

Most important, however, these essays help us think of archaeological remains in broader terms, not only as those rare and precious bits of the past that allow us to understand ancient communities and societies, but also as objects that, by perduring into the present, are affected by and partly constitutive of modern political, economic, and social contexts as well. Understanding the significance of these more modern aspects of an ancient object's biography remains a largely unexplored but compelling area for archaeological study.

Readers of *All the King's Horses* should be aware that it does not offer prescriptive solutions to problems. Yet, while there are few easy answers, the questions remain compelling and the need to address them is growing. The surviving fragments of the past are a finite resource, increasingly contested and increasingly at risk. Unless we find better and more effective ways of protecting the surviving fragments of antiquity, our ability to reconstruct the past may be lost forever, beyond the ability of either archaeologists or all the king's horses to recover.

#### Notes

1. Humpty Dumpty, in chapter 6 of Lewis Carroll's *Through the Looking Glass and What Alice Found There*.
2. Aptly captured by Carroll: "'The question is,' said Humpty Dumpty, 'which is to be master—that's all.'"
3. Our understanding of the past is neither, and that's why we grub about for those rare bits of the past, beautiful and otherwise, in the first place.
4. These agreements are the mechanism under existing U.S. law of implementing the 1970 UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property.

## 2

### *The Economics of the Looted Archaeological Site of Bâb edh-Dhrâ': A View from Google Earth*

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Archaeological concern about the antiquities trade and associated looting of archaeological sites has generally focused on what have been termed its "material and intellectual consequences" (Gill and Chipindale 1993). In other words, on the destruction of archaeological materials and contexts caused by unsystematic and unrecorded removal, and on the misinterpretations and misunderstandings that are introduced into historical enquiry when decontextualized artifacts are received and studied as valuable and collectable art objects. More recently, however, the broader social and political consequences of the antiquities trade have also begun to attract attention, including its criminal involvement, the disrespect of sovereign rights, the corrosive effects of cultural loss on social memory and identity, the socioeconomic elitism of the collectors, and the socioeconomic deprivation of those who do the looting. This latter context is the one that concerns us here, and we present the results of a preliminary evaluation of the potential of Google Earth for producing quantitative data that might be used to investigate the comparative economics of the antiquities trade.

#### Subsistence Digging

The growing strand of concern about the poor socioeconomic circumstances of the people who do the actual looting can be traced back at least to Dwight Heath's (1973) sympathetic study of illicit excavation and trade in Costa Rica (see also Lange 1976). Then, in 1993, David P. Staley,



disturbed by the use of pejorative terms such as *looting* to describe the actions of illicit excavators, coined the less judgmental “subsistence digging” to use instead. He defined a “subsistence digger” as “a person who uses the proceeds from artifact sales to support his or her traditional subsistence lifestyle” (Staley 1993:348). The use of the term *subsistence digging* is intended to avoid further stigmatizing people or communities already suffering from economic deprivation or from political discrimination or oppression, and to help recognize their right to economic self-determination (Hollowell 2006a, 2006b:72–73; Hollowell-Zimmer 2003; Matsuda 1998, 2005). Yet, while there is some measure of agreement within the archaeological community that the term *subsistence digging* is a useful one, there is uncertainty and disagreement about the limits of its applicability. Julie Hollowell (2006b:77), for example, rightly asks whether “subsistence” in the early twenty-first century should include such things as college education and the purchase of computers, although many would still balk at any attempt to characterize the lifestyle of fast cars and women enjoyed by some Tuscan *tombaroli* (described by van Velzen 1996) as a subsistence one.

The identification of subsistence digging as an issue of economic justice has raised a number of questions about the economic value of archaeological heritage—about how economic value is constituted, how it is realized, and how it is distributed. Laws and ethical codes aimed at suppressing the illicit excavation and trade of archaeological heritage, and more generally at regulating ownership and access, typically avoid any productive engagement with economic value.<sup>1</sup> Although the intention of much heritage legislation is protective, its action is prophylactic, installing a legal barrier between the public and a cultural and economic resource. Yet, although such legislation attempts to place archaeological heritage outside the economic domain, the persistence of archaeological looting and the continuing trade in antiquities shows that it has not succeeded. Instead, economic value has become a covert value, shaping perceptions and offering opportunities for exploitation, while at the same time remaining outside the scope of any constructive discussion and normative or legislative intervention. It can even be argued that regulatory laws are failing in their purpose precisely because they omit to make any provision for the equitable distribution of economic value (Brodie 2010).

