burials from the Thirteenth Dynasty. The late Twelfth and Thirteenth Dynasty luxury offerings consisted of locally produced carnelian and gold beads [Table 7.247], while those from the mid-Second Intermediate Period consisted of a bracelet of plate gold, carnelian beads, and the remains of two unidentified ivory objects. Three copper rings of Egyptian origin comprised two percent of the total luxury objects and three percent of the mid-Second Intermediate Period luxury offerings [Table 7.248]. Luxury objects comprised sixteen percent of the burial offerings from 1800 B.C., fourteen percent of those from 1750 B.C. and twelve percent of the offerings from the middle of the Second Intermediate Period [1650 B.C.].

Egyptian manufactured goods made up ten percent of the Twelfth Dynasty [1800 B.C.] offerings at Ashkeit, twenty-five percent of the Thirteenth Dynasty offerings and six percent of those from the middle of the Second Intermediate Period. Local pottery accounted for four percent of the late Twelfth Dynasty offerings and one percent of the offerings from the mid-Second Intermediate Period. The Thirteenth Dynasty burials lacked local pottery. Egyptian pottery comprised ten percent of the Twelfth Dynasty burial goods, twenty-five percent of the Thirteenth Dynasty offerings and two percent of the offerings from the mid-Second Intermediate Period [1650 B.C.] [Table 7.249].

At Ashkeit, mean tomb wealth [146.19] and total goods value [6,278] were highest for burials from the middle of the Second Intermediate Period [1650 B.C.], while the largest local production index [44] was obtained for the late Twelfth Dynasty [1800 B.C.] burials and the largest foreign exchange index [1.11] was computed for burials from the mid-Second Intermediate Period [1650 B.C.]. The wealth indices computed for Cemetery 97 were fourteen, sixty-two, 118 and twelve in 1800 B.C., 1750 B.C., 1650 B.C. and 1600 B.C. respectively [Table 7.250 and Table 7.251].

Grave size, both area [1.89 square metres] and volume [1.66 cubic metres], was greatest in the Thirteenth Dynasty [1750 B.C.] and smallest in the late Twelfth Dynasty [1800 B.C.] when these measurements were 1.44 square metres and 1.49 cubic metres respectively. The maximum grave size, 2.73 square metres and 4.16 cubic metres, was recorded for the mid-Second Intermediate Period [1650 B.C.], a time interval when the average grave area was 1.50 square metres and the mean grave volume was 1.61 cubic metres. The minimum grave area [0.40 square metres] was recorded for a burial from the late Twelfth Dynasty, while the minimum grave volume [0.10 cubic metres] was that of a mid-Second Intermediate Period [1650 B.C.] grave [Table 7.252 and Table 7.253].

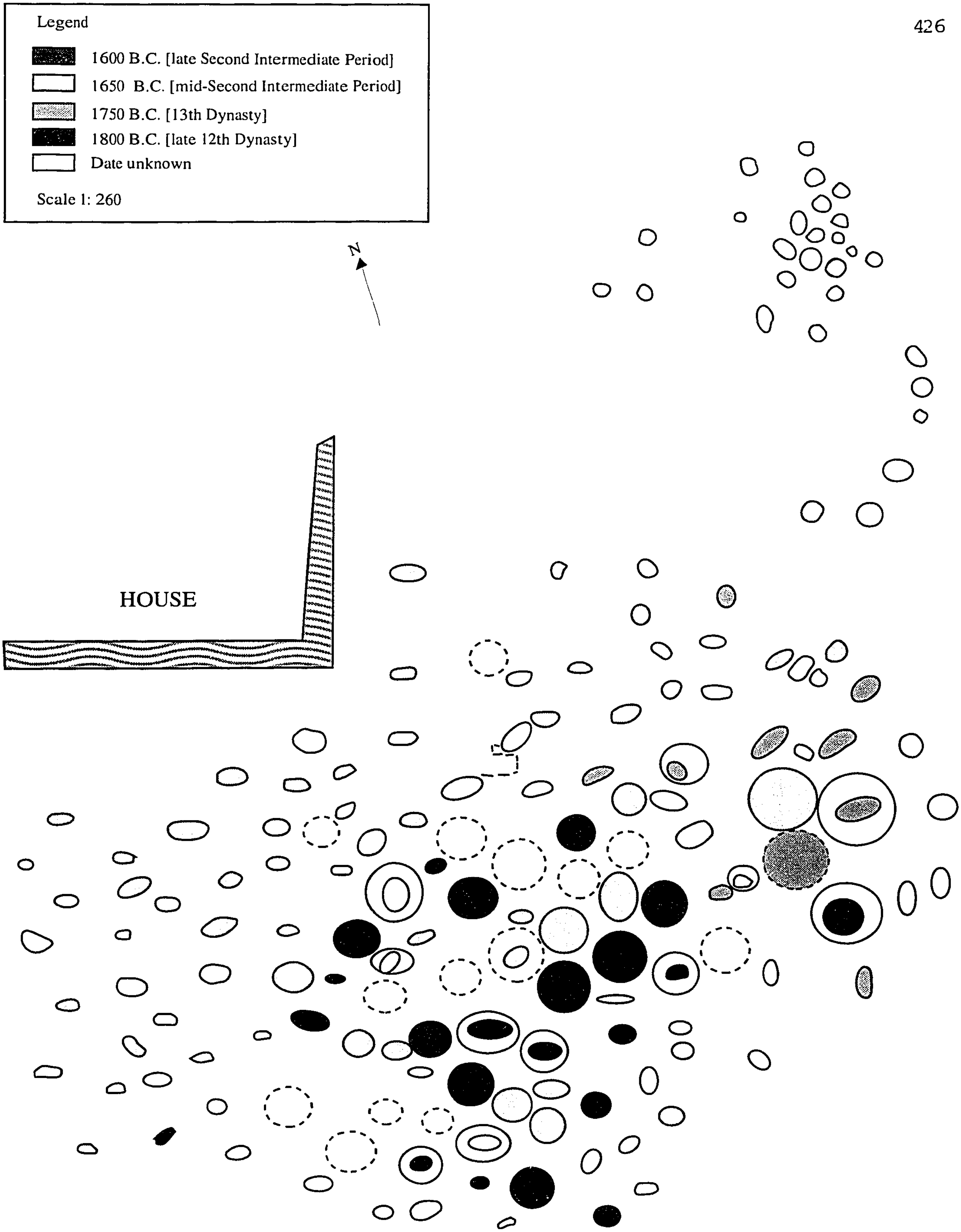


Figure 32. Ashkeit, Cemetery 97: distribution of 12th Dynasty, 13th Dynasty and middle and late Second Intermediate Period Middle Nubian graves [After Säve-Söderbergh 1989, 4/2: Plate 95]

Table 7.244: Frequency distribution of superstructure and grave offerings from C-Group graves at Ashkeit [Percentages are based on the total number of dated graves from each time period in Cemetery 97]

	1800 BC		1750 BC	
	Number	**Percent**	**Number**	**Percent**
Graves with no burial goods	3	13.64	0	0
Graves with 1 burial good	8	36.36	3	30.00
Graves with 2 burial goods	2	9.09	2	20.00
Graves with between 3 and 13 burial goods	6	27.27	5	50.00
Graves with between 14 and 39 burial goods	2	9.09	0	0
Graves with between 40 and 79 burial goods	1	4.55	0	0
Graves with between 80 and 132 burial goods	0	0	0	0
Total number of graves	22		10	
Total number of burial goods	141		36	
	1650 BC		**1600 BC**	
	Number	**Percent**	**Number**	**Percent**
Graves with no burial goods	0	0	0	0
Graves with1 burial good	11	20.75	0	0
Graves with 2 burial goods	7	13.21	0	0
Graves with between 3 and 13 burial goods	19	35.85	1	100.00
Graves with between 14 and 39 burial goods	6	11.32	0	0
Graves with between 40 and 79 burial goods	8	15.09	0	0
Graves with between 80 and 132 burial goods	2	3.77	0	0
Total number of graves	53		1	
Total number of burial goods	878		3	

Table 7.245: Descriptive statistics for burial [superstructure and grave] goods from Middle Nubian burials in Cemetery 97 at Ashkeit

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of burial goods:				
In 1800 BC	6.41	13.59	22	141
In 1750 BC	3.60	3.50	10	36
In 1650 BC	16.57	26.17	53	878
In 1600 BC	3.00	-	1	3
Number of luxury goods:				
In 1800 BC	1.00	4.25	22	22
In 1750 BC	0.50	1.58	10	5
In 1650 BC	2.00	5.48	53	106
In 1600 BC	0	-	1	0
Number of grave beads:				
In 1800 BC	5.00	13.71	22	110
In 1750 BC	1.50	3.38	10	15
In 1650 BC	13.66	25.45	53	724
In 1600 BC	0	-	1	0
Number of local goods:				
In 1800 BC	5.77	13.53	22	127
In 1750 BC	2.70	3.23	10	27
In 1650 BC	15.45	25.89	53	819
In 1600 BC	3.00	-	1	3
Total number of Egyptian goods:				
In 1800 BC	0.64	1.22	22	14
In 1750 BC	0.90	0.74	10	9
In 1650 BC	1.02	4.14	53	54
In 1600 BC	0	-	1	0

Table 7.246: Descriptive statistics for superstructure and grave goods associated with C-Group burials in Cemetery 97 at Ashkeit in 1800 B.C., 1750 B.C., 1650 B.C. and 1600 B.C.

	1800 B.C.		1750 B.C.	
	Mean	Standard Deviation	Mean	Standard Deviation
Burial goods found with subadults	1.67	1.16	3.00	-
Burial goods found with adults	-	-	-	-
Burial goods found with females	-	-	-	-
Burial goods found with males	3.00	-	6.00	4.24
Burial goods found with subadult females	-	-	-	-
Burial goods found with subadults of unknown sex	-	-	-	-
Burial goods found with adult females	2.00	1.41	-	-
Burial goods found with adult males	7.75	9.95	3.20	4.38
Burial goods found with adults of unknown sex	30.50	43.13	-	-
Burial goods found in graves without occupants	4.00	6.58	2.50	0.71
Burial goods in plundered graves	7.50	15.63	3.22	3.49
Burial goods in undisturbed graves	-	-	2.00	-
	1650 B.C.		**1600 B.C.**	
	Mean	Standard Deviation	Mean	Standard Deviation
Burial goods found with subadults	8.67	8.21	-	-
Burial goods found with adults	-	-	-	-
Burial goods found with females	41.00	-	-	-
Burial goods found with males	23.25	28.22	-	-
Burial goods found with subadult females	-	-	-	-
Burial goods found with subadults of unknown sex	-	-	-	-
Burial goods found with adult females	27.55	31.84	3.00	-
Burial goods found with adult males	20.67	42.29	-	-
Burial goods found with adults of unknown sex	14.50	19.09	-	-
Burial goods found in graves without occupants	9.88	15.88	-	-
Burial goods in plundered graves	13.29	22.70	3.00	-
Burial goods in undisturbed graves	52.50	42.30	-	-

Table 7.247: Bead occurrences in Cemetery 97 at Ashkeit [Percentages are based on the total number of grave beads in burials from 1800 B.C., 1750 B.C., 1650 B.C. and 1600 B.C.]

	1800 B.C.		1750 B.C.	
	Number	Percent	Number	Percent
Gold beads	0	0	5	33.33
Carnelian beads	22	20.00	0	0
Total luxury beads	22	20.00	5	33.33
Shell beads	22	20.00	0	0
Glazed Nubian beads	64	58.18	10	66.67
Glazed Egyptian beads	0	0	0	0
Total glazed beads	64	58.18	10	66.67
Other Nubian beads	2	1.82	0	0
Total local grave beads	110	100.00	15	100.00
Total imported grave beads	0	0	0	0
Total grave beads	110		15	
	1650 B.C.		1600 B.C.	
	Number	Percent	Number	Percent
Gold beads	0	0	0	0
Carnelian beads	100	13.81	0	0
Total luxury beads	100	13.81	0	0
Shell beads	116	16.02	0	0
Glazed Nubian beads	503	69.48	0	0
Glazed Egyptian beads	0	0	0	0
Total glazed beads	503	69.48	0	0
Other Nubian beads	5	0.69	0	0
Total local grave beads	724	100.00	0	0
Total imported grave beads	0	0	0	0
Total grave beads	724		0	

Table 7.248: Luxury goods from Cemetery 97 at Ashkeit in 1800 B.C., 1750 B.C. and 1650 B.C. [Percentages within each date category are based on the total number of luxury goods found with burials of that date. The late Second Intermediate Period burial contained no luxury artefacts]

	1800 B.C.		1750 B.C.		1650 B.C.	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Alabaster	0	0	0	0	0	0
Carnelian	22	100.00	0	0	100	94.34
Copper	0	0	0	0	3	2.83
Gold	0	0	5	100.00	1	0.94
Ivory	0	0	0	0	2	1.89
Silver	0	0	0	0	0	0
Local luxury goods	22	100.00	5	100.00	103	97.17
Egyptian luxury goods	0	0	0	0	3	2.83
Total luxury goods	22		5		106	

Table 7.249: Burial goods from Cemetery 97 at Ashkeit [Percentages are based on the total number of grave goods with burials that date from 1800 B.C., 1750 B.C., 1650 B.C. and 1600 B.C. The late Second Intermediate Period burial contained three objects]

	1800 B.C.		**1750 B.C.**	
	Number	**Percent**	**Number**	**Percent**
Beads	110	78.01	15	41.67
Local pottery	5	3.55	0	0
Egyptian pottery	14	9.93	9	25.00
Total local goods	127	90.07	27	75.00
Total Egyptian goods	14	9.93	9	25.00
Goods *in* graves	128	90.78	31	86.11
Total burial goods	141		36	
	1650 B.C.		**1600 B.C.**	
	Number	**Percent**	**Number**	**Percent**
Beads	724	82.46	0	0
Local pottery	10	1.14	0	0
Egyptian pottery	21	2.39	0	0
Total local goods	819	93.28	3	100.00
Total Egyptian goods	54	6.15	0	0
Goods *in* graves	861	98.06	3	100.00
Total burial goods	878		3	

Table 7.250: Descriptive statistics for assessments of economic production, exchange, goods value and tomb wealth in 12th Dynasty, 13th Dynasty and Second Intermediate Period Middle Nubian C-Group burials from Cemetery 97 at Ashkeit

	Mean per Burial	Standard Deviation	Total Number of Burials
Total local production:			
In 1800 BC	43.96	30.18	22
In 1750 BC	33.70	24.52	10
In 1650 BC	43.19	33.15	53
In 1600 BC	18.00	-	1
Total foreign exchange:			
In 1800 BC	0.64	1.22	22
In 1750 BC	0.90	0.74	10
In 1650 BC	1.11	4.14	53
In 1600 BC	0	-	1
Total goods value:			
In 1800 BC	13.68	16.72	22
In 1750 BC	62.10	95.23	10
In 1650 BC	118.45	185.81	53
In 1600 BC	12.00	-	1
Total tomb wealth:			
In 1800 BC	51.86	31.38	22
In 1750 BC	93.10	106.59	10
In 1650 BC	146.19	185.57	53
In 1600 BC	27.00	-	1

Table 7.251: Goods indices from Cemetery 97 at Ashkeit in 1800 B.C., 1750 B.C., 1650 B.C. and 1600 B.C.

	1800 B.C. Number	1750 B.C. Number
Total goods value	301	621
Local production index	44	34
Foreign exchange index	0.64	0.90
Egyptian exchange index	0.72	0
Wealth index	14	62
	1650 B.C. Number	**1600 B.C. Number**
Total goods value	6,278	12
Local production index	43	18
Foreign exchange index	1.11	0
Egyptian exchange index	1.00	0
Wealth index	118	12

Table 7.252: Estimated superstructure [cairn] volumes and measured grave areas, in cubic metres and sq. metres respectively, of Middle Nubian C-Group burials in Cemetery 97 at Ashkeit

	Superstructure size	Grave size
In 1800 BC:		
Maximum	2.40	2.34
Minimum	0.24	0.40
Mean	1.41	1.44
	[12 cairns]	[20 graves]
In 1750 BC:		
Maximum	3.04	2.70
Minimum	0.64	1.26
Mean	2.01	1.89
	[3 cairns]	[10 graves]
In 1650 BC:		
Maximum	3.07	2.73
Minimum	0.77	0.55
Mean	1.54	1.50
	[15 cairns]	[53 graves]
In 1600 BC:		
Maximum	-	1.28
Minimum	-	-
Mean	-	-
	[- cairns]	[1 grave]

Table 7.253: Measured grave volumes, in cubic metres, of Middle Nubian C-Group tombs in Cemetery 97 at Ashkeit

	Grave volume
In 1800 BC:	
Maximum	3.02
Minimum	0.36
Mean	1.49
	[20 graves]
In 1750 BC:	
Maximum	2.52
Minimum	1.13
Mean	1.66
	[10 graves]
In 1650 BC:	
Maximum	4.16
Minimum	0.10
Mean	1.61
	[53 graves]
In 1600 BC:	
Maximum	1.28
Minimum	-
Mean	-
	[1 grave]

7.0.28 Nonparametric tests: Ashkeit, Cemetery 97

At Ashkeit, cross-tabulations were employed to establish whether there was any statistical association between the date of a given grave in Cemetery 97 and any of the variables being monitored. While the contingency table data do not indicate any association between the date of a grave and its size [Table 7.254], the data do indicate some association between the date of a grave and the number of burial offerings that accompany it [Table 7.255]. During the time period from 1800 B.C. to 1750 B.C., more than the expected number of burials in Cemetery 97 contained between one and ten objects, while half the expected number contained ten or more offerings. During the Second Intermediate Period [1650 B.C. to 1600 B.C.], fewer than the expected number of burials contained between one and ten artefacts, whereas more than the expected number contained ten or more objects [Table 7.255]. The contingency table data for those burials that contained beads [Table 7.256 and Table 7.257] also revealed no association between the date of a grave and the number of beads that were found in it.

When tests of comparison were conducted for each variable at different time periods, the selected null hypothesis specifies that the variable means of each population or time period are equal. For locally made burial goods [Table 7.261], the null hypothesis that the means of these variables were the same in 1800 B.C, in 1750 B.C., and in 1650 B.C., could be rejected. The data suggest that a *significant* difference exists between the mean number of locally made burial goods, including beads, occurring in 1650 B.C., and the mean number that occurred in earlier, 1750 B.C. and in 1650 B.C., graves. In other words, this Kruskal-Wallis test supports the contingency table data that indicate some relationship between the date of a grave and the number of goods that are associated with it. Nevertheless, these data do not indicate any *statistical* association between the date of a grave and the number of beads that had been deposited in it [Table 7.264]. Kruskal-Wallis test results also indicate no statistically significant difference in the average number of luxury artefacts found with burials from the three time periods represented in Cemetery 97 [Table 7.265]. Similarly, Kruskal-Wallis tests reveal that no significant difference exists between the mean number of Egyptian objects deposited in Thirteenth Dynasty graves [1750 B.C.] and the mean number deposited in either earlier [1800 B.C.] or later [1650 B.C.] tombs [Table 7.266].

DF:	1
Total Chi-square:	0.146
p-value:	0.7023
Contingency coefficient:	0.042
Number missing:	2

	Cell frequencies	1800BC-1750BC	1650BC	Totals
Small	Observed	24	45	69
	Expected	24.64	44.36	69
Large	Observed	6	9	15
	Expected	5.36	9.64	15
Totals		30	54	84

Table 7.254: Ashkeit, Cemetery 97: grave area and date

DF:	1
Total Chi-square:	4.310
p-value:	0.0379
Contingency coefficient:	0.222

	Cell frequencies	1800BC-1750BC	1650BC-1600BC	Totals
Goods =1-10	Observed	25	35	60
	Expected	20.96	39.04	60
Goods ≥ 10	Observed	4	19	23
	Expected	8.04	14.96	23
Totals		29	54	83

Table 7.255: Ashkeit, Cemetery 97: total burial goods and date

DF:	2
Total Chi-square:	4.912
p-value:	0.0858
Contingency coefficient:	0.232

	Cell frequencies	1800BC-1750BC	1650BC-1600BC	Totals
Beads = 0	Observed	22	25	47
	Expected	17.49	29.51	47
Beads = 1-10	Observed	7	15	22
	Expected	8.19	13.81	22
Beads $\geq$ 10	Observed	3	14	17
	Expected	6.33	10.67	17
Totals		32	54	86

Table 7.256: Ashkeit, Cemetery 97: total grave beads and date

DF:	2
Total Chi-square:	5.172
p-value:	0.0753
Contingency coefficient:	0.238

	Cell frequencies	1800BC-1750BC	1650BC-1600BC	Totals
Beads = 0	Observed	25	29	54
	Expected	20.09	33.91	54
Beads= 1-10	Observed	4	13	17
	Expected	6.33	10.67	17
Beads $\geq$ 10	Observed	3	12	15
	Expected	5.58	9.42	15
Totals		32	54	86

Table 7.257: Ashkeit, Cemetery 97: Nubian glazed beads and date

DF:	2
H statistic:	8.555
p-value:	0.139

	Mean rank of burial goods	Burial count
1800 BC	31.77	22
1750 BC	35.80	10
1650 BC	49.02	53

Table 7.258: Ashkeit, Cemetery 97: Kruskal-Wallis rank information for total burial goods and date

U statistic:	93.500
p-value:	0.5023

	Mean rank of burial goods	Burial count
1800 BC	15.75	22
1750 BC	18.15	10

Table 7.259: Ashkeit, Cemetery 97: Mann-Whitney rank information for total burial goods and date

U statistic:	176.500
p-value:	0.0960

	Mean rank of burial goods	Burial count
1750 BC	23.15	10
1650 BC	33.67	53

Table 7.260: Ashkeit, Cemetery 97: Mann-Whitney rank information for total burial goods and date

DF:	2
H statistic:	9.857
p-value:	0.0072

	Mean rank of burial goods	Burial count
1800 BC	31.93	22
1750 BC	32.75	10
1650 BC	49.53	53

Table 7.261: Ashkeit, Cemetery 97: Kruskal-Wallis rank information for total locally made burial goods and date

U statistic:	103.500
p-value:	0.7916

	Mean rank of local goods	Burial count
1800 BC	16.21	22
1750 BC	17.15	10

Table 7.262: Ashkeit, Cemetery 97: Mann-Whitney rank information for total local goods and date

U statistic:	156.000
p-value:	0.0403

	Mean rank of local goods	Burial count
1750 BC	21.10	10
1650 BC	34.06	53

Table 7.263: Ashkeit, Cemetery 97: Mann-Whitney rank information for total local goods and date

DF:	2
H statistic:	4.956
p-value:	0.0839

	Mean rank of grave beads	Burial count
1800 BC	37.55	22
1750 BC	31.50	10
1650 BC	47.43	53

Table 7.264: Ashkeit, Cemetery 97: Kruskal-Wallis rank information for total grave beads and date

DF:	2
H statistic:	0.501
p-value:	0.7783

	Mean rank of luxury goods	Burial count
1800 BC	41.02	22
1750 BC	39.70	10
1650 BC	44.44	53

Table 7.265: Ashkeit, Cemetery 97: Kruskal-Wallis rank information for total luxury artefacts and date

DF:	2
H statistic:	2.979
p-value:	0.2255

	Mean rank of Egyptian goods	Burial count
1800 BC	41.48	22
1750 BC	55.65	10
1650 BC	41.25	53

Table 7.266: Ashkeit, Cemetery 97: Kruskal-Wallis rank information for total Egyptian made artefacts and date

7.0.29 Descriptive statistics: Abka, Cemetery 266, *ca.* 1850 B.C. to *ca.* 1600 B.C.

The graves in Cemetery 266 [Figure 33] had been dug in a silt bank, south of Abka village, *ca.* 1100 metres east of the Nile, on the northeastern edge of the Gamai lowlands. Säve-Söderbergh, who reported that all the burials except 1W and 2W had been excavated between November 1963 and January 1964 by S. Dreijer, described the site as "disturbed by erosion, sebâkh-digging and ancient plundering" (1989: 236).

The cemetery, which covered an area of 2,500 square metres, contained 111 graves. An analysis of those tombs with which artefacts were associated revealed that 2,898 burial goods had been distributed amongst twenty-one burials from the mid-Twelfth Dynasty [1850 B.C.], eighteen from the Thirteenth [1750 B.C.] and forty-one from the late Second Intermediate Period [1600 B.C.]. Five subadults [one in 1850 B.C. and two each from the other two time periods], twenty-one adults [two from 1850 B.C.; four from 1750 B.C. and fifteen from 1600 B.C.] and eighteen persons of unknown age [six in 1850 B.C., one in 1750 B.C. and eleven in 1600 B.C.], were removed from tombs in Cemetery 266. The remaining thirty-six graves, or forty-five percent of these Abka graves, lacked bodies: twelve, or fifty-seven percent, of the mid-Twelfth Dynasty burials had been removed, as had eleven, or sixty-one percent, of those from the Thirteenth Dynasty and thirteen, or thirty-two percent, of those from the late Second Intermediate Period [1600 B.C.].

At Abka, at least one object had been entombed with fourteen percent of the mid-Twelfth Dynasty burials, with thirty-nine percent of those from the Thirteenth Dynasty and with twenty-two percent of the late Second Intermediate Period interments. Fifty-three percent of the mid-Twelfth Dynasty burials were accompanied by between three and twenty burial offerings, as were thirty-three percent of the burials from the Thirteenth Dynasty and thirty-two percent of those from the late Second Intermediate Period. Five percent of the burials from 1850 B.C. and five percent of those from 1600 B.C. contained between 165 and 369 objects. Two late Second Intermediate Period burials, or five percent of the total burials in the cemetery, were associated with more than 370 offerings [Table 7.267].

The mean number of burial objects found with mid-Twelfth Dynasty burials was 20.67; this average increased to 26.44 in the Thirteenth Dynasty and to 48.49 in the late Second Intermediate Period [1600 B.C.]. Standard deviations reveal that wealth differences were most pronounced amongst individuals from the late Second Intermediate Period [Table 7.268].

While the largest number of grave goods, 1,988, or sixty-nine percent of the total cemetery offerings, were discovered in the late Second Intermediate Period graves, the mid-Twelfth and Thirteenth Dynasty graves contained fifteen percent and sixteen percent, respectively, of the total. Like practically all others included in this study, the largest segment of the burial offerings encountered in Cemetery 266 [93.8 percent] was comprised of beads. In the mid-Twelfth Dynasty graves, 93.09 percent of the offerings were beads of which seventy-seven percent were glazed and the remainder had been fashioned from shell. Ninety-one percent [90.55] of the Thirteenth Dynasty offerings consisted of beads of which fifty-eight percent were glazed, forty percent were shell and one percent was carnelian. Ninety-five percent [94.87] of the late Second Intermediate Period offerings consisted of beads of which fifty-one percent were glazed and forty-six percent were shell. Less than one percent [0.16] consisted of unidentified, presumably Nubian, stone, and the remainder were luxury beads of ivory, carnelian and copper [Table 7.270] and [Table 7.272].

Luxury goods were most numerous in the late Second Intermediate Period burials where they comprised ninety percent of the total luxury offerings discovered in the cemetery. The remaining ten percent of the luxury offerings were recovered from the Thirteenth Dynasty burials. In Cemetery 266 the proportions of both locally produced and imported luxury artefacts fluctuated over time. No luxury offerings were retrieved from the mid-Twelfth Dynasty graves; those in the Thirteenth Dynasty graves were all of local manufacture; and eighty-three percent of those recovered from the late Second Intermediate Period burials had been fashioned locally from carnelian, ivory and silver. The remaining seventeen percent of the late Second Intermediate Period goods consisted of copper imports from Egypt [Table 7.271].

In Cemetery 266, the proportions of locally produced burial objects fell slightly from ninety-nine percent in the mid-Twelfth Dynasty to ninety-eight percent in the other two time periods. No local pottery was associated with the mid-Twelfth, or with the Thirteenth Dynasty burials. Only 0.20 percent of the late Second Intermediate Period offerings consisted of locally made pottery. Egyptian pottery was absent from the mid-Twelfth Dynasty graves, but comprised 0.42 percent of the mid-Thirteenth Dynasty offerings and 1.91 percent of those from the late Second Intermediate Period [Table 7.272].

The highest mean tomb wealth [148.46] was obtained for the late Second Intermediate Period [1600 B.C.] burials in Cemetery 266 [Table 7.273]. The largest foreign exchange index [0.95] and the largest local production index [66], as well as the largest total goods value [5,337] also were calculated for the late Second Intermediate Period burials. The wealth indices calculated for Cemetery 266 were forty-one, fifty-nine and 130 in 1850 B.C., 1750 B.C. and 1600 B.C. respectively [Table 7.274].

Grave sizes at Abka varied from a mean of 0.99 square metres in the mid-Twelfth Dynasty to a mean of 1.07 square metres in the late Second Intermediate Period. The largest remaining superstructures at Abka were Thirteenth Dynasty in date. Their mean size during this time period was 6.56 cubic metres. Lastly, while the mean superstructure size in the mid-Twelfth Dynasty was 1.59 cubic metres, this fell to 0.69 cubic metres in the late Second Intermediate Period [Table 7.275].

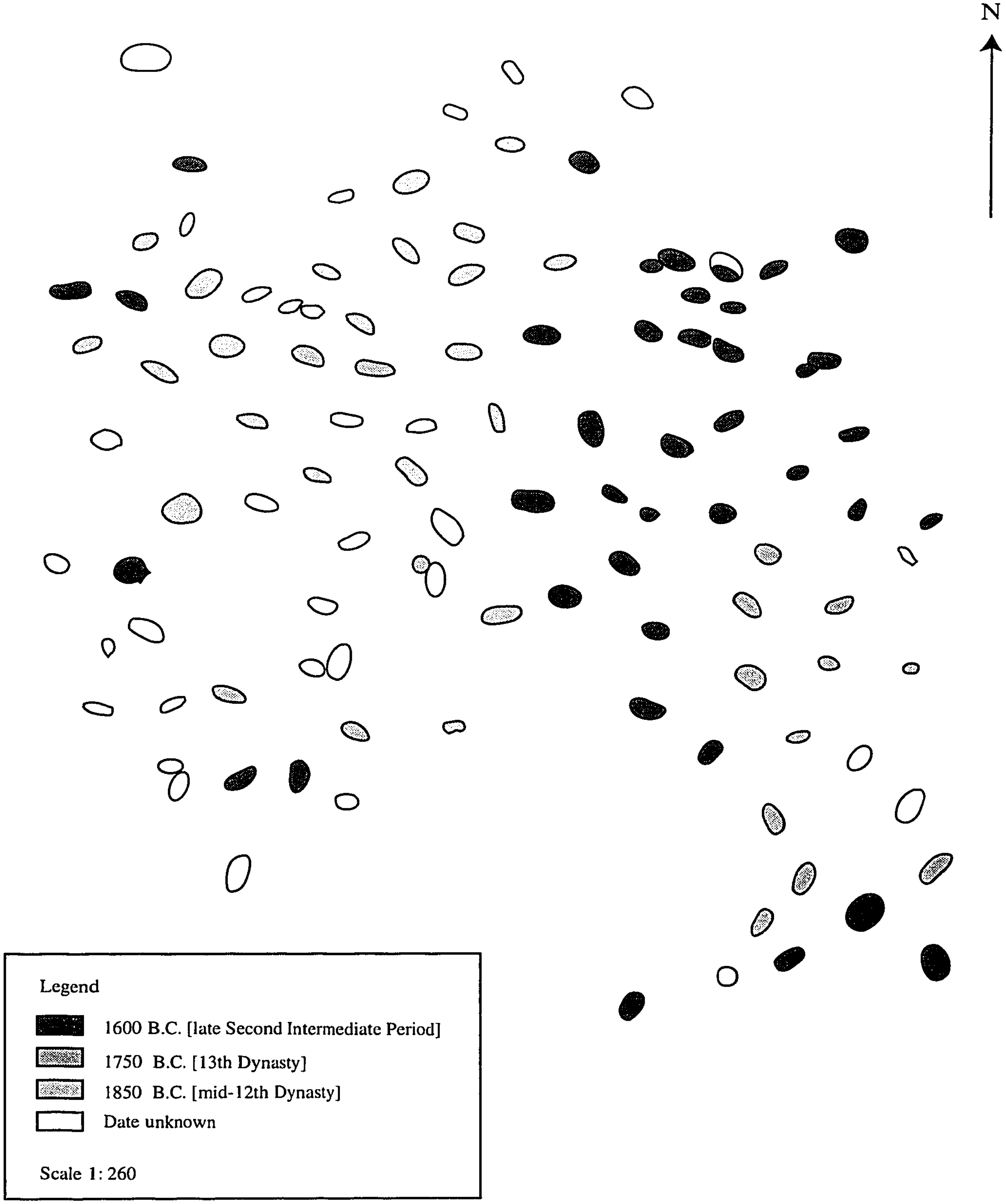


Figure 33. Abka, Cemetery 266: distribution of mid-12th Dynasty, 13th Dynasty and late Second Intermediate Period Middle Nubian graves [After Säve-Söderbergh 1989, 4/2: Plate 146]

Table 7.267: Frequency distribution of superstructure and grave offerings from C-Group graves at Abka [Percentages are based on the total number of dated graves from each time period in Cemetery 266]

	1850 BC		1750 BC	
	Number	**Percent**	**Number**	**Percent**
Graves with no burial goods	0	0	0	0
Graves with 1 burial good	3	14.29	7	38.89
Graves with 2 burial goods	4	19.05	0	0
Graves with between 3 and 20 burial goods	11	52.38	6	33.33
Graves with between 21 and 41 burial goods	1	4.76	1	5.56
Graves with between 42 and 164 burial goods	1	4.76	4	22.22
Graves with between 165 and 369 burial goods	1	4.76	0	0
Total number of graves	21		18	
Total number of burial goods	434		476	

	1600 BC	
	Number	**Percent**
Graves with no burial goods	1	2.44
Graves with 1 burial good	9	21.95
Graves with 2 burial goods	3	7.32
Graves with between 3 and 20 burial goods	13	31.71
Graves with between 21 and 41 burial goods	5	12.20
Graves with between 42 and 164 burial goods	6	14.63
Graves with between 165 and 369 burial goods	2	4.88
Graves with between 370 and 410 burial goods	2	4.88
Total number of graves	41	
Total number of burial goods	1988	

Table 7.268: Descriptive statistics for burial [superstructure and grave] goods from Middle Nubian burials in Cemetery 266 at Abka

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Burial Goods
Number of burial goods:				
In 1850 BC	20.67	47.52	21	434
In 1750 BC	26.44	43.78	18	476
In 1600 BC	48.49	96.52	41	1988
Number of luxury goods:				
In 1850 BC	0	0	21	0
In 1750 BC	0.33	0.97	18	6
In 1600 BC	1.29	5.23	41	53
Number of grave beads:				
In 1850 BC	19.24	47.59	21	404
In 1750 BC	23.94	43.04	18	431
In 1600 BC	46.00	95.37	41	1886
Number of local goods:				
In 1850 BC	20.38	47.58	21	428
In 1750 BC	26.00	42.67	18	468
In 1600 BC	47.54	95.73	41	1949
Total number of Egyptian goods:				
In 1850 BC	0	0	21	0
In 1750 BC	0.11	0.47	18	2
In 1600 BC	0.93	1.82	41	38

Table 7.269: Descriptive statistics for superstructure and grave goods associated with C-Group burials in Cemetery 266 at Abka in 1850 B.C., 1750 B.C. and 1600 B.C.

	1850 B.C.		1750 B.C.	
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**
Burial goods found with subadults	2.00	-	80.50	96.87
Burial goods found with adults	5.50	2.12	31.75	57.57
Burial goods found with males	8.67	5.69	7.00	-
Burial goods found with males, age unknown	15.00	-	-	-
Burial goods found with subadult females	-	-	-	-
Burial goods found with subadults of unknown sex	2.00	-	80.50	96.87
Burial goods found with adult females	-	-	-	-
Burial goods found with adult males	5.50	2.12	7.00	-
Burial goods found with adults of unknown sex	-	-	40.00	67.55
Burial goods found in graves without occupants	23.33	56.63	18.10	24.80
Burial goods in plundered graves	17.11	34.81	41.29	63.76
Burial goods in undisturbed graves	-	-	-	-

	1600 B.C.	
	Mean	**Standard Deviation**
Burial goods found with subadults	40.50	2.12
Burial goods found with adults	61.53	115.29
Burial goods found with females	26.60	32.38
Burial goods found with males	135.17	198.96
Burial goods found with males, age unknown	194.50	252.44
Burial goods found with subadults of unknown sex	40.50	2.12
Burial goods found with adult females	26.60	32.38
Burial goods found with adult males	105.50	203.01
Burial goods found with adults of unknown sex	61.33	94.26
Burial goods found in graves without occupants	28.08	70.10.
Burial goods in plundered graves	70.19	115.74
Burial goods in undisturbed graves	7.00	-

Table 7.270: Bead occurrences in Cemetery 266 at Abka [Percentages are based on the total number of grave beads in burials from 1850 B.C., 1750 B.C. and 1600 B.C.]

