

ROUND-TABLE COMMENTS

Joan ARUZ

I preface my comments on conference papers and discussions with two suggestions : first, for the establishment of a standardized terminology for sealing types, ideally to be published with illustrations, which would facilitate the very fruitful contacts between Aegean and Near Eastern scholars engaged in the study of seals and sealings; second, for the continuation of the type of study which integrates the evidence of archaeological context and methods of sealing with the analysis of the style, iconography and quality of seal designs.

A number of questions may be raised with regard to the significance of seal imagery in administrative systems. As a result of the study by Olivier, one may ask whether certain repeated combinations of design elements on hieroglyphic deposit seals may be meaningful, even though they are not recognizable signs of the hieroglyphic script. The recent study of Near Eastern glazed steatite cylinder seals by Holly Pittman is directly relevant to this question.

Another issue which has been partially addressed in Near Eastern studies is the possibility of different functions for distinctive groups of seals in a single period, characterized by their style and iconography. Scholars have focused attention, for example, on modelled-style ritual scenes and drilled-style scenes of craftsmen (often female) in the Late Uruk period. One also thinks of the more general dichotomy between Cretan well-modelled hard stone and "popular"-style soft stone seals, which may also be analyzed for significant thematic groups. Bonnie Magness-Gardner brings up the issue of inscribed and uninscribed Syrian seals and their function in the administration. Relevant to this question is recognition that inscriptions occur on seals and sealings with distinctive styles (generally associated with major centers) and characteristic motifs.

Michelle Marcus has introduced us to the varied seal corpus at the Iranian site of Hasanlu, which includes Assyrian and provincial Assyrian imports. Seal impressions, however, are only made from seals in the local style. Elsewhere, Judith Wiengarten has shown that local-style and central Cretan-style seals at Zakro are used in two different sealing systems. Similarly, functional differences have been distinguished at Susa for Protoelamite classic-style seals and the more widespread class of glazed steatite seals, in the study by Holly Pittman.

One feature which is shared by sealing systems in the Aegean and the Near East is the use of a single motif with a number of variations, which at times are nearly indistinguishable. This phenomenon may be significant in understanding relationships among seal users. It appears, along with multiple and counterstamping of sealings used to lock containers and storerooms, at the period when seals and sealings first occur in the Aegean in EB II. This brings us to the question of origins, which was addressed by Judith Wiengarten in the conference in her study of impressions from Phaistos. It seems appropriate to begin this inquiry in the previous phase at Lerna and in contemporary and earlier contexts in Anatolia, Syria and Mesopotamia.

Marvin POWELL

As an "outside observer", I found the attempt of this conference to make sense of the disparate array of archaeological data for sealing practices in the Aegean both encouraging and impressive. I was especially impressed by the diverse array of questions and methodological techniques applied to what is—in spite of the well-known presence of writing—a still largely mute body of data. I was, however, also impressed with the diverse, uneven, and intransigent nature of the Aegean data and with the difficulties which Aegean specialists face as they try to construct a convincing picture of Aegean society in the Bronze Age and to set sealing practices into the context of what must now and for the foreseeable future be a highly theoretical, indeed tenuous, picture of reality. Plato's image of the shadows on the wall is perhaps applicable to all of our attempts to understand the past, and it seems to me particularly applicable to the present problem.

In the first place, sealing is a socio-economic phenomenon that is extremely difficult to interpret without a knowledge of social structure and ethos. Polybios remarked with amazement that Roman officials of his age handled large sums of public money with scrupulous honesty, whereas Greeks could never be trusted to do this without an elaborate system of controls. While Polybios's point may be overdrawn, my point is that we know absolutely nothing of certainty about the ethos of the Bronze Age Aegean. If Near Eastern material has anything to teach us, it is that a picture of a society drawn from economic records may bear little resemblance to the picture reconstructed from literary records whose focus is primarily non-economic. Even more serious are the conflicting social paradigms that have been reconstructed out of the *same* material. To mention only one example, where some scholars have seen "theocratic" states and "redistributive" economies, others have discerned social systems in which "theocracy" and "redistribution" are relegated to subordinate or relatively minor roles.