This denial of economic value by archaeological heritage law and ethics (and by art historical and archaeological scholarship more gener-

Table 1. *Initial Price of Artifact Paid to Finder and Price Paid for First Time on International Market.*

<i>Artifact</i>	<i>Initial price</i>	<i>Final price</i>	<i>Time lapse (years)</i>	<i>References</i>
Achyris (Steinhardt) phiale (1980, Italy)	\$20,000	\$1.2 million	11	Slayman 1998
Morgantina acroliths (1979, Italy)	\$1100	\$1 million	1	Robinson 1998
Statue of Marsyas (1988, Turkey)	\$7400	\$540,000	<6	Rose and Acar 1995
Euphronios krater (1971, Italy)	\$8800	\$1 million	1	Slayman 1998
Yongtai head (1996, China)	\$840	\$125,000	1	Maggio 1998
Amenhotep head (1991, Egypt)	\$6000	\$1.4 million	<3	Watson 2002, 26; Tokeley 2006, 202
Asteas krater (1970s, Italy)	A pig (!)	\$275,000	<10	Slayman 2006
Nataraja (1982, India)	£12	£250,000	6	O'Keefe 1997, 19 n. 35
Morgantina silver (Italy)	\$27,000	\$3 million		Watson and Todeschini 2007, 106.

ally) also means that very little is known about it. Most policy suggestions in this area that consider economics are concerned to evaluate the applicability of simple or more sophisticated market models, which in themselves offer only a subset of possible economic solutions, and which are in any case vitiated by the general paucity and unreliability of empirical data that might be used to test them. The reasons for this data shortage are not hard to find. The funding and kudos attached to short-term, solution-oriented research is not forthcoming for more fundamental, difficult and long-term research into the nature of the problem for which solutions are sought. In such an under-researched environment, however, even well-meaning solutions have the potential to cause more harm than good. Cautionary admonitions about houses built on sand come to mind.

As an example, it is instructive to consider the discussion that has developed concerning the remuneration of subsistence diggers. The return on their labor appears poor when viewed in the context of the



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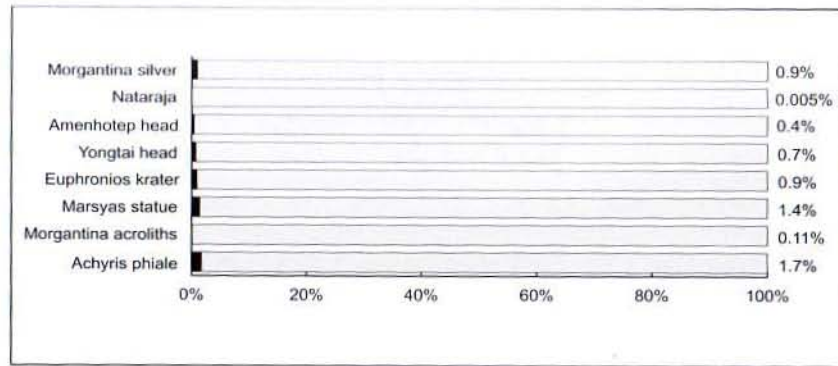


Figure 1. Percentage of price paid for an artifact on the international market received by finder (based on data in Table 1).

global antiquities market, but might be appreciable in local terms. There are few data available that describe the increasing prices of artifacts as they pass up the trading chain, but those that are available show that typically the diggers receive something like 1 percent of the international market value of a piece (Table 1; Figure 1). Although this statistic of 1 percent is derived from price data for “big ticket” items, similarly low percentages for more mundane objects have been suggested from Costa Rica (Heath 1973:261; Lange 1976:306), Turkey (Acar and Kaylan 1988), China (Boylan 1995:103), and Israel (Kersel 2006:164–166).