	1850 B.C.		1750 B.C.	
	Number	Percent	Number	Percent
Carnelian beads	0	0	4	0.93
Copper beads	0	0	0	0
Ivory beads	0	0	2	0.47
Total luxury beads	0	0	6	1.39
Shell beads	94	23.27	173	40.14
Glazed Nubian beads	310	76.73	252	58.47
Glazed Egyptian beads	0	0	0	0
Total glazed beads	310	76.73	252	58.47
Other Nubian beads	0	0	0	0
Total local grave beads	404	100.00	431	100.00
Total imported grave beads	0	0	0	0
Total grave beads	404		431	

	1600 B.C.	
	Number	Percent
Carnelian beads	19	1.01
Copper beads	9	0.48
Ivory beads	22	1.17
Total luxury beads	50	2.65
Shell beads	862	45.71
Glazed Nubian beads	970	51.43
Glazed Egyptian beads	1	0.05
Total glazed beads	971	51.48
Other Nubian beads	3	0.16
Total local grave beads	1876	99.47
Total imported grave beads	10	0.53
Total grave beads	1886	

Table 7.271: Luxury goods from Cemetery 266 at Abka in 1850 B.C., 1750 B.C. and 1600 B.C. [Percentages within each date category are based on the total number of luxury goods found with burials of that date]

	1850 B.C.		1750 B.C.		1600 B.C.	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Alabaster	0	0	0	0	0	0
Carnelian	0	0	4	66.67	20	37.74
Copper beads	0	0	0	0	9	16.98
Gold beads	0	0	0	0	0	0
Ivory	0	0	2	33.33	23	43.40
Silver	0	0	0	0	1	1.89
Local luxury goods	0	0	6	100.00	44	83.02
Egyptian luxury goods	0	0	0	0	9	16.98
Total luxury goods	0		6		53	

Table 7.272: Burial goods from Cemetery 266 at Abka [Percentages are based on the total number of grave goods with burials that date from 1850 B.C., 1750 B.C. and 1600 B.C.]

	1850 B.C.		1750 B.C.		1600 B.C.	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Beads	404	93.09	431	90.55	1886	94.87
Local pottery	0	0	0	0	4	0.20
Egyptian pottery	0	0	0	0	26	1.31
Total local goods	428	98.62	468	98.32	1949	98.04
Total Egyptian goods	0	0	2	0.42	38	1.91
Goods *in* graves	434	100.00	476	100.00	1988	100.00
Total burial goods	434		476		1988	

Table 7.273: Descriptive statistics for assessments of economic production, exchange, goods value and tomb wealth in Twelfth Dynasty, Thirteenth Dynasty and late Second Intermediate Period Middle Nubian C-Group burials from Cemetery 266 at Abka

	Mean per Burial	Standard Deviation	Total Number of Burials
Total local production:			
In 1850 BC	43.95	56.09	21
In 1750 BC	46.83	46.36	18
In 1600 BC	65.83	95.50	41
Total foreign exchange:			
In 1850 BC	0.29	1.31	21
In 1750 BC	0.44	1.46	18
In 1600 BC	0.95	1.96	41
Total goods value:			
In 1850 BC	41.14	95.50	21
In 1750 BC	58.67	94.49	18
In 1600 BC	130.17	264.73	41
Total tomb wealth:			
In 1850 BC	64.71	102.83	21
In 1750 BC	79.50	94.50	18
In 1600 BC	148.46	266.03	41

Table 7.274: Goods indices from Cemetery 266 at Abka in 1850 B.C., 1750 B.C. and 1600 B.C.

	1850 B.C. Number	1750 B.C. Number
Total goods value	864	1056
Local production index	44	47
Egyptian exchange index	0	0.11
Wealth index	41	59

	1600 B.C. Number
Total goods value	5337
Local production index	66
Egyptian exchange index	0.93
Wealth index	130

Table 7.275: Estimated superstructure [cairn] volumes and measured grave areas, in cubic metres and sq. metres respectively, of Middle Nubian C-Group burials in Cemetery 266 at Abka

	Superstructure size	Grave size
In 1850 BC:		
Maximum	2.70	2.04
Minimum	0.40	0.15
Mean	1.59	0.99
	[5 cairns]	[21 graves]
In 1750 BC:		
Maximum	12.15	1.53
Minimum	0.97	0.28
Mean	6.56	1.03
	[2 cairns]	[18 graves]
In 1600 BC:		
Maximum	1.25	1.95
Minimum	0.24	0.40
Mean	0.69	1.07
	[4 cairns]	[41 graves]

Table 7.276: Measured grave volumes, in cubic metres, of Middle Nubian C-Group tombs in Cemetery 266 at Abka

	Grave volume
In 1850 BC:	
Maximum	3.26
Minimum	0.17
Mean	1.44
	[21 graves]
In 1750 BC:	
Maximum	2.88
Minimum	0.22
Mean	1.67
	[18 graves]
In 1600 BC:	
Maximum	3.59
Minimum	0.36
Mean	1.65
	[41 graves]

7.0.30 Nonparametric tests: Abka, Cemetery 266

Cross-tabulations were used to establish whether there was any statistical association between the date of a given grave in Cemetery 266 at Abka and any of the variables being surveyed. When grave area was chosen as a measure, only eleven [three in 1850 B.C., two in 1750 B.C. and six in 1600 B.C.] graves fell into the category designated "large" [i.e. greater than 1.5 square metres]. Because of the resulting small expected cell frequencies, it was impossible to conduct a reliable chi-square test for this variable. However, by using grave volume, the contingency table data revealed that it was not possible to reject the null hypothesis that there was no association between the size of a grave and its date [Table 7.277]. When grave offerings were employed as the 'dependent' variable, the null hypothesis could be rejected in the case of 'total grave beads' [Table 7.279]. In all other instances, the contingency table data do not indicate any association between the date of a grave and the number of burial offerings that accompany it. Total burial goods and date [Table 7.278] and Nubian glazed beads and date [Table 7.280] are examples of this lack of statistical association. When burials that lacked glazed beads were omitted from the chi-square calculations, the resulting contingency-table data also do not indicate any association between the date of a given grave and the number of glazed Nubian beads that had been found within it [Table 7.281].

Tests of comparison also were conducted for each variable at the three different time periods identified in Cemetery 266 at Abka. In each case the null hypothesis states that the variable means of each population or time period are equal. For locally made burial goods and locally made glazed beads, the null hypothesis that the means of these variables were the same in 1850 B.C, in 1750 B.C. and in 1600 B.C. could not be rejected [Table 7.282 and Table 7.283, respectively]. The Kruskal-Wallis test data suggest that no statistically *significant* difference exists between the mean number of locally made burial goods, including glazed, Nubian beads, occurring in 1600 B.C. and the mean number that occurred in either 1750 B.C. or in 1850 B.C. In this instance, there was support for the contingency table data that indicate no relationship between the date of a grave and the total number of locally made burial

DF:	2
Total Chi-square:	2.089
p-value:	0.3519
Contingency coefficient:	0.160

	Cell frequencies	1850BC	1750BC	1600BC	Totals
Small	Observed	17	13	26	56
	Expected	14.70	12.60	28.70	56
Large	Observed	4	5	15	24
	Expected	6.30	5.40	12.30	24
Totals		21	18	41	80

Table 7.277: Abka, Cemetery 266: grave volume and date

goods that are associated with it [Table 7.278], but no support for those data which suggest that some relationship exists between the date of a grave and the number of locally produced grave beads that had been deposited in it [Table 7.279]. Mann-Whitney test results show that the null hypothesis that the mean number of luxury objects found in graves from 1750 B.C. equals the mean number in 1600 B.C. graves could not be rejected. This test therefore suggests that no *significant* difference exists between the average number of luxury objects in graves from these two time periods. In short, the difference between the association of eighteen Thirteenth Dynasty burials with six luxury objects and that of forty-one late Second Intermediate Period graves with fifty-three luxury items is *not* statistically significant [Table 7.284]. Lastly, because fewer than five Egyptian artefacts remained in the mid-Twelfth and Thirteenth Dynasty graves, unreliable results were obtained for this variable.

DF:	2
Total Chi-square:	1.142
p-value:	0.5648
Contingency coefficient:	0.119
Missing:	1

	Cell frequencies	1800BC	1750BC	1600BC	Totals
Goods=1-10	Observed	15	11	23	49
	Expected	13.03	11.17	24.81	49
Goods $\geq$ 10	Observed	6	7	17	30
	Expected	7.98	6.84	15.19	30
Totals		21	18	40	79

Table 7.278: Abka, Cemetery 266: total burial goods and date

DF:	4
Total Chi-square:	22.238
p-value:	0.0002
Contingency coefficient:	0.466

	Cell frequencies	1850BC	1750BC	1600BC	Totals
Beads =0	Observed	1	8	16	25
	Expected	6.56	5.63	12.81	25
Beads =1-10	Observed	16	3	9	28
	Expected	7.35	6.30	14.35	28
Beads $\geq$ 10	Observed	4	7	16	27
	Expected	7.09	6.08	13.84	27
Totals		21	18	41	80

Table 7.279: Abka, Cemetery 266: total grave beads and date

DF:	2
Total Chi-square:	2.339
p-value:	0.3106
Contingency coefficient:	0.169
Missing:	0

	Cell frequencies	1850BC-1750BC	1600BC	Totals
Beads =0	Observed	12	19	31
	Expected	15.11	15.89	31
Beads =1-10	Observed	18	13	31
	Expected	15.11	15.89	31
Beads $\geq$ 10	Observed	9	9	18
	Expected	8.78	9.23	18
Totals		39	41	80

Table 7.280: Abka, Cemetery 266: glazed Nubian beads and date

DF:	1
Total Chi-square:	0.457
p-value:	0.4990
Contingency coefficient:	0.097
Missing:	32

	Cell frequencies	1850BC-1750BC	1600BC	Totals
Beads =1-10	Observed	18	12	30
	Expected	16.88	13.13	30
Beads $\geq$ 10	Observed	9	9	18
	Expected	10.13	7.88	18
Totals		27	21	48

Table 7.281: Abka, Cemetery 266: glazed Nubian beads and date [Burials that lacked Nubian glazed beads were omitted from these calculations]

DF:	2
H statistic:	0.015
p-value:	0.9927

	Mean rank of burial goods	Burial count
1850 BC	40.07	21
1750 BC	40.33	18
1600 BC	40.79	41

Table 7.282: Abka, Cemetery 266: Kruskal-Wallis rank information for total locally made burial goods and date

DF:	2
H statistic:	2.068
p-value:	0.3556

	Mean rank of glazed beads	Burial count
1850 BC	46.48	21
1750 BC	40.33	18
1600 BC	37.51	41

Table 7.283: Abka, Cemetery 266: Kruskal-Wallis rank information for total Nubian glazed beads and date

U statistic:	366.500
p-value:	0.9672

	Mean rank of luxury goods	Burial count
1750 BC	30.14	18
1600 BC	29.94	41

Table 7.284: Abka, Cemetery 266: Mann-Whitney rank information for total luxury objects and date

Chapter 8

The Middle Nubian C-Group Cemeteries: Interpretations - Exchange Patterns

Some scholars have suggested that decreases and increases in the quantity of Egyptian artefacts found in C-Group graves occurred at specific time periods. The posited fluctuations are believed to mirror changes in the political and economic relationship between Lower Nubian communities and Egypt. Plentiful imports during the First Intermediate Period are believed to have been followed by decreases in the quantity of Egyptian trade goods made available to Lower Nubians during the Middle Kingdom era (Bietak 1968: 133-157; O'Connor 1974: 29-30; Säve-Söderbergh 1989: 2-3), since the introduction of Egyptian coercive practices, such as forced labour, presumably resulted in an interruption in exchange contacts. In this thesis, the degree of Egyptian involvement with each Middle Nubian community was estimated by assessing the number of Egyptian artefacts present in each of the time periods represented in a particular cemetery. Results that show a statistical difference in the mean number of Egyptian artefacts present in burials dating from *ca.* 2000 to *ca.* 1550 B.C. were interpreted to mean that the volume of Egyptian imports varied significantly from one time period to another and may reflect the changes in political and economic relations between Middle Nubians and Egyptians that are documented in ancient Egyptian texts.

In 2000 B.C. fifteen percent [seventy-six objects] of the grave goods at Aniba North consisted of Egyptian imports. The number of Egyptian goods associated with graves increased steadily between 1900 B.C. and 1650 B.C. but by 1600 B.C. the percentage of Egyptian-made artefacts had dropped to five percent [159 items] of the offerings. Burial data show that, in the centuries following the mid-Twelfth Dynasty, while the percentage of Egyptian pottery associated with burials at Aniba North steadily declined, the quantities of other Egyptian articles fluctuated. Cross-tabulations of Egyptian artefacts and date reveal that there is some dependence between the two variables. Between 2000 B.C. and 1900 B.C. fewer than the expected number of burials were associated with more than two Egyptian objects, while more than the expected number were associated with one Egyptian artefact. In 1850 B.C. and in 1700 B.C. more than the expected number of burials contained no Egyptian goods, whereas fewer than the expected number contained one object or more than two objects; the reverse was the case in 1750 B.C. While fewer than the expected number of burials from 1650 B.C. lacked Egyptian goods, more than the expected number were associated with one Egyptian object or more than two Egyptian objects. Slightly more than the expected number of burials from 1600 B.C. lacked Egyptian artefacts and slightly more than expected contained more than two objects of Egyptian manufacture [Table 7.122]. These results are supported by Kruskall-Wallis tests which demonstrate that, from 2000 B.C. to 1600 B.C., there were statistically significant differences in the mean number of Egyptian artefacts present in the burials within each date category at Aniba North.

Mann-Whitney U tests further revealed that, while there was no significant difference between the mean number of Egyptian artefacts present in 2000 B.C. and in 1900 B.C., or between 1900 B.C. and 1850 B.C., or between 1650 B.C. and 1600 B.C., there was a significant difference between the mean number of Egyptian objects deposited in graves between 1850 B.C. and 1750 B.C. [an *increase* occurred], between 1750 B.C. and 1700 B.C. [a *decrease* occurred], and between 1700 B.C. and 1650 B.C. [an *increase* occurred]. An increase in the mean number of Egyptian goods associated with late Second Intermediate Period graves also occurred but this increase was not statistically significant [Table 7.106]. These fluctuations in Egyptian exchange at Aniba North show that, between 2000 B.C. and 1850 B.C., exchange contacts between the Egyptians and Lower Nubians were seemingly "constant," whereas a statistically significant increase in "trade" takes place between 1850 B.C. and 1750 B.C. The documented *decrease* in exchange does not occur until *ca.* 1750 B.C. to *ca.* 1700 B.C., namely, during a time period when the Egyptians supposedly withdraw from Lower Nubia.

The burial data from Serra East also indicate that a significant difference exists between the mean number of Egyptian goods, and Egyptian pottery in particular, occurring in the cemetery in 2000 B.C. and the number that occurs in 1800 B.C. and in 1650 B.C. [Table 7.222 and Table 7.223]. As at Ginari, Gerf Husein, Tumas and Aniba North, the Serra East data show that a constant flow of Egyptian trade goods into Lower Nubia did not occur. Nevertheless, although these Serra East data reflect changes in the amount of Egyptian material reaching northern Sudanese graves, they give little support to the "traditional colonization" model of Egyptian-Nubian political and economic relationships. Not only is the number of Egyptian artefacts in late Twelfth Dynasty graves at Serra East *higher* than in those from 2000 B.C., but local production, tomb wealth and foreign exchange at the site all increase in a linear fashion over time. The change identified appears to be one of continual, rather than interrupted, "economic growth."

At Ginari, non-parametric tests established that a significant difference exists between the mean number of Egyptian artefacts present in the mid-Second Intermediate Period graves and the mean number present in the late Second Intermediate Period graves [Table 7.11]. Egyptian artefacts increased from five percent of the mid-Second Intermediate Period offerings at Ginari to eighteen percent of the offerings from 1600 B.C. Because of the late date of the cemetery, information on earlier possible fluctuations is lacking. A *significant* difference exists also between the mean number of Egyptian artefacts present in the late Second Intermediate Period graves at Gerf Husein and the mean number present in those from the Eighteenth Dynasty [Table 7.34]. At Gerf Husein, Egyptian artefacts increased from two percent of the burial offerings in 1600 B.C. to twenty-eight percent in 1550 B.C. Shifts in the quantity of Egyptian artefacts that may have occurred during the First Intermediate Period/ Middle Kingdom transition period remain undetected because of the low sample count and because Egyptian artefacts were absent from the earliest tomb found there. Likewise, because graves prior to the late Twelfth Dynasty could not be identified at Tumas, it was not possible to discover whether or not an upward or downward shift in the quantity of Egyptian artefacts present in the Middle Kingdom graves had occurred. However, the test data for Cemetery 189 indicate that a significant difference exists between the mean number of Egyptian imports occurring in 1550 B.C. and the mean number occurring between 1800 B.C. and 1600 B.C. [Table 7.98]. Furthermore, at Tumas, *an increase in Egyptian trade goods occurs over time,* for, although the mean number of Egyptian goods per burial was higher and the goods were less widely distributed in 1650 B.C., in 1550 B.C. Egyptian goods make up fifty-eight percent of the total burial offerings as well as fifty-eight percent of the total luxury offerings in the cemetery [Table 7.84].

Some researchers also have claimed that between 2200 B.C. and 1500 B.C. the quantity of Egyptian objects deposited with Middle Nubian burials remained virtually unchanged. Consequently, they infer that fluctuations in the amount of Egyptian-Nubian exchange did not occur (Adams 1984: 145). Results that indicate no statistical difference in the mean number of Egyptian artefacts deposited in burials dating from *ca.* 2000 to *ca.* 1550 B.C. were interpreted to mean that throughout this period the volume of Egyptian imports remained "constant" and therefore does not reflect the changes in political and economic relations between Middle Nubians and Egyptians that are portrayed in the Egyptian textual record.

The Koshtemna burial data indicate that no significant difference exists between the mean number of Egyptian objects present in graves from 1900 B.C. and the mean number that occurred with burials from either 1800 B.C. or 1750 B.C. This Kruskal-Wallis test therefore supports the contingency table data that indicate no relationship between the date of a grave in Cemetery 87 and the number of Egyptian-made [Table 7.51] burial goods that are associated with it. These results, which could be interpreted to mean that the number of Egyptian burial goods in Cemetery 87 remained "constant" over the time period from 1900 B.C. to 1750 B.C., partially support the argument of those scholars who insist that, between 2200 B.C. and 1500 B.C., fluctuations in the amount of Egyptian-Nubian exchange did not occur.

In 2000 B.C. the Egyptian exchange index calculated for Cemetery 200 near Aniba was 0.20. It increased to 0.31 in 1800 B.C. and fell to 0.29 in 1650 B.C. This pattern suggests that the flow of Egyptian trade goods into Lower Nubia was far from constant [Table 7.153]. However, because the number of Egyptian artefacts from 2000 B.C. was less than five, it was not possible to determine whether the late Twelfth Dynasty increase in imports was statistically significant. Results of a Mann-Whitney test, that show no significant difference between the mean number of Egyptian artefacts present in the late Twelfth Dynasty and the mean number present in the mid-Second Intermediate Period tombs [Table 7.171], appear to support the "constant flow" of Egyptian trade goods model advocated by Adams. There also was no significant difference between the number of glazed beads [Table 7.169] present in 1800 B.C. and the number present in 1650 B.C. in Cemetery 200. Since it was established that a significant difference exists between the mean number of locally made cairn pots that occurs in 2000 B.C. and the mean number that occurs in 1650 B.C., the computed statistical difference in the mean number of burial goods deposited in graves from 2000 B.C. and the mean number from other dates [Table 7.164] may perhaps be due to fluctuations in this variable. Thus, in spite of the slight increases in trade goods that occurred at Aniba North and Serra East, *the results of this analysis suggest that the quantity of Egyptian artefacts reaching Middle Nubian burials remained essentially unchanged throughout the Middle Kingdom era.*

Despite the numerical increase in Egyptian offerings that occurred in Twelfth Dynasty burials at Tushka, and despite the fact that Egyptian-made artefacts comprised fourteen percent of the offerings in 1900 B.C., twenty percent of those from 1800 B.C., four percent of those from 1750 B.C. and five percent of those from 1650 B.C. [Table 7.192], the burial data from Cemetery 209 show that differences in the mean number of Egyptian artefacts present at these time periods are not statistically significant [Table 7.205]. This result attests to a virtually "constant" exchange relationship between Egyptians and Nubians at Tushka.

At Dakka, it was found that Egyptian-Nubian exchange remained relatively "constant" from the late Twelfth and Thirteenth Dynasties until the middle of the Second Intermediate Period. In Cemetery 101, no significant difference exists between the mean number of Egyptian burial goods in tombs from 1800 B.C. and the mean number in tombs from either 1750 B.C. or 1650 B.C. [Table 7.67]. Because there were fewer than five Egyptian artefacts from all three time periods at Areika, it was not possible to determine the extent of this community's trade with Egypt. However, if the glazed beads discovered at the site can be assumed to be Egyptian, the data reveal that no significant difference exists between the mean number that occurred in 1850 B.C. and the mean number occurring either in 1750 B.C. or in 1650 B.C. [Table 7.80 and Table 7.82]. No significant difference exists between the mean number of Egyptian burial goods in mid-Second Intermediate Period graves in Cemetery 195 at Aniba and those in graves that are late Second Intermediate Period in date [Table 7.152]. While none of these results can shed light upon the extent of Egyptian-Nubian exchange prior to the end of the Middle Kingdom, they do signify that post-Middle Kingdom contact between the two groups was relatively constant.

No significant difference exists between the mean number of Egyptian artefacts present in graves from 1550 B.C. and those from 1750 B.C., 1650 B.C. or 1600 B.C. at Debeira East. Means ranged from one Egyptian artefact per burial in 1750 B.C. to 0.44 per burial in 1650 B.C. In 1600 B.C. the mean number of Egyptian artefacts per burial was 1.27; in 1550 B.C. it was 0.69. Because of the low standard deviations obtained for all time periods, it must be inferred that Egyptian artefact dispersal in Cemetery 65 was widespread [Table 7.225]. At Ashkeit, the mean number of Egyptian objects per burial in Cemetery 97 increased steadily from 0.64 per burial in 1800 B.C. to 0.90 per burial in 1750 B.C. to 1.02 per burial in 1650 B.C. Standard deviations show that "unequal access" to these artefacts was greatest amongst the latter burials. Nevertheless, no significant difference was found between the mean number of Egyptian artefacts distributed in graves from 1800 B.C. and the mean number present in 1750 B.C. or in 1650 B.C.

There were no Egyptian artefacts in the mid-Twelfth Dynasty burials at Abka, but this variable increased from 0.11 per burial in 1750 B.C. to 0.93 per burial in 1600 B.C. Standard deviations were 0.47 and 1.82 respectively. In Cemetery 266 Egyptian artefacts comprised 0.42 percent of the Thirteenth Dynasty grave offerings and 1.91 percent of those from the late Second Intermediate Period. However, although a relatively large increase in Egyptian goods from a total of two in 1750 B.C. to a total of thirty-eight in 1600 B.C. occurred, it was not possible to determine if the increase was statistically significant since fewer than five artefacts were present in 1750 B.C. As at Dakka, Cemetery 101, and Aniba, Cemetery 195, these results cannot define the extent of Egyptian-Nubian contact before the close of the Middle Kingdom; however, they do establish that, following the Middle Kingdom, exchange was practically constant between the two peoples.

It was not possible to reject the hypothesis that the mean number of Egyptian offerings found in late Second Intermediate Period tombs in Cemetery 201 at Masmas was equal to the mean number associated with Eighteenth Dynasty burials [Table 7.186]. Thus, Egyptian-Nubian exchange at this site remained unchanged. The remaining Egyptian articles, which were mostly scarabs, testify to seemingly limited contact between Middle Nubian and Egyptian communities: Seventeen percent [170 objects] of the late Second Intermediate Period offerings and ten percent [fifty-two objects] of those from the Eighteenth Dynasty were Egyptian in origin. However, the increase in the percentage of both Egyptian pottery and alabaster in Cemetery 201 [Table 7.176 and Table 7.177] suggests that, at Masmas, the availability of these artefacts was not adversely affected by the Egyptian reconquest of Lower Nubia. A similar increase in alabaster and Egyptian pottery took place during the same time period at Tumas [Table 7.87 and Table 7.88] but not at Debeira East, where, although an increase in the percentage of pottery also occurred, alabaster is absent [Table 7.228 and Table 7.229]. Thus, data from Koshtemna, Dakka, Cemetery 195 at Aniba, Cemetery 200 at Aniba, Masmas, Tushka, Debeira East, Ashkeit and Abka show that, during the time periods represented in these cemeteries, fluctuations in the volume of Egyptian-Nubian exchange did not occur.

Finally, *if* glazed beads were assumed to be Egyptian in origin, their distribution also would indicate that the flow of Egyptian artefacts into Lower Nubia was virtually "constant" because, first, there was no significant difference in the mean number of these beads occurring in burials from different time periods at Ginari, Gerf Husein, Koshtemna, Dakka, Tumas, Masmas, Tushka, Serra East, Abka or in burials from Cemetery 200 at Aniba; and, because, second, there was no dependence between glazed beads and date at either Debeira East, or Ashkeit or Abka. Statistically significant fluctuations in the distribution of glazed beads occurred only at Aniba North. Mann-Whitney U tests also demonstrated no significant difference in the mean quantity of glazed beads that were deposited in graves from 1900 B.C. and those from 1850 B.C. or 1600 B.C. in Cemetery T at Adindan.

The belief that, *in comparison with other time periods,* "all evidence for C-Group sites of the Middle Kingdom indicates rather an almost total lack of Egyptian culture" (Wegner 1995: 141) was not supported by the burial data from the cemeteries analysed here. In fact, data from almost all of those cemeteries with Eleventh Dynasty and Middle Kingdom burials show, on the contrary, that the latter graves are associated with *more* Egyptian objects than the former. At Gerf Husein and Koshtemna the Eleventh Dynasty samples were small and Egyptian objects were lacking; furthermore, despite the finding that Egyptian-made objects accounted for one percent of the Eleventh Dynasty offerings in Cemetery 101 at Dakka and twelve percent of those from 1800 B.C., no statistical difference between the mean number of offerings in these two time periods could be established because fewer than five Egyptian objects were found in the graves from 2000 B.C. At Dakka, there was also no statistical difference between the mean number of Egyptian offerings in the late Twelfth Dynasty graves and the mean number in graves from either the Thirteenth Dynasty or the mid-Second Intermediate Period, when Egyptian artefacts comprised twelve percent, fifteen percent and ten percent of the total respectively. Although fewer artefacts were found in graves from 1900 B.C. and 1850 B.C. than in graves from 2000 B.C. at Aniba North, the difference was not statistically significant. Fewer than five Egyptian artefacts were found in the Eleventh Dynasty burials from Cemetery 200 at Aniba. Only at Serra East, Cemetery 179, where 0.42 percent of the 2000 B.C. offerings and four percent of those from 1800 B.C. were Egyptian in origin, was the difference between the mean number of Egyptian artefacts in Eleventh Dynasty and Middle Kingdom graves proved to be of statistical significance.

Unlike most other researchers, Adams has claimed that "the abundance of Egyptian-made goods [in the Middle Nubian] graves is astonishing..." (1984: 169). However, these Lower Nubian burial data lend no support to the argument that the *quantity* of Egyptian trade goods deposited with Middle Nubian burials was large. In fact, the analysis revealed that Egyptian artefacts comprise only nine percent of the burial offerings at Ginari, three percent at Gerf Husein, two percent at Koshtemna, eleven percent at Dakka, slightly less than one percent at Areika, eighteen percent at Tumas, five percent at Aniba North, two percent in Cemetery 200 at Aniba, fifteen percent at Masmas, twelve percent at Tushka, one percent at Serra East, three percent at Debeira East, seven percent at Ashkeit and one percent at Abka. Thus, the above assessments of this variable are probably consistent with the theory that, apart from demands for labour and taxes, there was little contact between the Middle Kingdom Egyptians and the local inhabitants of Lower Nubia (Trigger 1976b: 79-80; Smith 1995: 49).

Evidence of minimal Nubian-Egyptian interaction also has been inferred from the composition of the Middle Kingdom ceramic assemblage in the Egyptian fortress at Askut. Between one and two percent of the sherds from this fortress are described as "hand made Native Nubian pottery of [either] the Kerma Moyen [or the] Kerma Classique [period] ... [Because the] sherds are primarily from open forms, often used as cooking vessels, [they imply] relations with a settled group, rather than long distance trade ...and may indicate that the frontier softened towards the end of the Middle Kingdom occupation of Nubia, allowing for a small Kerman trading colony, [or, if produced by C-Group peoples, they are indicative of C-Group roles in Egyptian society] as servants and cooks [who were] not allowed to stay in the forts" (Bourriau 1991: 131; Curtin 1984; Gratien 1992; Smith 1995: 79). On the other hand, the presence of a "typical Nubian style," probably C-Group, steatopygyous female, clay figurine "in a New Kingdom stratum near the shrine of Meryka [at Askut] ... may indicate ..." that relationships between Egyptians and Lower Nubians were more complex than formerly believed. Smith notes that "fertility symbols are a normal offering for an Egyptian shrine, especially a household shrine. The fact that a figurine in Native Nubian style is found in an otherwise Egyptian cultural context ... shows a deeper level of contact than the simple presence of pottery, implying a familiarity with, and perhaps sharing of, personal religious beliefs between expatriates and C-Group and/or Kermans" (1995: 104-106).

In spite of the slight increases in trade goods that occurred at Aniba North, Ginari, Gerf Husein, Tumas and Serra East [Cemetery 179], the results of this analysis suggest that, between *ca.* 2000 B.C. and *ca.* 1550 B.C., the *quantity* of Egyptian artefacts reaching Middle Nubian burials remained essentially unchanged. However, standard deviations indicate that their *dispersion was unequal.* During the late Twelfth Dynasty, Egyptian goods were most unequally distributed in Cemetery 200 at Aniba and in Cemetery 209 at Tushka. Their unequal distribution during the middle of the Second Intermediate Period was most pronounced at Ginari and Aniba [Cemetery 195]. Although the Aniba samples are small, late Second Intermediate Period graves at both of these sites show an increase in the use of Egyptian artefacts. Standard deviations for Masmas reveal that, in Cemetery 201, the late Second Intermediate Period Egyptian artefacts were *less* widely dispersed than those from the Eighteenth Dynasty graves [Table 7.177 and Table 7.178]. Although these results indicate that the distribution of Egyptian artefacts amongst individuals at these sites was more unequal at some times than at others, changes in standard deviations which denote continually *increasing* "inequality" of Egyptian goods distribution occurred at Gerf Husein, Koshtemna, Dakka, Tumas, Aniba North, and Ashkeit. This differential access to imported Egyptian goods appears to have been controlled by élite groups whose abilities to acquire small numbers of imports varied considerably from district to district.

Thus, while eighty-seven percent of the late Second Intermediate Period burials in Cemetery 58 at Ginari and sixty percent of those in Cemetery 201 at Masmas contained Egyptian objects, only nineteen percent of the Gerf Husein graves boasted imports [Table 8.1]. Of the twenty-six objects found in the eleven graves from the latter site, four were items of copper that included a bronze mirror from Burial 382 and two copper earrings from Burial 619. Other Egyptian artefacts included a button seal in Burial 383; scarabs in Burials 313 and 394 and a frog-shaped, scaraboid seal in Burial 622. The forty-six Egyptian objects from the fourteen Ginari graves included four kohl pots of alabaster, a silver-mounted seal, scarabs, amulets and pottery. At Masmas, 170 Egyptian artefacts, of which eleven were luxury items, were retrieved from the forty late Second Intermediate Period burials. Kristiansen has observed that, among people from the Nordic Bronze Age in northern Europe, "bronze was a scarce material . . . ," [therefore], razors, tweezers and other "symbols of special body care" that had been fashioned from bronze were found only in the graves of individuals of high rank (1987: 42). Similar circumstances may have prevailed in the Nile valley. In Cemetery 201 at Masmas copper earrings had been deposited with the female in Burial 1. She had been entombed in an unlined chamber over which a mud-brick vault had been built. An offering slab of stone had been provided at the head end of the burial and offerings to the deceased had been made in Nubian and Egyptian pottery through a hole which led through one wall of the brick vault into its interior. A copper implement also was retrieved from the burial of a female in a nearby tomb of similar type. Both of these tombs, which together account for five percent of those from this time period at Masmas, had been plundered. From the tomb construction and remaining offerings it was inferred that these burials belonged to highly ranked females. Egyptian faience 'fly' amulets had been deposited in one of these graves; two Seventeenth Dynasty scarabs were found in the other. Scarabs also were encountered in thirty percent of the late Second Intermediate Period graves in this cemetery at Masmas. This finding, along with the discovery that alabaster and Egyptian pottery also were relatively common amongst burials at this location, suggests that élite group control over Egyptian imports was well entrenched in this Masmas community. Brumfiel, Earle and others have observed that "[a]n individual may establish superior social rank by displaying the symbols associated with a foreign, already established elite" (Brumfiel and Earle 1987: 3; Flannery 1968; Wheatley 1975), and they suggest that wealth control can be employed to "attract . . . allies to compete for political leadership" (Brumfiel and Earle 1987: 3). While political maneuvering of this kind may have occurred during the early use of the site, the temporal distribution of burial types in this cemetery suggests that the gravesite contains the tombs of a limited number of high status late Second Intermediate Period males whose power had waned considerably by the onset of the Eighteenth Dynasty.

Despite the finding that the *quantity* of Egyptian imports deposited in Middle Nubian graves was not large, the Lower Nubian burial data do signify that, *among those graves from which artefacts were recovered,* the number of Middle Nubian *burials* with which Egyptian trade goods were associated was relatively large. Nevertheless, there was little support for Adams' assertion that "nearly half" of the Middle Nubian graves between Shellal and Wadi Sebua that were investigated during the First Archaeological Survey contained presumably Egyptian "objects of foreign origin." He also estimated that "Egyptian-made pottery vessels" were present in about twenty percent of these burials, while in thirty-six percent the Egyptian-made objects consisted mostly of bracelets and beads (1984: 169). A comparison of the presumed and actual goods retrieved from Cemetery 101 at Dakka is enough to show that Adams' estimate for Egyptian goods in general is far too large: according to Firth's report, this cemetery contained 612 graves (1915: 140). Bietak also asserts that, of the known C-Group burial places, only Aniba North is larger than this cemetery of 600 graves (1968: 57). Unfortunately, it was discovered that artefacts were associated only with 267, or forty-four percent, of the burials in this cemetery. When calculated as a percentage of the total number of Middle Nubian burials present, Egyptian artefacts were associated with 19.44 percent of the graves in Cemetery 101. If those burials in which glazed beads were found are included, the number of burials associated with Egyptian artefacts rises to 21.41 percent. Based only on the Cemetery 101 burial data, Adams' estimation of Egyptian pottery occurrence is quite accurate; it was found with 17.48 percent of these burials. Moreover, 170, or ninety-six percent, of these 177 Egyptian pots that had been used as offering vessels had been deposited outside the superstructure that surrounded the burial.

Closer scrutiny of the percentage of *burials* with which Egyptian artefacts were associated revealed the already described pattern of temporal and spatial variability. While decreases in the number of burials associated with Egyptian imports were recorded for the latest interments at Koshtemna, Aniba North, Masmas, Tushka and Ashkeit [Figure 34], at Ginari, Dakka, Tumas, Serra East and Abka the percentage of burials associated with imported Egyptian goods tended to increase with time [Table 8.1 and Figure 35]. At Aniba, Cemetery 200, an increase in Egyptian exchange occurred after the late Twelfth Dynasty. Although Hodder has argued that "different processes may lead to the same form, and there appear to be few reliable correlations between falloff patterns and exchange processes" (1982f: 203), the time lag identified for a similar increase at Areika may represent the operation of "down-the-line" exchange if Aniba inhabitants, whose central-place access to Egyptian goods was greater than that in other nearby localities, were exchanging goods with downstream peoples. Egyptian goods also appear in spurts in burials in Cemetery 195 at Aniba, at Debeira East, and at Gerf Husein where the availability of Egyptian imports increased during the Second Intermediate Period [Table 8.1 and Figure 36]. These variations in Egyptian goods dispersal, that seem to reflect changes in differential access to imported burial offerings, presumably result from changes in the abilities of competing élite groups to control the distribution of imports. Thus, despite Hodder's caution that "[a] change to a less complex or less differentiated burial rite does not necessarily entail a change to a less complex society" (1980: 166), at Masmas, the replacement of late Second Intermediate Period mud-brick tombs with Eighteenth Dynasty 'sand-graves' suggests the onset of a certain 'devolution' of Middle Nubian society at this location. Furthermore, the presence of approximately half the quantity of Egyptian objects in these later burials indicates that a loss of control over imports apparently had occurred.

Very few *Stage Ia* burials could be identified in the cemeteries in the study. As a result, the claim for regular Egyptian contact and large quantities of Egyptian goods in First Intermediate Period graves could not be verified. Eleventh Dynasty declines also could not be established. However, Twelfth Dynasty graves tended to contain more Egyptian artefacts than earlier burials. Säve-Söderbergh's suggestion that the ever increasing number of Egyptian artefacts deposited in late First Intermediate Period, Eleventh Dynasty and early Twelfth Dynasty graves was followed by decreases in late Twelfth Dynasty graves was not confirmed by the data. The expected fluctuations in the deposition of goods that mirror known Egyptian relationships with Middle Nubians could not be identified. On the other hand, Adams' opinion that the volume of imports remained unchanged over time seemed to be supported by the data. Lastly, although *in some cemeteries Egyptian imports are found in a large percentage of those C-Group graves that contained artefacts,* they do not occur in large quantities. Thus, since the total quantity of Egyptian imports was relatively small, the analysis tends to support Kemp's argument that Egyptian artefacts are not commonly found in C-Group burials.

