

VARNA: The Necropolis and the Gold Finds

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Part One: The Site and Excavations

The chalcolithic necropolis of Varna was discovered by chance in the fall of 1972 in the west industrial zone of the town of Varna. While excavating a trench for electrical cables to a nearby factory, a tractor operator by the name of Raicho Marinovo accidentally dug into a burial, now known as Grave 1, revealing a number of gold artifacts, copper tools and flint blades. Once their significance was established, excavations were begun by Dr. Ivan S. Ivanov of the Varna National Museum.

The necropolis is situated on a slope rising from the southeast to the northwest, 12-18 meters above the present lake which is 500 meters to the south. In prehistoric times, this slope would have bordered directly on a gulf opening into the Black Sea. The general stratigraphy as described by Ivanov¹ consisted of four separate layers; an upper layer of humus 35-65 cm thick, a fine intermediate layer, a bed of yellow-grey clay which increases in depth moving from southeast to northwest and a quaternary bed of limestone and gravel which gives way in the north and west to a layer of sand. The majority of the graves were found in the clay layer with the remainder located in the sandy beds.

For excavation, the area of the necropolis was divided into squares 10 meters by 10 meters aligned in a grid oriented to the four cardinal points. Each square was then subdivided into squares 2 meters on a side and formed the basic unit of excava-

1. I.S. Ivanov, "Les fouilles archéologiques de la nécropole chalcolithique à Varna (1972-1975)," *Studia Praehistorica* 1-2(1978) 13-26.

tion. In the seasons from 1972 thru 1975, 2500 m² were excavated in which 60 burials were discovered. The southern limits of the necropolis were also determined. By 1978, 130 graves had been discovered, but Renfrew² does not mention the extent of the excavations. Ivanov³ reported 204 burials, along with a number of deposits from the 6500 m² excavated by early 1982. There are three major types of graves; the cenotaphs or "symbolic" burials⁴, burials in the supine position and burials in the flexed or "hoker" position⁵. The remaining burials were too fragmentary to discern position or empty.

Two points can be made from this information. First, as the excavations are moving from the southeast to the northwest, the density of the necropolis is increasing. In the earliest excavations on the southern end of the necropolis, the density of burials was 2.4 graves/100 m². By 1982, the overall density of the necropolis had risen to 3.14/100 m², but the density of the area excavated from 1976 to 1982 is 3.6 graves/100 m². This represents a 50% increase in density in the most recently excavated areas. Generally the oldest part of a cemetery or burial tumulus will show a higher density of graves with later burials diffusing from the focus. It is not unreasonable to assume that the Varna excavations have moved or are moving into the oldest part of the necropolis. Conversely, the southern end nearest the lake is likely to be the youngest part. This cannot be determined precisely, however, until a detailed plan of the necropolis is published.

Secondly, as the excavations have progressed up the slope, there has been a distinct change in burial patterns. In the group of burials excavated prior to 1976, there were 21 cenotaphs, 22 supine burials, 10 flexed burials and 7 undetermined burials. Excluding the latter category, we have the following percentages:

2. C. Renfrew, "Varna and the social context of early metallurgy," *Antiquity* 52(1978) 199-203.

3. I.S. Ivanov, "The Chalcolithic Varna Necropolis," in *The Oldest Civilization in Europe and the Oldest Gold in the World — Varna, Bulgaria* (Nippon Television Network Cultural Society, 1982) 21-24.

4. Ivanov's use of the term "symbolic" refers more to the relative wealth of grave goods found in each grave rather than the lack of an inhumation. This group includes graves with no human remains, graves with terracotta masks, graves with fragmented bodies (secondary burial?) and in one case, a grave containing a supine burial (Grave 43).

5. The "hoker" or flexed burials lay predominantly on their right side with the hands near the face, in contrast to burials found farther inland which are positioned on their left sides or with the face and chest down.

cenoteps	39.6%
supine	41.5%
flexed	18.9%

By 1982 with 204 graves excavated, the pattern has changed. The number of cenoteps increased to 35, supine burials to 59, flexed burials to 41 with the undetermined burials now numbering 69. The overall percentages are as follows:

cenoteps	25.9%	(- 13.7%)
supine	43.7%	(+ 2.2%)
flexed	30.4%	(+ 11.5%)

The figures for graves excavated between 1976 and 1982 show the changes more clearly:

cenoteps (14)	17.1%
supine (37)	45.1%
flexed (31)	37.8%
undetermined (62)	

It would seem then, that as the excavations have progressed to the northwest, cenoteps become increasingly rare with none being found after the excavation of Grave 97⁶. Supine burials continued to be found at a fairly constant rate, while the flexed burials are much more common in the denser area of the necropolis. The large increase in undetermined burials may be due to their older age and increased decomposition or to disturbance. Within the limits of the necropolis have been found at least one Late Bronze Age burial (Grave 33) and pits from the Early Bronze Age, so partial destruction or disturbance of Chalcolithic burials throughout the Bronze Age is a very viable explanation.

This dichotomy in burial position has been seen by Best⁷, Lichardus⁸ and the author⁹ as evidence of an indigenous and an

6. Ivanov (*supra* n. 3). This fact can be determined from the catalogue of Varna burials and finds contained within this volume.

7. J. Best and S. von Reden, *Auf der Spur der ersten Griechen — Woher kamen die Mykener?*, Neue Archäologische Erkenntnisse über die Herkunft der Griechen, DuMont Buchverlag (Köln, 1981) 86-95.

8. J. Lichardus, "Handwerker und Handwerkerrstand in der Frühen Kupferzeit, Am Beispiel des Karanovo VI-Gumelnița-Kulturverbandes," in *Interaction and Acculturation in the Mediterranean*, volume II (1982) 197-221.