Against this evidence of low remuneration, Jerome C. Rose and Dolores L. Burke’s (2004) systematic work in north Jordan suggested that diggers there were receiving a higher percentage of international market price. For example, on the ground, they were receiving \$7 each for Roman oil lamps (Rose and Burke 2004:4) at a time when, in London, similar lamps were being sold for about \$45 each (Brodie, personal observation). Thus, the diggers were receiving about 15 percent of the international market price. Hollowell has reported that St. Lawrence Island diggers, who corporately own the archaeological resource, and whose artifacts enter the market legally, can receive anything up to 70 percent of the international market price (Hollowell 2006a:121). This higher percentage return in a legal market suggests that the risks and expenses involved in transporting and “laundering” illegally acquired artifacts across international borders cause the large markups in price that occur between artifacts coming out of the ground and their final sale on the

international market. What that means to the diggers in real terms, however, is not clear. It is possible that prices on the ground are not coupled to final prices on the international market, which are more likely to reflect the variable effects of transaction costs and demand. For example, in Belize, it is believed that the intensity of subsistence digging is linked to agricultural success or failure, not to prices on the international market (Matsuda 1998:94). But, although subsistence diggers or looters may be cheated out of the full value of their labor, it remains the case that because digging is usually illegal, and so not subject to taxation or profiteering employment practices, they might feel cheated less than in other—legitimate—employment.

Another line of discussion about the remuneration of subsistence digging concerns aggregate monetary incomes and economic outcomes. Archaeological heritage is a limited resource, and in the long term, digging is unsustainable as a subsistence option. Nonetheless, it might still be justified in socioeconomic terms if the income generated is used to establish a more permanent and improved source of income. So, for a hypothetical example, a digger might use money derived from the sale of artifacts to pay for a child to obtain a law degree. Whether such “wise investment strategies” actually exist, however, is another matter—there are no documented examples. Another relevant consideration is that money obtained through digging is ultimately derived from abroad, so in sufficient quantities it might constitute what in 2008 would have been called an “economic stimulus” for a local economy, with diffuse though positive effects. Dwight B. Heath, for example, in the early 1970s, reckoned that 1 percent of the economically active population of Costa Rica was directly involved in the antiquities trade, and that the trade generated about \$500,000 per year for the Costa Rican economy (about 70 percent derived from abroad), which was further spread around through “wages, royalties, commissions, flim-flams, graft, and other kinds of exchanges” (Heath 1973:260). Hollowell estimated that every year dealers spend an estimated \$1.5 million on St. Lawrence Island, which works out to be about \$1,000 per inhabitant (Hollowell 2006a:105).

Again, Rose and Burke’s (2004) work in north Jordan is an important reference point. They conducted an informal pedestrian survey of six Roman-Byzantine cemeteries in the Irbid-Ramtha area, counting 570 robbed tombs in total. They used this figure in conjunction with information about tomb contents derived from the literature and price infor-



mation obtained from the diggers to conclude that even as a minimum estimate the contents of the robbed tombs would have generated on the ground something like \$14,000 to \$25,000 for each cemetery. Multiplying those figures by the 745 known Roman-Byzantine cemeteries in the area, Rose and Burke concluded that the sale of material from all cemeteries would make a total of between \$10 to \$18 million for the regional economy, ultimately earned from abroad.

Studies such as those conducted by Hollowell and Rose and Burke are important because they place looting/subsistence digging in a quantifiable economic context. It is only through such studies that progress will be made toward introducing sustainable and equitable strategies of economic exploitation of archaeological heritage as realistic alternatives to undocumented digging. With this pressing need for quantitative data in mind, we have investigated how estimates of site damage obtained from satellite imagery available on Google Earth can be combined with information derived from other sources to produce some (primitive) financial indicators.

### The Contribution of Google Earth

In principle, looted archaeological sites and the amount of looting damage visible on individual sites can be identified and assessed remotely through the use of high-resolution aerial and/or satellite imagery. Up until the middle 2000s, however, the cost of obtaining up-to-date images of sufficiently high resolution was generally prohibitive. This situation improved in 2005 when the launch of Google Earth provided a platform, making low-cost, good-quality satellite imagery publicly available.

The imagery used on Google Earth derives from a number of sources and is variable in terms of date and resolution. Much imagery, particularly of remote areas, has a resolution of less than 30 m/pixel, although this is improving, and for many areas of the Earth's surface, image resolution is now better than 1 m/pixel (see Parcak 2009:43–51), which is suitable for identifying areas of ground disturbed by looting, although not usually for delineating individual pits. Most imagery is between one to three years old but is regularly updated, and since the release of Google Earth 5 in 2008, older images have been archived and made accessible so that in the future overviews of change over time will become increasingly viable.