A summary of Egyptian-Nubian exchange patterns if metal and glazed beads are assumed to be Egyptian in origin is presented in Appendix F.

Figure 34. Percentage of Middle Nubian burials between 2000 B.C. and 1550 B.C. associated with Egyptian artefacts. There were fewer than five burials from 2000 B.C. and 1700 B.C. at Koshtemna and in 1600 B.C. at Ashkeit

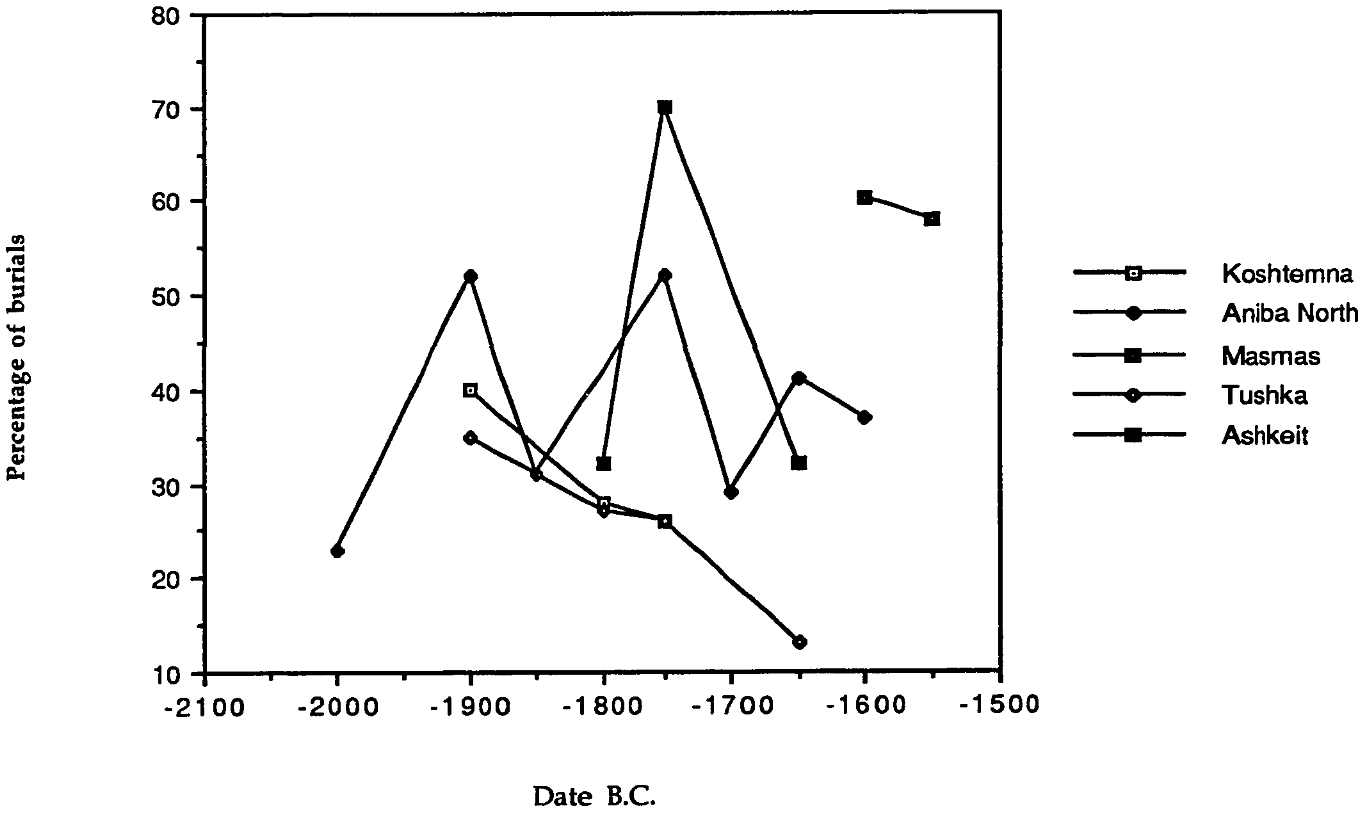


Figure 35. Percentage of Middle Nubian burials between 2000 B.C. and 1550 B.C. associated with Egyptian artefacts. There were fewer than five burials at Dakka in 1600 B.C. and at Serra East in 1550 B.C.

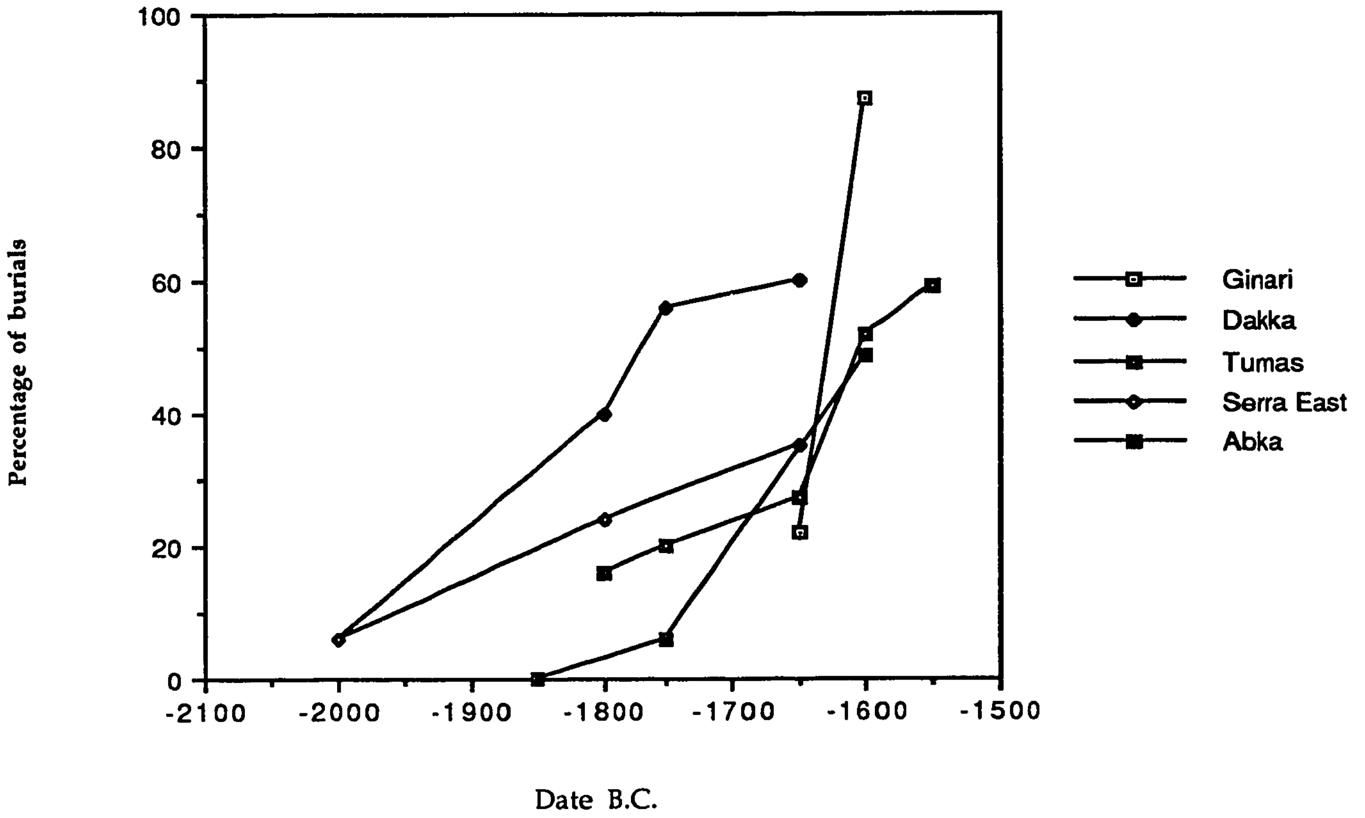


Figure 36.Percentage of Middle Nubian burials between 2000 B.C. and 1550 B.C. associated with Egyptian artefacts. There were fewer than five burials from 2100 B.C. and 1850 B.C. at Gerf Husein

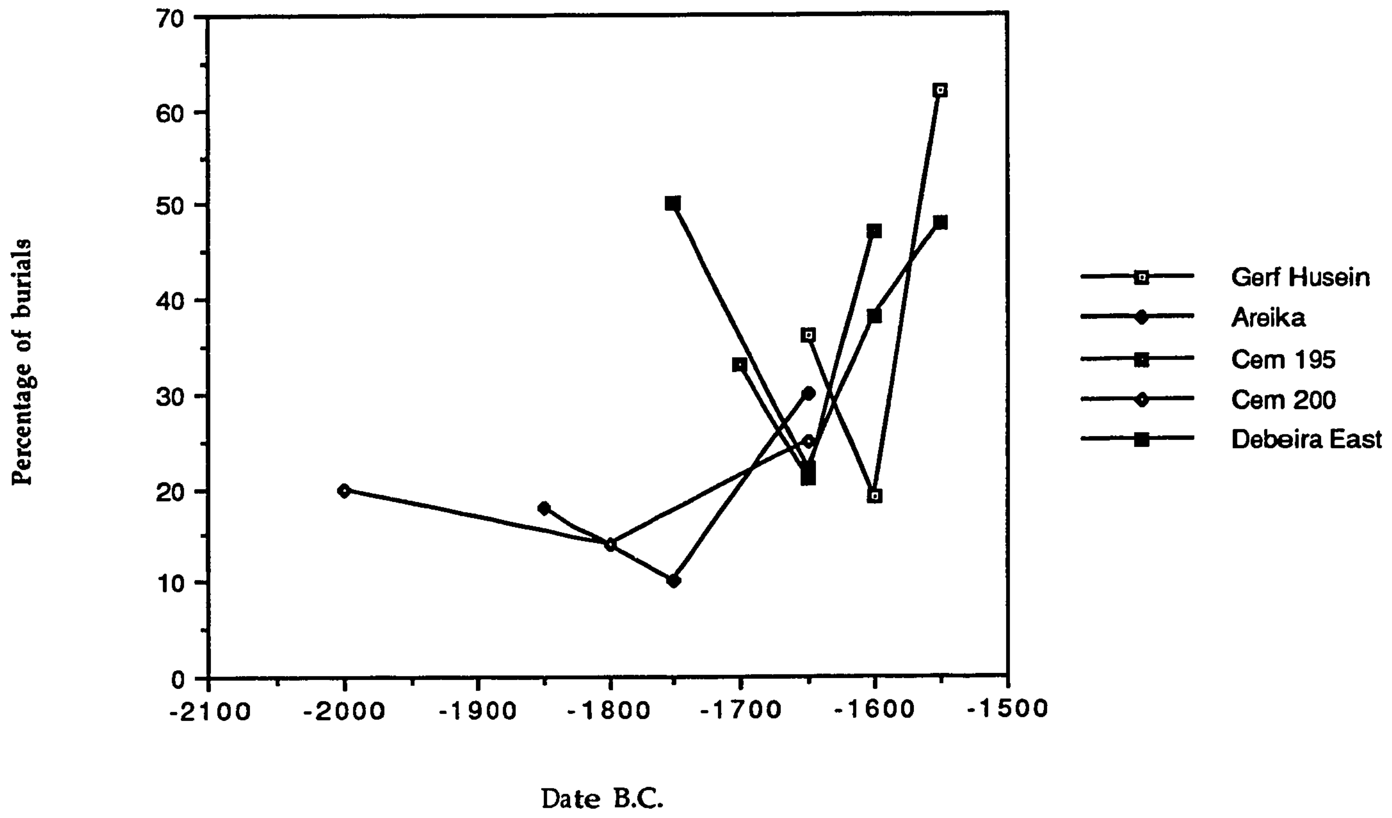


Table 8.1: Percentage of burials with Egyptian and local artefacts from all fifteen Middle Nubian cemeteries. Since some burials contained both types of item, the sum of the percentages for imported and local items from a single date category often exceeds 100.

	2000 BC		1900 BC		1850 BC	
	Imported	**Local**	**Imported**	**Local**	**Imported**	**Local**
Burials at:						
Ginari	-	-	-	-	-	-
Gerf Husein	-	-	-	-	100	100
Koshtemna	0	100	40	90	-	-
Dakka	6	94	-	-	-	-
Areika	-	-	-	-	18	95
Tumas	-	-	-	-	-	-
Aniba North	23	92	52	79	31	97
Cem 195	-	-	-	-	-	-
Cem 200	20	100	-	-	-	-
Masmas	-	-	-	-	-	-
Tushka	-	-	35	96	-	-
Serra East	6	62	-	-	-	-
Debeira East	-	-	-	-	-	-
Ashkeit	-	-	-	-	-	-
Abka	-	-	-	-	0	100

Table 8.1 continued: Percentage of burials with Egyptian and local artefacts from all fifteen Middle Nubian cemeteries. Total percentages within a date category may exceed 100 if some burials contained both imported and local artefacts.

	1800 BC		1750 BC		1700 BC	
	Imported	**Local**	**Imported**	**Local**	**Imported**	**Local**
Burials at:						
Ginari	-	-	-	-	-	-
Gerf Husein	-	-	-	-	-	-
Koshtemna	28	85	26	79	0	100
Dakka	40	96	56	99	-	-
Areika	-	-	10	100	-	-
Tumas	16	43	20	43	-	-
Aniba North	-	-	52	99	29	99
Cem 195	-	-	-	-	33	100
Cem 200	14	97	-	-	-	-
Masmas	-	-	-	-	-	-
Tushka	27	93	26	87	-	-
Serra East	24	76	-	-	-	-
Debeira East	-	-	50	50	-	-
Ashkeit	32	73	70	90	-	-
Abka	-	-	6	100	-	-

Table 8.1 continued: Percentage of burials with Egyptian and local artefacts from all fifteen Middle Nubian cemeteries. Total percentages within a date category may exceed 100 if some burials contained both imported and local artefacts.

	1650 BC		1600 BC		1550 BC	
	Imported	**Local**	**Imported**	**Local**	**Imported**	**Local**
Burials at:						
Ginari	22	85	87	67	-	-
Gerf Husein	36	91	19	87	62	31
Koshtemna	-	-	-	-	-	-
Dakka	60	100	33	67	-	-
Areika	30	90	-	-	-	-
Tumas	27	53	52	29	59	36
Aniba North	41	98	37	97	-	-
Cem 195	21	97	47	93	-	-
Cem 200	25	96	-	-	-	-
Masmas	-	-	60	85	58	91
Tushka	13	29	-	-	-	-
Serra East	35	85	-	-	100	100
Debeira East	22	89	38	85	48	74
Ashkeit	32	96	0	100	-	-
Abka	-	-	49	85	-	-

Chapter 9

The Middle Nubian C-Group Cemeteries: Interpretations - Socioeconomic Patterns

9.1 Access to burial resources

A major objective of this thesis was to determine whether or not the Middle Nubian burial data lend support to the belief that socioeconomic differences between members of the C-Group population were "small," and that Lower Nubian societies remained "democratic" throughout the time period from the Sixth to the Eighteenth Egyptian Dynasties (Säve-Söderbergh 1989: 12; Trigger 1976b: 79). A fundamental concept employed in the interpretation of the statistical analysis is that economic differences between the burials in a date category, and thus between the social positions symbolized, imply the existence of unequal access to burial resources by members of the Middle Nubian society over time. The economic status of a cemetery's occupants was determined by assessing the number of artefacts present in burials from each of the time periods represented. Results that show that the increases in artefacts were statistically significant were interpreted to mean that access to more goods had occurred. Standard deviations indicated whether more or fewer individuals had access to the increased number of goods. An increased number of goods dispersed amongst fewer graves signified that economic differences had increased, thus implying that inequality had increased. Findings that indicate that economic differences between members of the C-Group population were practically lacking will be interpreted to mean that throughout the period from *ca.* 2000 to *ca.* 1550 B.C., no increase in differential access to burial goods occurred, no form of luxury resource control was operative and Middle Nubian C-Group communities remained "democratic" until the era of the New Kingdom.

Analysis of the Cemetery 87 burial data established that during the 1900 B.C. to 1750 B.C. time period at Koshtemna the mean number of burial offerings had *increased* with time and that an increase in subadult offerings was the major contributor to the rise. Whereas the average number of adult offerings over this period was eighteen, thirty-one and sixteen objects in 1900 B.C., 1800 B.C. and 1750 B.C. respectively, the average subadult burial offerings increased from approximately twenty-eight items in 1900 B.C. to seventy-seven in 1800 B.C. and eighty-three in 1750 B.C. [Table 7.41].

Standard deviations indicate that grave offerings in Cemetery 87 at Koshtemna are distributed less widely during the time period from 1800 to 1750 B.C. than in 1900 B.C. In other words, between 1800 B.C. and 1750 B.C., fewer graves contain approximately the same number of goods. While sixty-seven burials in 1900 B.C. contained 1055 artefacts, 1441 goods were distributed amongst forty graves from 1800 B.C. and 1265 goods had been deposited with thirty-four burials from 1750 B.C. Standard deviations of 31.01, 73.77 and 84.75 for total burial goods were obtained for these time intervals. Likewise, in 1800 B.C. and 1750 B.C. standard deviations of 73.32 and 84.24 respectively show that beads are more unequally distributed at these time periods than in 1900 B.C. when the standard deviation was 30.11 [Table 7.40].

An increase in the range of wealth dispersion between individuals also is indicated by the increases in standard deviations [47.46 in 1900 B.C., 95.83 in 1800 B.C. and 132.95 in 1750 B.C.] obtained for offerings from all the *undisturbed* graves in the cemetery [Table 7.41]. These standard deviations show that "inequality" was greatest amongst the eleven Thirteenth Dynasty [1750 B.C.] burials. Unfortunately, both the age and the sex of the three wealthiest individuals in this category remain unknown.

However, in spite of these findings, nonparametric tests showed that no *significant* difference exists between the mean number of locally made burial goods, including shell and other beads, occurring in 1900 B.C. and the mean number that occurred in graves from either 1800 B.C. or 1750 B.C. Again, the Kruskal-Wallis tests [Table 7.50] support the contingency table data that indicate no relationship between the date of a grave and the *number* of burial goods that are associated with it [Table 7.49]. The contingency table data for this cemetery also do not indicate any dependence between the date of a grave and its size [Table 7.48]. Thus, at Koshtemna, there is statistical evidence that between *ca.* 2000 B.C. and *ca.* 1700 B.C. economic differences among members of the Middle Nubian population were hardly very large.

The mean number of objects associated with subadult burials at Areika increased from 4.33 in 1850 B.C. to five in 1750 B.C. and fifty-one in 1650 B.C. The mean number of adult offerings over the same period was 14.93, 44.50 and 33.50. Standard deviations indicate that in both populations "inequality" was highest amongst the mid-Second Intermediate Period [1650 B.C.] burials and also that this "inequality" was most pronounced between the two adult females [Table 7.72]. The analysis also revealed that the mean number of offerings in undisturbed graves, which was far larger than in plundered graves, increases with time. An increase in wealth differences between individuals during the 1850 B.C. to 1650 B.C. time period at Areika also is indicated by the increases in standard deviations [53.20 in 1850 B.C., 57.25 in 1750 B.C. and 85.22 in 1650 B.C.] obtained for offerings from undisturbed graves [Table 7.72]. Nevertheless, there is little statistical evidence that economic differences between members of the Areika Middle Nubian population were large.

A comparison of the standard deviations obtained for the three time periods represented in Cemetery 195 at Aniba shows that local goods dispersal was most unequal during the early Second Intermediate Period, while the distribution of Egyptian articles was most unequal among the burials from the middle of the Second Intermediate Period [Table 7.139 and Table 7.140]. Although the unequal dispersal of luxury wealth was not very marked in this cemetery, it was highest among the mid-Second Intermediate Period burials for which a standard deviation of 3.91 was obtained.

Standard deviations of 62.46 and 23.44 show that wealth dispersion in Cemetery 201 at Masmas was greater in the late Second Intermediate Period than in the Eighteenth Dynasty. Moreover, in both time periods, wealth differences were greatest amongst subadults and females. The corresponding standard deviations for these variables are 119.34 and 34.22 for subadults and 52.48 and 24.87 for adult females. In each time period the largest mean number of burial goods was found with a subadult female: 345 in the late Second Intermediate Period and 102 in the Eighteenth Dynasty. Standard deviations for adult male offerings are 4.66 and 6.19 in 1600 B.C. and 1550 B.C. respectively. Nevertheless, it was not possible to reject the hypothesis that there is no dependence between the number of goods present in a particular grave and its date; nor was it possible to reject the hypothesis that the mean number of offerings, both local and Egyptian, found in late Second Intermediate Period tombs was equal to the mean number associated with Eighteenth Dynasty burials. Thus, there is little statistical evidence for a diachronic increase in economic differences among members of the Middle Nubian community at Masmas.

At Ginari, approximately equal percentages of middle and late Second Intermediate Period graves in Cemetery 58 *lacked* [14.81 percent and 14.29 percent respectively] burial goods. The data analysis also established that, although a higher mean number of offerings had been deposited with the mid-Second Intermediate Period burials [27.37 as opposed to 17.00], no statistical difference exists between the mean number of beads [Table 7.12 and Table 7.13] or locally manufactured grave goods [Table 7.10] occurring at each time period. However, closer inspection of these data revealed that sixty-five percent of the middle and seventy-five percent of the late Second Intermediate Period burials contained fewer than ten objects [Table 7.10]. Beads, that comprised eighty-eight percent of the mid-Second Intermediate Period offerings, had been deposited in seven graves, and in one of them, fifty-eight percent of the beads accompanied a subadult burial. Three late Second Intermediate Period graves contained the 170 beads that totalled sixty-seven percent of the offerings.

The standard deviations computed for the artefact counts at Ginari show that in terms of quantity of goods associated with burials, "inequality" was more pronounced in the middle of the Second Intermediate Period when the total luxury offerings consisted of twenty-five carnelian beads that been deposited in one grave. However, a further analysis revealed that, despite these findings, when the quality of the offerings was assessed, there was a higher degree of "inequality" amongst the late Second Intermediate Period interments than among the earlier burials. Thus, a comparison of the mean total goods *value* per burial for these two time periods shows that as this variable increased from 82.89 in 1650 B.C. to 425.93 in 1600 B.C., the corresponding standard deviations shifted from 170.63 to 549.25. Likewise, mean total tomb wealth increased from 92.11 in 1650 B.C. to 469.93 in 1600 B.C. Standard deviations were 170.09 and 557.97 respectively.

Furthermore, although seventeen luxury objects were dispersed among seven of the twelve late Second Intermediate Period graves at Ginari, in three of these graves, nine artefacts that included all the gold and ivory objects in the cemetery, or eighty-two percent of the local luxury items, had been deposited with four male burials. The remaining eighteen percent of the local luxury offerings occurred in the undisturbed grave of an adult female with whom an alabaster kohl-pot also had been entombed. A fifth grave contained two alabaster vessels and an Egyptian copper mirror; in the sixth, an Egyptian silver-mounted seal accompanied the burial, while a kohl-pot, sculpted from alabaster, was the sole luxury object in the last. Further statistical support for the notion that "inequality" was greater amongst the late Second Intermediate Period burials than amongst those from the mid-Second Intermediate Period was provided by those tests which indicated that a significant difference exists between both the mean number of luxury items and the mean number of Egyptian artefacts in the mid-Second Intermediate Period graves and the mean number in the late Second Intermediate Period tombs [Table 7.15 and Table 7.11]. No statistical difference exists between the mean number of beads [Table 7.12 and Table 7.13], locally manufactured grave goods [Table 7.10], or locally crafted luxury objects [Table 7.14] occurring at either time period. The significant relationship in the first instance therefore reflects an increase in access to imported luxury objects, and in the second it reflects an increase in access to imported, mostly non-luxury, items.

The Ginari data therefore suggest that inequality amongst this west bank society was most pronounced at the same time that access to imported Egyptian artefacts and to more prestigious local luxury objects was increasing. Since both of these processes appear to have occurred during time periods when Egyptian involvement with Lower Nubia was minimal, factors contributing to the apparent increase in differential access to luxury goods may have been the absence of the Egyptians as well as an increase in the ability of local leaders to control local surplus wealth following the Middle Kingdom occupation, or/and, an increase in the opportunity to demand tolls on Upper Nubian and Theban merchandise.

The data suggest that in the three cemeteries at Gerf Husein, a *significant* difference exists between the mean number of local objects, including shell and grave beads, present in 1600 B.C. and the mean number present at the other time periods. However, the data indicate no significant statistical difference in the mean number of luxury items present at different time periods. Nevertheless, luxury items at Gerf Husein were practically all restricted to Cemetery 72 [Gerf Husein North]. While a total of six luxury objects [five carnelian beads with an adult female in Burial 108 and an ivory ring with an adult male in Burial 88] were discovered in two closely situated mid-Second Intermediate Period graves in the northeastern portion of Cemetery 73, and while the Cemetery 74 luxury offering consisted of the remains of a single copper mirror in Burial 507, fifty-three of the fifty-four luxury objects recovered from the 1600 B.C. graves were found in Cemetery 72 where they had been distributed amongst fourteen of the fifty-seven burials in this date category. Seventy percent of these luxury items were carnelian beads from eleven percent [six graves] of the late Second Intermediate Period burials. In addition, there was ivory from two; copper from three; gold from one and electrum from two. Furthermore, all the Eighteenth Dynasty luxury offerings at Gerf Husein were also from Cemetery 72. Moreover, not only were the forty luxury items dispersed amongst only four of the thirteen Eighteenth Dynasty graves, but eighty-five percent of these goods consisted of carnelian beads from a single grave [Burial 481]. These data suggest that although approximately the same mean number of luxury goods were being placed in the Gerf Husein graves between 1650 B.C. and 1550 B.C., the offerings were being confined to the burials of fewer individuals as time progressed. Increases in the standard deviations obtained for luxury artefact distribution also support this trend [Table 7.17].

No superstructures remained in cemeteries 72, 73 or 74, and no extremely large graves were encountered although a brick-lined, Eighteenth Dynasty grave was discovered in Cemetery 72. The largest graves were late Second Intermediate Period in date, and standard deviations show that "inequality" was greatest amongst these burials. The Gerf Husein burial data also show that, between 1650 B.C. and 1550 B.C., tomb elaboration was minimal. However, the discovery that the largest proportion of the Gerf Husein offerings had been deposited in late Second Intermediate Period graves, and that a significant difference exists between the mean number of offerings in these graves and the mean number in graves from 1650 B.C. and 1550 B.C, as well as the discovery that "inequality" was most pronounced among burials from 1600 B.C., and that ninety-four percent of the dated luxury artefacts from the three cemeteries were restricted to the burials of adult males, adult females and subadults in Cemetery 72, suggests that, between 1650 B.C. and 1550 B.C.

1. differential access to local and imported non-luxury burial offerings was greatest in 1600 B.C.;
2. access to local and imported luxury artefacts remained unchanged but was restricted to a minority of the burial population;
3. the more economically advantaged members of the Gerf Husein community tended to be buried in a spatially distinct area in which luxury offerings of carnelian, copper, ivory and gold had been accumulated.

At Tumas, the unequal distribution of offerings in Cemetery 189 reached its peak in 1650 B.C. when the average number of goods recovered from the four undisturbed burials was 197.50 per burial and the standard deviation was 270.63 [Table 7.84]. However, inequality between adult males was highest in 1650 B.C., whereas for adult females, inequality in burial offering dispersion was highest in 1600 B.C.

The test data for Cemetery 189 indicate that a significant difference exists between the mean number of burial offerings that are present in 1650 B.C. and the mean number that occurred at other time periods. Similar test results were obtained for locally made burial goods [Table 7.97], particularly locally made grave beads [Table 7.99]. Closer scrutiny of the burial data revealed that although large fluctuations in all bead deposits were common to all time periods, only glazed and shell beads experienced dramatic shifts in quantity. Nubian glazed beads comprised forty-three, eighty, and seven percent of the goods in Twelfth Dynasty, Thirteenth Dynasty and mid-Second Intermediate Period burials while shell beads increased from eighteen percent of the Twelfth and Thirteenth Dynasty offerings to forty-three percent of those from the middle of the Second Intermediate Period. Nubian glazed beads were absent from the late Second Intermediate Period and Eighteenth Dynasty graves but seventeen percent of the offerings from the latter consisted of ostrich eggshell beads. However, it was established that no statistical difference could be detected between the mean number of Nubian glazed beads present between 1800 B.C. and 1550 B.C. [Table 7.100] while a significant difference did exist between the mean number of shell beads recovered from the mid-Second Intermediate Period tombs and the mean number present at other times [Table 7.102].

At Tumas, although a significant difference exists between the mean size of a grave in 1550 B.C. and the mean size at other dates, it could be argued that these statistical differences in grave size probably reflect nothing more than a change in burial position to extended bodies that require more space. Nevertheless, after a spatial analysis of these graves, slight distinctions could be discerned between them [Figure 10]. First of all, it was discovered that one square metre was the average size of seven of the 'northern group' of Eighteenth Dynasty graves whereas the average size of seven graves in the 'southern group' was two square metres; second, while coffins had been used for three of the northern burials, thirteen had been used in the southern section; third, alabaster vessels were recovered from three northern burials and from seven southern tombs, and lastly, metal deposits were confined to tombs in the southern section. Objects of bronze, silver and gold were absent from the northern group of Eighteenth Dynasty graves.

The Tumas results suggest that, between 1800 B.C. and 1550 B.C

1. access to all local and imported non-luxury objects, except mid-Second Inter-

mediate Period ostrich eggshell beads, remained unchanged but restricted to approximately half of the burial population

2. access to local and imported luxury artefacts remained unchanged but was restricted to a minority of the burial population

3. tomb elaboration was minimal and confined to the construction of spatially distinct, Thirteenth Dynasty stone-lined burial chambers and Eighteenth Dynasty coffin burials that often coincided with the presence of luxury offerings of copper, silver or gold.

In Cemetery 200 near Aniba eighty-four percent of all burials were associated with fewer than thirty artefacts. In 2000 B.C. all burials fell into this category. In 1800 B.C. ninety-three percent of the burials had less than thirty objects and in 1650 B.C. seventy-one percent of all graves had less than thirty goods. These burials therefore exhibit an increase in the mean number of grave goods over time. Whereas the mean number of artefacts retrieved from burials dated to 2000 B.C. is two, this increases to nine in the late Twelfth Dynasty and to 26.25 objects in the middle of the Second Intermediate Period [Table 7.154]. Kruskal-Wallis tests indicate that a significant difference exists between the mean number of burial goods present in 2000 B.C. and the mean number present in 1800 B.C. and in 1650 B.C. [Table 7.164]. Moreover, no significant difference exists between the mean number of local beads, and Nubian glazed beads in particular, from the late Twelfth Dynasty graves and the mean number from the mid-Second Intermediate Period graves [Table 7.168 and Table 7.169]. However, a numerical difference exists between the mean number of locally produced cairn pots in 2000 B.C. and the mean number in 1650 B.C., and, because the difference *is* statistically significant, the observed difference in burial goods is due, perhaps entirely, to fluctuations in this variable.

A comparison of the standard deviations computed for this cemetery shows that unequal distribution of burial offerings was greatest amongst the mid-Second Intermediate Period burials. The contrast is most pronounced when grave condition is taken into consideration as well. In undisturbed graves the mean number of objects per burial in 1800 B.C. was 38.25. In 1650 B.C. it increases to 82.75 when thirty-two percent of the offerings from this date category were found in the grave of a single, undisturbed, subadult. The corresponding standard deviations are 47.11 and 82.08 for Twelfth Dynasty and mid-Second Intermediate Period burials. Even among plundered burials both the means and the standard deviations obtained for mid-Second Intermediate Period burials are higher than those for late Twelfth Dynasty interments. The mean number of objects per plundered burial dated to 1800 B.C. is 3.28; in 1650 B.C. it is 11.42. Standard deviations for these time periods are 4.26 and 18.43 respectively.

The distribution of luxury goods revealed a similar pattern of unequal dispersal. The five burials from 2000 B.C. lacked luxury artefacts; five carnelian beads had been deposited with one Twelfth Dynasty burial and seventy-nine percent of the twenty-four graves dated to 1650 B.C. were without luxury offerings. Of the five mid-Second Intermediate Period burials that had received luxury goods, copper and silver were present in one, carnelian in three and ivory in two. Even pottery had been dispersed unequally in Cemetery 200. While all five Eleventh Dynasty burials were associated with pottery, forty-five percent of the Twelfth Dynasty burials lacked it, as did forty-two percent of those from the middle of the Second Intermediate Period. Thus, the increase in inequality revealed by these data was detected not only in the quantity of goods deposited with burials between 2000 B.C. and 1650 B.C., but in their more unequal dispersal amongst the later burials.

The cross-tabulation results from Serra East indicate that a significant statistical dependence exists between the date of a grave in Cemetery 179 and the number of goods associated with it [Table 7.221]. More than the expected number of Eleventh Dynasty burials lack offerings and fewer than the expected number contain between one and thirty objects. On the other hand, while the number of Twelfth Dynasty burials that lacked offerings was practically equal to the expected value, and while fewer than the expected number of interments had been provisioned with more than thirty offerings, more than the expected number of Twelfth Dynasty burials contained between one and thirty artefacts. Fewer than the expected number of mid-Second Intermediate Period burials lacked grave goods, but more than the expected number had received offerings. On the other hand, whereas a Kruskal-Wallis test revealed that no significant difference exists between the mean number of burial goods present at the different time intervals represented in the cemetery, standard deviations show that inequality of burial good dispersion increased between 1800 B.C. and 1650 B.C., and a Mann-Whitney U test revealed that a significant difference exists between the mean number of offerings placed in graves dated to 1800 B.C. and those that are 1650 B.C. in date.

In Cemetery 179, a standard deviation of 760.98 shows that the range of wealth dispersal was particularly large amongst five of the mid-Second Intermediate Period subadults. Whereas "a necklace of 700 golden rings and 2,000 beads of silver" had been deposited with one, and while a second wore a torque-type necklace of gold wire, another had received a total of fifty glazed beads. A fourth had been given ten shell and twenty faience beads in addition to eight pottery vessels that were found in an 'offering place' outside the superstructure, and ten pottery vessels had been placed outside the superstructure surrounding the burial of the fifth (Säve-Söderbergh 1989: 208-212, 4/2: 38-39, 78-79, 99). Those subadult graves that contained luxury artefacts comprised two percent of the burials from this time period. The second largest standard deviation [59.88] indicates that the next greatest range of wealth dispersal occurs amongst adult females of the same date, while the widest range of wealth dispersal amongst adult males was obtained for those from the Twelfth Dynasty [1800 B.C.] burials [Table 7.213].

In order to assess "grave differentiation and changes in this through time" amongst predynastic Egyptian burials at Armant, Kathryn Bard conducted a cluster analysis on the types of burial offerings found in the graves of different time periods. She was able to show that the graves tended to separate into two clusters in *each* time period. For example, the average size of the small cluster of eight *Ic* Amratian graves was 1.15 square metres. They contained an average of 2.87 undecorated pots, while the average size of the large cluster of nineteen graves was 0.8 square metres. These graves contained an average of 0.65 undecorated pots. Bard concluded that "the clusters clearly differentiate between two groups of richer and poorer graves in the earlier [Ic] . . . and later [III] periods" (1987: 123-125, 1994: 70). 'Earlier' [2000 B.C.

to 1800 B.C.] and 'later' [1650 B.C. to 1550 B.C.] burials at Serra East show a similar "development" of tomb size and burial item allocation. Average superstructure and grave area of the earlier 150 burials, with which there was a mean of seventeen items per burial, was 3.09 cubic metres and 0.92 square metres. Amongst the later eighty-six burials, the mean superstructure and grave sizes were 4.72 cubic metres and 1.04 square metres. The mean number of goods deposited with these tombs was fifty-seven per burial. These data show that economic differences at Serra East increased. Contingency table data [Table 7.221] and a Mann-Whitney U test confirm that this increase is statistically significant. Furthermore, standard deviations increased from 29.86 for the earlier burials to 310.33 for the later. An increase in inequality amongst these burials is clearly indicated. During the mid-Second Intermediate Period at Serra East, average superstructure size was 4.66 cubic metres; mean grave size was 1.03 square metres. For the four largest tombs, all located in the northwestern section of the cemetery, mean superstructure and grave sizes were 12.12 cubic metres and 2.25 square metres. Amongst these tombs, both cairns and graves were therefore almost three times the average size for this date. Also, Säve-Söderbergh reported that only "some [superstructures at Serra East] had up to eight [stone] layers preserved" (1989: 205). Thus, if the height of the cairn over Burial 13 had originally been approximately the same as that over the neighbouring Burial 12, the former superstructure would have been 22.50 cubic metres in volume. These tombs were spatially close to those of the previously mentioned wealthy subadults.

The Serra East results suggest that, between 2000 B.C. and 1550 B.C

1. access to all local and imported non-luxury objects increased over time and was available to more than sixty percent of the burial population in all time periods;

2. while access to Egyptian luxury artefacts decreased during the middle of the Second Intermediate Period, access to local luxury artefacts remained unchanged. Nevertheless, access to both was restricted to a minority of the burial population;

3. tomb "elaboration" consisted of the construction of two mid-Second Intermedi-

ate Period, brick-vaulted and/or mud-plastered tombs that also were spatially close to those mid-Second Intermediate Period burials that contained luxury offerings of carnelian, silver and gold.