I think the crucial question that Aegean specialists must ask themselves is whether and to what degree Near Eastern models are really applicable to the Aegean. I would not debate for a moment that all Bronze Age cultures have certain features in common; however, I am skeptical about the usefulness of any of the Near Eastern paradigms—and that includes Ugarit, Alalakh, and Mari, as well as Egypt, Babylonia, and Assyria—for interpreting the ethos of Aegean societies. All of the Near Eastern societies for which we can construct some sort of believable social paradigm seem to be far more hierarchically structured than any European society until the late Roman Empire. Thus, all of the Near Eastern societies about which we are sufficiently informed to make a judgement do have real bureaucracies. Whether any of the Aegean societies have a bureaucracy in the same sense is a moot point, but I am inclined to a negative opinion.

Bureaucracy does not exist independently of the society but is embedded in it, and where real bureaucracies have developed they have usually proved extraordinarily tenacious, metamorphosing themselves in wonderful ways to stay alive. The complete disappearance of Aegean "bureaucracies" along with literacy at the end of the Bronze Age suggests that such administrative structures were neither elaborately hierarchical nor pervasively tied to the social structure but were probably palace-oriented mechanisms, the main purpose of which was to run the *estate* of the ruler, which cannot necessarily be assumed to have been contiguous with or to have had identical interests with the *state* for whom the ruler served as leader.

Thus, whereas Near Eastern data for sealing, which can be controlled to some extent by written evidence, may suggest ways of interpreting the often free-floating Aegean data, the paradigms may not be applicable in detail and will probably result in distortion of the Aegean evidence if one attempts to force it into the Near Eastern model.

In sum, I would reiterate my proposition that sealing cannot be divorced from social ethos and social structure. And I would go on to argue that there is—no matter how difficult to define—such a thing as East and West and that the line lies historically somewhere on a North-South axis in the Aegean-West Anatolian area. The paradigmatic case of this opposition is the aftermath of the Battle of Kunaxa : the Greek generals who innocently went to their own doom and Artaxerxes and his advisors must have been equally surprised at the actions of their opponents. Of course, there are the true believers who would argue that the Indo-Europeans are the catalytic element leading to the difference implicit in the Kunaxa incident. In view of the history of the Hittites, the Mitannians, and the Indo-Europeans in Iran and India, that is a rather doubtful proposition. Likewise, it has been argued with ingenuity and conviction that there is something radically different about Aegean society in the Iron Age as opposed to the Bronze Age, but I confess that I personally remain unconvinced by theories that extrapolate from material objects a major cleavage in Aegean social history between the Bronze and Iron Age. There are differences, to be true, but whether those differences mean that the social ethos was pervasively and significantly different is a moot point and one that we will never be able to decide unless by some unforeseen miracle we actually hear Bronze Age peoples of the Aegean speak for themselves as we can hear those of the Near East, not only in their ubiquitous economic records but in a wide array of other literary forms.

Malcolm WIENER

I begin with an observation I know all present will share : this has been a splendid conference, beautifully organized, as enjoyable as it was productive. I think we have all been impressed by how fruitful the study of administrative systems as revealed by sealing practice has proven, and what a wealth of ideas—sometimes very provocative ideas—it has generated.

My assigned task as the one non-specialist and historian on the panel is to relate some of what we heard to major questions of Aegean prehistory.

Judith Weingarten has presented one such provocative idea in the form of the first of her "three revolutions" in Minoan sealing practice, by proposing that the system employed at Phaistos in MM II bore some resemblances to the system in use at Karahöyük in Anatolia, not only as regards certain motifs, but more particularly as regards the system of sealing in both its physical and administrative aspects. In her paper on the Minoan Multiple Sealing System, she cites a specific, interesting parallel between the material from Phaistos and that from Karahöyük. This body of material from Phaistos Weingarten regards as the earliest evidence of an administrative system in Crete, earlier examples of seal use constituting individual marking of objects for identification or decoration as distinguished from an administrative system.