We have recently completed a preliminary evaluation of Google Earth imagery for studying archaeological site looting in Jordan (Contreras and Brodie 2010). We chose Jordan for our preliminary study because archaeological looting there is well documented (Bisheh 2001; McCreery 1996; Politis 2002; Rose and Burke 2004), and geospatial data about archaeological site locations was publicly available in the form of the JADIS database. Furthermore, there was the important technical consideration that Google Earth incorporates, for much of Jordan, sub-meter/pixel visual spectrum imagery from the Quickbird satellite owned by the Digital-Globe corporation. It was not possible in the time available to subject all imaged terrain to visual inspection, and so two sampling strategies were implemented (see Contreras and Brodie 2010 for details). This enabled the identification of 25 sites that we considered to show evidence of looting (visible as pitting, which presented on the images as highly contrasting, intermingled dark and light pixels, distinct from the low-contrast background pixels). Subsequent ground-truthing established that 13 out of 16 sites visited showed evidence of recent digging, thus confirming the reliability of the method.

Image resolution for looted sites was generally not adequate to allow the identification of individual pits, and so counts of pit number and direct estimates of pit density were not possible. To quantify damage, then, we chose instead to measure total pitted area. Visibly disturbed areas identified as pitted were isolated with boundary polygons in ArcGIS, which in several cases entailed drawing multiple polygons for a single site. The resulting shapefile was then used to calculate the total pitted area. Of the 22 sites that after ground-truthing we believed to show evidence of looting, six were Early Bronze Age (EBA) in date, and EBA sites accounted for 68 percent of the total looted area of 515,351 m<sup>2</sup> (51.5 ha or ~.5 km<sup>2</sup>). Furthermore, three of the four largest looted sites were the EBA cemetery sites of Bâb edh-Dhrâ', Fayfa', and an-Naq' in the area of Ghor es-Safi, southeast of the Dead Sea (Figure 2).

### Bâb edh-Dhrâ'

The best known and most systematically excavated and published of the three EBA cemeteries is Bâb edh-Dhrâ'. Bâb edh-Dhrâ' has been known to archaeologists since at least 1924 when it was reported that several tombs there had been looted (Albright 1924:59). It was first excavated in



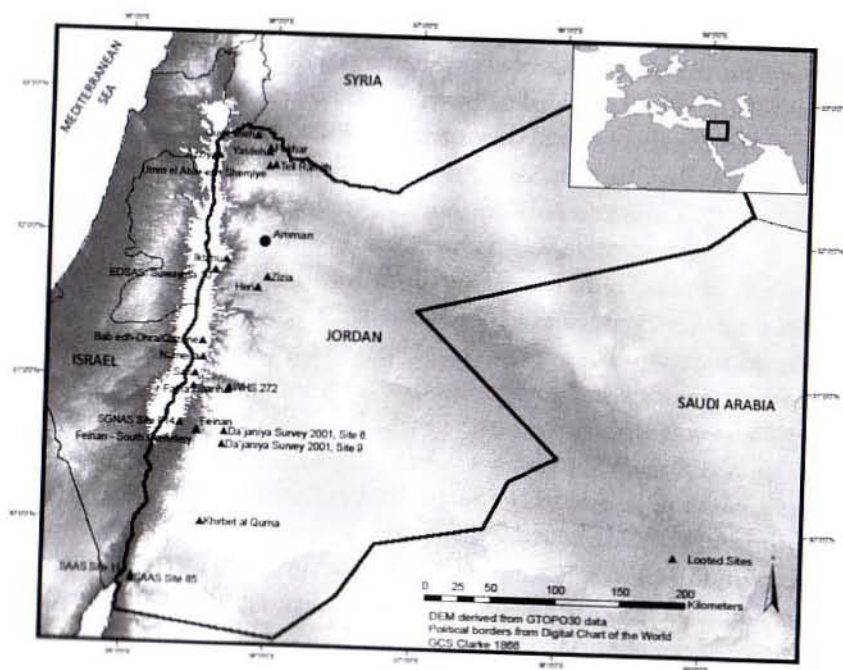


Figure 2. Map of Jordan showing places mentioned in the text.

the 1960s by Paul Lapp (Lapp 1966; Schaub and Rast 1989), who was drawn there by the large quantities of EBA pottery appearing in the antiquities shops of Jerusalem and Amman and rumors that the Bâb edh-Dhrâ' cemetery was a major source (Lapp 1966:104; McCreery 1996:5). During a preliminary visit to the site in 1964, Lapp was able to collect 60 more-or-less complete pots from the ground surface, although when he returned to excavate there in March 1965 he had difficulty at first in locating the cemetery area. It was not until a "local expert" alerted him to the surface indications of tombs that he was able to start work (Lapp 1966:105). Lapp's difficulty in locating the cemetery suggests that at the time it was not pock-marked as it is today by the open mouths of looted tombs, and although some tombs must have been looted, as recounted by Lapp's "local expert," the number could not have been large.