9. D. Zanotti, "Varna: The Interpretation of the Evidence from the Necropolis," paper prepared for the Hleb i Vino conference, UCLA, April, 1984.

intrusive population mixing through time. Todorova¹⁰ has called attention to the fact that the supine burials found along the Black Sea coast as a whole may represent a new ethnic element. While it is largely outside the scope of this paper, it should be noted that flexed position is common for Karanovo VI-Gumelnita burials, while the supine position is intrusive, possibly from the Pontic steppe region. Where sex could be determined among the Varna burials, the females are most commonly found in the flexed position (60%), while males were predominantly interred in the supine position (67%).

To summarize then, there appears to be a clear pattern within the Varna necropolis in which the older, denser burials, predominantly in the flexed position, are found to the northwest, while the younger cenotaphs are closer to the ancient coastline. Supine burials seem to reflect a period of transition between the two areas.

Part Two: The Gold Artifacts

Since 1972, Varna has become synonymous with one word, gold. The finds are regarded as among the earliest, if not *the* earliest goldwork in the world and are all the more impressive because of the large quantity of objects recovered. However, in terms of describing the necropolis as a whole, gold burial goods are the exception rather than the rule, a fact overlooked by Gimbutas¹¹ and Renfrew¹².

Distribution-Before attempting to discuss the distribution of the gold finds within the Varna necropolis, note must be made of a number of discrepancies in the publications which make any conclusions drawn here tentative at best.

Ivanov¹³ reported recovering 1814 gold artifacts from 60 graves excavated through 1975. In the same article, he lists the number of gold finds from Graves 1, 4, 36 and 43 as 225, 320, 853 and 500, respectively. Simple arithmetic tells us that these four graves

10. H. Todorova, *The Eneolithic in Bulgaria* (Oxford, 1978) 79.

11. M. Gimbutas, "Varna: A Sensationally Rich Cemetery of the Karanovo Civilization About 4500 B.C.," *Expedition* (summer, 1977) 39-48.

12. C. Renfrew, "Ancient Bulgaria's Golden Treasures," *National Geographic* (July, 1980) 112-29.

13. Ivanov (supra n. 1) 18.

purportedly contained 1898 gold artifacts or more than the necropolis as a whole should have! A tally of the finds from Graves 1 thru 60 suggests a figure of c. 2600 would have been a more appropriate total to publish.

In 1982, Ivanov¹⁴ notes that "over 2000" gold artifacts had been recovered from 204 graves. The Varna catalogue¹⁵ however, lists 2876 gold finds from the same number of graves. Ivanov states that the 2000 plus artifacts weigh 6000 grams, which is in line with the listed weight for the 1814 gold finds from prior to 1976 and the interim weight of 5500 grams of gold from 130 graves in 1978 which Renfrew¹⁶ has noted. Clearly either the weights or the artifact totals are in error, but one is left in a quandry as to which it is.

Much of the above problem seems to center on Grave 43. In 1978, Ivanov¹⁷ describes Grave 43 as containing 500 gold artifacts. Egami¹⁸ repeats this same total in his discussion of Varna, but in the same volume, Ivanov¹⁹ gives the total number of gold finds from Grave 43 as 1011. The only thing which has remained constant is the weight of the gold recovered; reported as 1516 grams in 1976²⁰, 1.5 kilograms in 1978²¹ and 1516 grams in 1982²². It remains to be seen as to how the number of artifacts could double, yet the weight remains the same.

The last point to be resolved is the apparent discrepancies between the inventory of items listed by Ivanov²³ from the first 60 graves and the same tombs as listed in the Varna catalogue. Below I list five artifact types and their frequencies of occurrence, first from Ivanov and secondly from the actual inventory of the Okayama exhibit:

14. Ivanov (supra n. 3) 22.
15. N. Egami (ed.), *The Oldest Civilization in Europe and the Oldest Gold in the World — Varna, Bulgaria* (Nippon Television Network Cultural Society, 1982). This volume contains a complete catalogue of the gold finds from Varna and was published in conjunction with the exhibit of these finds at the Okayama Municipal Museum of Near Eastern Art, August 12-September 15, 1982.
16. Renfrew (supra n. 12) 122.
17. Ivanov (supra n. 1) 18.
18. N. Egami, "The Significance of the Varna Proto-Urban Civilization," in *The Oldest Civilization in Europe and the Oldest Gold in the World — Varna, Bulgaria* (Nippon Television Network Cultural Society, 1982) 17-20.
19. Ivanov (supra n. 3) 21.
20. Ivanov (supra n. 1) 18.
21. Renfrew (supra n. 2) 199.
22. Ivanov (supra n. 3) 21.
23. Ivanov (supra n. 1) 19-20.

beads	1195 - 2250
applied ornaments	278 - 193
rings	144 - 75
spiral bands	26 - 27
bracelets	12 - 14

As can be seen, only the bracelets and spiral bands even approximate Ivanov's published inventory. For no apparent reason the other three items are either grossly overstated or understated. Whether we use Ivanov's figures or those from the catalogue is irrelevant since the fact of the matter is that after a decade of excavation and three-fold increase in the number of graves discovered, very few new finds of gold have come to light. In Graves 61 thru 204, only 158 gold artifacts, or 5.5% of the total were recovered. All of the gold finds come from just 38 graves or approximately 18% of the necropolis. Of these, 23 were cenotaphs and 15 contained human remains; 6 in the supine position, 5 flexed and 4 where no position could be determined. In general, the supine burials containing gold are to be found in the vicinity of the cenotaphs, while the flexed burials with gold grave goods are found in the older part of the necropolis with no apparent connection to the cenotaphs.

To emphasize the concentration of the gold in just a few graves, Ivanov²⁴ used three cenotaphs as an example. Graves 1, 4 and 36 yielded 1398 gold artifacts or 77% of his total for the first 60 graves and 68% of his overall total for the necropolis.

Using the catalogue, it is possible to identify two major groups of cenotaphs in which the gold is concentrated. Group I consists of Graves 1, 2, 3, 4 and 5, yielding a total of 623 gold finds. Group II consists of Graves 35, 36, 39, 40, 41 and 43 with a yield of 1969 gold finds. Taken together, 5.4% of the total burials contained 90% of the gold. Four graves, 1, 4, 36 and 43, produced 2394 gold artifacts alone. 83.7% of the total finds came from 2% of the total number of burials.