This proposition, if correct, bears significantly upon one of the primary problems of Aegean prehistory, namely the explanation of the rise of the first high civilization of the western world in Crete. Some scholars (for example, Peter Warren) have seen the rise of palatial society as developing gradually from EBA roots. Others (for example, John Cherry) have viewed the emergence of a palatial system in Crete, and only in Crete among the islands of the Mediterranean, as involving a "quantum leap" at the beginning of the second millennium. It was our distinguished colleague Enrica Fiandra, whose experience and expertise includes the Near East as well as the Aegean, who proposed many years ago that the palaces of Crete should be seen as the westernmost extension of a chain of interconnecting palatial systems stretching from Mesopotamia through the Near East. In the United States, Vance Watrous is perhaps the most vigorous proponent of the view that the rise of a high civilization in Crete is inexplicable except in terms of very close contact with the Near East, perhaps including the introduction of Near Eastern architectural practices in the building of the old palaces. An administrative system imported *in toto* from the Near East would strongly support such a view.

The site of Karahöyük lies on the metal trade routes documented in the Kültepe tablets. We know from the tablets (and from the later Mari texts) how much metal moved along the trade routes, and it would not be surprising if administrative techniques or an administrative system to monitor and record the trade migrated as well. Literacy in Anatolia was introduced by the Assyrian trading colonies. My own view of the importance of the search for copper and tin and of the palatial role in organizing major overseas trade beginning with the old palaces is stated in a paper presented at the Swedish Institute Symposium of 1984 ¹. We may recall also that Cyprus at the beginning of the Late Bronze Age, at a time when Minoan imports of copper and tin increase dramatically, adopts as its first script not one based on the cuneiform near at hand, but rather a linear script in which, as our host and chairman has recently demonstrated, 18 or 19 of 22 signs are based on (or are at least closely related to) Linear A ². In the Iron Age,

1 M.H. WIENER, "Trade and Rule in Palatial Crete", in R. HÄGG and N. MARINATOS (eds.), *The Function of the Minoan Palaces* (1987) 261-268.

2 T.G. PALAIMA, "Cypro-Minoan Scripts : Problems of Historical Context", in Y. DUHOUX, T.G. PALAIMA and J. BENNET (eds.), *Problems in Decipherment (BCILL 49 1989)* 121-187.

Phoenician interest in the metal of southwestern Spain and Portugal led to the creation there prior to 750 B.C. of a syllabary based on the Phoenician alphabet. The Etruscan script as well can be connected ultimately to Phoenician/Greek interest in the metal of Etruria; for example, at the earliest Greek settlement in the west at Pithacussae, there is much evidence of metallurgy. Are we dealing here merely with the impetus bringing cultures into contact, or does the investment over time and space (as distinguished from simple barter) inherent in mining, metallurgy, and trade in metals stimulate the adoption of writing, record keeping and administrative systems?

The proposition that the first system of administration based on seals was imported *in toto* from the Near East involves two questions: (1) Are the sealings systems which survive in the archaeological record at Phaistos in MM II and at Karahöyük similar in a sufficient number of characteristics to justify this proposition? (2) Was there in fact no systematic use of sealings and writing in Crete prior to the Phaistos MM II deposit?

As to the former, Ingo Pini in the discussion following Judith Weingarten's paper noted that only a few of the Karahöyük seal shapes and designs have close parallels at Phaistos, the large majority being purely Minoan creations, and asked why, if the whole Minoan administrative system was imported from the East, cuneiform was not imported as well. To this Judith Weingarten would seem to have a reasonable reply, namely that (1) MM II Crete possessed a rich 500-year glyptic tradition of its own and had no need to borrow iconographic motifs, and (2) there is nothing unusual about a culture borrowing some aspects, and not others, of the culture of a more advanced neighbor. In addition to Ingo Pini's queries, we may also note that the practice of direct sealing of objects and retaining the sealings as records appears at first impression to be rather basic, and conceivably the result of independent invention or casual observation (i.e., "stimulus diffusion") without close contact between the cultures.