Lapp went on to excavate 53 EBA tombs, which were spatially clustered in two areas that he designated as Cemetery A on the east of the site and the smaller Cemetery C to the northwest (Figure 3) (Schaub and Rast 1989:25). Most of the excavated tombs were Early Bronze IA shaft



Figure 3. Google Earth image of the looted cemetery of Bâb edh-Dhrâ'. Looted areas are outlined in white. The locations of graves excavated during formal projects are marked by black dots.

tombs (33 in total), each tomb comprising one or more burial chambers dug out radially from the bottom of an axial shaft (Schaub and Rast 1989:35–318). For the 33 tombs, 53 burial chambers were excavated, each one containing multiple inhumation burials and associated artifacts. Evidence of illegal digging was noted for eight tombs, but only one tomb (A84) seems to have been badly damaged. The second most frequent tomb type was the EB II-III charnel house. Eight charnel houses were excavated, with a ninth dating to EB IB (Schaub and Rast 1989:319–472). Again, the charnel houses contained multiple inhumations with associated artifacts.

Excavations resumed in 1975. Over four seasons (1975, 1977, 1979, and 1981), a further 27 EB IA shaft tombs were excavated, comprising 63 burial chambers (Schaub 2008). Most chambers appeared to be have been undisturbed by looting, although two had been robbed out, and surface indications of several more robbed tombs were noted in Area G. A further three charnel houses were excavated.

Into the early 1980s, then, it was still possible to locate many undisturbed tombs, and although evidence of tomb robbing was noted, the cemetery appears to have been largely intact. By the mid-1990s, however, the situation had clearly deteriorated. A short rescue excavation conducted there in 1995 investigated 39 previously unrecorded EB IA shaft tombs clustered in a small area of the cemetery, comprising 64 chambers,



that had been uncovered by illicit digging (McCreery 1996). In the limited time available it was not possible to clear all the tombs and inventory their contents, but the statistics from unsilted (and therefore intact) chambers are suggestive. Of the 44 chambers investigated that had been looted, only 20 yielded whole or restorable pots; the remaining 20 chambers had clearly been emptied of their contents.

The artifact assemblage recovered from the EB IA shaft tombs comprises mainly pottery, with a small number of stone objects (maceheads and basalt bowls), beads, and objects made of organic materials such as wood and leather. From the 53 chambers opened by Lapp, for example, there were 1182 pots, 41 stone bowls and maceheads, and 17 beads (Schaub and Rast 1989: x, Table 5; 203, Table 8). Similar quantities and proportions were recovered in the 1975–1981 excavation campaign (Schaub 2008:28, Table 4.1; 29, Tables 4.2–4.4). Thus, the saleable assemblage from these tombs is comprised overwhelmingly of pottery. A similar assemblage of artifacts was recovered from the EB II–III tombs. Typologically, the EB IA and EB II–III ceramic assemblages resemble one another, comprising mainly undecorated bowls and jars/juglets in a range of different sizes, although the EB IA types are on average larger (Schaub and Rast 1989:249, Figure 148; 419, Figure 251; 421–422, Figures 252 and 253, 423). This size difference might have important implications for marketability, which are discussed further below.