Burial data from Tumas, Cemetery 200 at Aniba and Cemetery 179 at Serra East therefore provide some statistical evidence for an increase in economic inequality amongst members of the Middle Nubian population between 2000 B.C. and 1650 B.C. Furthermore, the increase in inequality revealed by these data was detected not only in increases in the *quantity* of goods deposited with burials between 2000 B.C. and 1650 B.C., but *in their more unequal dispersal* during some date categories and especially during the middle of the Second Intermediate Period. Between 1900 B.C. and 1550 B.C., there also were differences in the quantity of burial offerings that were placed in the graves of Middle Nubian individuals at Ginari, Gerf Husein and Aniba North.

While many archaeologists have concluded that socioeconomic differences between members of the C-Group population were small, and that Lower Nubian societies remained "democratic" throughout the time period from the Sixth to the Eighteenth Egyptian Dynasties (Adams 1984: 162), others have proposed that "growing class differentiation" is reflected in the variability observed in ... burial remains at some sites (O'Connor 1991: 156; Säve-Söderbergh 1989: 12). Even Adams, who argues that very little variation in wealth or size is exhibited by early Middle Nubian burials, and who claims that it is almost impossible to "be certain which 'C-Group' graves ... belong to the 200-year interval of Egyptian occupation and which to earlier and later times" (1984: 157, 160), has suggested that "with the passage of time an increasing variability can be observed in the graves, probably reflective of growing disparities in wealth and power. This tendency is particularly marked in the Second Intermediate Period, following the withdrawal of direct Egyptian rule from Lower Nubia" (1984: 157-158).

Contingency table results for Cemetery 101 at Dakka show some association between the date of a grave and the number of grave goods asssociated with it [Table 7.63]. Between 2000 B.C. and 1750 B.C., more than the expected number of burials were associated with fewer than five burial offerings while the reverse was the case for graves with more than ten goods. Between six and ten offerings remained with fewer than the expected number of 2000 B.C. and 1800 B.C. burials but with more than the expected number of burials that were 1750 B.C. in date. Less than the expected number of burials from 1650 B.C. had fewer than five burial goods; less than expected had between six and ten, but more than twice the expected number were associated with more than ten burial artefacts. Thus, there is some evidence of more "prosperity" in the mid-Second Intermediate Period burials. Between 1800 B.C. and 1650 B.C., the increase in the mean number of goods in these graves is also a manifestation of their increasing prosperity [Table 7.55].

Standard deviations of 16.99 and 60.91 for grave and superstructure offerings suggest that wealth differences between individuals in Cemetery 101 were most pronounced in 2000 B.C. and in 1650 B.C. respectively [Table 7.55]. The Eleventh Dynasty sample, which was extremely small and almost totally limited to the burials of adult males, nonetheless displays slight differences in tomb construction as well as in the quantity of offerings deposited with the deceased. Average superstructure size in 2000 B.C. was 4.32 cubic metres. That of Burial 470 was 6.16 cubic metres. The fifty-three offerings associated with this grave were the second largest number retrieved from the Eleventh Dynasty burials at Dakka. Moreover, while this grave was almost twice the average size for the date category, Burial 444, with only seven artefacts, was smaller than average. Adult males were found in both graves. In 1650 B.C., although the largest number of offerings remained in the tomb of a subadult of unknown sex, wealth differences also were greatest amongst males [Table 7.56]. While twenty goods had been deposited with the male in Burial 311, those in Burials 111 and 451 had received 172 and 237 offerings respectively. Superstructure sizes in Cemetery 101 imply that economic differences between individuals once buried in the four largest mid-Second Intermediate Period tumulus graves [whose average superstructure volume was approximately one hundred cubic metres] and the rest of the mid-Second Intermediate Period Middle Nubian community must have been even more striking. These four tumulus graves accounted for ten percent of the total number of mid-Second Intermediate Period tombs that were still associated with artefacts. Grave sizes for three of the largest tumulus burials are unknown. However, while average grave size in 1650 B.C. was 2.05 square metres, that of Burial 6 was 4.14 square metres. In this date category the largest grave was 6.40 square metres; the smallest was 0.52 square metres. This difference in size also may reflect economic differences between the individuals in the tombs.

The data analysis also revealed that decreases in the mean number of offerings found with burials in Cemetery 101 took place in 1800 B.C, in 1750 B.C. and in 1600 B.C. [Table 7.55]. The standard deviations obtained for these date categories [7.45 in 1800 B.C., 7.15 in 1750 B.C. and 2.65 in 1600 B.C.] indicate that, since wealth differences among burials in these time periods were not marked, "inequality" was far less than it was during the mid-Second Intermediate Period.

The cross-tabulation of grave size and date at Aniba North disclosed that there was some dependency between the two variables. There were fewer than the expected number of small burials in the 2000 B.C. to 1850 B.C. date range and in 1700 B.C.; there were fewer than the expected number of medium-sized graves during the middle and late Second Intermediate Period and there were fewer than the expected number of large tombs in 1650 B.C. During the latter two time periods, there were also more than the expected number of small graves. In fact, the percentage of small graves tended to increase over time while the percentage of medium-sized and large graves tended to decline [Table 7.115 and Table 7.116]. In all date categories, a minority of the graves were large. Burial goods and date also showed some association. While more than the expected number of early Twelfth Dynasty and early Second Intermediate Period burials contained between one and two burial goods, and whereas more than the expected number of burials from the mid-Twelfth and Thirteen Dynasties had between three and ten offerings, more than the expected number of burials from all other time periods also had more than ten offerings. Fifty percent of the Eleventh Dynasty burials, but only half as many mid-Twelfth and Thirteenth Dynasty burials, were associated with more than ten artefacts [Table 7.117]. After the Eleventh Dynasty, the number of burials in which more than one hundred artefacts had been deposited tended to increase [Table 7.105]. Despite some increases in the mean number of artefacts per burial in practically all time periods, increasing "inequality," especially during the Second Intermediate Period, is denoted by the larger standard deviations obtained for artefact distribution in those time periods [Table 7.106].

However, the greatest evidence of increasing "inequality" at Aniba North is reflected in increasing superstructure sizes. In 1900 B.C. when average cairn size in the cemetery was 4.88 cubic metres, that surrounding Burial N456 was 28.27 cubic metres. In 1850 B.C. mean superstructure size was 7.52 cubic metres. The volume of the cairn above the mid-Twelfth Dynasty Burial 276, in which gold beads were found, was almost three times that of the average. Sizes also increased in 1750 B.C. The average was 10.32 cubic metres; that covering N319 was 97.19 cubic metres. Cairn sizes decreased during the early Second Intermediate Period, but by 1650 B.C. their mean volume was up to 8.77 cubic metres. Although great mid-Second Intermediate Period stone tumuli, such as Burials N183, N336 and N303 were 85.53, 120.50 and 193.23 cubic metres, respectively, in volume, other tumuli were larger still. At 24.66 cubic metres, mean superstructure size in 1600 B.C. was even larger than it was in 1650 B.C. However, the largest tomb from this date category, N301, was not as large as the biggest mid-Second Intermediate Period structures. Nevertheless, standard deviations show that "inequality" at Aniba North was greatest during the late Second Intermediate Period. Only two percent of these 1600 B.C. burials were made in large tumulus graves.

Frequency distributions of cairn sizes at Aniba North and Dakka show two distinct groupings in 1850 B.C. and 1750 B.C. and three in the Second Intermediate Period. These groupings suggest a corresponding social division of the Middle Nubian communities at these locations. Large tumulus graves were uncovered in the far western portion of Cemetery 209 at Tushka. Most were probably Second Intermediate Period in date. Similar social divisions probably existed in the Tushka population at this date as well.

9.2 Access to burial places

Inequalities in tomb construction and tomb contents

During the second decade of the twentieth century, 'earlier' and 'later' Middle Nubian burial types were proposed by Firth on the basis of tomb contents and construction (1915: 13-14). Twenty years later, Steindorff remarked on the existence of tombs of different types that had been built in the same period, and pointed out that so-called 'sandgraves' were used, at least at Aniba, throughout the Middle Nubian era (1935: 35). However, although different types of Middle Nubian tomb construction have been noted by several scholars (Bietak 1968; Emery and Kirwan 1935: 9; Firth 1915: 13-14; Steindorff 1935: 35; Trigger 1976b: 98-99; Williams 1983: 5), their homogeneity is more often stressed and differences among them are sometimes viewed as being almost wholly chronological. The variation between 'rich' and 'poor' Middle Nubian burials has been termed "quantitative rather than qualitative," and the apparent reluctance on the part of wealthier individuals to isolate their burials from those of the poorer members of their own cemetery communities has been interpreted as evidence of a Middle Nubian egalitarian social structure (Adams 1984: 157-158).

O'Shea reported that the degree of separation between the wealth and prestige hierarchies in a society was the primary factor that determined whether or not "special positions of enhanced prestige and ritual offices . . . " could be recognized archaeologically. Because the "upper levels of rank and wealth were nearly completely merged" amongst the Indian community at Big Village, he found it impossible "to isolate independent markers of prestige, even though such positions are known to have existed among the Omaha" (1984: 251). O'Connor was able to identify *Ia* Middle Nubian tombs, located "at the center of [the cemetery at Aniba North and] characterized by small superstructures with average diameters of 1.00-1.90 meters. On the fringes of the Phase IA concentrations, or outside them altogether, are larger superstructures with average diameters of 2.10 meters . . . Among the C-Group IA graves as a whole is a small group that has superstructures larger than normal . . . Moreover, these larger tombs cluster together in an area separate or 'set aside' from the others, perhaps to indicate that these tombs were of especially high status. These circumstances indicate that they are probably tombs of rulers and their close kin, especially as a socially lower level of elite tombs is indicated elsewhere." O'Connor was unable to identify the tombs of either an early élite or early rulers at Dakka or Faras primarily because fewer details are available in the site reports for these areas, but also because of severe plundering and because the remaining number of early graves at these locations is small (1993a: 33-36).

Although statistical evidence of unequal goods dispersal was unavailable for the earliest periods of their history, results of the statistical analyses discussed above indicate an unequal distribution of Middle Nubian mortuary goods in every date category from 2000 B.C. until 1550 B.C. Moreover, statistically significant increases in economic differences between members of the Middle Nubian community were identified at Gerf Husein, Tumas, Cemetery 200 at Aniba, and Serra East. These findings were based on a strictly quantitative treatment of the burial data.

Adoption of a "dimensional approach" that monitored the manner in which mortuary treatment served to divide the burial population into identifiable, social "subsets" (O'Shea 1984: 47-48), showed that different social categories were probably symbolized through the employment of different grave furnishings and varying amounts of energy expenditure on tomb construction (Peebles and Kus 1977: 431). Moreover, the detection that certain burial locations were mostly composed of the tombs of males, females and subadults whose grave offerings consisted of materials to which the majority of the population had little or no access apart from robbery, was inferred to indicate that some form of social hierarchy existed and was recognized within Middle Nubian society. No spatial separation between the burials of males, females or subadults was interpreted to mean that grave placement had been carried out according to economic and social criteria. Thus, particular cemeteries, or certain areas of cemeteries, may have been associated with the more "affluent" members of the society. Control over coveted burial resources by individuals in these spatially clustered graves was inferred from the co-occurrence of limited numbers of burials with elaborate tomb construction and luxury and/or possible "sociotechnic" artefacts (Binford 1962; O'Shea 1984: 62-63). The appearance of different spatial clusters in cemeteries at different time periods was thought to signify the shifting of "resource control" from one group of individuals to another over time. Similarly, the identification of spatially clustered élite tombs in different cemeteries at different time periods may reflect the passage of "resource control" from individuals in one location to those in another. Use of a technique that focused more on the *types* of tomb construction employed and on the *quality* of Middle Nubian burial offerings discovered in each date category revealed that:

1. *The earliest Middle Nubian graves, ca. 2000 B.C., were of two types: unlined 'sandgraves' that lacked superstructures and cairn enclosed, unlined tombs. Luxury objects were scarce in these burials and almost entirely restricted to the use of carnelian.*

   Eleventh Dynasty burials that show only slight variations in the quality of the artefacts they contained were encountered at Koshtemna, Dakka, Aniba North, Aniba, Cemetery 200 and Serra East. At the latter location, the unlined, almost circular, 'sandgraves' of adults and subadults lay in the southwestern portion of Cemetery 179. Some burials were noticeably larger than others, and one of the largest was Burial 209, which belonged to a male who was accompanied by one hundred faience ring beads and two beads of granitic stone. In the adjacent Burial 231, there were carnelian beads, granitic stone beads, approximately twenty faience beads and two button seals from the First Intermediate Period. In the same cemetery, the subadult in Burial 218 had been interred with twenty-one faience beads, one bead of granitic stone and a carnelian bead. Burial 203 was that of a second subadult with whom about twenty faience beads had been placed while ten beads of the same type were the only offerings that had been deposited with the female in Burial 213 (Säve-Söderbergh 1989: 211). At Serra East in 2000 B.C. mean goods wealth was forty-seven. For three of these burials [Nos. 231, 209 and 218], it was larger than average [154, 244 and fifty-five respectively]; for two [Nos. 203 and 213] it was below average [forty and twenty respectively]. Luxury artefacts were present in six percent of the Eleventh Dynasty graves at Serra East [Table C.1].

   The second type of Eleventh Dynasty grave chamber also was unlined, but was enclosed by a superstructure or cairn of packed, usually sandstone, rubble. Burial 117 in Cemetery 87 at Koshtemna was that of an undisturbed, adult male with whom large, barrel-shaped, carnelian beads had been deposited (Firth

1912: 180-181). At five cubic metres and approximately two square metres, both the cairn and the grave chamber size of this burial, which was the only remaining Eleventh Dynasty grave at Koshtemna, were larger than the mean for burials of similar date at Serra East. Burial 426 in Cemetery 101 at Dakka was a far wealthier interment than any of those described above. It contained a skeleton of unknown age and sex that was wrapped in a leather shroud and accompanied by green glazed ring beads, a copper mirror still in its linen case and a button seal of First Intermediate Period date; pottery on the southeast side of the superstructure consisted of two red polished, black topped bowls (Bietak 1968: 169; Firth 1915: 134). Whereas mean cairn size for this date category at Dakka was approximately four cubic metres, the cairn that covered the latter burial was around six cubic metres. It also was the second largest Eleventh Dynasty superstructure in Cemetery 101. Goods wealth for these two burials was 100 and 451 respectively. Mean goods wealth in 2000 B.C. at Dakka was 139. At Dakka, twelve percent of the Eleventh Dynasty graves contained luxury objects [Table C.1].

2. *Twelfth Dynasty [1900 B.C. to 1800 B.C.] Middle Nubian graves also were of two types: unlined, cairn enclosed tombs and unlined 'sandgraves' that lacked superstructures. Luxury objects were not common in these burials, but they display a wider variety of materials, including gold and ivory in the Early Twelfth Dynasty [1900 B.C.] graves and gold, silver and ivory in those from the later years of the Dynasty [1800 B.C.]*

   Early Twelfth Dynasty [1900 B.C.] Middle Nubian graves were mainly cairn-enclosed, unlined tombs. Sixty-seven cairn-enclosed graves from this time period were identified in Cemetery 87 at Koshtemna where the undisturbed adult female in Burial 110 had been entombed with a necklace of green glazed beads and several ostrich eggshell ring beads, and the undisturbed subadult in Burial 109 had received an anklet of ostrich eggshell beads and a kohl shell. In the same cemetery, the adult male in Burial 104, also undisturbed, had been wrapped in a leather shroud; a few green glazed beads also had been placed in the grave. At

Koshtemna, the largest number of luxury goods [132] recovered in the cemetery was found in eleven, or sixteen percent, of these early Twelfth Dynasty graves [Table C.1]. All the gold from the period had been confined to one burial and sixty-seven percent of the carnelian to another. While copper and ivory were found in five percent of them, eighty-four percent were without luxury goods altogether. Fifty carnelian beads had been deposited with the female in Burial 102, two ivory objects remained with the plundered adult male in Burial 100, and the other luxury artefacts had been dispersed amongst the remaining nine graves. In Cemetery 87, average superstructure size in 1900 B.C. was four cubic metres. Burial 106, with a superstructure size of approximately eight cubic metres, was the second largest in the cemetery. This tomb belonged to an undisturbed, adult female interred with a necklace of gold beads, a copper mirror in a linen case, a shell bracelet and a leather shroud (Firth 1912: 179-180). Thirty-nine percent of the prestige goods from this date period was concentrated in this grave.

The late Twelfth Dynasty [1800 B.C.] unlined, almost circular 'sandgraves' of adults and subadults that were assigned to this date on the basis of their position in a cemetery, also show very little variation in the quantity and quality of the artefacts they contain. Thus, while both the subadult in Burial 343 and the adult in Burial 353 in Cemetery 189 at Tumas lacked artefacts altogether, the undisturbed, adult female in Burial 345 had been wrapped in a leather shroud and given a straw-stuffed pillow. Burial 363, however, was not quite as 'poor.' It belonged to a plundered adult and still contained spherical, green glazed beads. Likewise, in Cemetery 101 at Dakka, a necklace of glazed beads was discovered in Burial 204, in which lay the body of an adult male who had been covered with matwork.

The most widespread type of late Twelfth Dynasty grave construction consisted of the cairn-enclosed, unlined tombs of adults and subadults that exhibited modest variations in the quantity and quality of the offerings they contained. For example, the analysis disclosed that several categories of burial data at Koshtemna exhibited the greatest "inequality" in 1800 B.C. [Table 7.41]. Amongst females, as well as amongst the undisturbed burials of both adults and subadults, the greatest "inequality" was detected in those from the late Twelfth Dynasty. Thus, while the undisturbed female in Burial 50 from Cemetery 87 had received offerings of beads fashioned from carnelian, black and white stone and green glaze, and while the one in Burial 169 had been given bead offerings of cowries, ostrich eggshell and green glaze, and while copper mirrors had been placed in both their burials, the undisturbed, adult male in Burial 84 had been buried with a single shell bracelet; his "body had been covered with goatskins" (Firth 1912: 167, 174-175, 187). The undisturbed subadult in Burial 82, also in Cemetery 87, had been interred with shell bracelets, tortoise shell bracelets [imported from the Red Sea], an anklet of black glazed beads and necklaces of the same material. Burial 89 was that of an undisturbed, adult female; she carried a kohl shell in her right hand, and she wore shell bracelets and finger-rings. In addition, "barrel-shaped gold beads, cylindrical bone beads," glazed beads and beads of carnelian and ostrich eggshell had been placed in the grave (Firth 1912: 174-176). While the superstructure surmounting this burial was five cubic metres in volume, average superstructure size in 1800 B.C. was three cubic metres. Firth reported that both Burial 120A, an undisturbed subadult, and Burial 120B, a plundered, adult male were surrounded by a single superstructure "built to accomodate both" graves. The undisturbed subadult, who had been festooned with necklaces of crystal, carnelian and green glazed beads, also had strings of *Conus* shells and green glazed beads around its body and an anklet of the latter material on its left wrist. Objects of far greater value must have been originally deposited in the grave of the plundered male since it was devoid of artefacts (1912: 181-182). Late Twelfth Dynasty prestige artefacts at Koshtemna had been restricted to seven burials; the remaining eighty-three percent of the burial population lacked luxury objects. While prestige goods were recovered from three percent of the late Twelfth Dynasty graves in Cemetery 189 at Tumas, and from eighteen percent of those in Cemetery 87 at Koshtemna, none was found in the forty-eight Dakka graves from this time period

[Table C.1].

3. *By 1750 B.C., tombs consisted of three basic types: unlined, cairn-enclosed tombs; rectangular, brick-lined grave chambers and stone-lined, cairn-enclosed tombs with attached offering chapels. Luxury objects still were relatively scarce in these burials but a wider variety of materials, including gold, silver, ivory and alabaster is encountered. The clustering of graves that contain luxury artefacts is observable in some cemeteries.*

Cairn-enclosed, unlined graves that exhibited a relatively large degree of variation in the quality of the offerings they contained were encountered in several cemeteries. In Cemetery 87 at Koshtemna, an offering 'place' had been constructed along the local east side of Burial 61, the plundered grave of an adult male which still contained ostrich eggshell beads, green glazed beads and the remains of several ivory bracelets. It was the only *tomb* of this type in the cemetery. Alabaster beads, an alabaster jar and a footed cup of black incised ware "decorated with red-painted lozenges" had been entombed with the individual in Burial 21 (Firth 1912: 162). This was the only grave in the cemetery that contained *offerings* of this type. Burial 171 in the same cemetery was the undisturbed grave of a subadult still adorned with a girdle of green glazed beads, while the undisturbed male in nearby Burial 125 was accompanied by gold and carnelian beads and pendants of mother-of-pearl, a Red Sea import. Burial 122 was that of an individual of unknown age and sex who had "girdles of beads" at the waist, articles of bead embroidery, pendants of mother-of-pearl, ostrich eggshell beads and carnelian beads (Firth 1912: 182). On the other hand, "blackened bowls" had been deposited with the deceased in Burials 155 and 164. Mean tomb wealth in 1750 B.C. at Koshtemna was 200; for Burial 61 it was 910. For Burials 171, 122 and 21, it was 320, 880 and 276 respectively. Standard deviations show that inequality of luxury item *value* was highest amongst the Thirteenth Dynasty burials in Cemetery 87. Sixty-one luxury objects were recovered from nine of the thirty-four burials [twenty-six percent] in this date category. One [Burial 21] contained the only alabaster objects found in the cemetery. Gold had been deposited with five burials; in two of these, carnelian artefacts also were found, and in one [Burial 54], two ivory bracelets were discovered with the skeleton of an adult male. Ivory bracelets also had been entombed with the male in Burial 61. The remaining two burials contained carnelian beads and a copper pin. Although black and red rather than elaborately coloured, the only specimen of painted Nubian pottery discovered at Koshtemna also was found in one of these graves [Burial 21]. Six, or seventy-seven percent, of these burials were clustered in the northern section of Cemetery 87; their superstructures tended to be slightly larger than average. While mean superstructure size at Koshtemna was 3.65 square metres, and while the average size of those dated to the Thirteenth Dynasty was 4.87 square metres, the mean size of those in the northern cluster was 5.52 square metres. At Koshtemna, standard deviations show that "inequality" was most pronounced during the Thirteenth Dynasty. These slight differences in cairn size and in artefact quality in the burials of a minority of Thirteenth Dynasty Koshtemna adults and subadults lend some support to the statistical evidence for an increase in inequality amongst the Middle Nubians at this location.

Rectangular, brick-lined grave pits, categorized by Bietak as *IIb5* structures and dated to *ca.* 1750 B.C., occur in Cemetery 209 at Tushka [Burials 246 and 262]. Not only were they spatially close, but these two comprise two percent of the 111 graves of that date. Painted Nubian ware was associated with the adult male in Burial 246. Pottery of this type, which was discovered with some of the 'wealthier' burials from the western half of the site, was not found elsewhere in the eastern portion of Cemetery 209 (Emery and Kirwan 1935: 407, 410). The average tomb wealth at Tushka in 1750 B.C. was 102.

Cairn-enclosed, undressed, quarrystone-lined tombs onto which offering chapels had been built accounted for two percent of the Thirteenth Dynasty graves at Aniba North. Since graves of this type were badly plundered, little variation could be discerned in the quantity or quality of their burial offerings; however, from their method of construction, it could be inferred that labour expenditure on these tombs was greater than that provided for other burials in this date category. Examples are Burials N53 and N220 at Aniba North. The grave chambers were completely empty but an alabaster jar, a plain Egyptian jar and seven Nubian vessels were found in the chapel east of Burial N53 while five Nubian jars remained in that of Burial N220. Both offering chapels had been provided with 'windows.' The grave chamber of Burial N309 had been covered with three stone slabs; silver, glazed beads, one Nubian black-topped bowl and five Egyptian vessels were found in the chapel. The grave chamber of an adjacent tomb, Burial N319, had been sealed with four stone slabs; in its chapel, which had a mud-plastered floor, six Nubian and two Egyptian offering jars were discovered (Steindorff 1935, 1: 129, 140, 147). While the average size of a superstructure at Aniba North during this time period was ten cubic metres, for these tombs it was ninety-three cubic metres. Similarly, whereas mean tomb wealth amongst Thirteenth Dynasty grave structures was 185, for Burial N53 it was 190 and for Burial N220 it was 540. For Burials N309 and N319 it was 1155 and 796 respectively. Thus, at Aniba North, there is some evidence that "energy expenditure" on the burials of some Thirteenth Dynasty individuals, who were in the minority in this date category, was far greater than that spent on the burials of others. Luxury artefact recovery from other Thirteenth Dynasty Middle Nubian graves also was generally so poor as to suggest that the effects of widespread political unrest may be reflected in the data from this time period.

4. *At least five Middle Nubian tombs types appear to have* **co-existed** *in Lower Nubia during the Second Intermediate Period [1700 B.C. to 1600 B.C.]: unlined, cairn-enclosed tombs; stone-lined grave pits; large, circular, tumulus graves with attached offering chapels; mud-brick, barrel-vaulted tombs and unlined 'sand-graves.' The contemporaneity of these tombs was inferred from the presence of either dated Egyptian scarabs or painted Nubian ware [Bietak's trait IIb15]. Luxury objects, especially those fashioned from carnelian and gold, were more plentiful in these burials and a wide variety of materials, including silver, ivory,*

alabaster and copper, is encountered. In some instances, those graves that contain luxury artefacts are grouped in a spatially separate portion of a cemetery; in others, they are located in separate cemeteries.

Traditional cairn-enclosed, unlined graves continued to be constructed in many cemeteries. An increase in access to luxury objects is reflected in many of these burials. At Aniba North, the individual in Burial N707 had been entombed with two Egyptian bowls, a necklace of silver ring beads, painted Nubian ware and a scarab that was Middle to New Kingdom in date (Bietak 1968: 135-136; Steindorff 1935: 173), and the deceased in Burial N907 had been interred with a necklace of carnelian 'face' amulets and a copper mirror (Steindorff 1935: 187). At Adindan, spatially close élite tombs whose superstructures were more than five metres in diameter were reported to have "correspondingly thick stone walls ... [The young female in Burial U2] wore a necklace of more than 600 exquisitely thin silver rings - some still strung on thick plant-fibre cord - and two pale gold or electrum bracelets on her left wrist." Luxury objects of alabaster, copper and gold were found in two of the three other nearby tombs. These four tombs were clustered in a separate 'cemetery' situated "a bit south of Cemetery T" (Seele 1983: xix; Williams 1983: 231-234). This grouping of graves at Adindan suggests that the individuals buried within them belonged to a faction that was able to exercise quite a great deal of control over access to luxury goods in the area.

Stone-lined grave pits, categorized by Bietak as *IIb2* structures and dated from *ca.* 1750 B.C. to *ca.* 1650 B.C., occur in Cemetery 189 at Tumas [Burials 256, 299 and 341], in Cemetery 195 at Aniba [Burial 24 in the southeastern section of the cemetery, as well as Burial 45, an adult female accompanied by gold beads, and Burial 46, the adjacent tomb of a subadult], and in Cemetery 200 at Aniba [Burials 22 and 73, both belonging to adult females]. Bietak identified five of these tombs at Aniba North: an arm ring and four Nubian vessels were associated with N266; four Nubian vessels and apparently plundered articles, including gold, were discovered near N318; five Nubian vessels were associated with N324; two shell arm rings, a copper mirror and painted Nubian ware were unearthed from N389 and N686 contained a dagger (Steindorff 1935: 143, 147, 148, 150, 171). A similar tomb at Aniba North was the mud-plastered, stone-lined Burial N222, which had been sealed with large stone slabs. It contained an undisturbed, probably female, corpse in a wooden coffin that had been lined with matwork and crammed with offerings including Nubian and Egyptian pottery, an alabaster jar, two copper mirrors and an Egyptian gold stag amulet. The deceased, who was wearing a beaded girdle, had been covered in linen and leather shrouds and adorned with rings of ivory and silver; bracelets of silver and glazed beads; ivory armrings; necklaces of silver, rock crystal and glazed beads; mother-of-pearl hair pendants, a graphite ear pendant and an anklet of glazed beads (Steindorff 1935: 140). While the average tomb wealth for the mid-Second Intermediate Period at Aniba North was 270 and that of Burials N707 and N907, described above, was 890 and 635 respectively, the total tomb wealth for Burial N222 was 3915.

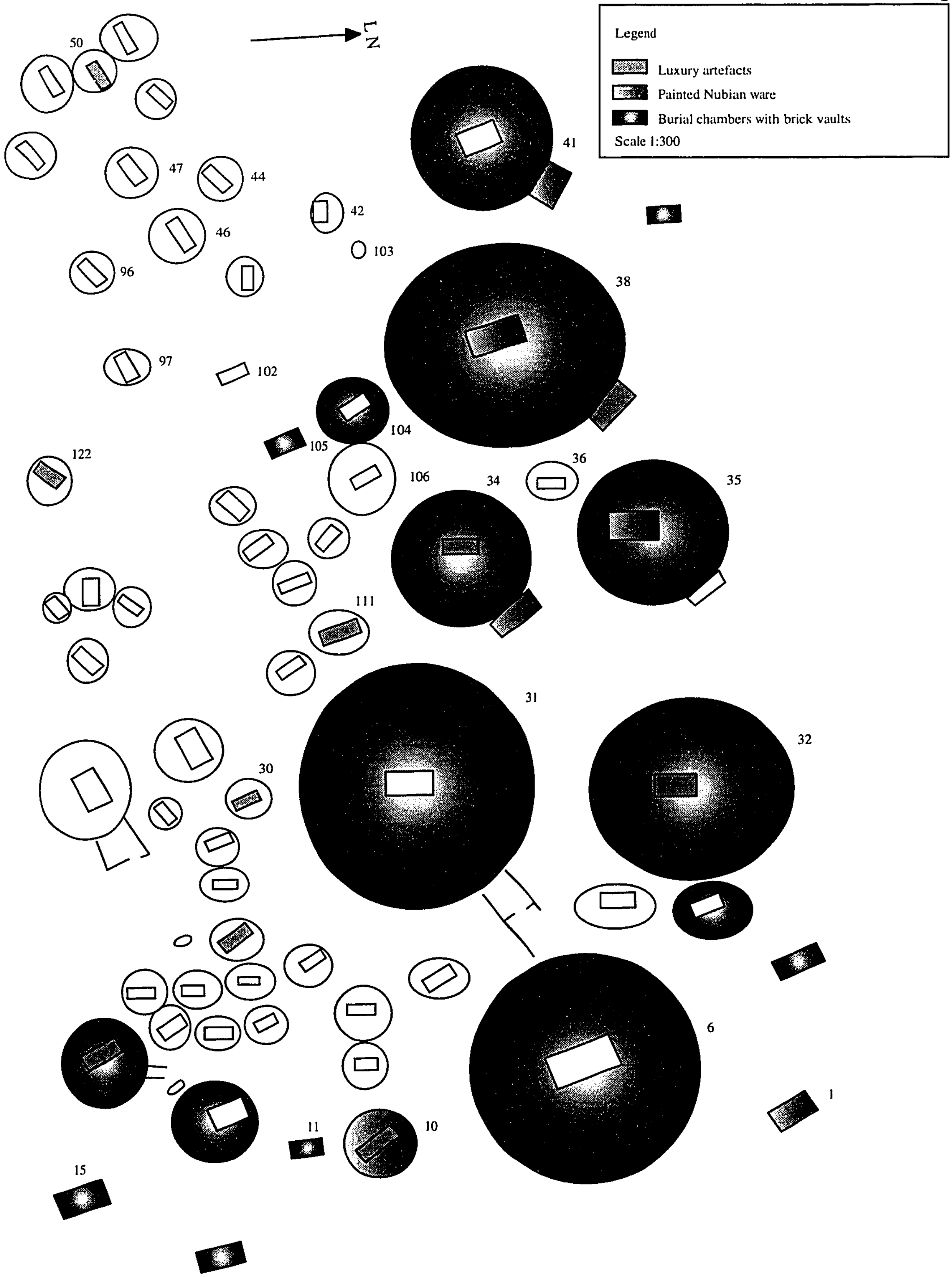


Figure 37. Dakka, Cemetery 101: distribution of élite Second Intermediate Period Middle Nubian graves
[After Firth 1915: Plan 3]

By the middle of the Second Intermediate Period [*ca.* 1650 B.C.], large, circular, tumulus graves with rectangular offering chapels were being constructed at Dakka, Aniba and Tushka. In Cemetery 101 at Dakka, seven of these tumulus tombs were located in the northern section of the cemetery. Each one enclosed a rectangular, brick-lined burial chamber surmounted by a mud-plastered brick vault. The superstructure over Burial 6 measured sixteen metres in diameter, while those of Burials 38 and 31 were larger still. Elaborately painted Nubian pottery was associated with fifty-seven percent of these tumuli. Except for similar vessels that were recovered from three nearby tombs with brick-lined chambers, a barrel vault, and a sandstone slab roof, pottery of this type was not discovered elsewhere in the cemetery. Gold, ivory, alabaster, and shell offerings remained in one tumulus grave, ivory objects were recovered from another and uninscribed mud sealings were found in the offering chapel of a third. Black incised Nubian bowls, glazed beads, ivory artefacts, marine shells, alabaster vessels and Egyptian ceramics were retrieved from the remaining four graves [Figure 37]. The tumulus graves of this type at Aniba North were located in the southwestern portion of the cemetery near the area where graves containing gold were clustered. Painted, Nubian ware was found northeast of Burial 302, east of the chapel attached to Burial 303, north of the chapel adjoining Burial 305 and in the chapel belonging to Burial 306. Vessels of this type were discovered in three other burials in the cemetery. The average size of the five largest tumuli was 161 cubic metres; that surrounding Burial 300 was 281 cubic metres. While these tombs amounted to two percent of the mid-Second Intermediate Period graves at Aniba North, at Dakka, the seven largest structures comprised eighteen percent of the contemporary burials. Tomb construction for a minority of Second Intermediate Period individuals at these two locations therefore involved far more "energy expenditure" than that accorded the burials of others. Furthermore, although the construction of such tumuli required "relatively little technical skill ... [these graves are archaeological evidence of] "building programmes of a labour-intensive nature that are specifically designed to affirm the personal glory of high-status individuals" (Trigger 1974: 100).

In some cemeteries, mud brick barrel vaults, categorized by Bietak as *IIb6* structures, probably *ca.* 1650 B.C. or *ca.* 1600 B.C. in date, were constructed over mostly brick-lined, rectangular tombs that sometimes lacked circular superstructures. In Cemetery 201 at Masmas [Figure 38a], the mudbrick superstructures over Burials 6 and 41 rested on stone foundations while that over Burial 71 had been given a covering of stone. These three graves were spatially close. Less elaborate versions of these mudbrick superstructures also had been constructed around unlined, rectangular graves in Cemetery 201 where they amounted to twenty-eight percent of the late Second Intermediate Period interments. Seventeenth Dynasty scarabs were recovered from two of them [Burials 7 and 8], and in one [Burial 13] two green glazed steatite Seventeenth Dynasty scarabs were discovered with an undisturbed adult male. For the female in Burial 1 at the same cemetery, plunderers had left behind an alabaster kohl pot, copper earrings, amethyst and carnelian beads, a belt of ostrich eggshell beads, a bracelet of faience beads and two Seventeenth Dynasty Egyptian scarabs (Emery and Kirwan 1935: 312-314, 321, 325). The high incidence of barrel-vaulted tombs, as well as burials from which imported objects and luxury items were recovered, suggests that burial within this cemetery may have been restricted to high ranking members of the Masmas community. In Cemetery 195 near Aniba, vaulted tombs of this type come to seven percent of the total number of graves. A similar mud-brick vault enclosed the plundered adult in Burial 28 at Tumas, Cemetery 189. This tomb, which comprised one percent of those in this date category, was three square metres in area and the only one of its kind in the cemetery. It presumably had been stocked with valuables originally, although a red polished, black-topped Nubian pot was the only remaining object in it (Emery and Kirwan 1935: 216).

Unlined 'sandgraves,' that lacked superstructures, dominate the middle and late Second Intermediate Period burial scene in some locations such as Cemetery 189 at Tumas. While many were circular in form, some were rectangular and in some cemeteries, the corpses they contained probably had been enclosed in wooden coffins. In Cemetery 189, where most of these graves were quite 'poor,' a typical example is provided by Burial 86. In it lay an undisturbed subadult who had been entombed in a wooden coffin with two Egyptian drop pots. In the same cemetery, however, while Egyptian pottery also had been placed near the undisturbed adult female in Burial 94, she wore a necklace of gold ring beads and carried a Seventeenth Dynasty scarab in her left hand. Goods values for these two burials were 145 and 1570 respectively. In contrast to the 'sandgraves' encountered in Cemetery 189, those in Cemetery 201 at Masmas were far wealthier. One of these was the undisturbed adult male in Burial 21, who was accompanied by a black-topped, Nubian red ware jar, a four-legged dish of brown ware, an Egyptian jar, beads of rock crystal and carnelian, and a Seventeenth Dynasty scarab. Burial 15 in Cemetery 201 at Masmas was an even wealthier, undisturbed, 'sandgrave.' It contained a young female accompanied by Nubian and Egyptian pottery, an alabaster kohl pot, necklaces of silver, carnelian, amethyst, faience and ostrich eggshell beads and numerous scarabs, including a green glazed steatite specimen from the Seventeenth Dynasty (Emery and Kirwan 1935: 224, 226, 315, 316). The goods value for Burial 15 was 3190. This grave was adjacent to a burial in which copper, alabaster and carnelian objects were found, and it was spatially close to the brick-vaulted tombs. All of these 'sandgraves' were 1600 B.C. in date.