Two points are clear. First, the gold from Varna was not evenly distributed throughout the necropolis, but was highly concentrated in only two areas. Secondly, the use of gold objects as burial goods, when viewed within the context of the necropolis as a whole, appears to be a late development, appearing in large quantities only in its latest stages of use in conjunction with the initial use of cenotaphs. Prior to that point the burials of Varna

24. Ivanov (*supra* n. 1) 15.

do not differ significantly in wealth from other Gumelnita burials.

Typology-Table 1 gives a condensed listing of gold artifact types and the number of graves in which they appeared. One problem in determining the exact frequency of some types comes from Ivanov's varying terminology. In one case, he lists a rectangular piece of gold (11.3 cm x 10.3 cm) from Grave 1 as an applique, whereas in other graves, similar or smaller pieces are described as rectangular plates or pectorals. Likewise in dealing with the sceptres, we see some graves where the sheathings of the wooden shaft are referred to as cylindrical platings and others where they are called tubules. In Grave 36, he lists five separate platings together as one sceptre.

As can be seen, the simplest types of artifacts have the widest distribution, namely the rings (25) and beads (19). The anthropomorphic pendants²⁵ as a group occur 18 times and present an interesting pattern. Type I occurs throughout the entire necropolis. Type II occurs in Graves 26 and 36. Type III does not occur prior to Grave 36 and is the most common type in the presumed older part of the necropolis. Other types which show limited patterns are the small convex appliques which occur only in the two major cenotaph groups and the biconical bracelets found only in Graves 1 and 4. The more unique objects are for the most part single occurrences, regardless of the total number produced.

There appears to be at least one case of linkage between two artifact types: the diadems and the earrings. They occur predominantly together and in three of the four occurrences, the diadem is accompanied by exactly eight earrings, recalling the pattern of pierced ears so common on Cucuteni and Gumelnita figurines²⁶.

25. The anthropomorphic pendants or plates occur in three types. Type I is a ring with a trapezoid tab perforated twice for suspension. Type II is a solid disk, often slightly convex with a similar tab perforated twice. Type III is a ring with a square or rectangular tab perforated once. Type II pendants are somewhat reminiscent of the convex appliques, the difference coming from the addition of the tab and the relative location within the burial.

26. Todorova (*supra* n. 10) plates 12-6 in specific. In general see J. Gaul, *The Neolithic Period in Bulgaria* (BASPR 16, 1948), M. Gimbutas, *The Gods and Goddesses of Old Europe* (UCLA, 1974) and A.P. Pogozeva, *Tripolye Anthropomorphic Plastic Figurines* (1983) in Russian.

and later examples from Thermi²⁷ and Northern Anatolia²⁸. Table 2 shows the actual quantities of each artifact type recovered. As can be seen, the simplest items: beads, small convex appliques and rings, comprise almost 90% of the total gold finds. By combining Tables 1 and 2 it becomes clear that some items that appear in substantial quantities such as spiral bands, cylindrical platings and earrings, have a very small distribution. Others such as the animal head plates (stylized bull's horns) are limited to one grave. Only the beads, rings and type I anthropomorphic pendants can be said to have a necropoliswide distribution. The remaining types, while innovative and often exotic are not indicative of the goldsmith's work in general. One is tempted to view this dichotomy of simple and complex gold forms as evidence of two different periods.

Analysis-According to Ivanov, "a considerable number of them (gold objects) are made of 23.5 carat gold and the others ... contain alloys of silver and copper"²⁹. In another article³⁰, he stressed the purity of the gold and the difficulties, today's goldsmiths would have in reproducing some of the work from Varna. This analysis then divides the gold finds into two categories: one of almost pure gold (90-94% pure) and another containing enough silver and traces of copper to approach the category of electrum. Implicit in his statements is the fact that some of the gold *may* have been purified.

Another, presumably separate, analysis was performed by A. Hartmann³¹. He has spectrographically analyzed 137 objects from the Varna necropolis including items from graves and isolated deposits. All of the samples were tinfree, which to Hartmann, eliminated the possibility that they could have come from an alluvial source, hence his term "Berggold" (or mined gold)

27. W. Lamb, *Excavations at Thermi on Lesbos* (1938) plates 29-31. Also D. Zanotti, "The Effect of Kurgan Wave Two on the Eastern Mediterranean," *Journ. of Indo-European Studies* 9, 3-4(1981) 275-302.

28. H. Müller-Karpe, *Handbuch der Vorgeschichte Kupferzeit III* (Munich, 1974) taf. 301 (Alishar H.). Also J. Yakar, "The Indo-Europeans and their Impact on Anatolian Cultural Development," *Journ. of Indo-European Studies* 9, 1-2(1981) 94-109 (Ikiztepe).

29. Ivanov (supra n. 1) 18.

30. Ivanov (supra n. 3) 21.

31. A. Hartmann, "Ergebnisse der Spektralanalytischen Untersuchung äneolithischer Goldfunde aus Bulgarien," *Studia Praehistorica* 1-2(1978) 27-45.

and his use of the designation type B to describe the Varna gold. Type B gold was further divided into two subgroups: one which contained platinum (BP) and one which did not (B). A small group of samples did not fall into either category and may represent deliberate alloying to produce electrum since the silver content in some items ranges as high as 50%.

The ranges for Ag and Cu are approximately the same for both the B and BP types. The percentage of Ag varies from 6-20% in type BP and 4-20% in type B. The percentage of Cu varies from .05-1.8% in type BP and .14-1.9% in type B. However, the Ag content of type BP samples clusters between 10% and 13% with a median of 11.8%. The Ag in type B samples clusters between 8% and 11% with a median of 10.9%. 68% of the BP samples contained more than .5% Cu, while only 29.6% of the B samples exceeded that limit. The type B gold then not only lacked platinum, but also contained significantly less of the trace elements Ag and Cu. Its greater purity in comparison to type BP may not only reflect different sources, but also a different chronological horizon.