Much more challenging is the second of the propositions inherent in Judith Weingarten's paper: that Crete had no prior sealing system for administration. Of course there were workshops making seals in Crete as early as EM II in the Mesara and at least by EM III at Arkhanes, where by MM I A inscribed seals appear (CMS II 1.391, 392, 393 and 394). Ingo Pini noted the use of a sealing as a stopper for a jar at Knossos in EM III-MM I, and indeed has collected 40 examples of seal use prior to MM II. Jean-Claude Poursat observed that Mallia in MM II used pre-palatial seals. Finally the objection has been raised that Judith Weingarten's thesis depends entirely on the argument from silence, and accordingly that the lack of evidence for a sealing system prior to MM II should be ascribed to the accidents of preservation and recovery. To this she has replied that individual use of sealings does not constitute an administrative system, and that sites reinvestigated in recent years by careful excavators using modern techniques, including sites where a sealing system would have been expected to exist prior to MM II such as Knossos and Vasiliki, have revealed no regular administrative use of seals. Indeed the various destructions by fire in EM II have revealed little evidence of seal use.

Lerna in EH II has a sealing system in Judith Weingarten's terms (as she has kindly confirmed). Comparing the evidence for size, complexity and scope of trade of sites in Crete in EM III-MM I with Lerna in EH II suggests *a priori* that Crete should also have made administrative use of the many seals it produced. Relevant here are in EM III significant population increase at Knossos, monumental buildings at both Knossos and Palaikastro, depictions of seagoing ships, and in EM Crete generally the arrival of gold, copper, ivory, ostrich eggs, Egyptian stone vases and scarabs. On the other hand, one may ask whether there is convincing evidence for a centralized system of any kind in the region of Knossos, and particularly in the region of Phaistos, before the palaces. In MM I B we have, of course, the construction of palaces at Knossos and Phaistos, accompanied by concentration of craft production and social storage.

The level of social complexity and scope of exchange in Crete in EM III-MM I appear greater (and by MM I B far greater) than in EH II Lerna, and the need for an identification and recording system accordingly greater as well. It is perhaps worth noting in this connection that contact between Knossos and Lerna in EM/EH II is indicated by the appearance (in a well-stratified context from the Royal Road excavations) of sherds from a sauceboat in a fabric that is well made and appears visually to come from the Argolid.

We are therefore thrown back upon, and required to confront, Judith Weingarten's *argumentum ex silentio*: Does the lack of evidence for a sealing system during a period (EM II-MM I) of seal production and use suggest the probable absence of such a system, or is the lack more likely the result of the accidents of recovery? Of course we could not be certain of the existence of an EH II sealing system were it not for the fortunate recovery of the sealings at Lerna (even though isolated examples of sealings had previously been recovered at Asine and Asea, as John Younger has noted).

Six factors seem relevant here. The first is the factor of chance in site selection and area of excavation. Blegen found the Pylos archive of Linear B tablets on the first day of his excavation, having laid out his trench so as not to harm valuable olive trees on the property. Hogarth missed the Palace at Zakro by a few meters. If he had dug a few meters less in the opposite direction he would have missed House A, and we would know much less about Minoan sealing practice in LM I B.

The second factor is the precise circumstance of a destruction. If the roof collapses before the fire starts, and it is raining, sealings, tablets and frescoes may all be lost.

A third factor is the amount of rebuilding at a site. The construction of the old palaces at Knossos and Phaistos in MM I B may have destroyed evidence of earlier occupation. The extensive clearing and rebuilding after the destruction of the old palaces in MM III and the transformation of certain areas of the palaces (such as the closing of the *kouloures* to provide space for ceremonial west courts) may also have destroyed much evidence of earlier occupation.

A fourth factor is that destruction by fire is by far the most likely to preserve evidence of widespread seal use, tablets or frescoes. Accordingly the archaeological record may reveal not the time of the first appearance of an administrative system, but rather the horizon of the first major fire destruction after the first use. For example, EM seals were in use in Mallia in MM II (as previously noted).

A fifth factor is the concentration of sealing administration in small areas (e.g., at Phaistos, Ayia Triadha and Zakro) until after the LM I B destructions (Knossos in LM III).