Figure 38a. Masmas, Cemetery 201: distribution of luxury materials [alabaster, carnelian, copper and silver] in late Second Intermediate Period and 18th Dynasty Middle Nubian graves [After Emery and Kirwan 1935, 2: Plate 52]

Figure 38b. Masmas, Cemetery 201: distribution of alabaster and carnelian artefacts in late Second Intermediate Period and 18th Dynasty Middle Nubian burials [After Emery and Kirwan 1935, 2: Plate 52]

5. *Eighteenth Dynasty [1550 B.C.] Middle Nubian graves were mainly of three types: unlined, circular, 'sandgraves;' unlined, rectangular grave chambers that also lack superstructures and occasional, elaborate chamber tombs. Luxury objects were relatively plentiful in some of these burials and the variety of materials is similar to that encountered in Second Intermediate Period graves. In some cases, graves that contain luxury artefacts are clustered in a spatially separate portion of the cemetery; in other instances, they are located in separate cemeteries. Lastly, Nubian princes like Amenemhet were able to construct elaborate chamber tombs in locations quite separate from the communal cemeteries.*

The unlined, sometimes almost circular 'sandgraves' that date to this period lack superstructures and generally show a great deal of variation in the quality of the artefacts deposited within them. However, although a wider variety of utilitarian objects appear to have been employed in these burials, pottery types tended to become more standardized. Both Burial 105 and Burial 337 in Cemetery 189 at Tumas contained subadults with whom an Egyptian drop pot had been deposited; Burial 366 contained an adult in a wooden coffin (Emery and Kirwan 1935: 227, 263, 267). While goods values attest to the relative poverty of these graves, similar burials in Cemetery 201 at Masmas [Figure 38a and Figure 38b] yielded a variety of luxury objects in carnelian, silver and copper: the young, plundered, adult female in Burial 58 had been interred in a coffin along with a Hyksos flask, an Egyptian drop pot, spacer 'beads,' a kohl pot, an Eighteenth Dynasty scarab and seven undated scarabs, two of which were mounted in silver. Spacer 'beads,' ostrich eggshell beads, glazed beads, an Egyptian drop pot and a copper razor were found with the plundered adult male in Burial 75; glazed beads and a pair of silver earrings remained with the plundered subadult in Burial 80; and the undisturbed subadult in Burial 38 had been placed in a coffin along with an Egyptian drop pot, a copper earring, cowrie shells and a necklace of amethyst and carnelian beads (Emery and Kirwan 1935: 320, 323-324, 326-327). Alabaster objects were found in twenty-one percent of these Eighteenth Dynasty 'sandgraves' and thirty percent contained luxury objects. All were located in the southern part of the cemetery. This grouping of graves with luxury artefacts, and the similar grouping of elaborate late Second Intermediate Period tombs in the northern part of the cemetery suggests that burial in Cemetery 201 may have been restricted to the more advantaged members of the Masmas community. Twenty-five percent of the late Second Intermediate Period burials in the cemetery contained luxury objects of carnelian, silver, copper and alabaster.

Like the 'sandgraves,' the rectangular, unlined Eighteenth Dynasty grave chambers show a great deal of variation between burials and in the quality of the artefacts they contain. Utilitarian objects are more commonly met with than before and the pottery types chosen for burial tend to be more uniform than those used in the past. Nevertheless, standard deviations revealed the existence of the usual inequities amongst burials from the period. In Cemetery 189 at Tumas, where sixty-four of these burials were located, twenty-four luxury objects had been dispersed amongst fourteen, or twenty-two percent, of the graves. While nine of these contained one luxury object each, and while ten luxury items had been distributed amongst four graves, the remaining five items, or twenty-one percent of the Eighteenth Dynasty luxury offerings, had been deposited in a single grave. Those graves in which copper, silver and gold were found, were clustered in the southern section of the New Kingdom portion of the cemetery. The unequal distribution of burial offerings amongst the Eighteenth Dynasty graves in this Tumas cemetery is well illustrated by the presence of several intact burials that contained luxury artefacts: with the undisturbed male in Burial 109, there was an alabaster kohl pot and three other pieces of Egyptian pottery; there also were traces of a coffin. Another burial, No. 142, contained two luxury offerings. It belonged to an undisturbed, adult female who had been interred in a wooden coffin along with two alabaster pots, a glazed, steatite scarab and an Egyptian bowl. In a third, Burial 144, four items of Egyptian pottery, a copper axe head, a glazed steatite Eighteenth Dynasty scarab and silver earrings were associated with an unplundered adult; this individual also lay in a coffin. A much wealthier grave belonged to the undisturbed subadult in Burial 336, who also had been placed in a coffin along with silver earrings, a gold pendant, two scarabs of green glazed steatite and a bead bracelet (Emery and Kirwan 1935: 228, 232, 263).

Elaborate chamber tombs were adopted for a third type of Eighteenth Dynasty interment. These were quite unlike any previous Lower Nubian burials. They were constructed in the Egyptian fashion and located away from the communal cemeteries.

This survey revealed that, between 2000 B.C. and 1550 B.C., both *within* the same cemetery and in *different cemeteries,* there were differences in the *quality* of the artefacts that were placed in the graves of Middle Nubian individuals in each date category at Serra East, Koshtemna, Dakka, Aniba North, Tumas, Cemetery 200 at Aniba, Masmas, Tushka and Cemetery 195 at Aniba. These findings further indicate that the burials of some Middle Nubian adults and subadults are evidence of "greater energy expenditure" than those of other adults and subadults. Such individuals were in the minority in each date category and were presumably those who held a different and higher status in relation to the majority of individuals within Middle Nubian society. The graves of these individuals who were accorded separate status and more lavish offerings therefore have some items as grave goods that are not shared by other members of the society (Peebles and Kus 1977: 431).

Thus, it was discovered that statistically significant increases occurred in the quantity of offerings deposited with members of the Middle Nubian community at Gerf Husein, Tumas, Cemetery 200 at Aniba, and Serra East. Moreover, it was found that there were differences in the quantity and quality of grave offerings both *between* and *within* cemeteries *during a single time period* and *diachronically.* In each time period, it was established that the most lavishly appointed tombs were restricted to a minority of the burial population, and in each time period, it was established that the construction of some tombs required more energy expenditure than others and that such tombs were restricted to a minority of the mortuary population. Furthermore, it was found that tomb elaboration was most pronounced between *ca.* 1650 B.C.

and *ca.* 1600 B.C. when twelve gigantic tumulus tombs, which were the graves of a minority of the mortuary population, were constructed at Aniba North and Dakka, and it was established that these élite tombs were associated with luxury artefacts and elaborate Nubian painted pottery rarely found elsewhere. All these factors may be interpreted as a manifestation of the unequal distribution of material wealth amongst grave occupants at every time period and thus an indication of differential access to burial resources in every time interval by members of the same Middle Nubian community.

Moreover, given the thesis that the burial status of a particular individual will correspond to the social position occupied by the deceased during his or her lifetime (O'Shea 1984: 10), the identification of major categorical differences between Middle Nubian burials *within a single time period* and the identification of increases in categorical differences *between different time periods* suggests that several different burial statuses symbolizing different social positions existed during each time period and that an increase in the number of statuses occurred over time. Furthermore, the apparent increase in tomb diversity at a time period in which large disparities in burial offerings are revealed by the burial data, suggests that the economic differences between the burials in the various types of tomb, and thus presumably between the social positions symbolized, imply not only unequal access to burial resources by individuals in many mid-Second Intermediate Period burials but also an increase in that inequality since earlier times. Overall, these findings are inconsistent with an interpretation of the C-Group socioeconomic system as one that exhibits only minimal differences in wealth between its members and remained democratic until the era of the New Kingdom. In fact, it is likely that the clustering of "wealthy" graves identified from the Second Intermediate Period mortuary remains at Dakka, Aniba North and Tushka probably reflects a two-tier Middle Nubian social system in which social ranking may have developed as the result of corporate group control over highly valued burial resources.

Leadership

Burial in rectangular, stone-lined, burial chambers that were sometimes surmounted by mudbrick barrel vaults and/or, larger than usual, circular, superstructures, is considered to be evidence of the existence of "local headmen" by many scholars. Unfortunately, these tombs are usually completely empty. However, in Cemetery 97 at Dakka, Firth discovered a male skeleton, accompanied by blue and green glazed ring beads and flint flakes, in a tomb [Burial 68] around which there were "traces of [a] circular superstructure about 5 metres in diameter" (1915: 110). At least seven offering jars had been placed outside the superstructure. Although lacking a mudbrick burial chamber and vault, the superstructure at Burial 68 is large enough to suggest that some "social difference" may have existed between its occupant and the rest of the Cemetery 97 population. Firth estimated that the cemetery "was fairly early in the C-group period" but the presence of a clay female figurine in Burial 44 at the same cemetery suggests a Second Intermediate Period date.

At Tushka, where 479 graves were uncovered during two separate Nubian expeditions, larger than usual circular superstructures [C7, C71 and C146] also occur. Painted Nubian ware, dated to *ca.* 1650 B.C., was associated with one of these [C146], a structure with a diameter of approximately ten metres. In the same cemetery, two smaller superstructures, but with diameters greater than seven metres, and six 'average-sized' tombs also were associated with painted Nubian ware. In the southeastern portion of the cemetery, Burial 246, a plundered, brick-lined chamber with a leaning, mudbrick vault surrounded by a low layer of stones, contained an adult male and a red polished, black-topped Nubian bowl. The surface pottery at this tomb included a small, painted, Nubian bowl (Emery and Kirwan 1935,1: 407). Painted pottery of this type was present at eleven, or two percent of the 479 Tushka graves. Tombs with mudbrick vaults also had been constructed in the western part of the Tushka cemetery. In one, Burial C152, a subadult was found. The remaining four tombs lacked human remains, but Burial C156 contained a sheep skull, bucrania, a kohl vessel with kohl and painted, Nubian pottery (Junker 1926: 18-19).

At Serra East, a male, aged between thirty-five and fifty-five years, was discovered with sheep and antelope remains in Burial 13, a 1650 B.C. tomb surmounted by a mudbrick vault. Animal remains, either goat or sheep, also were found with the adult in a neighbouring brickvaulted tomb, as well as with the female interment in Burial 20, a nearby mid-Second Intermediate Period tomb whose walls had been plastered with clay and lined with slabs of stone (Säve-Söderbergh 1989: 208). These three burials make up one percent of the Cemetery 179 burial population.

In Cemetery 101 at Dakka, Firth reported that while female skeletal remains were found in one mid-Second Intermediate Period tumulus grave [Burial 35] in which painted Nubian pottery had been deposited, and, while male bones were discovered in another, the others lacked human remains. Burial 3, Burial 11, Burial 13, Burial 16 and Burial 39 in the same cemetery also contained female bones. All were brick-lined burial pits over which mud-plastered brick vaults had been erected. These burials comprised two percent of the total in this Dakka cemetery.

In Cemetery 210 at Masmas, of eighty-six graves, four, or five percent of all graves in the cemetery, and thirteen percent of the forty dated Second Intermediate Period graves, had mudbrick vaults. Only one [Burial 41], or three percent of the 1600 B.C. burials, had been constructed over "stone foundations" and was the plundered burial of an adult male with whom only Egyptian pottery remained. Two, or five percent, of the 1600 B.C. graves contained female burials. Their mudbrick vaults apparently had been constructed over unlined grave pits (Emery and Kirwan 1935: 312, 321).

Small clusters of these graves in a limited number of cemeteries and the nature of the skeletal material retrieved from them suggest that the combined use of painted Nubian pottery, animal offerings, luxury objects, a mud plastered burial chamber over which a brick vault had been constructed and around which an enormous stone superstructure was built was restricted to a minority of the Middle Nubian population who may have served as leaders and that females as well as males may have held these positions [Figure 37].

Adams, however, has concluded that Middle Nubian society was one "characterized by increasing discrepancies of wealth and power, but in which these discrepancies did not become formalized in hereditary social distinctions" (1984: 158). On the other hand, there are also scholars who suggest that during the Second Intermediate Period some Middle Nubian rulers, or *heqaw,* may have wielded considerable power over their subjects. More recently, O'Connor has suggested that the whole of Lower Nubia, or ancient Wawat, may have been a single polity whose "paramount ruler" resided at Aniba. There may have been "sub-chiefs" at Dakka and Faras. O'Connor also has remarked on the similarity between ivory arm rings found on the upper arms of "an Early Bronze Age élite Upper Nubian in Cemetery 7 [at] Shellal ... [and that on the left arm of a possible Upper Nubian ruler] depicted on the causeway of the pyramid of pharaoh Sahure [who ruled Egypt from *ca.* 2458 B.C. to *ca.* 2446 B.C]" (1993a: 28, 36). Although separated in time from this Fifth Dynasty engraving by about six hundred years, the Middle Nubian use of arm rings to symbolize, at least, membership within an élite group, and possibly even leadership, should not be overlooked. At Aniba North, burials and artefacts had been removed from all the tumulus graves. However, in other less elaborate tombs that were early Twelfth Dynasty to mid-Second Intermediate Period in date, *Type G* arm rings of particularly fine quality were discovered, and Steindorff has suggested that, since they apparently were found with male burials in all cases where sex determinations could be made, they probably were worn only by men, "normally" on the left upper arm (Steindorff 1935: 61).

In some instances, *Type G* arm rings also were found in graves from which the bodies had been removed. Thus, the early Twelfth Dynasty Burial N939B contained only a "few bones" and the remains of a quartz armring. The superstructure surrounding N939B was approximately *sixteen* cubic metres in volume. The average superstructure size in 1900 B.C. was five cubic metres. Fine *Type G* arm rings that were associated with male skeletal material in three mid-Twelfth Dynasty graves [N431, N455 and N780], in two from the early Second Intermediate Period [N 292, N 567] and in one from the middle of the Second Intermediate Period [N573] also had been fashioned from quartz. In the remaining Aniba North burials that contained arm rings and male skeletons the arm rings had been made of flint [N534B and N825] and shell [N903]. The burials were all 1700 B.C. in date. Two of these early Second Intermediate Period burials also contained carnelian [N534B and N567], and gold was present with one burial from each time period [N780 from 1850 B.C., N825 from 1700 B.C. and N573 from 1650 B.C.].

A similar type of burial was discovered in Cemetery 87 at Koshtemna, where Firth reported that the male in Burial 78, dated to the early Twelfth Dynasty, had a "large quartz armlet on [his] left humerus." In the same cemetery, the early Twelfth Dynasty male in Burial 25 wore a "white marble armlet" on the left upper arm, and the plundered adult male in Burial 100, also an early Twelfth Dynasty interment, still retained part of an ivory bracelet and the remains of a "white marble armlet" (Firth 1912 : 163, 173, 178). Seven, or fifty-four percent of these burials, also contained luxury artefacts. In Cemetery 72 at Gerf Husein, a "broken quartz armlet" was discovered, along with male bones, in Burial 238 (Firth 1912: 83). Lastly, part of a quartz armlet remained in the grave chamber of Burial 31 in Cemetery 101 at Dakka. The stone superstructure "of great size" which surrounded this mid-Second Intermediate Period tomb was the largest in the cemetery. It was 136 cubic metres in volume and it enclosed a "rectangular brick-lined and vaulted pit ... [whose] four walls each have a central internal buttress ..." (Firth 1915: 18-19, 115-116). Superstructures of this type are rare and probably mark the graves of C-Group "headmen" (Trigger 1976b: 99). Thus, the presence of a quartz arm ring in the mid-Second Intermediate Period tumulus burial of a *heqa* at Dakka and the tendency for such arm rings to occur in burials that contain luxury artefacts suggests that some of the early graves in which arm rings were discovered also may be those of Middle Nubian leaders.

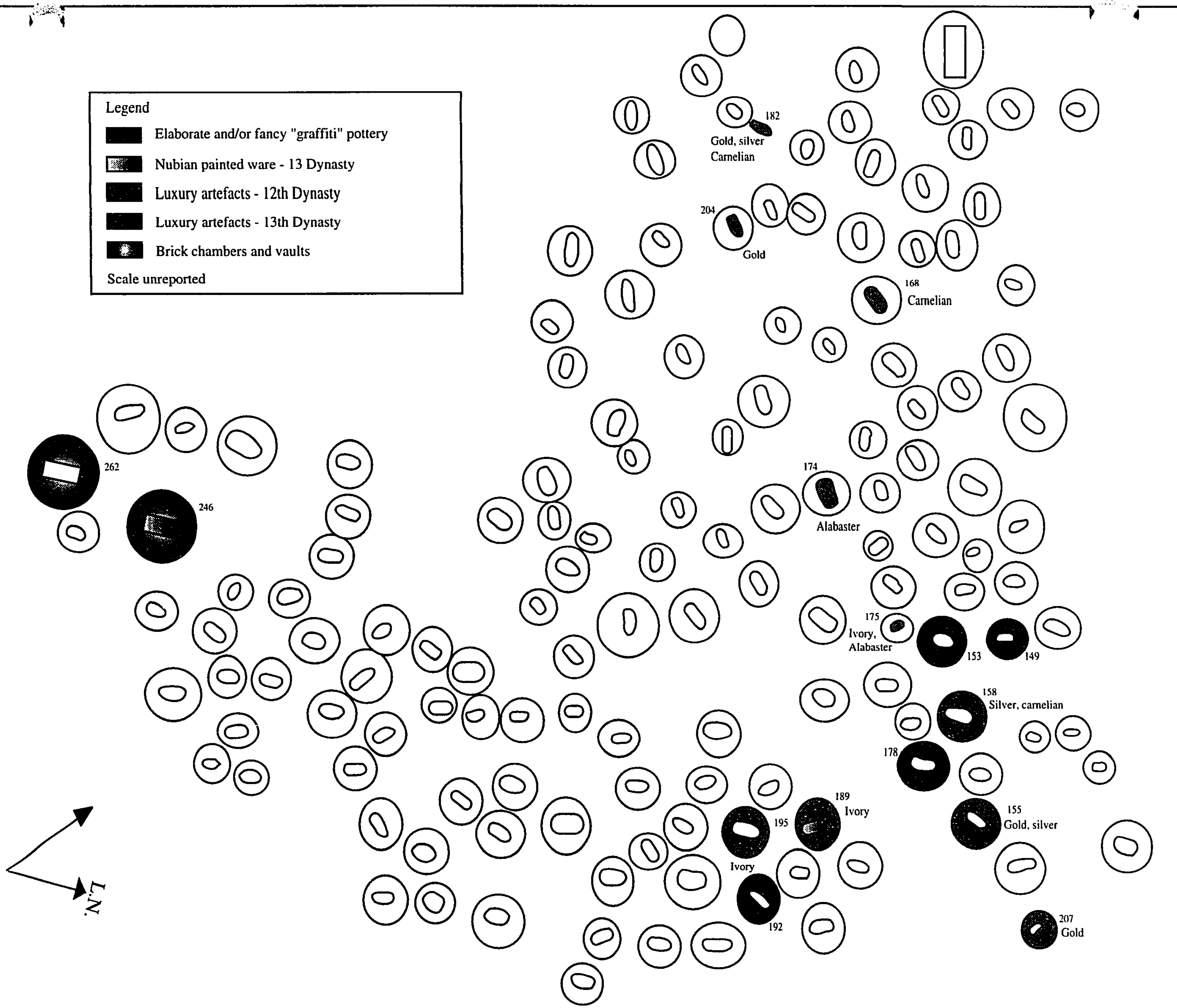


Figure 39. Tushka, Cemetery 209 - eastern section: distribution of 12th Dynasty and 13th Dynasty élite burials

Leadership shifts

As a result of the findings outlined above, it was concluded that inequality was present in each date category and that, amongst the Middle Nubian population, it tended to increase over time. At Tushka, however, a closer study of several categories of burial data revealed that the amount of inequality in the burial community *decreased* with time. Following his application of grave volume to estimate social stratification among the predynastic Egyptian burials at Armant, Griswold demonstrated that an "overall" decline in inequality had taken place. He concluded that the location of the site "between two centers of developing political power" was the cause for this decline. He noted that, during the incipient stages of social stratification at Armant, inequality reached its peak. "In later periods, as power was concentrated and social stratification developed at Hierkonpolis and Naqada ... the position of Armant was not maintained and it began to be overshadowed by the other two centers; either the élite at Armant were losing power or the leaders of the community were moving away ..." (1992: 196).

A similar process may be reflected in the burial data from Tushka: inequality amongst the earliest burials in Cemetery 209 was not marked. Nevertheless, the males in Burials 87 and 53 had acquired alabaster bracelets. Average superstructure size, like that of early Twelfth Dynasty cairns from other sites, was approximately three cubic metres. However, that of the superstructure over the plundered, adult male in Burial 53 was 5.48 cubic metres. Amongst these early burials, therefore, the development of an "élite" group may have been taking place. In Cemetery 209, the largest number of burial goods was found in the late Twelfth Dynasty [1800 B.C.] graves. Standard deviations show that inequality, especially amongst adult males and females, also was most extreme amongst these burials [Table 7.189]. After 1800 B.C., however, standard deviations for pratically every category of burial data, including grave beads and Egyptian goods [Table 7.188, Table 7.189 and Table 7.193], indicate a tendency for inequality to decrease.

Amongst individuals in *undisturbed* burials, inequality in this cemetery was most conspicuous in those from the Thirteenth Dynasty [1750 B.C.]. Nevertheless, for practically all other categories of mortuary data, including the seven burials in which thirty-four prestige goods had been deposited, inequality, which had not been particularly marked in 1800 B.C., declined still further in 1750 B.C. The clustering, in the eastern section of Cemetery 209, of burials that were associated with luxury items and rare, "elaborately treated jars" (Williams 1983: 50) also suggests a trend towards the development of a Thirteenth Dynasty "élite" group [Figure 39]. The two largest cairns in this part of the cemetery enclosed brick-vaulted burial chambers [Burials 246 and 262]; both were located on the southern edge of the cemetery. Average superstructure size in 1750 B.C. was 3.19 cubic metres; those over Burials 246 and 262 were almost three times the average size for this date category. However, the overall decline of this area continued into the middle of the Second Intermediate Period when large tomb construction shifted to the far western portion of the cemetery. Through a Mann-Whitney *U* test, the drop in the total number of burial goods deposited in 1650 B.C. graves was found to be statistically significant [Table 7.210]. Standard deviations again show that, although luxury items and imported goods were less widely dispersed than formerly, inequality amongst the 1650 B.C. burials had declined for almost all categories of burial data.

Moreover, during this time period, since great stone tumuli were being constructed in the far western part of the cemetery, referred to here as the neighborhood of 'Junker's tombs,' the mid-Second Intermediate Period burials uncovered in Cemetery 209 proper may perhaps be the graves of the more disadvantaged members of the 1650 B.C. Tushka community. Eighty-one luxury items were dispersed amongst two of the twenty-four [eight percent] mid-Second Intermediate Period graves. In one [Burial 1], a necklace of fifty gold beads, an anklet of carnelian beads and a copper mirror, or ninety-four percent of the luxury objects from 1650 B.C., had been deposited with an adult female. In the other [Burial 5], five alabaster beads remained with a plundered adult male (Emery and Kirwan 1935: 359). Both of these graves may have been spatially quite close to the area where 'Junker's tombs' were located. After attempts by a Thirteenth Dynasty élite group to control prestige items had presumably failed, the individuals in these burials may have allied themselves with a more successful faction that could provide access to coveted burial objects. Thus, these data reflect a decline in inequality in that portion of Cemetery 209 excavated by Emery and Kirwan at a time when it was apparently increasing in the far western part of the cemetery. A change in leadership, as power shifted from the individuals buried in the élite, Thirteenth Dynasty brick-vaulted tombs in the eastern part of the cemetery to those buried in 'Junker's brick-vaulted tombs,' may perhaps be reflected in these remains.

Tomb destruction

(I) Plundering

A further indication that wealth differences existed amongst Middle Nubian peoples is provided by the phenomenon of plundering, since it is unlikely that stealing would develop in a society that lacked economic differences between its members. Thus, the recognition that tomb robbing was practised by some sectors of the Middle Nubian community and not by others may be attributed to differential access to burial resources. Evidence that plundering took place during the Middle Nubian period exists in Cemetery 30 at Wadi Qamar, where Burial 2 showed "where an unbroken [C-Group] burial lay on top of a body plundered while fresh..." (Reisner 1910: 190-191), and at Adindan, where the fact that some Middle Nubian skeletal bones were still articulated led Williams to conclude that "the valuables had probably been removed shortly after the burial." In Cemetery 189 at Tumas, the ***undisturbed*** New Kingdom surface burial of an adult, Burial 168, was positioned ***over*** Burial 159 (Emery and Kirwan 1935: 239, 265), an indication that the latter had probably been plundered prior to the New Kingdom. Lastly, three successive entombments were unearthed from Burial 37 in Cemetery 262 at Abka. While the two uppermost burials are reported as undisturbed, the adult on the bottom of the shaft was missing its head, which presumably had been removed during robbery (Säve-Söderbergh 1989: 234).

Perhaps the very existence of socioeconomic differences between members of C-Group communities may have contributed to a reliance on tomb robbing to augment the "burial trousseau" for some members of the society. Plundering also may have escalated during the Middle Kingdom period as a result of the introduction of new Egyptian objects into the economy. However, Williams has observed that "we can infer that C-Group people plundered even pottery, because at Adindan ... Middle

Kingdom pots . . . were deposited in phase III tombs (T4, T112) some two centuries or more after their manufacture" (1983: 21).

(II) Burial Destruction

It has been argued that the destruction of some Middle Nubian superstructures was due probably not to plundering but to the C-Group habit of recycling old building materials: the cairns were "destroyed simply to provide the materials for making any of the other circles. . . " (Williams 1983: 21). It also has been established that some Middle Nubian tombs were damaged in the course of sebâkh digging (Bietak 1966: 11; Firth 1912: 64, 1915: 112). An even earlier argument that some Middle Nubian grave destruction may have been the result of processes or activities quite apart from normal plundering was made by Firth, who declared that the graves in at least one cemetery may have been destroyed for political or religious reasons. . . (1927: 132-133). Steindorf reported that thieves had rummaged through practically all the graves at Aniba, both large and small, and brutally plundered the corpses. Unlike Firth, he claimed that the motive behind the destruction was pure greed. He reasoned that robbery often occurred very soon after the burial, perhaps carried out by people who knew exactly what types of costly items had been placed in a grave, and he insists on this cause, in spite of the fact that, in many graves, the corpse had been carried away altogether, something which, according to Firth, the robbers would hardly have done in the course of plundering (1935: 28). Despite this observation, Firth also was inclined to believe that the removal and destruction of skeletal material was a consequence of the hunt for valuables. Thus, the high incidence of missing bodies in some locations has not been explained in any satisfactory manner. In fact, although C-Group burials were probably subjected to both plundering and corpse destruction at most periods during Middle Nubian history, an analysis of these phenomena suggests that, while the incidence of plundering remained relatively constant throughout the time period from 2200 B.C. to 1550 B.C., *from 1800 B.C. to 1700 B.C., plundering in many cemeteries was accompanied by more corpse destruction than at other time periods.*

Cemetery 68, on the east bank at Moalla, "was much denuded by *sebâkh*-digging, and the graves had all been plundered or disturbed in the process. The [cemetery] surface was covered with small heaps of stones from the *sebâkh*-sieves" (Firth 1912: 64). Nevertheless, of the twenty-seven remaining graves, although at least fourteen, or fifty-two percent, had been plundered, skeletal material remained in sixteen, or fifty-nine percent, of the graves. The graves were middle [1650 B.C.] and late [1600 B.C.] Second Intermediate Period in date.

Cemetery 69, north of Khor Nugdi on the east bank near Moalla, contained seventy-five Middle Nubian C-Group and New Kingdom burials. At least thirty-two, or forty-three percent, had been plundered. Skeletal material was retrieved from sixty-five, or eighty-seven percent, of the graves (Firth 1912: 66-74). Only twenty-two, or thirty-four percent, of the skeletons were reported to be broken, scattered, or in "no apparent order" (Firth 1912: 66-74). The graves were late Second Intermediate Period [1600 B.C.] and Eighteenth Dynasty [1550 B.C.] in date.

Cemetery 113, on the east bank north of the Wadi Alaqi, contained Early Dynastic and Middle Nubian burials. In the section of the cemetery labeled 113/50 there were nine Kerma-type burials of which one [Burial 104] still contained distinctive Kerma pottery, two [Burials 63 and 103] contained animal offerings, one [Burial 103] contained supposedly sacrificed human offerings, wooden *angareebs* remained in two or possibly three [Burials 64, 103 and 104] burial chambers, and ostrich feather fans were discovered in three units. Four additional graves contained bone and leather fragments. Seven, or seventy-eight percent, of the Kerma burials contained skeletal material. The eleven empty graves in this section that were assigned to the "latest C-Group period [had been dug in] the lower slopes of the alluvial mud banks [and] the pits had been completely cleared out." Sixteen apparently nearby burials [113/1] were New Kingdom in date. Six, or thirty-eight percent, contained complete, extended skeletons (Firth 1927: 127-129).

In Cemetery 115 at Qurta [*ca.* 1800 B.C.] where "the graves were dug in ancient drift sand [on the west bank, Firth reported that] ... there was the usual almost complete absence of burials in the pits, and as the filling of these was blown sand, it is not easy to ascribe the removal of the bodies to sebâkh digging .... [Although Firth was in error about the *date* of destruction, he suggested that] [p]ossibly the cemeteries were destroyed ... for political or religious reasons ... It is hardly conceivable that plunderers would have removed in many cases the complete burial, and this could hardly have been done except when the skeleton was still held together by tissue .... Again, the removal of the dead may have been carried out by the Middle Kingdom Nubians themselves when the country was occupied in the New Empire by Egyptians. The same absence of skeletons from the C-group graves is reported from other sites of this period..." (Firth 1927: 132-133). Of the 107 Cemetery 115 burials excavated by Firth, skeletal remains were discovered in only seven percent of the graves. The absence of grave offerings makes it impossible to determine the use period of the cemetery although the presence of sheep bones in one grave [Burial 35] and the discovery of red glazed pendants in another [Burial 39] indicates that these two were probably late in date (Firth 1927: 134; Lucas and Harris 1989: 162-163).

Likewise, in Cemetery 118 at Qurta "there was ... especially in the western and older portion ... an extraordinary absence of skeletons, or even bones, from the pits: apparently due to very early plundering, or deliberate sacrilege" (Firth 1927: 141). Only eleven, or five percent, of the 240 graves (Bietak 1968: 63) contained human, C-Group bones. On the other hand, skeletal material was apparently recovered from several Early Dynastic and New Kingdom graves in the same cemetery as well as from the "poor late C-Group graves ... on the ground below Cemetery 118" (Firth 1927: 151).

The late Second Intermediate Period and Eighteenth Dynasty burials in Cemetery 147 at Mediq included two Kerma-type burials. Skeletons from the Early Dynastic and Meroitic periods also were unearthed in this cemetery.

Apart from an individual of unknown sex in Burial 9, and a male in Burial 10, the chambers of the twenty Middle Kingdom *Stage IIa* (Bietak 1968: 68) [*ca.* 1850 to 1750 B.C.] Middle Nubian graves in Cemetery 151 at Wadi Sebua were empty, although "a few bones ... [were] found scattered in the debris and sand" (Firth 1927: 233). Emery and Kirwan report that "some time was spent ... searching for the cemetery belonging to ... [the C-Group settlement on the west bank across the river from Korosko] but when it was located every grave was found to have been completely plundered, not even the bones remaining" (1935: 106). However, in the nearby Cemetery 154 on the west bank at Wadi el-Arab, eighty-nine skeletons were recovered from the eighty-eight graves assigned to the 'New Kingdom' era (Emery and Kirwan 1935: 122-148).

Emery and Kirwan also report that the apparently 'late' C-Group graves in Cemetery 161 "had been plundered to such an extent that not even the bones had been left in place" (1935: 151), that all the C-Group graves in Cemetery 169 "had been completely plundered" (Emery and Kirwan 1935: 199) and that those in Cemetery 179 "were empty" (Emery and Kirwan 1935: 208).

At Areika, in Cemetery 167, eighteen, or eighty-two percent of the twenty-two graves dated to 1850 B.C., had been plundered, as had fifty percent of the ten 1750 B.C. burials, and sixty percent of those from 1650 B.C. Six subadults [two females and four of unknown sex], twenty-nine adults [eleven males, ten females and eight of unknown sex] and seven bodies of unknown age and sex were removed from the forty-two graves which still contained grave offerings.

Ninety-nine, or ninety-five percent, of the 104 C-Group graves in Cemetery 195 near Aniba contained bodies although eighty-nine, or eighty-six percent, were listed as plundered (Emery and Kirwan 1935: 277-292). The cemetery dates from *Stage IIa* to the period shortly before the beginning of the New Kingdom (Bietak 1968: 75).

In the late Second Intermediate Period Cemetery 201 at Masmas, although seventy-three, or eighty-six percent of the eighty-five Middle Nubian graves had been plundered, seventy-seven, or ninety-one percent, contained bodies.

(III) Burial Removal

In Cemetery 87 at Koshtemna, sixty-one burials [one in 2000 B.C., twenty-three in 1900 B.C., twenty in 1800 B.C., eleven in 1750 B.C. and six of unknown date] were undisturbed, while ninety-three, or fifty-four percent of the graves, had been plundered. Forty-two, or forty-five percent, of these plundered graves dated to 1900 B.C. Twenty percent [nineteen graves] were from 1800 B.C., twenty percent were from 1750 B.C., two percent were from 1700 B.C. and the dates of ten percent [nine plundered graves] were unknown. Of the remaining nineteen burials, eight had been damaged by *sebâkh-* diggers and the dates of the rest could not be determined. When grave condition within each date category was studied, it was discovered that

DF:	2
Total Chi-square:	2.849
p-value:	0.2406
Contingency coefficient:	0.143
Missing observations:	18

	Cell frequencies	1900BC	1800BC	1750BC	Totals
Undisturbed	Observed	24	20	11	55
	Expected	26.50	15.66	12.85	55
Plundered	Observed	42	19	21	82
	Expected	39.50	23.34	19.15	82
Totals		66	39	32	137

Table 9.1: Koshtemna, Cemetery 87: grave condition and date

sixty-three percent of the graves dated to 1900 B.C. had been plundered, as were forty-eight percent of those from 1800 B.C., and fifty-six percent of those from 1750 B.C. Both burials from 1700 B.C. had been looted.

The skeletal remains of 131 individuals, or seventy-seven percent of the total number of original burials in Cemetery 87, were discovered. Twenty-six percent [twenty-nine] of the 112 corpses that date from 1900 B.C. to 1750 B.C. had been removed from the tombs. Bodies from eighteen, or twenty-seven percent, of the graves dated to 1900 B.C. had been removed. Between 1800 B.C. and 1700 B.C. fourteen percent of the Koshtemna corpses had been removed from their graves. Fifteen percent [six bodies] and fourteen percent [five bodies] were missing from graves dated to 1800 B.C. and 1750 B.C. respectively.

Firth reported that in Cemetery 101 at Dakka "almost all the pits were found empty ... [and] filled with blown sand, which has replaced the skeletons and loose earth filling removed by *sebakhîn* at a period when the cemetery and its superstructures, though choked with sand, were in such good preservation as to render access to almost every grave possible" (1915: 112). Analysis of 253 of these burials showed that Firth discovered skeletal remains in forty-five percent of the graves dated to 2000 B.C.; in twenty-three percent of the 1800 B.C. graves; in fourteen percent of

DF:	2
Total Chi-square:	13.656
p-value:	0.0011
Contingency coefficient:	0.285
Missing observations:	0

	Cell frequencies	Undisturbed	Plundered	Totals
Goods=0	Observed	10	18	28
	Expected	11.20	16.80	28
Goods=1-10	Observed	23	57	80
	Expected	32.00	48.00	80
Goods > 10	Observed	29	18	47
	Expected	18.80	28.20	47
Totals		62	93	155

Table 9.2: Koshtemna, Cemetery 87: burial goods and grave condition

the 1750 B.C. graves; in forty-nine percent of those dated to 1650 B.C., and in sixty-seven percent of the tombs from 1600 B.C. When cross-tabulations were employed to determine whether any dependence existed between the body condition and the date of the Dakka burial remains [Table 9.3], it was possible to reject the hypothesis that there was no association between the two variables. Fewer than the expected number of bodies were missing from graves *ca.* 1650 B.C. to *ca.* 1600 B.C., while more than the expected number of complete or partial bodies from these dates remained. On the other hand, while more than the expected number of bodies were missing from the Thirteenth Dynasty tombs and fewer than the expected number of complete or partial bodies were found within them, *fewer* than the expected number of bodies had been removed from the *ca.* 2000 B.C. to *ca.* 1800 B.C. burials and *more* than the expected number of complete or partial bodies from this era had survived [Table 9.3].