Muhly³² has questioned not only Hartmann's conclusions, but also his methodology and the validity of using platiniridium inclusions to determine sources. One major flaw in Hartmann's work was the narrowness of the analysis. Only five trace elements, Ag, Cu, Sn, Pt and Ni were recorded with Zn appearing on the graphic representations. This fact alone has caused some critics, including Muhly, to treat Hartmann's results as tentative until a more thorough analysis has been done.

Disagreements aside, a number of points can be made from Hartmann's results. Of the 137 objects studied, 117 came from 24 graves in the necropolis and were apparently chosen at random from Graves 1 thru 60. 56 samples were BP gold, 49 were B gold and 12 came from the undetermined category (UD). Ten graves show overlapping of B, BP and/or UD types, six graves contained only BP gold, seven graves had B gold only and one, the UD type.

Type B gold finds are found predominantly in the area of Graves 1-30, with a concentration in the area of the first four cenotaphs (Graves 1-4) and possibly Grave 15. The ratio of B/BP for the finds analyzed from these burials is as follows:

32. J. Muhly, "Gold Analysis and the Sources of Gold in the Aegean," *Temple U. Aegean Symposium* 8(1983) 1-14.

Grave	1	11/5
"	2	2/2
"	3	2/3
"	4	11/8
"	15	4/1

The majority of type BP gold is found in Graves 36-60 with a concentration at the second focus of wealth in the necropolis: Graves 36, 41 and 43. Here the ration of B/BP is:

Grave 36	2/10
" 41	1/4
" 43	6/8

The distribution of the UD samples closely approximates that of the BP group with 7 of the 12 finds coming from Graves 36 and 43.

In general, both types of gold were used in the production of the same class of objects. For example, of the ten bracelets from 5 graves analyzed, 6 were type B and 4 were type BP. There are other objects which seem to be limited to one or the other type. The following items are found predominantly or exclusively in BP gold: all three types of anthropomorphic pendants (85%, 1 example UD), open cylindrical beads, biconical beads and the zoomorphic plates. Forms predominantly found in B gold are: open wire rings (earrings?), spheroids, platings and points for sceptres and the diadems (3 of 4, 1 UD).

There is not enough evidence to form definite conclusions, but we might postulate the development of social stratification as evidenced by prestige items—such as sceptres and diadems may have coincided with the exploitation of a new gold source or the use of a new metallurgical technology hitherto unknown at Varna. A third possibility was that they were imported.

Conversely, the relationship between the BP gold and anthropomorphic pendants strongly suggests that the BP type was the original gold used at Varna. These pendants, while symbols or art in their own right, are believed to be religious in nature. They have a wide distribution in Southeastern Europe³³ and the

33. J. Makkay, "Problems Concerning Copper Age Chronology in the Carpathian Basin," *Acta Archaeologica Hungaricae* 28(1976) 252-300. Also D. Zanotti, "The Evidence for Kurgan Wave One as Reflected by the Distribution of 'Old Europe' Gold Pendants," *Journ. of Indo-European Studies* 10, 3-4(1982) 223-34.

Aegean³⁴. Gimbutas³⁵ regards them as a stylized representation of the "Great-Goddess" or Mother-Goddess and thus at the center of religion in "Old Europe"³⁶. Besides gold, the form is known in silver, bone and stone. These elements along with the positions of the pendants in the necropolis strongly suggest that they were made of the first gold exploited at Varna; not necessarily an indigenous source, but rather a source exploited by the indigenous inhabitants.

Before leaving the topic of analysis, some mention should be made of the significance of the Varna gold's purity. As noted above, Hartmann has stressed the fact that the gold, because of the lack of tin as an impurity, was mined. He cites the lack of advanced mining techniques within the Balkans and opts for a Near Eastern source of mined gold basing his argument on the low chronology. Muhly³⁷ has stated though, that there is no solid evidence of gold mining in the Near East before the XIX dynasty of Egypt. According to Jovanovic³⁸ two possibilities exist; the early presence in alluvial deposits of extremely large (up to 10 kg) and pure nuggets or the extraction of gold during copper mining since they are often found together. Either case would satisfy Renfrew³⁹ who is of the opinion that the gold came from a Balkan source, and with the Aibunar copper mines less than 250 km away, it seems possible that some gold was recovered with the copper ore. The fact that the Aibunar copper has been found throughout the circum-pontic region⁴⁰ makes Varna a viable export center.

34. Zanotti (supra n. 33) 231-32. Also K. Branigan, *Aegean Metalwork of the Early and Middle Bronze Age* (1974) plate 24; 3138, 3139 (Poliochni) and H. Schliemann, *Ilios* (1881) 430; no. 557 (Troy).

35. Gimbutas (supra n. 26) 152-200.

36. Gimbutas (supra n. 26) 17-36. Also M. Gimbutas, "Old Europe: c. 7000-3500 B.C. The Earliest European Civilization before the Infiltration of the Indo-European People," *Journ. of Indo-European Studies* 1, 1(1973) 1-21 and M. Gimbutas, "The Neolithic Cultures of the Balkan Peninsula," *Aspects of the Balkans: Continuity and Change* (The Hague, 1972) 9-49.

37. Muhly (supra n. 33) 7.

38. B. Jovanovic, "Early Gold and Eneolithic Copper Mining and Metallurgy of the Balkans and Danube Basin," *Studia Praehistorica* 1-2(1978) 192-97.