Finally, a sixth factor affecting recovery is of course the character of the excavation itself—the skill and diligence of the excavator, trench-masters and workmen. It is said that the first tablet found at one major site was rescued from the dump by a workman familiar with tablets from working at another site. Jean-Pierre Olivier kindly called my attention to the fact that Nicholas Platon had the courage to say in print that many tablets were lost at Zakro when a workman threw them into a very damp area, on a day when Dr. Platon had to be in Siteia. Of course many early excavations (as well as some later excavations) were badly run by today's standards.

Accordingly we should perhaps remain skeptical about the *argumentum ex silentio* regarding the absence of an administrative sealing system in Crete before MM II. We may do well to recall the fate of Martin Nilsson, who in his great work of 1933 *Homer and Mycenae* held that mainland Greece was clearly illiterate throughout the Bronze Age. Nilsson argued from silence, maintaining that 70 years of excavation of great Bronze Age sites like Mycenae, Tiryns and Thebes would surely have disclosed real linear writing in the Cretan tradition, as opposed to mere painted brands on stirrup jars, had there been any such writing and had the

inhabitants of the mainland been anything but rude barbarians, whose leaders were "warring princes, not heads of an administrative apparatus" ³. Fewer than 7 years later, the Linear B tablets of Pylos were discovered. (I should mention that it was Tom Palaima who called this to my attention four years ago, and it was Cynthia Shelmerdine who told Tom !)

In considering the origin of an administrative system employing sealings in Crete, we should distinguish form from function. For even if the argument from silence proves unsound, and a sealing system did exist in Crete before MM II, nevertheless if the precise form of the system observable at Phaistos in MM II B so resembles a Near Eastern system that independent invention or stimulus diffusion inspired by casual contact become unlikely explanations, the implications in terms of the development of Minoan palatial culture are significant.

For the last of Judith Weingarten's three great revolutions in Minoan sealing practice—the proposed concentration of administration in LM I B in four regional centers (Knossos in the north, Zakro in the east, Ayia Triadha in the south and Khania in the west)—the accidents of recovery are also relevant. At Knossos, which suffered no destruction at the end of LM I B, and at Khania, where most of the site lies under the modern town, the evidence is enigmatic. At Zakro and Ayia Triadha the LM I B destructions preserved not only seals and tablets but (unlike sites which have not produced administrative records) luxury products of great value as well. At Zakro neither the palace archive area nor Room VII of House A at the entrance to the town was built over in LM II-III A:1 (nor at any subsequent time). Rather the extensive LM III building and occupation was concentrated on the hill of Ayios Antonios overlooking the palace on the south. At Ayia Triadha the part of the site which Vance Watrous has termed House A, on the side of the hill, was used as a foundation for LM III construction, thereby preserving its contents ⁴. At Mallia, on the other hand, comparatively little LM I B material was found in the immediate vicinity of the palace, since the area seems to have been cleared and occupied in LM II-III A:1. At Gournia there was significant building and a shrine constructed in LM III in the area of the likely entrance to the town where earlier sealings, if any, might have been found (on the analogy of House A at Zakro). At Palaikastro only a small part of a very large site has been dug. The concentration of archives in small areas, noted earlier, is relevant to the likelihood of their recovery from LM deposits. Finally, whatever the cause or causes of the LM I B destructions and abandonments, it is even conceivable that a palatial official fleeing a site such as Mallia or Gournia took tablets, roundels and sealing records to the Lasithi plain (for example), in the hope that such records would still be relevant in the changed circumstances.

The element of chance in the recovery of evidence of administration is clearly quite high. Nonetheless, if future decades of excavation at such sites as Mallia, Petras Siteia and Palaikastro (and perhaps one day at the town of Phaistos) continue to yield no evidence of administration, then we may perhaps conclude (with a prayer to the shade of Martin Nilsson) that the odds favor the LM I B concentration of administration in four centers which Judith Weingarten has proposed. Again the implications in terms of Minoan history would be significant.

Accordingly, the lines of research pursued by Judith Weingarten and other participants in this conference seem to me fruitful and important, like the conference itself.