In Cemetery 189 at Tumas, "the [graves in the] east side of the cemetery ... may be assigned to about the XIIth Dynasty, of which nearly all had been plundered, little remaining except the pottery offerings ... The west end of the cemetery was almost entirely devoted to graves of the [Second] Intermediate and New King-

DF:	2
Total Chi-square:	24.544
p-value:	< 0.0001
Contingency coefficient:	0.304

	Cell frequencies	2000BC-1800BC	1750BC	1650BC	Totals
Human remains	Observed	17	17	21	55
	Expected	14.83	30.35	9.81	55
No human remains	Observed	48	116	22	186
	Expected	50.17	102.65	33.19	186
Totals		65	133	43	241

Table 9.3: Dakka, Cemetery 101: body condition and date

dom periods, which fortunately had suffered less from plunderers" (Emery and Kirwan 1935: 212).

Furthermore, the growth of the cemetery, from west to east during the Twelfth and possibly early Thirteenth Dynasties followed by the late Thirteenth Dynasty or early to middle Second Intermediate Period revival to the far west and further growth east until some Eighteenth Dynasty burials were made over Twelfth Dynasty superstructures by that time buried by sand, suggests that (i) since almost equal numbers of Twelfth and Thirteenth Dynasty tombs lack bodies whereas both plundered and unplundered late Second Intermediate Period and Eighteenth Dynasty graves usually contain bodies, and (ii) since some Twelfth and Thirteenth Dynasty superstructures were erected over graves that were probably *already ransacked* when the superstructure was built, most violation occurred during the late Twelfth and early Thirteenth Dynasties when it was possible to remove articulated skeletons from the graves. Although some plundering and body destruction of the earlier burials may have occurred as late as the middle of the Second Intermediate Period, when some Twelfth Dynasty tombs were probably still visible, the presence of interments such as Burial 185 and Burial 337 [*1550 B.C.*] in the eastern part of the cemetery suggests that by the late Second Intermediate Period or Eighteenth Dynasty, the Twelfth Dynasy and mid-Second Intermediate Period tombs were no longer visible.

Only twenty-six, or 7.1 percent, of the burials in Cemetery 189 were undisturbed. *Ninety-three* percent of the burials, or 337, had been plundered. Nevertheless, 310 bodies [thirty-eight subadults and 271 adults], or *eighty-five* percent of the total number of burials, remained. Twenty-six corpses had been definitely removed and a further twenty-eight were apparently missing. Closer inspection of the data within each date category revealed that bodies were missing from fourteen percent of the Twelfth Dynasty burials, from eight percent of those from the Thirteenth, from three percent of those from the middle of the Second Intermediate Period and from six percent of those from the late Second Intermediate Period. No Eighteenth Dynasty burials lacked corpses.

If the twenty-eight missing bodies are included, an analysis of burial destruction in Cemetery 189 reveals that *sixty-three percent of the missing bodies [thirty-four corpses] had once belonged to the Twelfth Dynasty graves [1800 B.C.],* and that changes in the previously quoted percentages for each date category are restricted to the Twelfth and Thirteenth Dynasty burials: Twenty-five percent of the burials dated to 1800 B.C. and twenty-seven percent of those from 1750 B.C. had been destroyed whereas three percent of those from 1650 B.C. and six percent of the 1600 B.C. burials had been vandalized. Of the 290 dated burials in Cemetery 189, fifty-one, or eighteen percent, had been destroyed and sixteen percent of these appear to have been vandalized between 1800 B.C. and 1700 B.C.

At Tumas, dependence between body condition and date is indicated by the contingency table data [Table 9.4]. In 1650 B.C. and in both 1600 B.C. and in 1550 B.C., more than the expected number of complete bodies remained and fewer than expected had been removed. The opposite situation was true in 1800 B.C. and in 1750 B.C.

At Tushka in Cemetery 209, eighteen percent of the 257 dated graves [forty-seven graves] lacked bodies. Seventeen bodies, or thirty-one percent, of the burials dated to 1900 B.C. had been removed; eight, or twelve percent, of those from 1800 B.C. were missing; seventeen, or fifteen percent of the 1750 B.C. burials lacked bodies and in five, or twenty-one percent of the burials dated to 1650 B.C., the bodies had been removed. Of the 258 dated graves in this cemetery, the corpses from forty-nine,

DF:	4
Total Chi-square:	41.312
p-value:	< 0.0001
Contingency coefficient:	0.322
Missing observations:	7

	Cell frequencies	1800BC	1750BC	1650BC	1600BC	1550BC	Totals
Bodies	Observed	99	37	76	29	64	305
	Expected	113.63	43.57	66.64	26.49	54.68	305
No bodies	Observed	34	14	2	2	0	52
	Expected	19.37	7.43	11.36	4.52	9.32	52
Totals		133	51	78	31	64	357

Table 9.4: Tumas, Cemetery 189: body condition and date

or nineteen percent of the tombs, had been destroyed. In short, most corpse removal at this cemetery appears to date to the mid-Twelfth Dynasty; only ten percent, or perhaps seventeen percent of these bodies, were removed between 1800 B.C. and 1700 B.C. Cross-tabulations [Table 9.5] established that it was possible to reject the null hypothesis that no dependence existed between body condition and date. The expected number of bodies from 1650 B.C. remained. But, whereas fewer than the expected number of corpses from 1750 B.C. had been removed and more than the expected number remained, and while fewer than the expected number of bodies had been removed from the late Twelfth Dynasty [1800 B.C.] graves, the reverse situation was true for burials from *ca.* 1900 B.C.

This survey of Middle Nubian burials suggests that whereas plundering was practised throughout the Middle Nubian period, *tomb, and corpse destruction in particular, reached a peak sometime between the middle of the Twelfth Dynasty and the early Second Intermediate Period.* Moreover, because luxury offerings were apparently rarely deposited in tombs from the period, to assign robbery as the motive behind the wholesale destruction of Twelfth and Thirteenth Dynasty tombs in some cemeteries seems particularly unsatisfactory. It is possible, therefore, that burial destruction occurred as a consequence of some other activity.

DF:	3
Total Chi-square:	7.857
p-value:	0.0491
Contingency coefficient:	0.173
Missing: 22	

	Cell frequencies	1900BC	1800BC	1750BC	1650BC	Totals
Bodies	Observed	38	59	92	19	208
	Expected	44.69	54.44	89.38	19.50	208
No bodies	Observed	17	8	18	5	48
	Expected	10.31	12.56	20.63	4.50	48
Totals		55	67	110	24	256

Table 9.5: Tushka, Cemetery 209: body condition and date

In addition to excessive tomb destruction, a second characteristic of late Middle Kingdom and Second Intermediate Period Middle Nubian tombs is the addition of weapons to the burial "outfit." Daggers were discovered at Dakka [Burial 434], Tumas [Burials 56 and 59], Aniba North [Burials 11, 487 and 546] and elsewhere. Moreover, defence walls that date to this time period were constructed in some places: a walled cemetery, of Middle Kingdom to Second Intermediate Period date, is reported at Debeira, Site 184, and a walled settlement of more than 100 dwellings sprang up at Wadi Sebua (Säve-Söderbergh 1989: 9). Reuse of a possible Egyptian "fortress" or labour "prison" at Areika (Wegner 1995: 155-156), where defence walls were already in place, apparently predates the New Kingdom. However, on the basis of evidence from the Egyptian fortress at Askut, Smith has argued that, both before and during the Second Intermediate Period, nothing but peaceful relationships between Lower Nubian and Kerma peoples is reflected in the archaeological record. Like Renfrew, who has argued that the appearance of fortifications, luxury materials and metal tools are signs of increasing cultural intensity (1969: 158-160), Smith suggests that "the fortification of some C-Group sites reflects their growing centralization and complexity, and need not indicate that the region was particularly unstable" (1995: 106). On the other hand, some of the destruction of Middle

Nubian cemeteries discussed here appears to predate the arrival of Kerma peoples and may reflect only C-Group, and/or, C-Group and Pangrave interactions. In fact, although small in number, Pangrave ceramics were discovered at both Wadi Sebua (Gratien 1983: 64) and at Areika (Wegner 1995: 138). Moreover, the use of undressed, standing slabs of stone as a method of building construction, as seen in the "predominantly curvilinear walls ... [that] were added onto the preexisting rubble and mud-brick walls" on the northern, exterior, portion of the East Building at Areika (Wegner 1995: 134), seems to have been fashionable amongst Pangrave peoples who employed the same technique to line their burial chambers and construct the 'stone rings' that surround the burials. Säve-Söderbergh has noted that cemeteries, such as 210 and 220, where the method of lining burial chambers with upright stone slabs is employed, tend to be culturally Pangrave; they are usually late Second Intermediate Period or early Eighteenth Dynasty in date and have been categorized as "transitional" (Säve-Söderbergh 1989). The use of this building technique at Wadi Sebua and Areika, also may indicate a Pangrave rather than a C-Group presence at the two sites and even may reflect Pangrave efforts to defend or isolate themselves from the latter. "...Abundant suggestions of local strife" are documented in Egyptian texts; Lower Nubians "were valued as mercenary troops in Egypt;" "strong chieftainship ... [can be correlated] with a high development of warfare;" and "inter-village and inter-tribal cattle-raiding" are normal pastimes for present day cattle-owning African peoples (Adams 1984: 160). Because factions are comprised of structurally and functionally similar groups that share similar ideologies and symbolic modes to express their demands for legitimacy, regional similarities in elaborate pottery styles and other burial goods over relatively long time periods have been interpreted as evidence of factional competition (Brumfiel 1989: 127-137). Thus, the use of similar symbolism, such as graffiti-style and black-incised pottery, by different groups, such as those represented in Thirteenth Dynasty élite tombs in separate locations at the northeast and southwest portions of the Aniba North cemetery, suggests the existence of different Middle Nubian C-Group factions. Excessive tomb destruction, the appearance of weapons in some Middle Nubian tombs and the appearance of walled habitations in some locations may be indications of widespread unrest that was generated by individuals engaged in rampant factional competition.

Lastly, that possible major restructuring of some C-Group communities occurred towards the end of the Second Intermediate Period seems to be reflected also in changes in burial practice, including the "progressive abandonment of many features that had distinguished the C-Group earlier. The manufacture and decoration of the incised bowl became increasingly less skillful and organized, and such vessels finally ceased to be made ... The superstructure of tombs was loosened ..., changed in shape, and finally eliminated [while] ... the major change that took place in phase III seems to have been the adoption of Kerma and Pan Grave traits for both pottery and burial customs" (Williams 1983: 119-120). Outright replacement of peoples who were "ethnically" C-Group by those who were Pangrave also is a possibility. Säve-Söderbergh has discovered that, at least in Sudanese Nubia, where "the two groups lived side by side," entire, large cemeteries of late Middle Nubian peoples, termed "Transitional," were attributable to the "Pangrave complex" (1989: 18-19). Smith reports that Egyptian "interaction with the Transitional Group is attested at Askut in the persistence of native Nubian pottery through the late Eighteenth Dynasty [where, although] some C-Group style sherds appear, ... the bulk of native pottery shows closest affinity to that of the Pan Grave culture ..." (1995: 149).

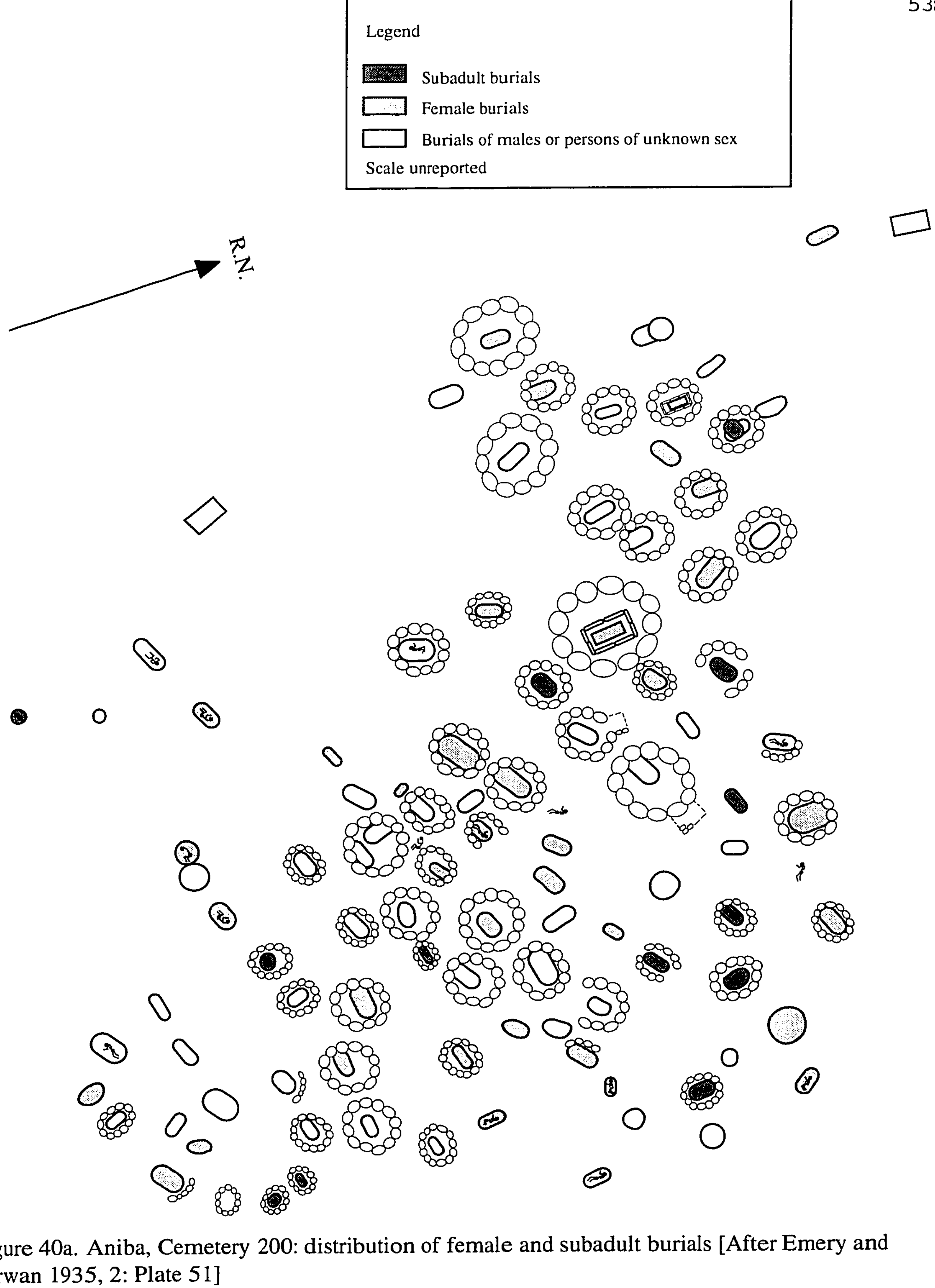


Figure 40a. Aniba, Cemetery 200: distribution of female and subadult burials [After Emery and Kirwan 1935, 2: Plate 51]

Figure 40b. Masmas, Cemetery 201: distribution of late Second Intermediate Period and 18th Dynasty Middle Nubian female and subadult burials
[After Emery and Kirwan 1935, 2: Plate 52]

9.2.1 Disappearance

Whereas Säve-Söderbergh has attributed the absence of *Stage III* sites in Sudanese Nubia to early Egyptianization of the C-Group population, while people who were culturally Pangrave carried on Middle Nubian traditions (1989: 12), O'Connor has suggested that "first the rulers, then the élite, and finally the rest of ... [the] Nubian communities chose to reside at or near the Egyptian centers ... [where] they were buried, alongside Egyptians and Egyptian-Nubians, in the town cemeteries, where multiple internments *(sic)* (many people buried, over time, in a single burial chamber) were common. This has created the false impression that population levels fall in Nubia during the 19th and 20th Dynasties" even though numerous burials from this time period exist at both Aniba and Kuban (O'Connor 1993a: 64-65; Smith 1995: 155; Williams 1983: 141-145).

The C-Group practice of multiple interments probably began during the Second Intermediate Period when burials of this type can be recognized at Ginari [Burial 123], Gerf Husein [Burial 312, *ca.* 1600 B.C.], Aniba North [Burial 479, *ca.* 1600 B.C.] and Masmas [Burial 42, *ca.* 1600 B.C.]. Multiple burials also were recorded in five instances at Debeira East, Cemetery 65, which were dated from *ca.* 1600 B.C. to *ca.* 1550 B.C. In Cemetery 184, also at Debeira East, double burials were discovered in two graves and in one instance [Burial 5] there were four individuals in the grave. The discovery of a Thutmosis III scarab in Burial 11 suggests an Eighteenth Dynasty date for the cemetery, although this date was rejected on the grounds that the "latest C-Group cemeteries do not represent a development from earlier graves on the same site" (Bietak 1968: 112; Säve-Söderbergh 1989: 216). Not only would the use of communal graves make cemeteries archaeologically 'less visible,' but changes in the post-Second Intermediate Period Middle Nubian burial furnishings, including the reliance on scarabs and the use of Egyptian-style pottery, could cause such tombs to be classified as 'Pharaonic.'

However, in addition to the evidence for a possible shift towards the use of communal, Egyptian-style tombs that might reflect a 'cultural disappearance,' the burial data from some Middle Nubian cemeteries are suggestive of a physical disappearance as well. While increases in the post-Middle Kingdom C-Group population can be inferred from the increase in their Second Intermediate Period burials, at all sites, except Tumas, Debeira East and possibly Abka, where late Second Intermediate Period and Eighteenth Dynasty graves were encountered, the number of burials decline. The burial data also show that, at most sites, the proportions of female and subadult burials increase during and after the Second Intermediate Period. Although these burial statistics may be a reflection of hitherto unknown cultural preferences, and although large infant mortality rates are to be expected in pre-industrial populations, and despite the fact that large numbers of female and subadult burials may attest to the existence of large numbers of both in the living population, the relatively 'sudden' loss of individuals from these groups presumably would, eventually, have a negative effect on population growth. During the New Kingdom, "settlers were sent to Nubia from Egypt [along with] captive populations from the Levant" (Smith 1995: 9-10). Of course, this may have been merely an Egyptian safeguard against local rebellion, but it also could have been a practical necessity if population levels in Lower Nubia had dwindled. A high incidence of female and subadult C-Group burials, therefore, may be indicative of the onset of C-Group population replacement difficulties.

According to Säve-Söderbergh, a "normal" sex distribution ratio of ten males and eleven females occurred in Cemetery 184 at Debeira East (1989: 216). On the other hand, he reports finding "an unusually large proportion of females" in Middle Nubian C-group graves at Abka where animal offerings of mostly sheep and goats suggest a date in the Second Intermediate Period for Cemetery 270. Age and sex determinations revealed that six males and fifteen females had been buried in the cemetery along with twenty-one subadults (1989: 240). Thus, of these forty-two individuals, thirty-six percent were female; eighty-six percent were females and subadults.

In this thesis, similar results were obtained for some of the cemeteries where abnormally high percentages of female burials were encountered. For example, eighty-five bodies [fifteen subadults and seventy adults], of which only fifty-eight were associated with offerings, were recovered from burials in Cemetery 200 at Aniba. When dates were assigned to *all* graves, including those that lacked artefacts, on the basis of their positions within the cemetery, six [one subadult, five adults] were dated to 2000 B.C., thirty-three [nine subadults and twenty-four adults] were from 1800 B.C. and forty-six [five subadults and forty-one adults] were from graves that were 1650 B.C. in date. Females [twenty-five] comprised sixty-nine percent of the burials in the latter date category. Furthermore, seventy-eight percent of the late Second Intermediate Period burials in this cemetery were those of females and subadults [Figure 40a]. At Tushka, sixty-seven percent of the burials from the middle of the Second Intermediate Period belonged to females.

At Masmas, forty percent of the late Second Intermediate Period burials in Cemetery 201 were female; subadults and females comprised fifty-eight percent of the burials in the cemetery [Figure 40b]. One kilometer south, in Cemetery 203, three groups of Eighteenth Dynasty multiple burials were discovered. Burial 1, a "shaft tomb," contained six burials: two males, a subadult and three females. Offerings included Egyptian pottery, glazed steatite scarabs and faience amulets including one of *Bes*. In Burial 2, a male, a subadult and three females had been entombed along with Egyptian pottery and blue glazed steatite scarabs. Burial 3 was a second "shaft tomb" in which the disturbed remains of five males, a subadult and seven females were discovered in association with alabaster kohl pots and a scarab of green glazed steatite (Emery and Kirwan 1935: 328-331). Of the twenty-four burials in the cemetery, fifty-four percent were females, while subadults and females together comprised sixty-seven percent.

Other cemeteries in which the proportion of female burials apparently increased during and after the Second Intermediate Period include the following: Gerf Husein, where eighteen of the twenty-five [eighty-six percent] females were from graves dated to 1600 B.C.; Aniba North, where seventeen of the twenty-one females [eighty-one percent] were from middle and late Second Intermediate Period graves; Cemetery 195 at Aniba, where fourteen of the twenty-three female skeletons [sixty-one percent] were found in graves dated to 1650 B.C.; Debeira East, where four of the seven females [fifty-seven percent] were removed from Eighteenth Dynasty graves; Cemetery 97 at Ashkeit, where twelve of the fifteen females [eighty percent] were exhumed from graves dated to 1650 B.C. and Abka, where all five females were discovered in late Second Intermediate Period graves.

Skeletal material was found in sixteen of the twenty-seven Eighteenth Dynasty graves in Cemetery 68 at Moalla. While subadults comprised thirteen percent of this burial population, females accounted for sixty-three (Firth 1912: 64-66). From the *ca.* Tuthmosis III, Eighteenth Dynasty Cemetery 220 at Ashkeit, which contained a total of sixty-seven graves, fifty-seven burials were retrieved. Age and sex was determined for thirty-three corpses. Of these, sixteen, or forty-eight percent, were subadults, presumably of unknown sex; thirteen, or thirty-nine percent, were female and four were male (Säve-Söderbergh 1989: 224, 240). In other words, eighty-eight percent of the individuals buried in Cemetery 220 were subadults and females.

In Cemetery 218 at Ashkeit, which consisted of fourteen late Eighteenth or Nineteenth Dynasty graves, the "burials were to an abnormal extent children" between the ages of ten and fourteen. These five subadults comprised thirty-six percent of the burials. One of the remaining nine burials was female, another male; the sex of the rest was undetermined (Säve-Söderbergh 1989: 222).

In the Nineteenth Dynasty Cemetery 172 at Areika, there were thirty-three burials. Thirteen, or thirty-nine percent, of these were females and twelve were subadults. Five of the latter were categorized as children of unknown sex; three were male and four were new born babies. Thus, twenty-seven percent of these burials were those of individuals who probably did not reach reproductive age; seventy-six percent belonged to females and subadults.

The existence of these cemeteries in which the proportions of the sexes are badly skewed, usually in favour of females, is hardly due to differential skeletal preservation since the bones of males, being larger, are more apt to survive. The implied absence of Middle Nubian C-Group males may be directly related to the unrest previously discussed. Moreover, since major alterations in Middle Nubian C-Group burial practices appear to coincide with these demographic changes, the latter may have indirectly fuelled the need for new and presumably more powerful cult elements, such as clay, fertility figurines and Egyptian scarabs, which were incorporated into the Second Intermediate Period burial regimen. Another cultural change that may be related to this apparent decline in the C-Group male population is the late Second Intermediate Period abandonment of cairn construction. While women may have dug graves and specialized in brick-making, dragging the heavy stones and boulders that were used to encircle the burial shafts was probably a male occupation. The building of fewer superstructures may have been one consequence of the decline in the male population.

As previously noted, Säve-Söderbergh's excavations suggest that people who were culturally Pangrave, rather than C-Group, survived until the time of the Nineteenth Dynasty in Sudanese Nubia. Since his research demonstrates that the two groups co-existed at least until the Eighteenth Dynasty, the disappearance of the C-Group communities simply may have been due to ***differential fertility.*** Some demographers have claimed that "differential fertility is the rule in human populations ... [and] there is always a far from negligible sterility rate [which is why] the part played by large families in keeping up the numbers is extremely important" (Sutter 1978: 146). For example, Karl Pearson estimated that in 1830 in Denmark, fifty percent of the Danish children were born of twenty-five percent of the Danish parents. Similarly, shortly before World War I, Charles B. Davenport calculated, "on the basis of differential fertility, that 1,000 Harvard graduates would have only 50 descendants after two centuries, while 1,000 Rumanian emigrants living in Boston would become 100,000" (Sutter 1978: 146-147).

Demographers also have argued that social phenomena ... [can] have a wide repercussion on the ... structure of populations and are capable of modifying them considerably from one generation to the other" (Sutter 1978: 146). Although difficult to prove, at least one "social phenomenon" that may have had an effect on the Lower Nubian C-Group population was of Kerma origin. Excavators have reported that "many relatively small and humble [Kerma] graves contained one or two sacrificed retainers, while the largest of the royal tombs may have had four hundred. [Graves containing human sacrificial victims apparently] were found even in the small and unimposing cemetery at Mirgissa ..." (Adams 1984: 198-199). This desire for sacrificial victims at a time when Kerma overlordship is attested in Lower Nubia may perhaps be linked to the decline in C-Group culture. Middle Nubians may well have been "transported" south as a result of human sacrifices becoming *de rigueur* in Upper Nubian burials. Cohen also has suggested that "...it was the activities of the rulers of Kerma that put an end to the 'Blutezeit' of the C-Group" (1991: 142-143).

The apparent decrease in sedentary, Eighteenth Dynasty, Lower Nubian, C-Group farming communities also has been attributed to the adoption of pastoralism. Other reasons that have been advanced for the apparent C-Group population decline include warfare, in which C-Group and Kerma communities battled Medjay and Egyptian troops, and forcible, Egyptian resettlement of C-Group communities in densely populated localities. The subsequent distribution of C-Group lands amongst Pangrave or Medjay peoples by the Egyptians may mean that Egyptianized Lower Nubians from the New Kingdom era may be of Pangrave rather than C-Group stock (Trigger 1985: 470). Cohen, who has noted that O'Connor concluded that "material referred to as the latest 'C-Group' was in fact much more closely related to the Pan-Grave culture" (1991: 143; O'Connor 1969: 122-123) also has suggested that Bietak's *Stage III* 'Mischkultur' is more closely affiliated with Pangrave cultural remains, and thus, the "true C-Group culture ... [perhaps never] experienced significant, widespread processes of acculturation" (Cohen 1991: 137-138). Moreover, because "...most II/b [C-Group] material ends before the Egyptian reconquest [and since] we cannot with any certainty account for the destruction of C-Group culture by citing Egyptian military activity ... [i]t is possible that the Pan-Grave people contributed to the demise of the C-Group" (Cohen 1991: 140, 204).

The phenomenon of 'Egyptianization,' has been identified as a fundamental aspect of the burial practices of some late Middle Nubian communities and is defined by Säve-Söderbergh as "...the gradual ...development of the building techniques of the settlements with increasing occurrence of mudbricks, square rooms, ...defences imitating Egyptian fortifications ... [and] a transition to graves of Egyptian types...with Egyptian outfits..." (1989: 10). This concept has been recently challenged by Cohen, who has argued that the 'acculturation hypothesis' is a biased concept that is "not useful as a general interpretative strategy in the study of ..." Egyptian-Nubian relationships (1991: 209). Cohen suggests that "many 'Egyptianizing' tendencies of the C-Group IIb such as rectangular burial pits and mortuary chapels may . . . [reflect Kerma influence] or even internal development within C-Group society." Nevertheless, he concedes that "acculturation . . . may have occurred only in isolated instances among a small part of the population" (1991: 117, 203).

While Bietak has asserted that the "transition from Nubian to Egyptian burial customs was a rapid process" (1968: 156), the data from some sites examined in this analysis of Middle Nubian burials suggest that these changes may have occurred relatively slowly and in a rather complex way. The manner of their occurrence also supports the notion of limited contact between Egyptians and Lower Nubians until New Kingdom times. The switch to rectangular grave chambers occurred in some cemeteries, such as Aniba North, during the Thirteenth Dynasty. The measurements of some graves at Koshtemna indicate that rectangular, or nearly rectangular, shapes were in use in Cemetery 87 at an even earlier date. At some sites, such as Cemetery 87 at Koshtemna and at Aniba North, Egyptian pottery was associated with some of the earliest burials. Occasionally, Egyptian stone seals and amulets were placed in Eleventh Dynasty graves at some locations (Steindorff 1935: 183) and the 'fortifications' at Sayala apparently were constructed prior to the Middle Kingdom (Säve-Söderbergh 1989: 10).

Adams, whose measure of 'Egyptianization' was based primarily on the origins of grave offerings, estimated that "the goods buried in even the latest graves of the C Horizon . . . are more than 75 per cent of Nubian origin, while those buried in graves of Egyptian type are more than 99 per cent of Egyptian origin." He also asserted that ". . . changes . . . are of a gradual and evolutionary sort . . . [for] each succeeding stage of the C Horizon shows a higher degree of Egyptianization than does the preceding" (1984: 145, 239). This tended to be the case, although it was found that thirty-six percent of the graves of 'Egyptian type' at Tumas and sixty-seven percent of those at Ginari contained locally produced artefacts. On the other hand, Egyptian trade goods were recovered from fifty-eight percent of the circular, 'Nubian type' burials in Cemetery 201 at Masmas. Scarabs from the 'Egyptian type' graves at Tumas and the 'Nubian type' graves at Masmas attest to an Eighteenth Dynasty date for both kinds of burial. Furthermore, at Aniba North, while slightly more than half of the early Twelfth Dynasty graves were associated with Egyptian artefacts, by 1850 B.C. only thirty-one percent contained imported goods. Similarly, a Thirteenth Dynasty increase was followed by an early Second Intermediate Period decline in burials with Egyptian objects [Table 8.1]. These data suggest that "Egyptianization," or perhaps merely the material representation of increasing Middle Nubian socio-political complexity, proceeded more slowly in some places than in others and also not necessarily in a strictly linear fashion, for although post-Middle Kingdom increases in the percentage of *burials* that contained Egyptian objects are documented for most cemeteries, at Masmas and at Tushka, as at Aniba North, the reverse occurred. However, regardless of the cause, even in the less hierarchical regions of Sudanese Nubia, the burial customs of the 'C-Group,' or the "local Nubian [Transitional] culture" (Säve-Söderbergh 1989: 10), failed to survive past the middle of the Eighteenth Dynasty.

Chapter 10

Conclusion

This analysis of the data resulting from excavations of fifteen Middle Nubian C-Group cemeteries dated from 2000 B.C. to 1550 B.C. was employed to determine the nature of the economic and political relationships between Egyptian and Lower Nubian communities, to establish whether economic differences and, as a consequence, social differences amongst members of Lower Nubian communities increased, decreased or remained unchanged during this time period and to suggest which of the traditional interpretations of Lower Nubian social and economic organization seem most likely.

Since assessments of the volume of Egyptian trade goods entering Lower Nubia between the Sixth and Eighteenth Dynasties have never been carried out in a systematic fashion, scholarly opinions about the extent of Egyptian-Nubian economic contact tend to differ. Whereas some researchers have suggested that regular Egyptian contact with C-Group peoples can be inferred from the large numbers of Egyptian artefacts that were traded to Nubia during the First Intermediate Period (O'Connor 1974: 29-30; Trigger 1976b: 54, 60), others are of the opinion that Egyptian imports at this time were rare (Säve-Söderbergh 1989: 8-9). While arguments for a decrease in imports by the time of the Eleventh Dynasty and a continuation of this trend during the Middle Kingdom era have been made (O'Connor 1974: 29-30; Trigger 1976b: 79), the notion that Egyptian imports are frequently found in burials from the late First Intermediate Period, Eleventh Dynasty and early Twelfth Dynasty also has been advanced (Säve-Söderbergh 1989: 8-9). Late Twelfth Dynasty Middle Nubian C-Group burials also are believed to contain few Egyptian artefacts (Säve-Söderbergh 1989: 8-9; Smith 1995: 49; Williams 1983: 117). During the Second Intermediate Period, however, an increase in trade goods occurs (Trigger 1976b: 97). Although the details of the economic relationships posited by these researchers differ, all are based upon the premise that fluctuations occurred in the quantity of imported Egyptian objects that were deposited in C-Group graves over time. Furthermore, these fluctuations are believed to reflect corresponding changes in Middle Nubian economic and political relationships with the Egyptians.

Scholarly disagreement over the nature of Middle Nubian socio-political development also is common. Thus, whereas Adams has emphasized the lack of variation that presents itself in the Nubian archaeological record, Säve-Söderbergh notes that variability, which he attributes either to "growing class differentiation" and the rise of more powerful leaders or to a different expression of "kingship," is observable both in the settlement remains and in the graves of Middle Nubian peoples (1989: 12). Other researchers have commented upon the absence of notable Middle Nubian class distinctions, but nevertheless observed that, during the Second Intermediate Period, Lower Nubian peoples, probably with the help of expatriate Egyptians, were "able to engage in trade or to charge tolls on goods passing through their territory ... Profits derived from this trade enhanced the status of local chiefs and perhaps entrepreneurs, producing an indigenous society that economically and politically was considerably more complex than it had been formerly" (Trigger 1976b: 98, 102).

To choose among these interpretations, it was proposed that, if it can be demonstrated that the volume of Egyptian imports varied significantly from one time period to another, these changes probably reflected the alterations in political and economic relations between Lower Nubians and Egyptians that are described in ancient Egyptian writings. It also was proposed that, if it can be established that among Middle Nubian communities access to local as well as imported burial offerings was unrestricted at all times; and that this access was no greater in some localities than in others; and that access to burial in an elaborate tomb was not restricted to a minority of the late Middle Nubian population; and that the burial places of this minority were not spatially distinct from the burial places of other members of the population and that this tomb elaboration does not parallel an elaboration in the production of funerary pottery and other locally made burial goods, it will be suggested that, throughout the period from *ca.* 2000 B.C. to *ca.* 1550 B.C., no increase in differential access to burial goods occurred; no form of luxury resource control was operative and Middle Nubian communities remained "democratic" until New Kingdom times.

Statistical evidence did not confirm the hypothesis that fluctuations in the quantity of Egyptian artefacts recovered from Middle Nubian graves dated between 2000 B.C. and 1550 B.C. correspond with the Egyptian-Lower Nubian political changes described in contemporary Egyptian texts.

The data analysis demonstrated that throughout the Middle Nubian Period there was virtually no change in the relatively small number of Egyptian trade goods that were associated with Lower Nubian burials. Whereas this finding offers little support for the argument that fluctuations in the number of Egyptian imports deposited in graves by C-Group peoples mirror corresponding changes in their economic and political relationships with the Egyptians (Säve-Söderbergh 1941: 129, 1989: 9; Trigger 1976b: 79, 97), it does appear to support the suggestion that "there are no sudden increases or decreases in the volume of trade goods in the 'C-Group' graves to mark the fluctuations of Egyptian policy ..." (Adams 1984: 145). However, it also gives some credence to the notion that objects of Egyptian origin are not plentiful in Middle Nubian graves (Kemp 1983), rather than to the belief that imports from Egypt tend to be numerous and are the result of a substantial trading partnership (Adams 1984: 169). It was inferred, therefore, that contact between the two groups was probably limited.

The circumstances under which these presumably limited contacts between the two groups took place remain unclear. First Intermediate Period 'oil jars,' Middle Kingdom unguent jars and linen from most time periods indicate that, in addition to grain, products traded to Lower Nubia probably included oil, ointment and clothes (Trigger 1976b: 59), or at least linen cloth. The presence in early C-Group sites of "round-based, necked [Egyptian] vessels that served as containers for liquids and foodstuffs ... suggests that the C-Group were obtaining food from Egypt ... [and]

Ankhtifi, the ruler of Edfu and Hierakonpolis at the beginning of the First Intermediate Period, boasted of having supplied food to the Wawat Nubians during a famine" (Butzer 1984: 106-107; Trigger 1976b: 54, 62; Vercoutter 1957: 69). Since low Nile floods may have persisted beyond the time of the First Intermediate Period, for Bell has deduced that high floods were *not* characteristic of the Middle Kingdom era (1975: 243), the association of grain jars with twenty-eight percent of the early Twelfth Dynasty burials at Aniba North suggests that the importation of foodstuffs may not have ceased until well into the Middle Kingdom. Closer scrutiny of the Aniba North data also showed that Egyptian grain jars were recovered from seventeen percent of the the mid-Twelfth Dynasty graves and from twenty-eight percent of those from the Thirteenth Dynasty. Some late Twelfth and Thirteenth Dynasty burials in Cemetery 209 at Tushka also were associated with similar jars of possible Kerma origin (Emery and Kirwan 1935: 501), which suggests that Kerma also may have been a source of foodstuffs. Lower Nubian reliance on their neighbours in times of food shortages is hardly surprising, for the rather uncertain Middle Nubian economy was dependent on floodplain agriculture and Butzer has emphasized that Nile floods were subject to "short-term variability" that must have had significant effects on agricultural productivity throughout the valley. Increases in Second Intermediate Period population levels and the absence of pottery of this kind in later graves suggests improvements in agricultural production. The latter recovery may have been boosted by the "longterm trend to higher floods" that continued until the end of the New Kingdom (Butzer 1976: 33, 52-56). Although Williams has warned that C-Group peoples often recycled their pottery (1983: 21-22), the intermittent acquisition of necessary foodstuffs may have formed the basis of Egyptian-Lower Nubian exchange prior to the Second Intermediate Period. The analysis also revealed that even the latter epoch, a time in which a greater variety of Egyptian artefacts were adopted as tomb goods by a larger number of C-Group peoples, apparently was not one of more intense exchange. As Smith recently concluded, the Egyptians "operated apparently without significant contacts ... with the native C-Group ... [and] the fact that even culturally neutral materials which might have been reworked, like metals or cloth, are rare, suggests that there was an economic as well as cultural separation" (Säve-Söderbergh 1989: 8-9; Williams 1983: 117; Smith 1995: 49). A pattern of rather infrequent exchange, "perhaps grain or beads" as compensation for "occasional labor" appears to be reflected in the archaeological record (Smith 1995: 49; Trigger 1976b: 79-80).