39. Renfrew (supra n. 2) 201.

40. E.N. Chernykh, "Aibunar — A Balkan Copper Mine of the Fourth Millennium B.C.," *PPS* 44(1978) 203-17. Also E.N. Chernykh, "Metallurgical Provinces in the 5th-2nd Millennia in Eastern Europe in Relation to the Process

Secondly, if the ore was not completely pure in its natural state, how was the purification accomplished? At Sardis for instance, gold was first used in the Early Bronze Age, but in an unrefined state that approximates the upper limits of Ag and Cu found at Varna⁴¹. Actual purifying or refining cannot be attested to prior to the Classical period⁴². Jovanovic⁴³ suggests an undefined mechanical separation process to remove impurities, but does not define how this would be accomplished. The assumption that they had the pyrotechnological capabilities to accomplish the smelting or refining of gold could be open to doubt given the poor quality of their fired ceramics and almost complete absence of graphite-painted pottery⁴⁴, but a similar situation existed in the level of the Royal Tombs at Alaca Huyuk, at a time when metallic vessels were gaining greater favor. At the same time we cannot rule out the possibility entirely since we know that they were quite capable of refining copper ore to an almost pure state.

The last point which must be dealt with is, if the gold was relatively pure, how was it alloyed to create electrum? It seems incredible that people who had not yet mastered the alloying of copper with tin or arsenic to produce bronze could already be producing a more difficult metal alloy; unless the time-scale for Varna is inaccurate.

Sources- I have already mentioned above Hartmann's view that Type B gold was imported from the Near East (BP) and Aegean or Eastern Mediterranean (B) and Renfrew's opinion that it must have come from a local Balkan source. There are four other possible source regions which deserve discussion: Transylvania, Thraco-Macedonia, Western Anatolia and Northeastern Anatolia.

On the surface, Transylvania seems the most obvious selection,

of Indo-Europeanization," *Journ. of Indo-European Studies* 8, 3-4(1980) 317-37. Chernykh's analysis of Aibunar ores shows that gold was virtually nonexistent as a trace element occurring in less than 2% of the samples at a level of .001-.01%, but this does not completely negate Jovanovic's hypothesis.

41. S. Goldstein, "The Examination of the Gold Samples from Pactolus North," *BASOR* 199(1970) 26-28.

42. J.C. Waldbaum, *Metalworks from Sardis* (Harvard, 1983) 185-86.

43. Jovanovic (*supra* n. 38) 196.

44. Only five graphite-painted vessels have been recovered from Varna. Four came from an older grave outside of the necropolis proper. Only one vessel, in Grave 43, can be directly related to the Varna burials under study.

and is the choice of Gimbutas⁴⁵ and Makkay⁴⁶ as the source of the Varna gold. Davis⁴⁷ identifies this region as the source of the gold from the Mycenae shaft graves, hence by default also the source for Varna⁴⁸. Chapman⁴⁹ has noted no less than 17 gold sources just north of Turdas and Tărtăria in the Middle Mures region. A trade route from Varna would coincide not only with the distribution of Gumelnita and Vidra types axes, but also account for the presence of Spondylus at Tărtăria and Alba Iulia-Lumca Nouă which have no apparent connection to other Spondylus finds from Vinča sites⁵⁰.

There are several arguments against this source. First, this region is generally considered Vinča territory where habitation is attested to as late as c. 4100 B.C. If as Chapman states, the principal contribution of the Vinča culture to metallurgy was its development of mining techniques, and small-scale prospecting took place in the Middle Mures, it is unusual that gold was so rare within the Vinča culture, with the only find coming from the site of Bor, near Rudna Glava⁵¹.

Secondly, one would expect more gold finds to be distributed along a trade over 600 km in length. I have proposed such a route along the Aiges river which passes very close to a number of major Gumelnita sites including Gumelnita, Cascioarele, Vidra and Teiu, but gold finds at these sites are very rare. Most models of trade patterns, such as those described by Renfrew⁵², would predict more gold finds at the source and along the route. This has not been the case.

45. Gimbutas (*supra* n. 11) 44.

46. Personal communication, 1984.

47. E.N. Davis, "The Gold of the Shaft Graves: The Transylvanian Connection," *Temple U. Aegean Symposium* 8 (1983) 32-38.

48. Both B and BP type gold are found in the Mycenae Shaft Graves and in other Mycenaean contexts. B and BP type gold begin to appear in the Aegean during the Early Helladic II period and are much more common here than in Europe.

49. J. Chapman, *The Vinča Culture of Southeastern Europe: studies in chronology, economy and society* (Oxford, 1981) Fig. 131.

50. Chapman (*supra* n. 49) Fig. 105. Assuming primary distribution along the Danube and Tisza for other Vinča sites, we are left with a gap of 240 km between these two sites and other Vinča finds. It is much more likely that they should be associated with Spondylus distribution along Gumelnita trade routes; either the Aiges or Olt rivers.

51. Chapman (*supra* n. 49) Fig. 106.

52. C. Renfrew, *The Emergence of Civilization* (London, 1972) 465-71.

Lastly, a comparison of Hartmann's⁵³ distribution maps strongly suggests that the gold of Transylvania was type A, containing tin and silver, not type B. The distribution map of type B makes it clear that Varna was the source from which it was disseminated into Southeastern Europe. The concentration of gold at Varna can then be linked to the fact that it served as the point of entry for gold mined or collected elsewhere, just as it was an entry point for Spondylus earlier.

In Western Anatolia, deJesus⁵⁴ has listed 10 sites of potential gold deposits, stretching from the Troad in the north to Aydin in the south. Nine were primary sites which could only be exploited by mining, while the single secondary or alluvial source was the Pactolus, near Sardis. Neutron activation analysis performed by Goldstein unfortunately did not sample for tin, however microscopic analysis by Young⁵⁵ did show the presence of platiniridium inclusions. There is no evidence that any of the other sites were used in prehistoric times although Strabo does mention gold mines in the Troad during Classical times⁵⁶.