In 2008, we used Quickbird imagery available on Google Earth to estimate the total looted area at Báb edh-Dhrá' to be 74,377m<sup>2</sup> (Figures 3, 4) (Contreras and Brodie 2010). We used this figure in conjunction with information derived from the excavation reports to estimate the total number of tombs in the looted area and the quantity of pottery that might have been acquired from the total number of these tombs, assuming them all to have been looted. Documented excavations had shown that the incidence of burial chambers and the quantities of their offerings are not constant across the site, as the mean number of chambers per tomb and the mean number of pots per chamber were both lower for Cemetery C than for Cemetery A. Thus, we calculated two estimates of looted pottery, a low estimate based on the Cemetery C statistics, and a high estimate based on the Cemetery A statistics. The true figure would lie somewhere in between. The low damage estimate was that 669 chambers had been looted and 9,366 pots removed. The high damage estimate was that 1,190 chambers had been looted and 28,084 pots removed. These estimates of



Figure 4. The surface of Bab edh-Dhra in 2009 pock-marked by looters' pits (photograph D. Contreras).

the amounts of pottery that have been looted from Báb edh-Dhrá' seem unusually high, and the high estimate in particular looks questionable, but they are not totally unrealistic. Although there is no reason to believe that rich Cemetery A-type tombs were found across the whole cemetery area, and that Cemetery C-types might have been more widespread than is evident from excavated areas, Cemetery A-types are found at higher elevations (McCreery 1996:57), and it is mainly the higher elevation areas that are looted. There is no guarantee, either, that all the looting pits visible on Google Earth penetrated burial chambers or that all chambers in the looted area have been looted. Many chambers will have collapsed since the Bronze Age. Nevertheless, we are confident that, in general, the densely pitted areas do represent evidence of looting. It is hard to believe that diggers would persevere in that way if there were no tombs to find, particularly if they had recourse to long probing rods for locating burial chambers. This technique seems attested by the fact that some looted chambers had been entered directly through the roof and not by means of the adjoining shaft (McCreery 1996:53). (The fact that diggers are knowledgeable about site locations has been noted before. In Peru's Virú Valley, for example, many previously unknown sites have been discovered by undocumented digging [Contreras 2010].) In any case, as we examine



below, the damage estimates for Bâb edh-Dhrâ' are certainly not contradicted by what is known about the market for such pottery.

### The London Market for Jordanian EBA Pottery

By the mid-1990s, it was easy to buy Jordanian EB IA pottery—generally described as “Old Testament”—in London. Round-bottomed juglets were being offered for between £45–50 each, depending on size, and bowls for between £70–175 (Martin 1996:8). Surprisingly, perhaps, there was no obvious EB II-III pottery for sale, as might have been expected had Bâb edh-Dhrâ' been a source. Perhaps the EB II-III pottery was in a poorer state of preservation than EB IA and, thus, less marketable. A large part of the EB II-III pottery found during formal excavations was in burnt destruction deposits, and although much was clearly fragmentary, more than 450 whole vessels were recovered. Perhaps even whole vessels from those burnt deposits would have been too badly damaged by burning to be marketable, although the crucial impediment to their sale is most likely size. Illustrations of whole pots found in EB II-III charnel houses show the predominant forms to have been small juglets, 10 cm or less high, and small bowls, also less than 10 cm high and 15 cm in diameter. Equivalent EB IA pots were usually larger, as were the EB IA pots on sale in London. The smallest EB IA juglets on offer in London were 10 cm high, and the smallest EB IA bowls were 18 cm in diameter (Martin 1996:8). The prices of the EB IA pots were directly related to their size, so perhaps simply, it was not sufficiently profitable to trade in small objects, and thus, EB II-III pots were not considered marketable.

The EB IA pottery achieved minor celebrity in 1996 when it was featured in a two-page color spread in the “Homes & Gardens” section of the *Guardian Weekend* magazine (Murphy 1996). The article was advertising the then-innovative marketing strategy, adopted by London dealer Chris Martin, of selling antiquities by mail order. It prompted an angry response from British Museum archaeologist Konstantinos D. Politis, who claimed that the material was coming from robbed cemeteries in Jordan. At the time Politis was excavating the badly looted EBA cemetery at an-Naq' (Politis 2002:Figures 14.6, 14.7). Martin claimed in his defense that his pottery did not come from an-Naq', that he had bought it in London from a Jordanian citizen, and that it had been part of a consignment exported from Jordan in 1988 with appropriate legal documenta-

tion (Newnham 1996:72). This documentation includes an English language translation of a Jordanian export license, which purports to authorize the legal export of 2000 ceramic objects. The number quoted on the license gives some idea of the quantities of pottery that were being exported at the time, and more consignments followed (Newnham 1996:72). Furthermore, although Martin obtained his stock in London, he clearly knew something about the size of the cemetery at Bâb edh-Dhrâ' and that it was capable of disgorging an exceedingly large number of pots, as he made the unlikely suggestion that there were between 10 and 15 million pots still in the ground there. Against Martin's guess of millions, even our high damage estimate of 28,084 pots begins to look like a conservative one.