Statistical evidence demonstrated that access to burial offerings was unequal at all times, although some types of offerings proved to be more accessible than others. Access to offerings tended to increase over time but apparently was greater in some time periods than in others. Increases in access to goods and increases in inequality appear to have been positively correlated.

The investigation of C-Group cemeteries revealed that burial offerings were available to approximately three-quarters of the burial population at Ginari, Gerf Husein, Koshtemna and Tumas [Table 10.1]. Moreover, this individual access to offerings consisted almost entirely of access to local and imported *non-luxury items,* such as pottery and glazed beads [Table C.1]. Objects of this type were present in more than ninety percent of those burials that contained offerings [Figure 41 and Figure 42]. These data also show that access to burial offerings appears to have been most "restrictive" during the Middle Kingdom era when between seventy-three and seventy-eight percent of those members of the Middle Nubian burial population who had acquired grave offerings managed to obtain fewer than ten items. Nevertheless, the data from some cemeteries also show some support for the notion that the nature of Middle Kingdom Egyptian 'exploitation' in Lower Nubia was probably primarily economic (Adams 1984: 184-187; Smith 1995: 22; Trigger 1976b: 66, 74-79) and not necessarily detrimental to Middle Nubian socio-economic development. While the mean number of artefacts per burial tended to decrease in mid-Twelfth and Thirteenth Dynasty burials at some sites, such as Aniba North, at others, such as Cemetery 209 at Tushka and Cemetery 179 at Serra East, the opposite occurred. The manufacture of the vast majority of the polished, black incised C-Group bowls, that are considered by some researchers to be the "most distinctive and elaborate feature of ... [their] culture" (Williams 1983: 40), took place during the Middle Kingdom occupation of Lower Nubia, and, despite the possibility that food shortages may have occurred occasionally in some localities during the Middle Kingdom era, increases in the number of archaeological sites imply increases in population and thus in the food supply and presumably in agricultural production (Trigger 1965: 160; 1976b: 71, 79-80).

In spite of the evidence for the development of a more sedentary and prosperous population (Trigger 1976b: 80), for large segments of the Middle Nubian population access to more than ten burial offerings remained beyond reach for the duration of the Middle Kingdom epoch. In contrast, only forty-four percent of the Eleventh Dynasty graves and between fifty-seven and sixty percent of those from the Second Intermediate Period contained under ten objects [Figure 43]. Greater access to burial goods did not, however, result in greater equality amongst individuals. In fact, at most locations, inequality amongst Middle Nubians was at its height during the mid-Second Intermediate Period despite the fact that a larger number of individuals had been interred with offerings. Increasing control over coveted goods by a minority of the burial population apparently occurred over time and these findings may reflect that increase in control.

Table 10.1: Percentage of burials in Middle Nubian communities between 1900 B.C. and 1550 B.C. with access to burial offerings from cemeteries where it was possible to estimate the dates of burials that lacked offerings

	Percentage
Burials at Ginari with offerings:	
In 1650 BC	85
In 1600 BC	86
Burials at Gerf Husein with offerings:	
In 1650 BC	91
In 1600 BC	93
In 1550 BC	77
Burials at Koshtemna with offerings:	
In 1900 BC	91
In 1800 BC	88
In 1750 BC	79
Burials at Tumas with offerings:	
In 1800 BC	48
In 1750 BC	45
In 1650 BC	63
In 1600 BC	58
In 1550 BC	67

Figure 41. Percentage of burials with non-luxury artefacts from Middle Nubian sites dated from 2000 B.C. to 1550 B.C. at locations where numbers remained relatively unchanged

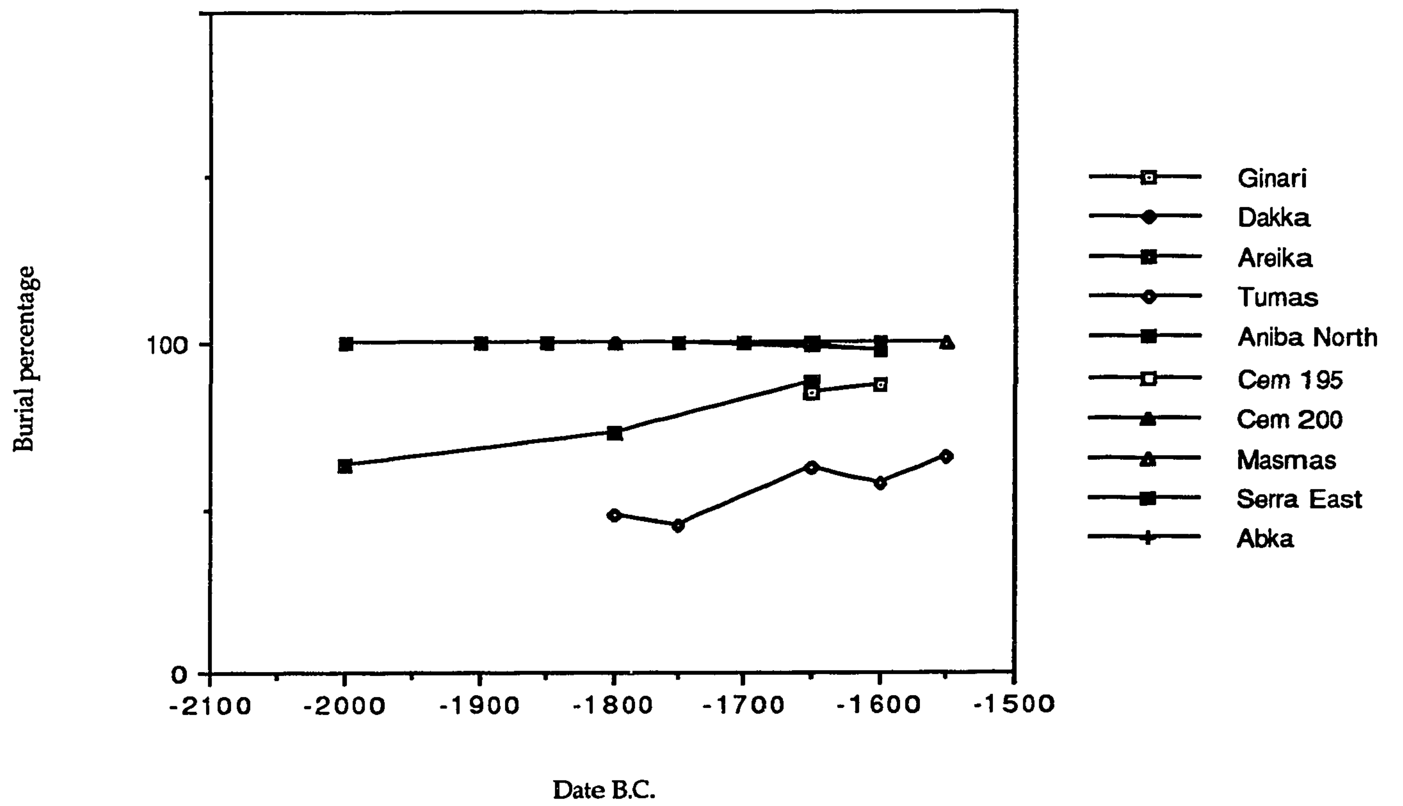


Figure 42. Percentage of burials with non-luxury artefacts from Middle Nubian sites dated from 2000 B.C. to 1550 B.C. at locations where decreases occurred

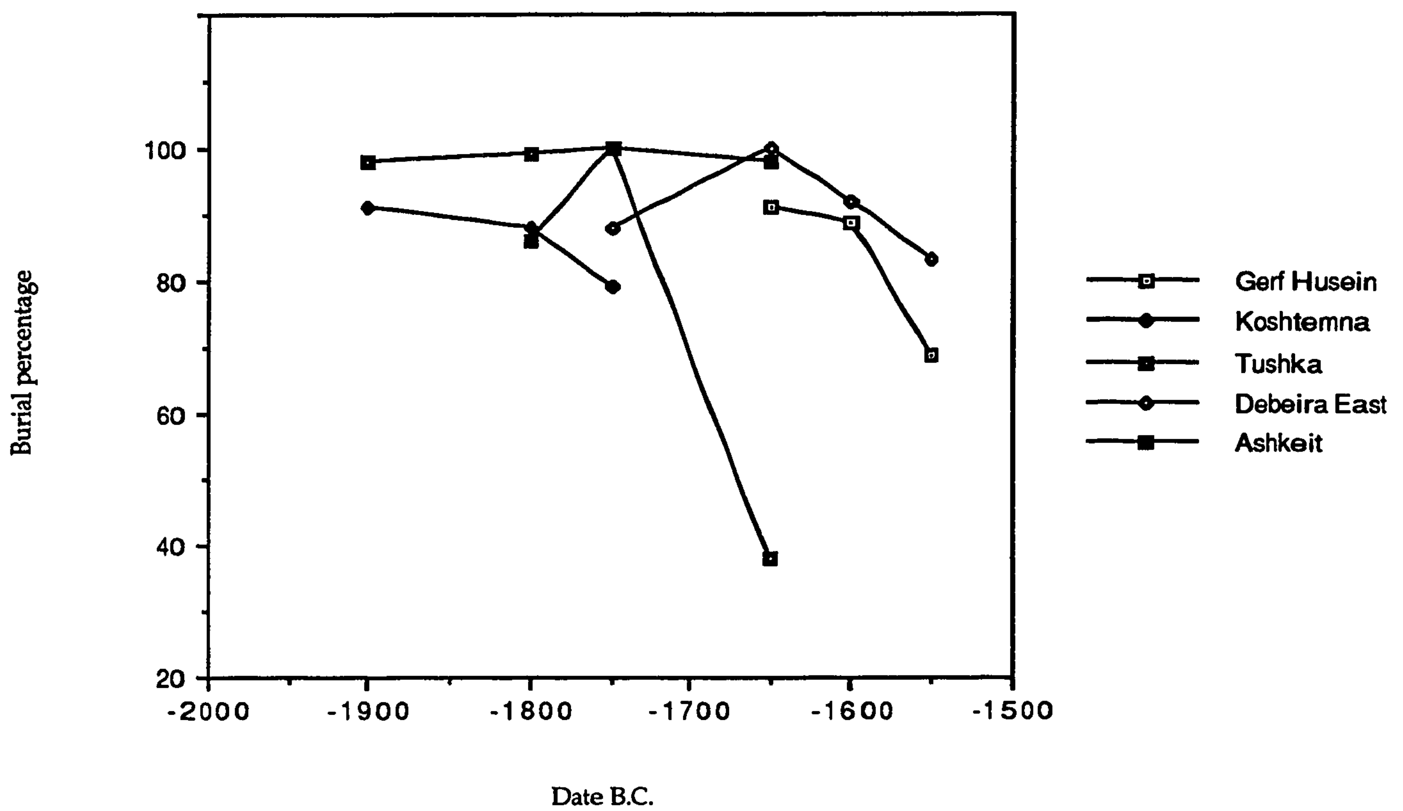


Figure 43. Percentage of burials between 2000 B.C. and 1550 B.C. from all fifteen Middle Nubian cemeteries that contained fewer than ten artefacts

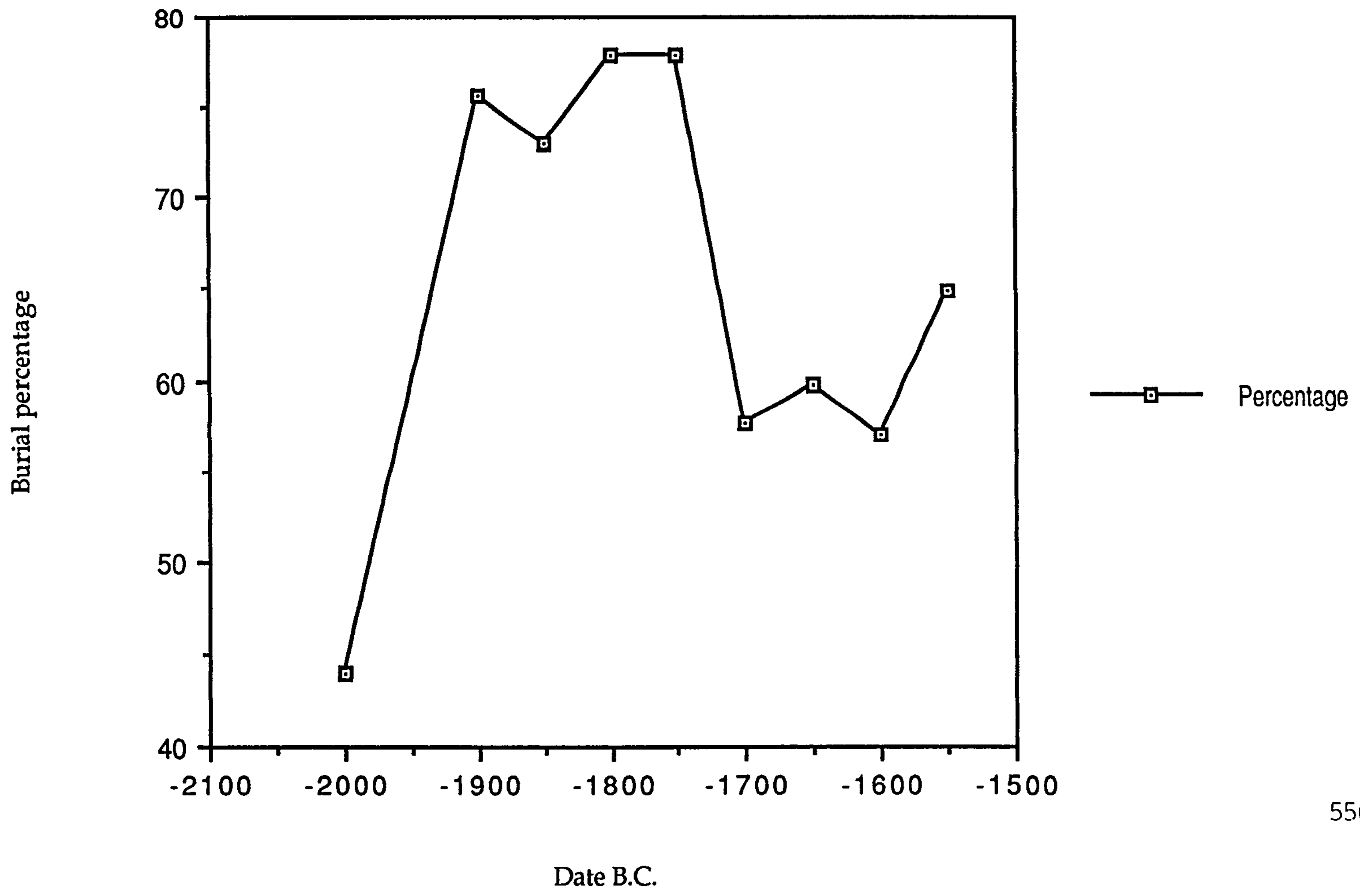


Figure 44. Percentage of burials with luxury artefacts dated from 2000 B.C. to 1550 B.C. at locations where increases occurred. If there were fewer than five burials from a particular time period, they were omitted from the calculations

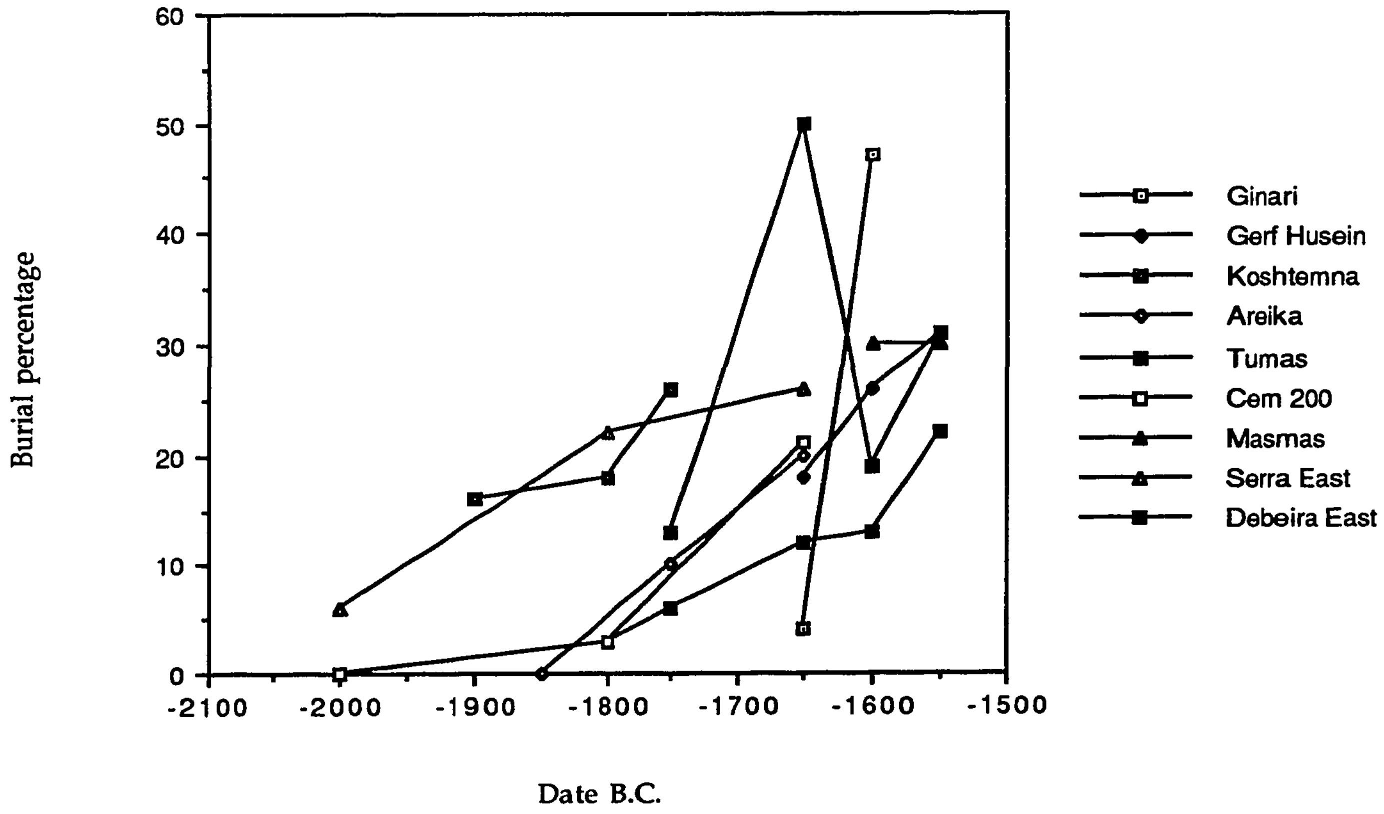
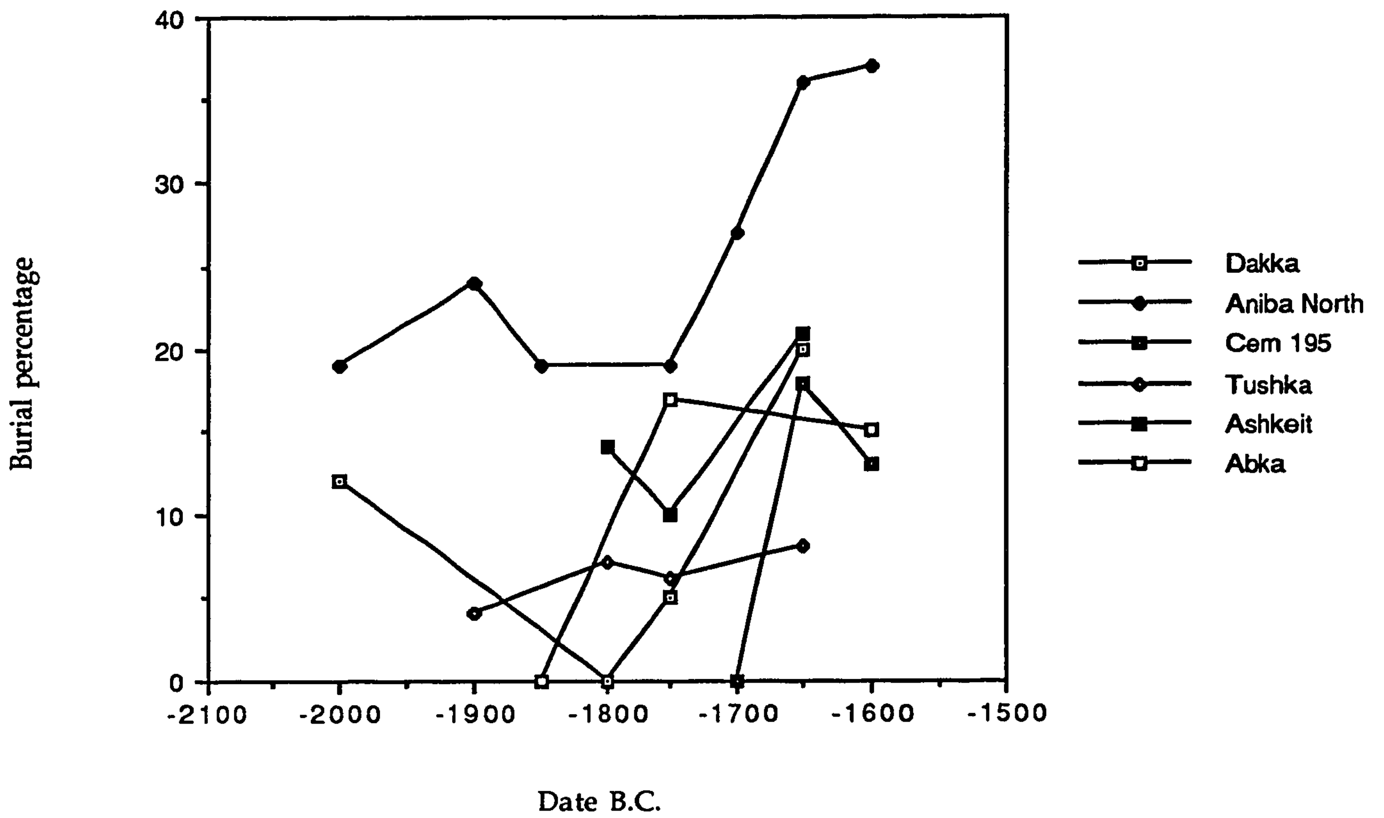


Figure 45. Percentage of burials with luxury artefacts dated from 2000 B.C. to 1550 B.C. at locations where increases and decreases occurred. If there were fewer than five burials from a particular time period, they were omitted from the calculations



Access to burial offerings apparently was greater in some localities than in others. In some regions, although attempts were made by the élite members of communities to limit the distribution of prestige items, there is no evidence that the authority wielded by such groups extended beyond the borders of their localities.

Even in time periods when access to non-luxury artefacts was greatest, availability varied from region to region. Thus, eighty-two percent of the graves at Dakka that were dated to 2000 B.C., and all in this date category in Cemetery 200 at Aniba, were associated with fewer than ten grave offerings, but only forty-six percent of those of similar date from Aniba North and twenty-two percent of the Eleventh Dynasty burials at Serra East contained fewer than ten artefacts [Appendix-Table E.1]. These data also make it clear that whereas non-luxury artefacts were present in more than ninety percent of those burials that contained offerings, at all time periods luxury artefacts were restricted to a minority of the burial population. This was especially the case in times of pronounced inequality, such as that detected at Dakka and Tumas during the mid-Second Intermediate Period. Whereas all the Cemetery 101 graves at Dakka and sixty-two percent of those from Tumas contained non-luxury offerings, twenty and twelve percent of the Dakka and Tumas burials respectively contained luxury objects [Appendix-Table C.1].

Further mortuary evidence showing that access to offerings was dependent not only on time but on locality is provided by some cemeteries, such as 201 at Masmas, that contained mainly "wealthy" burials, while others, such as Ashkeit, Cemetery 97, contained rather poor entombments throughout their period of use. It can be inferred, either, that offerings of a certain type may have been more available in some localities than in others, or that, in certain localities, *the élite members of the community were able to exercise greater control over the distribution of prestige items than were their counterparts in other adjacent communities.* Similarly, whereas the total number of luxury artefacts recovered from the mid-Second Intermediate Period graves at Ginari was twenty-five, two objects remained in the Areika burials from the same epoch.

Like offerings in general, access to luxury goods also was dependent both on time and place. Thus, in practically every date category, luxury artefacts were available to a larger percentage of the burial population at Aniba North [Appendix-Table C.1, Figure 44 and Figure 45] than at other sites. Nevertheless, the unequal dispersion of these goods tended to increase over time, and wealth estimates show that the value of the deposited luxury offerings also tended to increase over time [Table 10.2]. While an increasingly large percentage of burials contained between one and five luxury items, as time progressed, a smaller number of individuals tended to control the distribution of an ever larger number of luxury goods. Thus, while 111 luxury items remained in the Thirteenth Dynasty burials at this site, graves from the middle of the Second Intermediate Period contained 1,639 luxury artefacts. Seventy-seven percent of these offerings, or 1,267 items, had been placed in twenty-one of the 102 burials that yielded luxury artefacts. These twenty-one burials comprised seven percent of the total in this date category. Moreover, when observed and expected cell frequencies of gold-bearing burials at Aniba North were compared using the standard Chi-square statistic, it was found that the burials were not randomly distributed in either the east-west or the north-south direction [Appendix A]. Burials containing gold, that were mainly Second Intermediate Period in date, tended to cluster in the southwest portion of the cemetery. These findings indicate that control over the distribution of luxury goods occurred in all time periods and that this control was executed by a minority of the burial population. Strengthening local élite hierarchies may explain this tendency for élite-managed control over coveted resources to become greater in some localities than in others. Thus, the co-existence of large, late Second Intermediate Period tumulus graves at Aniba North with small, élite-equipped tombs, such as Burial 51 in Cemetery 195, may be a reflection of such a hierarchy in the Aniba region. Like high status tombs in other cemeteries, Burial 51 consisted of a mud-brick vault that surmounted a brick-lined grave in which the plundered remains of an adult male and a "ruminant" were found along with beads of silver, beads of carnelian and fragments of painted, Nubian ware. Similar pottery was recovered from one other grave in the cemetery and a third also possessed a brick-lined chamber that had been covered by a vault (Emery and Kirwan 1935: 284, 288). However, despite this co-existence of large and small élite tombs in the same 'region,' other evidence, namely the presence elsewhere of large tumulus graves of similar date, suggests that the

Table 10.2: Estimates of luxury goods wealth from Middle Nubian burials at Aniba North

	Mean per Burial	Standard Deviation	Total Number of Burials	Total Luxury Goods
Total luxury goods value:				
In 2000 BC	21.15	53.17	26	63
In 1900 BC	66.03	152.78	29	120
In 1850 BC	37.02	129.19	90	242
In 1750 BC	35.05	113.72	104	111
In 1700 BC	69.20	212.98	226	1358
In 1650 BC	122.85	333.41	282	1639
In 1600 BC	159.68	423.25	110	741

authority wielded by the more powerful members of such élite groups, in this case, presumably those at Aniba North, probably did not extend beyond the 'borders' of their localities. Likewise, the occurrence of grand, Second Intermediate Period tumulus graves at Dakka, Tushka and possibly Faras, suggests that, at all these places, the authority of their rulers was never "...more than local" (Adams 1984: 161).

Inequality amongst Middle Nubian populations, inferred from changes in standard deviations computed for the variables being monitored, tended to increase over time, although occasional declines occurred at some locations in some time periods. These fluctuations were considered to reflect decreases and increases in control over burial resources by competing élite groups. Increases in inequality that seem to correspond with the appearance of élite burials in some locations and that could be correlated with nearly contemporary declines in inequality at other locations also were detected. It was inferred that these shifts in inequality may reflect changes in leadership that occurred often and perhaps shifted from one locality to another.

Standard deviations make it clear that between 2000 B.C. and 1850 B.C., inequality increased amongst members of the Middle Nubian community at Aniba

North. During the Thirteenth Dynasty, however, economic differences at this site were not as great as they had been during the Middle Kingdom era. This decline in inequality may have resulted because a slightly larger number of individuals had acquired access to luxury items that were no longer as strictly controlled as in the past [Table 7.109]. Egyptian texts relate that some Lower Nubians were required to "wash gold ... [and perhaps] pay taxes" (Trigger 1976b: 79), and, between 1850 B.C. and 1700 B.C., the data attest to increased instability and presumably to a loss of power on the part of established local rulers. Decreases in inquality also were detected in Thirteenth Dynasty burials at Tushka, Ashkeit and at Abka. After 1750 B.C., inequality was on the rise again only in the last two places named.

At Tushka, declines in inequality took place amongst Thirteenth Dynasty burials in the eastern section of Cemetery 209 and amongst mid-Second Intermediate Period graves from the western portion of the cemetery. These results indicate that there was less variation in goods dispersal amongst the later graves. However, the location of Junker's Second Intermediate Period élite tombs in a different portion of the burial ground, where approximately one dozen relatively large tumulus graves were built, suggests that the decrease in Second Intermediate Period inequality was restricted to individuals buried in that part of the cemetery excavated by Emery and Kirwan. A change in factional or élite group control over coveted burial resources, that resulted in a shift in 'power,' may perhaps be reflected in these burial remains. The layout of élite tombs at Aniba North also may reflect 'power' shifts amongst rival factions. Moreover, while Late Second Intermediate Period tomb elaboration at Masmas reflects élite development at that site, a definite loss of 'power' seems to be reflected in the contemporary sandgraves at Dakka, where tumulus graves were no longer being constructed. Other locational 'power shifts' also may have taken place prior to the middle of the Second Intermediate Period, and one consequence of such political inconstancy may have been the tomb destruction documented in the last chapter.

These discoveries are less in accord with the view proposed by Emery and Kirwan that the culture of the "non-aggressive and unwarlike ... [C-Group people] reached its height during the peaceful years that followed the Egyptian conquest under

Senusret III" (1935: 4), and more in keeping with those generalizations about Lower Nubian socio-political organization that recognize both unrest and factionalism as part of the social scene. Adams notes that "strong chieftainship has usually gone hand in hand with a high development of warfare; ... [and] that there are abundant suggestions of local strife in the biographical texts of Harkhuf" (1984: 160). A form of factionalism also has been advanced as the feature behind the employment of Nubians from Wawat as mercenaries in Egyptian armies that specialized in military raids which "must have served to disrupt the economy of Lower Nubia and keep its population low:" participation in Egyptian warfare may not have been considered disloyal if different ethnic groups were involved in "... attacking districts other than their own" (Trigger 1976b: 60-63). Furthermore, Adams has argued that "[t]he proliferation of place names in Egyptian texts carries ... a suggestion of ethnic or local diversity, and with it the possibility of strife" (1984: 159). Intergroup rivalry amongst the Lower Nubians also may have been encouraged by the Egyptians, who may have made trade items more accessible to C-Group peoples in some locations than in others.

Griswold has shown that decreases in inequality amongst the predynastic Egyptian population at Armant reflect a loss of power on the part of local community leaders that was correlated with the growth of powerful élites at Naqada and Hierakonpolis (1992: 196); Säve-Söderbergh has suggested that "it is highly probable that [Middle Nubian social] ... structure varied considerably during the centuries ... [and warns that] one reconstruction valid for all ... stages will hardly be correct" (1989: 12) and Trigger has noted that "[w]here warfare is endemic among closely neighbouring groups ... protection may be achieved by kinsmen living in small dispersed hamlets, not all of which can be attacked at one time" (1974: 102). As a result of this analysis, it was concluded that, despite the evidence for overall increasing social complexity, frequent upward and downward shifts in inequality, and therefore probably also in socio-political complexity, appear to have characterized most Middle Nubian communities over time and at most locations. Much Middle Nubian mortuary variability, then, may be a reflection of this constant political shuffling. These changes, in turn, are traceable to the apparently continual, possibly violent, factional rivalries that were generated by a diverse population of scattered communities who had established their settlements to correspond with the available strips of fertile ground along the riverbank.

Mortuary data confirmed that access to burial in an elaborate tomb was restricted to a minority of the late Middle Nubian population whose burial places tended to be either spatially clustered or spatially distinct from the burial places of other members of the population. This process was accompanied by the gradual adoption of a more diverse array of luxury artefacts, culminating in a period of tomb elaboration accompanied by the appearance of limited amounts of painted funerary pottery. There was also a trend towards the use of a more diverse array of utilitarian goods, a switch to the use of metal tools and weaponry, and a tendency to adopt more sophisticated 'Egyptian-style' building techniques.

In addition to the increase in the variety of luxury artefacts and the Second Intermediate Period tomb elaboration discussed above, other indications of increasing complexity, that are evident as early as the Middle Kingdom era, are suggested by the appearance of a more diverse array of objects amongst the Middle Nubian grave offerings. Particularly at Aniba North, where the preservation of utilitarian objects in cemetery contexts was considerable, the artefacts recovered indicate that by 1850 B.C. new grave goods were appearing in addition to pottery, which tended to be the predominant type of object associated with the Eleventh Dynasty graves.

While ring beads remained the choice item for offerings in all time periods and leather objects continued to proliferate in the form of shrouds, kilts, belts, cords, headresses and sandals, there are examples of mat weaving and elaborate bead embroidery in the Middle Kingdom, and of coffins in later burials. Models of Nubian beds were associated with some burials (Steindorff 1935: 147), while some Middle Nubians were buried on regular sized *angareebs,* or Nubian beds (Emery and Kirwan 1935: 256), and others included wooden or pottery headrests (Emery and Kirwan 1935: 281, 287) or straw-filled leather or linen cushions (Steindorff 1935: 165, 168). Spoons (Firth 1915: 107, 118) and ceramic strainers were part of the culinary assemblage; bread was found in a late Second Intermediate Period Kerma-style Nubian jar from Burial 25 [1600 B.C.] in Cemetery 201 at Masmas (Emery and Kirwan 1935: 317) and beer is sometimes encountered as a residue in offering jars. Pottery lamps were associated with some burials (Emery and Kirwan 1935: 305; Firth 1927: 135), fishing nets and model boats with others (Steindorff 1935: 101, 129). Although textiles recovered in C-Group contexts are normally considered to be Egyptian in origin, possible yarn-winders were found in Thirteenth Dynasty graves at Aniba North (Steindorff 1935: 145, 170), and objects normally interpreted as spindle whorls were retrieved from both Middle Kingdom [T 38 and T 153C] and Eighteenth Dynasty [T3] burials at Adindan (Williams 1983: 76). Archers with bows and arrows are illustrated on "graffiti-type" pottery from Cemetery 115 at Qurta and from Aniba North (Firth 1927: 137; Steindorff 1935: 136), and part of a "wooden arrow shaft ... was found in the scapula of the male burial in T208 at Adindan" (Williams 1983: 76). A growing concern with 'property' also is apparent in some of the later graves, especially in Cemetery 115 at Qurta and at Aniba North, where incised owner's marks are reported on "quite a few of the Nubian red and black bowls" (Emery and Kirwan 1935: 375; Firth 1912: 169; Firth 1927: 138; Steindorff 1935: 101, 161, 176, 185), and at Dakka, where hemispherical, uninscribed mud sealings were discovered in the chapel adjoining Burial 38 (Firth 1915: 116). An attempt to record an "inscription" appears on a red polished, black-topped bowl from a Thirteenth Dynasty burial at Aniba North (Steindorff 1935: 136-137).

During the Second Intermediate Period, it has been noted that "[c]opper and bronze daggers and axes were buried with the dead more frequently than during the Middle Kingdom, when their sale to the C-Group may have been curtailed. Most of these weapons of the late C-Group are of Egyptian ... manufacture" (Trigger 1976b: 100). Egyptian attempts to control the ownership of metal are well documented. "Because of the value of all metal, care was taken to weigh tools [in Egypt] before they were issued to workmen and again when they were returned to store, to ensure that there had been no pilfering of the metal. Theft of metal tools figures large in the surviving records of trials" (James 1979: 222-223). However, since copper mirrors appear even in early Middle Kingdom burials in Lower Nubia, and since reuse of the metal is a possibility, Middle Nubian manufacture of more mundane metal objects may well have been taking place by this time period and may be reflected in the change from the occasional deposition of bone awls and bone needles in Eleventh and early Twelfth Dynasty graves to the inclusion of copper artefacts in burials from the Thirteenth Dynasty and Second Intermediate Period. A copper awl with a bone handle was retrieved from Burial 1 in Cemetery 30 at Wadi Qamar, and a "pointed copper instrument fixed in [a] wooden handle" was found by A.M. Blackman in Cemetery 41, Burial 500, at Khor Meris (Reisner 1910: 194, 226). A copper pin was found in the kilt of the male skeleton from Burial 85 [1750 B.C.] in Cemetery 87 at Koshtemna (Firth 1912: 175); a copper fish hook was recovered from Burial 67 [1650 B.C.] in Cemetery 195 at Aniba (Emery and Kirwan 1935: 281, 287) and a copper needle was retrieved from Burial N953 [1650 B.C.] at Aniba North (Steindorff 1935: 191) and from Burial 7 in Cemetery 113/1 at Kuban (Firth 1927: 126). At Moalla, bronze or copper implements were recovered from two graves that were probably Seventeenth Dynasty in date: Burial 10 contained a razor, tweezers and an awl, while Burial 23 contained an axe head (Firth 1912: 65-66). The Middle Nubian use of copper also can be inferred from the practice of jar repair: At Dabod, in Cemetery 23, Blackman found parts of a "bowl, red-polished, black-topped [with] rivet holes [where it had been mended]" (Reisner 1910: 100), and Firth remarked that, because pottery of this type is "extremely thin, broken and riveted vessels [are] common" (1912: 10; Firth 1915: 17). In Cemetery 115 at Qurta, outside the superstructures enclosing Burials 85, 94 and 98, he discovered *zirs* with rivet holes "showing use of metal-copper rivets" (Firth 1927: 136-138).