Alluvial gold sources in Central Macedonia and Thrace are known from the Gallikos and Axios rivers⁵⁷ and the Hebrus river⁵⁸, respectively. A primary source near Mt. Pangaiion is noted by ancient sources⁵⁹, but it is not known how early it was in use. Exploitation was possible during Karanovo VI period. Sites with Karanovo VI horizons include Sitagroi, Dikilitash, Paradimi and Galepsos in Thrace. Graphite-painted sherds appear at Limnotopos (Vardino)⁶⁰ on the Axios and as far south as Pevkakia, Thessaly⁶¹. A single gold bead was found at Sitagroi

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53. Hartmann (supra n. 31) Abb. 2 (B type) and A. Hartmann, "Die Goldsorten des Äneolithikums und der Frühbronzezeit im Donauraum," *Studia Praehistorica* 1-2(1978) 182-91, Abb. 5 (A₃ type).

54. P.S. deJesus, *The Development of Prehistoric Mining and Metallurgy in Anatolia* (Oxford, 1980) chapter 5.

55. W.J. Young, "The Fabulous Gold of the Pactolus valley," *Bulletin, Museum of Fine Arts, Boston* 70/359(1972) 4-13.

56. Waldbaum (supra n. 42) 13.

57. W. Heurtley, *Prehistoric Macedonia* (Cambridge, 1939) 26.

58. Waldbaum (supra n. 42) 13.

59. Renfrew (supra n. 12) 129.

60. W.A. Heurtley, "Report on the Excavation at the Toumba of Vardino, Macedonia," *Liverpool Annals of Archaeology and Anthropology* 12(1925) 15-36.

61. J.E. Coleman, unpublished manuscript, 1984.

and a gold ring at Saratse⁶². Gold slags are known from Early Bronze Age levels at Vardarophtsa and Saratse, 10 km and 40 km from Limnotopos, respectively⁶³. An early analysis of the slags can neither affirm nor deny the potential of the Macedonian sources to have also been the source of the Varna gold⁶⁴. However, the North Aegean did serve as the source of Spondylus which reached Varna and was redistributed, so the possibility of gold trade cannot be completely ruled out.

The last potential source of the Varna gold is Northeastern Anatolia. deJesus⁶⁵ mentions the Coruh river, south of the Pontic Mts. as a possible source, but fails to note it in his monograph⁶⁶, stating merely that there must have been gold sources in Central and Northern Anatolia to account for the rich finds of Alaca Huyuk. His earlier assertion is indirectly verified by Bryer⁶⁷.

As in Macedonia and Thrace, there is ample evidence for Karanovo presence in Northern Anatolia beginning possibly with the Karanovo III period, and if not connected directly with the gold source(s), then at least in the close vicinity. Karanovo style ceramics are known from Ikiztepe, Dundartepe and several other sites in the Samsun region as well as from Kavak, Tekkekoy, Alishar Huyuk, Alaca Huyuk and Buyuk Gullecek in the interior during the Chalcolithic⁶⁸. Figurines of the Karanovo type have been found at Ikiztepe⁶⁹ and Alishar Huyuk⁷⁰. An extensive copper mine and smelting center was discovered at Kozlu, 10 km

62. C. Renfrew, "The Tree-Ring Calibration of Radiocarbon: an archaeological evaluation," *PPS* 36(1970) 280-311 (Sitagroi). C. Radford and W.A. Heurtley, "Report on the Excavations at the Toumba of Saratse, Macedonia," *BSA* 30(1930) 113-50 (Saratse).

63. O. Davies and W.A. Heurtley, "Report on the Excavation at the Toumba and Tables of Vardarophtsa, Macedonia, 1925-26," *BSA* 28(1928) 195-242. Radford and Heurtley (*supra* n. 42).

64. Davies and Heurtley (*supra* n. 63) 197.

65. P.S. deJesus, "Metal Resources in Ancient Anatolia," *AS* 28(1978) 97-102.

66. deJesus (*supra* n. 54).

67. A.A.M. Bryer, "The question of the Byzantine Mines in the Pontos: Chalybian Iron, Chaldian Silver, Koloneian Alum and the Mummy of Chriana," *AS* 32(1982) 133-50.

68. U. Alkim, "Recent Archaeological Research in Turkey; Ikiztepe," *AS* 25-29(1975-79). Also J. Mellaart, *The Chalcolithic and Early Bronze Age in the Near East and Anatolia* (Beirut, 1966).

69. Yakar (*supra* n. 28). Also H. Alkim, pers. comm., 1983.

70. Müller-Karpe (*supra* n. 28).

from Horoztepe⁷¹. Shepherd⁷² notes that the vein was probably exploited for at least 300 meters underground and in galleries. Timbers used in the mine have yielded a calibrated radiocarbon date of 3750 B.C.⁷³, clearly too early for the Early Bronze Age in Anatolia. By its close proximity to the sites listed above, Kozlu too must be connected with the Late Chalcolithic in Northern Anatolia and ultimately with the later period of the Karanovo culture, who were well versed in mining technology as evidenced by the finds from Aibunar.

Analysis of the gold from the Coruh shows that the gold from the lower Coruh contained platinum, but not tin. Gold from the upper Coruh contained neither platinum nor tin⁷⁴. Thus in one regional source we have a possible answer to the origin of both the B and BP gold found at Varna. A source which was alluvial and not primary. It is also an intriguing source for the Mycenaean gold, when one recalls the voyage of Jason and the Argonauts in quest of the golden fleece, thought to be found in this same area: Colchis.

Chronology-It is surprising that a site as important as Varna is not more accurately dated. Gimbutas⁷⁵ has ascribed a date of c. 4500 B.C. (phase I of the Gumelnita-Kodzaderman-Karanovo VI culture) to the earliest use of the necropolis. She cites typological studies of gold and copper which show Varna to be roughly contemporary with Chotnica, Ruse, Gabarevo, Gumelnita A₂, Vidra and the Cucuteni hoard of Karbuna. However, the sources she cites date to 1959 and 1961, well before Varna was discovered. This date has been used by both Phillips⁷⁶ and deJesus⁷⁷.