There were still a large number of EB IA antiquities for sale on the Internet in August 2008, and prices had climbed appreciably. Martin's present company Ancient and Oriental was offering a bowl for £200 (22 cm diameter, a bowl this size would have been offered for £135 in the late 1990s) and a one-handled juglet, said to come from “Transjordan,” for £150 (14 cm high; a juglet this size would have been offered for £50 in the late 1990s).<sup>2</sup> Another Web site was offering a bowl for £210, accompanied by the provenance ex-Peter Negus collection, and said to be from Bâb edh-Dhrâ', in “southern Palestine.”<sup>3</sup> At first sight, the mention of Bâb edh-Dhrâ' in a statement of provenance appears surprising, bordering on a tacit admission that the artifact had first been obtained in illegal circumstances. But it is less surprising when it is remembered that dealers are more concerned about assuring their customers of authenticity than legal export (Tubb and Brodie 2001:108–110). Thanks to the legitimate excavations of the 1960s and 1970s and their exemplary publication, Bâb edh-Dhrâ' is now a “known site” that exists in the literature. By associating a pot with a known site, the dealer is able to increase its historical interest and reassure potential customers about authenticity. By the same token, it is interesting to note that many pots offered for sale on the Internet are said to be from the area of Jericho, another known (and famous) site. Whether or not such pots actually do derive from their attributed sites is open to speculation.



### Discussion

It is possible to combine information obtained from Google Earth, published excavation reports, sales catalogs, and media reporting to make some inferences about the economics of looting at Bâb edh-Dhrâ' that might stand comparison to Rose and Burke's (2004) figures. According to Politis, who conducted extensive interviews in the area of an-Naq' in the late 1990s, about 20 km away from Bâb edh-Dhrâ' (Politis 2002: 263), local people digging up tombs were being paid something like one pound (British) for four pots, when the average daily wage was the equivalent of three pounds (British) per day (Newnham 1996:71). At that time, as noted above, pots were being sold in London for prices in the range £70–175 (say, £122 each). If these figures are applied to the Bâb edh-Dhrâ' damage estimates, then for the low damage estimate of 9,366 pots, the people digging and selling them would have received a total sum of something in the region of £2,342 over a period of several years. On the London market the same pots would have sold for £1,142,652. For the high damage estimate of 28,084 pots, the diggers would have received £7,021, and the pots would have sold in London for £3,426,248.

The estimated £2,342 to £7,021 (between \$3,864 and \$11,585 at late 1990s exchange rates) revenue of sold pots from Bâb edh-Dhrâ' stands in comparison to Rose and Burke's (2004) conclusion that each cemetery in their study area had the potential to generate between \$13,000 and \$24,000 through sale of their artifacts. (A small amount of extra money would have been available from Bâb edh-Dhrâ' from the sale of other artifacts.) It is important to point out, however, that there are some important discrepancies in the underlying data. Rose and Burke (2004) reported for their study area that diggers were receiving something like \$7–15 each for artifacts (estimated above to be about 15 percent final sale price), whereas Politis reported a much lower figure of less than a dollar a pot (about 0.2 percent final sale price). When compared to the 1 percent norm derived from data in Table 1, Politis's figure of one pound (British) for four pots in the Ghor es-Safi area looks suspiciously low, whereas Rose and Burke's figure of \$7–15 per artifact looks suspiciously high. Perhaps the investigators have misreported or been misinformed, but that is not necessarily the case. The conditions and availability of paid employment in the Ghor es-Safi might be poorer than those in Irbid, and thus more conducive to digging for lower rewards. Another reason for lower prices

in the Ghor es-Safi might be that whereas Bâb edh-Dhrâ' was giving up its thousands of pots, the nearby EBA cemeteries of Fayfa' and an-Naq' were also being looted. There was a potential output from these three cemeteries of tens of thousands of pots, and there was no evidence on the market of anything like that number. Perhaps, in this case, prices on the ground were responding to broader market conditions and were being driven down by oversupply.