Other signs of growing complexity are evident in Middle Nubian tomb and settlement construction techniques. The use of Nile mud, both as mortar in tomb construction, and as plaster for coating burial chamber walls, is reported from the Thirteenth Dynasty onwards. While the earliest grave pits were apparently always unlined, at Aniba North, Steindorff noted that some grave chambers, such as N124 from the Thirteenth Dynasty and N120 from the Second Intermediate Period had been constructed of stone and covered with mud plaster (Steindorff 1935: 133, 134). Most Second Intermediate Period brick-lined grave pits and brick vaults received a finishing coat of mud plaster. Occasionally, Second Intermediate Period superstructures, such as that surrounding Burial 12 in Cemetery 101 at Dakka, were enclosed by a retaining wall of mud bricks (Firth 1915: 114).

Although Adams has pointed out that Middle Nubian "dwelling sites show little functional improvement over those of earlier times ... [he concedes that] ... there is an obvious developmental sequence..." (1984: 147-148, 158). Among the most substantial of the known C-Group settlements are those from northern Sudanese Nubia that consisted of small, square-roomed stone and adobe houses. At Faras East, Middle Kingdom Egyptian pottery, Pangrave-type ceramics, a possible fireplace, round silos, and the remains of a circular dwelling with a stamped clay floor that resembled the houses at Aniba were all that survived of Middle Nubian habitation in the area (Säve-Söderbergh 1989: 262). One house at Debeira East, probably Second Intermediate Period in date (Adams 1984: 148), was approximately fifty-four square metres in area. Although not big, and apparently occupied by some very ordinary family, this Middle Nubian house attests to extremely adequate living conditions, especially when compared with Egyptian dwellings, such as the house of an artisan from Deir el-Medineh that was seventy-one square metres in area (O'Connor 1983: 193), but constructed more than three hundred years later. Even some of the largest New Kingdom Egyptian 'mansions' at Amarna were only about 400 square metres, or only seven times the size of the Debeira Middle Nubian house (Smith 1995: 156). Moreover, the existence of habitation sites such as the complex at Amada, which had an area of 3,200 square metres (Trigger 1965: 105) and was *in use at the same time period,* suggests that social differences amongst members of the Middle Nubian community at this time period were quite pronounced.

These data therefore indicate that, among Middle Nubian C-Group communities, some segments of the population had little or no access to burial offerings, that most had access only to non-luxury artefacts such as beads and pottery and that a majority of these individuals had been entombed with fewer than ten objects. Moreover, access to luxury artefacts, both local and imported, was restricted at all times and was greater in some localities than in others. This data analysis also shows that, in some cemeteries, the quantity of goods placed in graves tended to increase over time; that statistically significant increases in artefact deposition occurred at Tumas, Serra East and elsewhere; that the value of the goods placed in tombs tended to increase over time and that the dispersal of these goods was unequal in all time periods; that differences existed in the quality of artefacts placed in graves from the same cemetery and in graves from different cemeteries during the same time period; that burials that contain luxury artefacts tended to be clustered in separate cemeteries or in separate portions of cemeteries and that élite-type tombs, which tended to be larger than other tombs and to contain prestige or luxury items, tended to form a minority of the burials and could be identified in almost every date category. Changes in leadership that occurred when some communities were able to outperform others in attempts to control burial resources also appear to be reflected in the data.

As a result of these findings, and from the evidence for the development and use of fortifications; for the use of an increasingly diverse array of luxury materials; for the adoption of metal tools; for increases in the sizes of graves and houses and for the use of more elaborate techniques in the construction of both, it was concluded that throughout the time period from *ca.* 2100 B.C. to *ca.* 1550 B.C. an increase in differential access to burial offerings appears to have occurred; some form of resource control seems to have been operating and the power of the Middle Nubian élite, possibly through *heqaw* at some locations such as Aniba North, appears to have increased considerably. However, because the data suggest that the volume of Egyptian imports remained relatively constant throughout this time period and does not reflect the changes in political and economic relations between Lower Nubians and Egyptians that are documented in contemporary Egyptian texts, the inferred increase in Middle Nubian social complexity apparently did not occur as a result of increased trade with the Egyptians.

Appendix A

Statistical Tests and Concepts Used in this Thesis

A.1 Means and Variances

A *population* is the set of all measurements having to do with a certain problem. A *sample* is a subset of the population. Suppose we have a population $\{x_1, \ldots, x_N\}$ consisting of numerical measurements. The *mean* μ and variance σ^2 of this population are defined to be

$$\mu = \frac{x_1 + \cdots + x_N}{N} \quad \text{and} \quad \sigma^2 = \frac{(x_1 - \mu)^2 + \cdots + (x_N - \mu)^2}{N}.$$

The positive square root σ is called the *standard deviation* of the population. Suppose that $\{x_1, \ldots, x_n\}$ is a sample drawn from this numerical population. The *sample mean* $\bar{x}$ and sample variance s^2 of this sample are defined to be

$$\bar{x} = \frac{x_1 + \cdots + x_n}{n} \quad \text{and} \quad s^2 = \frac{(x_1 - \bar{x})^2 + \cdots + (x_n - \bar{x})^2}{n - 1}.$$

The positive square root s is called the *sample standard deviation.* μ is a measure of location of a numerical population, while σ^2 (or σ) is a measure of the variability of the population measurements about μ. The variance will be zero if and only if all measurements in the population are equal. The higher that σ is, the more variability is present in the population. In the usual statistical situation, μ and σ^2 are unknown and $\bar{x}$ and s^2 are used to estimate μ and σ^2.

A.2 Hypothesis Testing

In tests of hypotheses, we have two hypotheses (i.e. statements) H_0 (called the *null* hypothesis) and H_1 (called the alternative hypothesis) concerning a population. H_0 and H_1 cannot both be simultaneously true. Based on the information in a random sample drawn from the population, we want to decide which of H_0 or H_1 is true. The act of deciding between H_0 and H_1 is called a *test of hypotheses.*

To test a pair of hypotheses, we must have a *rule*. A rule consists of a *test statistic* T and a certain set C of numbers, to be called the *critical region* of the test, such that if the value of T determined from the sample belongs to C, then we reject H_0, whereas if the value of T does not belong to C, then we accept H_0.

Two possibilities for error immediately arise. Since the act of sampling is random, it may happen that H_0 is true, but an unlikely sample occurs for which the value of T belongs to C and so causes us to reject H_0. This is called a type I error, and the probability of this occurring is denoted by α. Thus we have

$$\alpha = \Pr_{H_0 \text{ is true}} \{H_0 \text{ is rejected }\} = \Pr_{H_0 \text{ is true}} \{T \text{ falls in } C\}.$$

α is also called the *level of significance*, or just the *level* of the test. The other type of error, called a type II error, occurs when H_1 is true and the test causes us to accept H_0. The probability of making this type of error is denoted by β. That is,

$$\beta = \Pr_{H_1 \text{ is true}} \{H_1 \text{ is rejected }\} = \Pr_{H_1 \text{ is true}} \{T \text{ does not fall in } C\}.$$

The number $1 - \beta$ is called the *power* of the test. The four possible things that can happen in a test are shown in the following table.

	Ho is true	H1 is true
Accept Ho	correct decision	type II error
Accept H1	type I error	correct decision

There is always a tradeoff between α and β, in that changing the critical region to give a smaller value of β will increase α, and vice-versa (the only way to decrease both α and β is by increasing the sample size). The practical solution to this tradeoff is always to choose a critical region which gives an acceptably small value of α, and let β fall as it may. In practice, this means that if the rule has been set up for a small value of α, and if the sample is such that we are led to accept H_1, then we may do so confidently; whereas, if we are led to accept H_0, we do not have the same confidence. In fact, one usually refrains from accepting H_0. For this reason, H_1 is always the statement that is to be proved. Finally, since the value of α is usually subjective, it is common practice to report the p-value of the test. When the value of the test statistic falls in the critical region C, we say that value of T is *significant*. The p-value is that value of α at which the value of T just becomes significant. If the reader's value of α is greater than the reported p-value, then the reader would reject H_0; otherwise the reader would not reject H_0. Thus, small p-values are strong evidence in favour of H_1.

In the remaining sections of this appendix, we shall outline the statistical tests that are used in this thesis. They are all nonparametric; that is, they make very few assumptions concerning the population being investigated. In particular, the populations need not be normally distributed.

A.3 Chi-Square Goodness-of-Fit Tests

Suppose we have a population, each of whose members can be of one of k categories $S_1, S_2, \ldots, S_k$. Let p_i be the (true) proportion of members of the population which are of category S_i, $i = 1, 2, \ldots, k$. Note that $p_1 + \cdots + p_k = 1$. We want to test

$$\begin{aligned} H_0 &: \; p_1 = p_{1,0}, p_2 = p_{2,0}, \ldots, p_k = p_{k,0} \\ H_1 &: \; \text{not } H_0 \end{aligned}$$

where $p_{1,0}, \ldots, p_{k,0}$ are given values and $p_{1,0} + \cdots + p_{k,0} = 1$.

Method: We select a random sample of size n. If an observation is of category i, we say that it *falls into cell i*. Let

$$n_i = \text{the number of observations in the sample that fall into cell } i, i = 1, \ldots, k.$$

The numbers $n_1, \ldots, n_k$ are called the *observed cell frequencies.* We also define

$$e_i = np_{i,0}, \quad i = 1, \ldots, k.$$

For each i, e_i is the number of observations in the sample we would expect if H_0 were true. The numbers $e_1, \ldots, e_k$ are called the *expected cell frequencies.* Define

$$\chi^2 = \sum_{i=1}^{k} \frac{(n_i - e_i)^2}{e_i}.$$

If the sample size n is large enough that all expected cell frequencies e_i are at least 5, then χ^2 has approximately the chi-square distribution with $k-1$ degrees of freedom. Hence the test is: reject H_0 at level α if $\chi^2 \geq \chi^2_{\alpha,k-1}$.

A.4 Contingency Tables

Contingency table analysis is a nonparametric statistical procedure which is used to establish that two attributes of a population are dependent on each other.

Suppose each observation from a population has two attributes, measurable by the variables A and B. We want to test the hypotheses

$$\begin{aligned} H_0 &: \quad A \text{ and } B \text{ are independent} \\ H_1 &: \quad A \text{ and } B \text{ are dependent.} \end{aligned}$$

Let $A_1, \ldots, A_r$ be r categories for the variable A, and $B_1, \ldots, B_c$ be c categories for the variable B. These give rise to $r \times c$ categories, called *cells*, for the vector (A, B), as in the following table.

	B_1	B_2	B_c
A_1			
A_2			
$\vdots$			
A_r			

Suppose that a sample of size n observations is randomly selected from the population. Let

$$n_{ij} \quad = \quad \text{the number of observations in the sample that fall}$$

$$\begin{aligned} & \text{into the } i-j\text{th cell}, \quad i=1,\ldots,r; j=1,\ldots,c, \\ n_{i\cdot} &= \sum_{j=1}^{c} n_{ij}, \quad i=1,\ldots,r, \\ n_{\cdot j} &= \sum_{i=1}^{r} n_{ij} \quad j=1,\ldots,c, \\ e_{ij} &= \frac{n_{i\cdot}n_{\cdot j}}{n}, \quad i=1,\ldots,r; j=1,\ldots,c. \end{aligned}$$

The n_{ij}'s are called the *observed cell frequencies*, and the e_{ij}'s are the *expected cell frequencies*. The test statistic is

$$\chi^2 = \sum_{i=1}^{r}\sum_{j=1}^{c} \frac{(n_{ij}-e_{ij})^2}{e_{ij}}.$$

If all the expected cell frequencies e_{ij} are at least five, then χ^2 has approximately the chi-square distribution with $(r-1)(c-1)$ degrees of freedom. The test is therefore: reject H_0 at level α if $\chi^2 > \chi^2_{\alpha,(r-1)(c-1)}$. Here, $\chi^2_{\alpha,(r-1)(c-1)}$ is a critical value of the chi-square distribution with $(r-1)(c-1)$ degrees of freedom. Such critical values may be found tabulated in tables of the chi-square distribution, for example in McLave and Dietrich, 6th Ed.

Remark In order for the test to be valid, each expected cell frequency must be at least 5. When that is not the case, we may group categories together to achieve this criterion.

A.5 The Wilcoxon Rank-Sum Test

This is also called the Mann-Whitney test, or the U-test. We have random samples of sizes n_A and n_B from two continuous populations A and B (we shall assume that A is the population associated with the smaller sample size; if the sample sizes are equal, it does not matter which one we call A). We assume the two samples are independent of each other. We want to test

H_0 : the two populations are identical (in distribution)

H_1 : the two populations differ in location

[the distribution for population A is shifted to the right of that for B]

[the distribution for population A is shifted to the left of that for B].

(Note: An abbreviated notation is being used here. We are actually specifying three pairs of hypotheses. Either of the above statements in brackets under H_1 may be used in place of the statement in H_1. If that is done, then the appropriate test given below will be stated correspondingly in brackets also.) We merge the two samples and rank the observations in the combined sample from the smallest (a rank of 1) to the largest (a rank of $n = n_A + n_B$). If two or more observations are tied, they are each assigned the mean of the ranks which they jointly occupy. Define

$$T_A = \text{sum of rankings for sample from population } A,$$
$$T_B = \text{sum of rankings for sample from population } B.$$

We have

$$T_A + T_B = \frac{n(n+1)}{2}, \quad \text{where} n = n_A + n_B.$$

The test statistic will be T_A.

A.5.1 Small-Sample Case.

Critical values (T_L and T_U) of T_A can be found in Table XII of the appendix in *Statistics,* a publication by McClave and Dietrich. These are such that $P\{T_L < T_A < T_U\} = \alpha$ if H_0 is true. The test is: reject H_0 at level α if

$T_A \leq T_L$ or $T_A \geq T_U$ (two-sided test)

[$T_A \geq T_U$ (one-sided test)]

[$T_A \leq T_L$ (one-sided test)].

(Note: the rules in square brackets apply to the corresponding alternative hypotheses).

A.5.2 Large-Sample Case

If $n_A \geq 10$ and $n_B \geq 10$, we proceed as follows. The distribution of T_A is approximately normal with

$$E(T_A) = \frac{n_A(n_A + n_B + 1)}{2}, \quad \mathrm{Var}(T_A) = \frac{n_A n_B(n_A + n_B + 1)}{12}.$$

Hence the test is: calculate

$$z = \frac{T_A - E(T_A)}{\sqrt{\mathrm{Var}(T_A)}},$$

and reject H_0 at level α if

$$|z| \geq z_{\alpha/2}$$
$$(z > z_\alpha)$$
$$(z < -z_\alpha).$$

Here, z_α is a critical value from the standard normal distribution. Tables of the standard normal distribution can be found in *Statistics,* a publication by McClave and Dietrich.

Note. Here, A does not have to be the population associated with the smaller sample size.

A.6 The Kruskal-Wallis H-Test

We have independent random samples from p continuous populations, and we want to test the hypotheses

$$\begin{aligned} H_0 &: \text{ the } p \text{ populations are identical} \\ H_1 &: \text{ at least two of the } p \text{ populations differ in location.} \end{aligned}$$

The samples are combined, and the combined sample is ranked. If two or more observations are tied, they are each assigned the mean of the ranks which they jointly occupy. The statistic to be used is

$$H = \frac{12}{n(n+1)} \sum_{i=1}^{p} \frac{R_i^2}{n_i} - 3(n+1),$$

where

$$n_i = i\text{th sample size},$$

$$R_i = \text{sum of the rankings for the } i\text{th sample},$$

$$n = n_1 + \cdots + n_p.$$

If there are at least five measurements in each sample, and if H_0 is true, then H will have approximately the χ-square distribution with $p-1$ degrees of freedom. Hence the test is: reject H_0 at level α if $H \geq \chi^2_{\alpha,p-1}$. Here, $\chi^2_{\alpha,p-1}$ is a critical value of the chi-square distribution with $p-1$ degrees of freedom.

Appendix B

Artefact "Values"

Amulet	10	Bracelet - horn	15
Antelope	10	Bracelet - ivory	150
Awl - bone	3	Bracelet - quartz	40
Axe - metal	200	Bracelet - shell (imported)	10
Axe - stone	5	Bracelet - shell (local)	5
Bag - leather	6	Bracelet - silver	250
Bag - linen	8	Bracelet - stone (imported)	50
Bead - bone	2	Bracelet - stone (local)	30
Bead - copper	10	Bracelet - tortoiseshell	20
Bead - electrum	25	Button seal	50
Bead - glazed (imported)	2	Case - leather	6
Bead - glazed (local)	2	Cattle	250
Bead - gold	30	Coffin	125
Bead - ivory	15	Dagger	350
Bead - pottery	1	Earring - carnelian	30
Bead - shell	2	Earring - copper	40
Bead - silver	25	Earring - electrum	60
Bead - stone (imported)	3	Earring - gold	70
Bead - stone (local)	2	Earring - ivory	50
Bead - wooden	1	Earring - mother-of-pearl/nacre	15
Bed (angareeb)	125	Earring - pottery	3
Box	40	Earring - shell	10
Bracelet - alabaster	70	Earring - silver	60
Bracelet - bone	20	Earring - stone (imported)	35
Bracelet - copper	150	Earring - stone (local)	15
Bracelet - gold	300	Fan (feathers and leather)	8

Fan (reeds)	8	Pendant - ivory	50
Figurine (clay)	5	Pendant - mother-of-pearl	15
Gazelle	20	Pendant - pottery	1
Gazelle - horns	5	Pendant - shell (imported)	4
Gazelle - painted skull	5	Pendant - shell (local)	3
Goat	15	Pendant - stone (imported)	7
Goat/sheep - horns	5	Pendant - stone (local)	7
Grindstone	5	Pendant - unknown material	5
Hair clasp - carnelian	60	Pendant - wood	1
Hair clasp - ivory	50	Pillow - leather	6
Hair clasp - mother-of-pearl	15	Pillow - tibn	3
Hair clasp - shell	10	Pin - copper	200
Hair clasp - unknown material	10	Plate - shell	5
Hammerstone	2	Point - bone	5
Headdress - beaded	120	Point - stone	3
Headdress - leather	6	Razor - metal	100
Head rest - pottery	6	Resin	5
Head rest - wood	12	Ring - bone	10
Horns	5	Ring - copper	15
Kilt/skirt - beaded	300	Ring - gold	35
Kilt/skirt - leather	20	Ring - ivory	20
Kohl pot - alabaster	70	Ring - shell (imported)	4
Kohl pot - faience	15	Ring - shell (local)	3
Kohl pot - mud	10	Ring - silver	30
Kohl pot - pottery	12	Sandal	9
Lamp	7	Scarab - glazed	50
Lid - pottery	1	Scarab - gold	200
Lid - stone (imported)	3	Scarab - stone (semi-precious)	90
Lid - stone (local)	2	Seal (clay)	10
Matwork	10	Sheep	25
Mirror - copper	250	Shroud - cloth	25
Needle - bone	5	Shroud - goatskin	10
Needle - horn	3	Shroud - leather	20
Needle - ivory	10	Shroud - linen	30
Offering table	5	Spacer	15
Palette - pottery	5	Spoon	3
Palette - stone	7	Stopper - pottery	1
Pebble (imported/local)	1	Stopper - stone	2
Pendant - carnelian	60	Thong - leather	3
Pendant - faience	5	Tweezers - copper	40

Vessel - Egyptian pottery (incised)	20
Vessel - Egyptian pottery (painted)	35
Vessel - Egyptian pottery (plain)	10
Vessel - Kerma pottery (metallic lustre)	15
Vessel - Kerma pottery (plain)	10
Vessel - Nubian pottery (elaborate incised bowl)	35
Vessel - Nubian pottery (elaborate incised cup)	25
Vessel - Nubian pottery (elaborate incised jar)	35
Vessel - Nubian pottery (graffiti marked)	35
Vessel - Nubian pottery (incised bowl)	10
Vessel - Nubian pottery (incised cup)	10
Vessel - Nubian pottery (incised jar)	10
Vessel - Nubian pottery (incised rim)	6
Vessel - Nubian pottery (painted)	40
Vessel - Nubian pottery (plain)	5
Vessel - stone (imported)	70
Vessel - stone (local)	40

Appendix C

Burials with Access to Luxury and Non-luxury Artefacts

Table C.1: Percentages of burials with luxury and non-luxury artefacts from all fifteen Middle Nubian cemeteries. Totals within a date category may exceed 100 if some burials contained both luxury and non-luxury goods.

	2000 BC		1900 BC		1850 BC	
	Luxury	**Nonluxury**	**Luxury**	**Nonluxury**	**Luxury**	**Nonluxury**
Burials at:						
Ginari	-	-	-	-	-	-
Gerf Husein	-	-	-	-	0	100.00
Koshtemna	100.00	0.00	16.42	91.05	-	-
Dakka	11.76	100.00	-	-	-	-
Areika	-	-	-	-	0.00	100.00
Tumas	-	-	-	-	-	-
Aniba North	19.23	100.00	24.14	100.00	18.89	100.00
Cem 195	-	-	-	-	-	-
Cem 200	0.00	100.00	-	-	-	-
Masmas	-	-	-	-	-	-
Tushka	-	-	3.64	98.19	-	-
Serra East	5.63	63.38	-	-	-	-
Debeira East	-	-	-	-	-	-
Ashkeit	-	-	-	-	-	-
Abka	-	-	-	-	0.00	100.00

Table C.1 continued: Percentages of burials with luxury and non-luxury artefacts from all fifteen Middle Nubian cemeteries. Totals within a date category may exceed 100 if some burials contained both luxury and non-luxury artefacts.

	1800 BC		1750 BC		1700 BC	
	Luxury	**Nonluxury**	**Luxury**	**Nonluxury**	**Luxury**	**Nonluxury**
Burials at:						
Ginari	-	-	-	-	-	-
Gerf Husein	-	-	-	-	-	-
Koshtemna	17.50	87.50	26.47	79.41	0.00	100.00
Dakka	0.00	100.00	4.51	100.00	-	-
Areika	-	-	10.00	100.00	-	-
Tumas	3.01	48.12	5.88	45.10	-	-
Aniba North	-	-	19.23	100.00	26.55	99.56
Cem 195	-	-	-	-	0.00	100.00
Cem 200	3.45	100.00	-	-	-	-
Masmas	-	-	-	-	-	-
Tushka	7.46	98.50	6.31	100.00	-	-
Serra East	21.52	73.42	-	-	-	-
Debeira East	-	-	12.50	87.50	-	-
Ashkeit	13.64	86.37	10.00	100.00	-	-
Abka	-	-	16.67	100.00	-	-

Table C.1 continued: Percentages of burials with luxury and non-luxury artefacts from all fifteen Middle Nubian cemeteries. Totals within a date category may exceed 100 if some burials contained both luxury and non-luxury artefacts.

	1650 BC		1600 BC		1550 BC	
	Luxury	**Nonluxury**	**Luxury**	**Nonluxury**	**Luxury**	**Nonluxury**
Burials at:						
Ginari	3.70	85.18	46.67	86.67	-	-
Gerf Husein	18.18	90.91	26.32	89.48	30.77	69.23
Koshtemna	-	-	-	-	-	-
Dakka	20.00	100.00	0.00	100.00	-	-
Areika	20.00	100.00	-	-	-	-
Tumas	11.54	61.54	12.90	58.06	21.87	65.62
Aniba North	36.17	98.58	37.27	98.18	-	-
Cem 195	18.18	100.00	13.33	100.00	-	-
Cem 200	20.83	100.00	-	-	-	-
Masmas	-	-	30.00	100.00	30.00	100.00
Tushka	8.33	37.50	-	-	-	-
Serra East	26.19	88.09	-	-	0.00	100.00
Debeira East	50.00	100.00	19.23	92.31	30.95	83.34
Ashkeit	20.76	98.12	0.00	100.00	-	-
Abka	-	-	14.63	97.56	-	-

Appendix D

Burials with Access to More than Ten Artefacts

Table D.1: Middle Nubian burials between 2000 B.C. and 1550 B.C. from all fifteen cemeteries that were associated with more than ten artefacts

	Number of Burials	**Percentage of Burials**
2000 BC	47	39.17
1900 BC	34	22.52
1850 BC	26	23.21
1800 BC	72	16.40
1750 BC	96	20.04
1700 BC	92	39.32
1650 BC	235	34.41
1600 BC	124	36.69
1550 BC	39	25.32

Appendix E

Burials with Access to Less than Ten Artefacts

Table E.1: Percentage of burials in Middle Nubian communities between 2000 B.C. and 1750 B.C. with access to fewer than ten burial offerings

	Percentage
Burials in 2000 B.C. with under ten offerings:	
At Dakka	82
At Aniba North	46
At Aniba, Cemetery 200	100
At Serra East	22
Burials in 1900 B.C. with under ten offerings:	
At Koshtemna	64
At Aniba North	55
At Tushka	100
Burials in 1850 B.C. with under ten offerings:	
At Areika	91
At Aniba North	70
At Abka	67
Burials in 1800 B.C. with under ten offerings:	
At Koshtemna	66
At Dakka	90
At Tumas	95
At Aniba, Cemetery 200	79
At Tushka	82
At Serra East	50
At Ashkeit	84
Burials in 1750 B.C. with under ten offerings:	
At Koshtemna	37
At Dakka	83
At Areika	60
At Tumas	87
At Aniba North	70
At Tushka	90
At Debeira East	86
At Ashkeit	90
At Abka	61

Table E.1 continued: Percentage of burials in Middle Nubian communities between 1700 B.C. and 1550 B.C. with access to fewer than ten burial offerings

	Percentage
Burials in 1700 B.C. with under ten offerings:	
At Koshtemna	100
At Aniba North	57
At Aniba, Cemetery 195	67
Burials in 1650 B.C. with under ten offerings:	
At Ginari	65
At Gerf Husein	40
At Dakka	60
At Areika	80
At Tumas	88
At Aniba North	57
At Aniba, Cemetery 195	79
At Aniba, Cemetery 200	50
At Tushka	88
At Serra East	15
At Debeira East	75
At Ashkeit	100
Burials in 1600 B.C. with under ten offerings:	
At Ginari	75
At Gerf Husein	55
At Dakka	100
At Tumas	94
At Aniba North	46
At Aniba, Cemetery 195	80
At Masmas	65
At Debeira East	42
At Abka	55
Burials in 1550 B.C. with under ten offerings:	
At Gerf Husein	90
At Tumas	95
At Masmas	39
At Serra East	0
At Debeira East	50

Appendix F

Egyptian-Nubian Exchange Patterns II

Given the possibility that metal and glazed beads were Egyptian in origin, the raw data from all cemeteries, except those at Gerf Husein, were adjusted so that counts of these beads were excluded from 'total local goods' and included in 'total Egyptian goods' instead. Nonparametric tests were carried out in the usual manner.

Results revealed *a significant difference in the decline* that took place between the mean number of Egyptian goods in the mid-Second Intermediate Period graves at Ginari and the mean number in the late Second Intermediate Period [1600 B.C.] graves. At Dakka, the data suggest that while no significant difference exists between the mean number of Egyptian artefacts recovered from graves dated to 2000 B.C. and 1800 B.C., or between those dated to 1800 B.C. and those from 1750 B.C., *a significant difference* does exist in the *increase* that took place between the mean number of Egyptian artefacts occurring in Cemetery 101 in 1750 B.C. and the mean number that occurred in 1650 B.C. A Kruskal-Wallis test showed that a significant difference exists between the mean number of Egyptian imports recovered from the Eighteenth Dynasty [1550 B.C.] burials in Cemetery 189 at Tumas and those from other time periods. A Mann-Whitney test further revealed that the *decrease* in the mean number of Egyptian imports that occurred in 1550 B.C. at Tumas was of statistical significance. At Aniba North, Kruskal-Wallis test results revealed no significant difference in the mean number of Egyptian imports recovered from graves dated between 2000 B.C. and 1750 B.C. However, similar tests showed a significant difference in the mean number of Egyptian artefacts recovered from graves dated from 1750 B.C. to 1600 B.C. Mann-Whitney tests further demonstrated no significant difference in the mean number of Egyptian offerings occurring in 1750 B.C. and the mean number from 1700 B.C., or in the mean number of Egyptian imports from 1700 B.C. and those from 1650 B.C. In short, there was no statistically significant difference in the mean number of Egyptian artefacts recovered from Aniba North graves that were between 2000 B.C. and 1650 B.C. in date. However, a Mann-Whitney test showed a *significant difference* in the mean number of Egyptian imports found in burials dated to 1650 B.C. and those dated to 1600 B.C. Unlike the situation at Ginari and Tumas, where a decline in imports proved to be of statistical significance, the data from Aniba North resembled those from Dakka: the *increase* in the mean number of late Second Intermediate Period Egyptian artefacts at Aniba North was shown to be statistically significant. However, standard deviations suggest that a decrease in inequality occurred during this time period. A Mann-Whitney test established that a significant difference exists between the mean number of Egyptian artefacts recovered from burials dated to 1600 B.C. in Cemetery 201 at Masmas and those dated to 1550 B.C. As at Ginari and Tumas, it was the *decline* in the mean number of Eighteenth Dynasty Egyptian objects at this site that was of statistical significance.

At Koshtemna, the data revealed that no significance difference exists between the mean number of Egyptian imports present in the time periods represented in Cemetery 87. Previous nonparametric tests also show no significant difference between the mean number of Egyptian artefacts recovered from graves dated to 1900 B.C., 1800 B.C. and 1750 B.C. [Table 7.51]. Nonparametric test data indicate that no significant difference exists between the mean number of Egyptian imports recovered from the three time periods identified in Cemetery 167 at Areika. Earlier tests could not be carried out because fewer than five artefacts from each time period had been classified as Egyptian in origin. Kruskal-Wallis tests revealed that in Cemetery 195 at Aniba, no significant difference exists between the mean number of Egyptian grave goods retrieved from graves dated to 1700 B.C. and those dated to 1650 B.C.

and 1600 B.C. Similar results were obtained from previous nonparametric tests [Table 7.152]. A Mann-Whitney test established that no significant difference exists between the mean number of Egyptian grave offerings recovered from burials dated to 1800 B.C. in Cemetery 200 at Aniba and those dated to 1650 B.C. Previous nonparametric tests provided similar results [Table 7.171]. A Kruskal-Wallis test revealed no significant difference between the mean number of Egyptian imports recovered from burials dated to 1900 B.C. in Cemetery 209 at Tushka and the mean number retrieved from burials that were 1800 B.C., 1750 B.C. and 1650 B.C. in date. Similar results were obtained from previous nonparametric tests [Table 7.205]. At Serra East, when metal and glazed ring beads were assumed to be Egyptian in origin, a Kruskal-Wallis test indicated no significant difference between the mean number of Egyptian artefacts recovered from graves dated to 2000 B.C. and those dated to 1800 B.C. and 1650 B.C. Mann-Whitney tests established that no significant difference exists between the mean number of Egyptian artefacts found in Debeira East graves dated to 1650 B.C. and those dated to 1600 B.C. Similarly, there was no significant difference between the mean number of Egyptian goods in graves at this site that were 1600 B.C. and 1550 B.C. in date. Previous nonparametric tests provided similar results [Table 7.243]. Results of a Kruskal-Wallis test show no statistical difference in the mean number of Egyptian imports found in Ashkeit burials dated to 1800 B.C. and those dated to either 1750 B.C. or 1650 B.C. Similar results were obtained from previous nonparametric tests [Table 7.266]. At Abka, a Kruskal-Wallis test revealed no significant difference in the mean number of Egyptian goods discovered in graves that were dated to 1850 B.C. and the mean number in burials that were 1750 B.C. and 1600 B.C. in date. Previous tests were unreliable because fewer than five artefacts from each time period had been classified as Egyptian in origin.

Despite the fact that this classification of the raw data meant that at all locations, except for Dakka, Tumas and Masmas, Egyptian artefacts outnumbered those that were locally produced, the results of the nonparametric tests were basically similar to those reported in Chapter 8. The null hypothesis that the mean number of Egyptian artefacts retrieved from burials in each time period was the same, or, in other words, that no change occurred in the quantity of Egyptian offerings associated with

Middle Nubian graves from 2000 B.C. to 1550 B.C., could be rejected in five instances: at Ginari, Cemetery 58; at Dakka, Cemetery 101; at Tumas, Cemetery 189; at Aniba North and at Masmas, Cemetery 201. These findings establish that statistically significant fluctuations occurred in the number of Egyptian objects associated with burials in these cemeteries. However, it was not possible to confirm the hypothesis that fluctuations in the quantity of Egyptian artefacts recovered from Middle Nubian graves dated between 2000 B.C. and 1550 B.C. *correspond* with the Egyptian-Lower Nubian political changes described in contemporary Egyptian texts.

In Cemetery 101 at Dakka, the statistically significant increase in the mean number of Egyptian artefacts discovered in tombs from 1650 B.C. is indicative of a larger mean number of mid-Second Intermediate Period imports in relation to all other time periods represented in the cemetery. Since changes in imports between 2000 B.C. and 1750 B.C. were not statistically significant, it was concluded that the flow of imports into the cemetery during this time period may have been relatively constant.

Similarly, at Aniba North, changes in the mean number of Egyptian artefacts associated with graves dated from 2000 B.C. to 1650 B.C. were statistically *not significant.* The results therefore seem to support the "constant flow" of Egyptian trade goods model proposed by Adams. A significant increase in the mean number of imports did not occur until the late Second Intermediate Period.

At Tumas, changes in Egyptian imports between 1800 B.C. and 1600 B.C. were not statistically significant. Since the flow of Egyptian goods into the cemetery during this time period appears to have been relatively constant, these results also seem to support the "constant flow" of Egyptian trade goods model proposed by Adams. In 1550 B.C., however, a statistically significant *decline* in the mean number of imported goods occurs. A similar decline in Eighteenth Dynasty imports occurs in Cemetery 201 at Masmas. Since the occurrence of alabaster and Egyptian pottery increases at both sites, the decline is probably entirely due to a decrease in glazed beads at the two locations. A statistically significant decline in the mean number of late Second Intermediate Period imports at Ginari despite increases in Egyptian pottery and alabaster also is due to a 1600 B.C. decrease in glazed beads.

At the other nine cemetery sites, the null hypothesis that the mean number of Egyptian artefacts recovered from burials in each time period was the same could not be rejected. It is therefore possible that no change occurred in the quantity of Egyptian offerings associated with Middle Nubian graves from time periods represented in these cemeteries. Again, Adams' "constant flow" of Egyptian trade goods model appears to be supported by the data.

The apportionment of Middle Nubian burial goods employed for these tests is based partly on that followed by Williams who reported that, "aside from pottery, beads were the most numerous of the objects found ..." (1983: 83). He claimed that "[a]lmost all of ... [the beads from Adindan] furnish evidence of trade - either for raw materials [such as ostrich eggshell] from the south or for finished products from Egypt" (1983: 83), but he also noted that "[e]xcept for pots and [glazed] beads, Egyptian objects are rare. They consist of [three] stone vessels, [five] scarabs from tombs of III date ... [one] copper pin with [a] roll head ... and small plaster fragments of a *rishi* mask" (1983: 95). He concluded from his study of the Adindan grave assemblages that "... the themes of C-Group association with cattle and C-Group trade with Egypt for simple goods are reinforced. Despite the presence of silver and gold beads ... more elaborate objects of Egyptian origin are absent, and there are no weapons deposited as grave goods" (Williams 1983: 95). In other words, despite large numbers of glazed beads, the number of stylistically Egyptian objects discovered at Adindan is insufficient to assume more than *limited contact* between Egyptians and Lower Nubians in the area. Given the fact that a similar situation exists in the cemeteries analysed here, the previous conclusion that contact between Egyptians and Lower Nubian peoples was quite limited throughout the Middle Nubian era is probably still applicable even when practically all the remaining goods in some cemeteries [Table F.1] are classified as Egyptian in origin.

Table F.1: Percentages of Egyptian burial artefacts in Middle Nubian cemeteries when all metal and glazed beads were assumed to be Egyptian in origin [Percentages are based on the total number of burial goods recovered from each cemetery]

	Number of Egyptian artefacts	Percentage of Egyptian artefacts
Ginari	801	80.58
Koshtemna	2234	58.28
Dakka	617	25.65
Areika	674	72.86
Tumas	531	34.24
Aniba North	10,794	56.20
Aniba, Cemetery 195	421	70.88
Aniba, Cemetery 200	720	79.91
Masmas	449	29.38
Tushka	2182	71.75
Serra East	5793	77.49
Debeira East	1949	79.62
Ashkeit	661	62.48
Abka	1573	54.28

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