Renfrew is somewhat vague, at one point considering Varna "at least 1500 years earlier than the treasures of Troy II"⁷⁸, and later

71. D.L. Giles and E.P. Kuijpers, "Stratiform Copper Deposits, N. Anatolia, Turkey. Evidence of E.B. I Mining Activity," *Science* 186(1974) 823-5. Also P.S. deJesus, "A survey of some ancient mines and smelting sites in Turkey," *Sonderdruck aus Archäologie und Naturwissenschaften* 2(1981) 95-105.

72. R. Shepherd, *Prehistoric Mining and Allied Industries* (London, 1980).

73. Su-295, 4750 ± 30 b.p. (2800 B.C.).

74. deJesus (supra n. 65, 102. Reference is made to the analysis made by H.A. Karajian, *Mineral Resources of Armenia and Anatolia* (New York, 1920).

75. Gimbutas (supra n. 11) 39.

76. A.P. Phillips, *The Prehistory of Europe* (London, 1980) 207.

77. P.S. deJesus, "Varna and early metallurgy," *Antiquity* 54(1980) 215-16.

78. Renfrew (supra n. 2) 200.

stating that Varna "may well be more than 6000 years old"⁷⁹, These generalities would seem to allow us to put Renfrew's implied dating in the range of c. 4100-3800 B.C. But later in the same article Renfrew is of the opinion that calibrated radiocarbon dating will place Varna somewhere between 4600 and 4200 B.C.⁸⁰

Todorova⁸¹ regards the necropolis as dating from the latest phase of the Varna culture contemporary with phase IIIb of the Gumelnita-Kodzaderman-Karanovo VI culture, i.e. the end of the fifth millennium B.C. Implicit from her charts is the fact that the incursions of steppe tribes, specifically from the Srednij Stog II culture, may have been a factor in the ending of the necropolis's use.

Best⁸², based on a personal study of the Varna material and his own excavations at Djadovo, near Ezero, has dated Varna to c. 3400-3200 B.C. Makkay⁸³ also supports a lower date, but how low is still unclear, since much of his work is not based on a radiocarbon chronology, calibrated or otherwise.

Clearly a variation in the dating of one site by as much as a millennium should be considered unusual. Despite the presence of wood and textile samples⁸⁴ no attempt has been made to date Varna by radiocarbon means and this may prove impossible even if attempted. The location of the necropolis suggests that when the lake system was an open gulf, the higher sea-level and water table may have caused the inundation of some burials. Three facts suggest this: the often complete decomposition of osteological material, the fact that many graves cannot now be discerned from the clay in which they were originally dug and the fine intermediate layer above the clay that may be sedimentary in nature. I am unsure what effect the contamination would have on the thermoluminescence dating of the pottery, but to date, it also has not been attempted.

There are secondary dates from other sites which may relate to

79. Renfrew (*supra* n. 12) 112.

80. Renfrew (*supra* n. 12) 114.

81. Todorova (*supra* n. 10) 37.

82. Personal communication, 1984.

83. Personal communication, 1984.

84. K. Kanchev, "Microwear Studies of Weapons and Tools from the Chalcolithic Necropolis at the city of Varna," *Studia Praehistorica* 1-2(1978) 46-49.

Varna. Ocharovo, about 80 km west of Varna has yielded two Late Eneolithic C-14 dates which calibrate to c. 3700 B.C.⁸⁵ A single date from the Karanovo VI level at Tell Azmak also falls into this range, calibrating to c. 3770-3800 B.C.⁸⁶ These dates would not be out of line for Varna since Todorova considers the necropolis to be contemporary with the Srednij Stog II culture of the Pontic steppes. The site of Derievka on the lower Dnieper has produced two radiocarbon dates for the Srednij Stog IIa culture. One, UCLA 1466A, has been widely cited because it is so early, c. 4480-4360 B.C. when calibrated. However, the second calibrated date, c. 3780-3630 B.C. (UCLA 1671A), is considered by Mallory⁸⁷ to be a truer reflection of the age of the site as based on ceramic correlations with the Tripolye B₂-C₁ sites and the fact that a cultural horizon with an average depth of 50-60 cm does not seem sufficient to account for 700 years of habitation. Srednij Stog II cemeteries have a number of traits in common with the Varna necropolis including supine burials in rectangular pits with rounded corners, the use of red ochre on the deceased and the predominance of the Proto-Europid physical type which is common in the steppes, but intrusive in Bulgaria.

At Sitagroi in Thrace, the third phase (Dikilitash phase), is considered by Renfrew⁸⁸ to be contemporary with the Maritsa and Gumelnita cultures (Karanovo V en VI) and characterized by graphite-painted ware. The last radiocarbon date taken from this phase calibrates to c. 3900 B.C.⁸⁹ This date came from trench ZA, level 41 which yielded about two meters of deposit from phase III. It must have been centrally located within the phase III strata since Renfrew⁹⁰ notes—that no dates were taken from the later levels of phase III (ZA levels 40 to 33). He does state that there was some cultural development in these levels so that there need not have been an interruption in the occupation. It is then probable that the Dikilitash phase lasted well into the fourth

85. Todorova (*supra* n. 10) Table 2. Including their deviation, these dates fall into a range of c. 3800-3500 B.C.

86. Bln-146, 5035 ± 150 b.p., 3085 B.C.

87. J.P. Mallory, "The Chronology of the Early Kurgan Tradition, Part Two," *Journ. of Indo-European Studies* 5,4(1977) 339-78.

88. Renfrew (*supra* n. 62) 298.

89. Bln-774, 3150 ± 120 B.C. Calibrated by the MASCA correction factor.

90. C. Renfrew, "Sitagroi, radiocarbon and the prehistory of southeast Europe," *Antiquity* 45(1971) 275-82.

millennium B.C., certainly until c. 3750 B.C. and possibly as late as 3500 B.C.⁹¹

Lastly, there is a radiocarbon date listed as coming from Varna which calibrates to c. 2950 B.C.⁹², but it is not known if it comes from the Varna district, or the environs of the town of Varna. It comes from a Kurgan "ochre grave" which should exclude it from consideration, but it must be kept in mind that the burials within the necropolis not only displayed the same burial position, but also were frequently covered with ochre. This date is in line with the date of 2950 B.C.⁹³ for the appearance of Cernavoda III-Boleraz material at Kétegyháza in Hungary⁹⁴ and could very well be close to the terminal dating for the Varna necropolis.