It is too soon to draw any firm socioeconomic conclusions from these data, but it is worthwhile trying to develop some macroeconomic contexts. The cemeteries of Bâb edh-Dhrâ', Fayfa', and an-Naq' are located in the Karak administrative area, which in 2003 had a population of 214,225.<sup>4</sup> As it stands at the moment, if we hypothesize that each of the cemeteries had a commodity value of something in the region of \$8,000, the sale on the ground of the total contents of all three cemeteries would have generated about four cents per inhabitant of the Karak area. Even if other large looted cemeteries in the region, such as the Nabataean one of Qazone, are added to the equation, we would be struggling to suggest that on average, the sale of the contents of all tombs would have generated more than one dollar per inhabitant. Rose and Burke's (2004) study was conducted in the more fertile and, thus, more populous administrative region of Irbid. They estimated a total commodity value for all 745 known Roman-Byzantine cemeteries of between \$10 to \$18 million. In 2003, the population of the Irbid region was 950,695, so that revenue would have broken down to between \$10 and \$18 per inhabitant. These per capita figures are total, not annual, and suggest that, overall, subsistence digging/looting does not make a large contribution to the regional economies of Jordan—certainly nothing comparable to the annual \$1,000 per person reported by Hollowell for St. Lawrence Island. Clearly, however, not everyone is engaged in digging, and the money made by the probably small number of people who are would be more than the averages estimated here. Nevertheless, if the general public is not benefiting monetarily to any great extent, it suggests that financially modest strategies of heritage management aimed at emphasizing the potential of heritage as an educational resource or a tourist attraction might enjoy some measure of public support, mobilized to discourage digging through ostracism or other means of social persuasion. Of course, the effectiveness of social persuasion would further depend on the extent to which the digging is criminally organized and officially ignored or condoned. It is a



matter of some urgency that accurate and verifiable information about prices on the ground, the factors involved in their formation, their economic outcomes, and the organization of the local market should be collected in Jordan and in other areas to build on the arguments offered here and to make more concrete suggestions.

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### Notes

1. Except, occasionally, legacy laws such as the United Kingdom's Treasure Act incorporates a monetary rewards system based on the commodity values of found artifacts.
2. <http://www.antiquities.co.uk/>.
3. [http://www.ancientrelics.co.uk/ANE\\_NEW\\_Page8.htm](http://www.ancientrelics.co.uk/ANE_NEW_Page8.htm).
4. Data obtained from the Hashemite Kingdom of Jordan Department of Statistics at [http://www.dos.gov.jo/dos\\_home/dos\\_home\\_c/main/index.htm](http://www.dos.gov.jo/dos_home/dos_home_c/main/index.htm).

## 3

### *The Material and Intellectual Consequences of Acquiring the Sarpedon Krater*

DAVID GILL

The return of the Sarpedon krater to Italy in 2008 has highlighted a number of issues about the acquisition of recently surfacing antiquities, the destruction of the archaeological record, and the intellectual consequences of the loss of knowledge. Discussions about looted antiquities tend to focus on the material consequences: destroyed cemeteries and disturbed occupation layers. There are more serious intellectual consequences: the loss of knowledge and the creation of possibly flawed theories and approaches that try to reclaim what has gone forever (Gill and Chippindale 1993). The centerpiece of this study is a figure-decorated clay pot made at Athens in the late sixth century B.C.

The loss of context is not unusual for objects that surface on the market. Among the 130 or so objects returned to Italy in the last few years there are 34 Athenian pots: six from Boston's Museum of Fine Arts (Gill and Chippindale 2006:324–325, nos. 3–8), 17 from the J. Paul Getty Museum (Gill and Chippindale 2007a:228–229, nos. 7–15; Gill 2010b:105–06, nos. 1–3, 10–14), two additional pieces from New York's Metropolitan Museum of Art (Gill 2010b:106, nos. 3–4), one from the Princeton University Art Museum (Gill 2010b:106–107, no. 3), one from the Minneapolis Institute of Arts, three from the Royal-Athena Galleries in New York (Gill 2010b:107, nos. 1–3), and four from the Shelby White collection (Gill 2010b:108, nos. 2–5). Virtually nothing is known about their final resting-places and the associated material. A cup signed by Euphronios and attributed to Onesimos was returned to Italy from the J. Paul Getty Museum in 1999 (Sgubini 1999; see also Williams 1991).



# All the King's Horses

Essays on the Impact of Looting  
and the Illicit Antiquities Trade  
on Our Knowledge of the Past

Edited by Paula K. Lazrus and Alex W. Barker

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