3 M.P. NILSSON, *Opuscula Selecta* III (1960) 501.

4 L.V. WATROUS, "Ayia Triada: A New Perspective on the Minoan Villa", *AJA* 88 (1984) 123-134. I am indebted to Prof. Watrous for clarifying this point for me, as well as for other helpful comments.

John G. YOUNGER

In examining the use of seals as bureaucratic tools we should keep in mind that to the Aegean glyptologist seals come in a bewilderingly wide variety of shapes and sizes, including objects engraved in relief (cf. *CMS* V 462), and that they served a variety of purposes, including, but not limited to, bureaucratic uses.

Nonetheless, most seal-engravers in the Bronze Age produced most seals within some kind of bureaucratic or administrative environment. The following brief remarks therefore not only focus on the relationship between the seals themselves and the people who used, owned, or carried them ('seal-bearer' may be closer to the Mycenaean term; cf. Greek 'kleidophoroi' and Mycenaean *ka-ra-wi-po-ro*) but also focus on how the seal-engravers responded to the changing bureaucratic uses seals were put to, especially as the different writing systems developed.

From the Late Neolithic to at least EH/EM II there was a wide glyptic koinê of seal-shapes and seal-motifs from the Balkans through Greece and Anatolia to Syria; in the last phase of this koinê, in EH/EM II, seals were used sphragistically for the first time.

Crete has produced little evidence of the sphragistic use of seals. The sealing from Myrtos (*CMS* V 20) carries the 'chevroned cross', a motif so common throughout this early eastern Mediterranean koinê that the stamp that bore it could have come from anywhere. The mainland, however, boasts of a flourishing sealing and impressing activity, reminiscent of Near Eastern practices: the Corridor House in the Peloponnese, attendant sealings (*CMS* V 43-119 & 519-522), some cognizance of Egyptian writing (*CMS* V 478), and much Helladic and Cycladic pottery impressed by seals.

Between the EH/EM II sealings and impressed pottery and the MM II sealings from the Phaistos and Monastiraki deposits, there must have been some continuity; many of the seal-shapes and motifs are similar and so, apparently, are the sealing practices. We probably should consider the entire period from EH/EM II to MM II as a first phase in Aegean sealing activity.

Contemporary with the Phaistos and Monastiraki deposits, seal-engravers created new seal-shapes: they formalized the stamp seal into the signet and then into the Petschaft and they created the class of three- and four-sided prisms. Almost the entire surface of these prisms is used to carry hieroglyphic inscriptions, the most lexical information that Aegean seals of any kind carry.

In the next period, Weingarten's "Minoan" period, seals were used primarily to impress sealings brought into the palaces. Obviously, the Minoans considered seals to be important adjuncts to the lexically informative tablets and since seals do not carry lexical information, apart from the hieroglyphic class, the Minoans must have been able to infer from the aesthetic qualities of seals valuable information about the seal-users who impressed the sealings outside the palaces. The Minoan bureaucrat inside would have been able to infer from the seal impression the impressing seal's iconography, style, shape, and whether the stone was hard (7+ on the Mohs scale) like agate or soft like serpentine. We may suspect that differences in these qualities reflected different social statuses, memberships in social groups, or levels of aesthetic education, all valuable nuances in identifying the owners/bearers of the seals.

In Weingarten's third, "Mycenaean", period of sealing activity, seals were used to impress sealings only intermittently. The Mycenaeans probably saw seals as uninformative adjuncts to the lexically more informative tablets. Top-quality seals in hard-stones would not therefore have been much in demand, if at all, in the 13th century and in fact it seems that few, if any, were made after the destruction of Knossos in the early 14th century.

When they impressed sealings with sealstones, the Mycenaeans in the III B palaces used hard-stone heirlooms, at least a generation old in all cases. Soft-stone seals produced from the middle of the 14th century on, however, were certainly popular amongst the humble; these seals were dedicated in sanctuaries, worn on sea journeys like the one that ended in a wreck off Kaş, and lost in new settlements, like Beşik Tepe in the Troad. But these soft-stone seals were not used sphragistically.