A second aspect which argues for a later dating of the Varna necropolis is the lack of certain type artifacts which would be expected to concentrate at a site as rich as Varna, if in fact it did date to the Gumelnita A₂ period. These type artifacts include graphite-painted ceramics, double spiral headed pins and bone "plaque" figurines which resemble later Cycladic figurines.

Above we have already discussed the lack of graphite-painted ceramics, despite the presence of graphite cones in several graves. Most of the ware was poorly fired and its brown to red-brown surface color may be due to a lack of understanding of the reduction-firing process necessary to keep the graphite from burning off⁹⁵. The single gold-painted bowl is typologically very late as can be seen in the evolution of the inner design⁹⁶.

According to Gaul⁹⁷ the double spiral headed pins seem to concentrate in northeast Bulgaria. A single example is known from Varna, Grave 66A. Similar Aegean examples are known in bronze from Chalandriani (E.C. II) and Troy IIg, in silver from Poliochni (E.B.A. I) and Zygouries (E.H. II) and in gold from Troy IIg⁹⁸. All of these date to the period c. 3200-2800 B.C. or

91. Renfrew (*supra* n. 90). He tentatively lists the range of later phase III as 3100-2600 B.C. in radiocarbon years which would yield a terminal date of c. 3370-3350 B.C.

92. KI-89, 4210 ± 60 b.p.

93. Bln-609, 4265 ± 80 b.p.

94. I. Ecsedy, *The People of the Pit-Grave Kurgans in Eastern Hungary* (Budapest, 1979) 21-33.

95. J. Frierman, "Appendix II. The Balkan Graphite Ware," *PPS* 35(1969) 42-44.

96. Todorova (*supra* n. 10) Table 17. See also Gimbutas (*supra* n. 11) fig. 7.

97. Gaul (*supra* n. 26) map VI.

98. Branigan (*supra* n. 34) plate 19.

roughly contemporary with the distribution of the anthropomorphic pendants in the same region.

The two bone figurines from Grave 61 are the only ones from Varna of the classic Gumelnita/Karanovo VI type. There may be some significance to the fact that these particular artifacts were found in burials so close together and both from burials in the "hoker" position typical of most Gumelnita burials. The important fact here is that what are assumed to be typical Gumelnita artifacts are found nowhere near the major gold finds, but in what is presumed to be an older area of the necropolis, again confirming the conjecture that the gold is found only in large quantities in the latest part of the necropolis.

Lastly it should be mentioned that Ivanov is adamant that the graves were dug into the clay layer *before* the humus and intermediate layer were laid down⁹⁹. In other words the clay layer was the surface level when the Varna necropolis was in use. Approximately 6 km inland lies the town of Ezerovo where four lacustrine sites have been discovered¹⁰⁰. Ezerovo I is of Late Bronze Age date, Ezerovo II and III date to the Early Bronze Age (Cernavoda III-Ezero) while Ezerovo IV is from the Eneolithic, presumably contemporary with Varna. The ceramics recovered from Ezerovo II and III compare well with those found at the lacustrine site near the Varna necropolis¹⁰¹. The stratigraphy of Ezerovo II shows that the habitation level rested on a bed of yellow and grey clay and was covered by a layer of fine silt¹⁰². This stratigraphy appears to parallel almost exactly that of the Varna necropolis, leading to an important question: how could two sites, 6 km apart, supposedly separated by 1200 or more years in time, be found in the same set of stratigraphic circumstances unless one site was misdated?

As can be seen there are valid reasons to date the Varna necropolis to the middle of the *fourth* millennium B.C., especially if the external synchronisms mentioned above are correct. However until the analyses are completed and the final excavation reports published, we can only conjecture.

It is hoped that here some of the mystique surrounding the Varna necropolis has been stripped away and some actualities about the

99. Ivanov (*supra* n. 1) 13.

100. G. Tonceva, "Les palafittes des environs de Varna," *Symposium über die Entstehung und Chronologie der Badener Kultur* (Bratislava, 1973) 471-83.

101. Tonceva (*supra* n. 100) 472.

102. Tonceva (*supra* n. 100) fig. 3.

site and materials recovered exposed. Misconceptions have a habit of becoming fact as the years pass.

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TABLE 1
Frequency Distribution of Gold Artifacts from Varna

<i>artifact type</i>	<i>number of graves</i>
anthropomorphic pendants	
type I	10
type II	2
type III	6
applique	
crescent	1
large convex	1
rectangular	4
small convex	7
trapezoid	1
beads	
biconical	5
cylindrical	14
bracelets	
biconical	2
wire	6
button	1
cylindrical plates (sceptres)	5
diadem	4
double spiral ornament	1
earrings	6
nails/tacks	6
plates	
animal head	1
convex	3
hemispherical	2
round	1
zoomorphic	2
rings	25
sceptre (complete)	1
sceptre points	2
spheroid	1
other (phallus cover, astragulus model, boomerang and arc-shaped plates)	3
spiral bands	4

TABLE 2
Inventory of the Gold Artifacts from Varna

<i>artifact type</i>	<i>quantity recovered</i>
anthropomorphic pendants	
type I	14
type II	8
type III	7
applique	
crescent	4
large convex	11
rectangular	5
small convex	170
trapezoid	6
beads	
biconical	63
cylindrical	2319
bracelets	
biconical	3
wire	12
button	1
cylindrical plates (sceptres)	29
diadem	4
double spiral ornament	1
earrings	35
nails/tacks	31
plates	
animal head	30
convex	5
hemispherical	3
round	2
zoomorphic	3
rings	105
sceptre (complete)	1
sceptre points	4
spheroid	1
spiral bands	36
other (phallus cover, astragulus model, boomerang and arc-shaped plates)	5