In both Weingarten's periods, therefore, the Minoan of LM I-III A:1 and the Mycenaean of LH III B, people both inside and outside the palaces had access to seals—in this sense, it seems permissible to say that almost everybody had a seal. But the periods differ in the ways the people outside the palaces used seals. In the Minoan period sealings were impressed outside the palaces by both hard- and soft-stone seals. The soft-stone seals are mainly examples of the serpentine Cretan Popular Group, whose examples have been found in large numbers from humble tombs and town sites. We may imagine, therefore, that in the Minoan period a wide range of people participated in the bureaucratic process of sealing, both the palatial administrators with their hard-stone seals and the more humble possessors of soft-stone Cretan Popular Group seals outside the palaces.

By the Mycenaean period, however, only people within the palaces used seals, only occasionally, and only heirloom hard-stone pieces. The rest of the population possessed examples of the Mainland Popular Group of steatite seals with schematic designs but these were apparently never used to impress sealings; instead, these "seals" must have functioned only as items of personal adornment or as amulets.

Thomas G. PALAIMA

The original intention which Erik Hallager, Judith Weingarten and I had when we sat in the Prison of Socrates restaurant in Athens on an evening in early September, 1987 and discussed the possibility of holding such a conference as this was to bring together a critical mass of scholars, representing as wide a range of pertinent specialties and perspectives as possible, who could contribute to a critical discussion of the use of seals and sealings as tools independent of and integrated into the formal administrative bureaucracies which controlled principally economic activities in the various regions of the Aegean (i.e., mainly the Minoan and Mycenaean) world during the Middle and Late Bronze Ages. We drew up the list of topic questions printed in the introduction to this volume. These questions address several obvious problems—and current approaches to solutions of those problems—which confront students of ancient societies, social and economic systems, and the mechanisms developed and used by those systems : (1) origins; (2) attested and inferred applications, overall and by culture and period; (3) transitions and modifications through time and across cultures and regions : identification of their natures and characteristics, and explanation of their causes; (4) the social and economic impacts of the systems and mechanisms, and the conditions under which they worked; (5) comparative perspectives; (6) disappearance and the factors causing it. This volume does not contain anywhere categorical answers, either by general consensus or by individuals, to any of our original questions. Nor does it contain papers or chapters which present definitive answers to any of the six general problems just listed. What can be found in its individual papers, responses, discussion and closing commentaries are new ideas and interpretations—in some cases even important new data—which bring us closer to an understanding of the role of seals and sealings in the Minoan and Mycenaean administrative systems by bringing into clear focus : the complex and subtle problems, new and old; the possibilities for different, often irreconcilable interpretations; and the limitations of data and interpretative methods confronting Aegean and Near Eastern experts alike. Consequently we have more problems and viewpoints to consider than when we began and a much better idea of the challenges facing us.

1a. Joan Aruz has stressed the practical need for standardizing terminology, so that Near Eastern, Egyptian and Aegean scholars interested in seals and administration can speak the same language and thereby avoid confusion in communicating with one another. Judith Weingarten's recent typological classifications of Minoan and Mycenaean sealings can be taken as the Aegean standard. Perhaps we Aegeanists can prevail upon Enrica Fiandra, Bonnie Magness-Gardiner, and Michelle Marcus to develop an illustrated typology of Near Eastern sealings. One need not arrive at identical terms—this is perhaps impossible. But if the practice of all Near Eastern scholars conformed to one standard glossary of terms and that of all Aegeanists to another (Weingarten's), and if these glossaries were published in prominent and readily accessible journals or series, e.g., for the Aegean one of the *CMS* volumes or *Beihefte*, and were then circulated widely as offprints, the dialogue between Near Eastern and Aegean experts could proceed with accurate simultaneous translation. Similar standard "typological glossaries" could be set up for seals (Younger, Pini, Aruz, Marcus) and even written administrative records and documents (Palaima, Olivier, Powell).

1b. Other issues related to terminology arose at many points. Enrica Fiandra and Bonnie Magness-Gardiner debated whether one could differentiate clearly between storerooms which were used for long-term storage and those that were "distributive", sealings from the latter

being directly linked to administration. This led immediately to the question of defining what one meant by "administration", a term whose precise definition is of critical significance in debating the origin of Minoan sealing systems and full-scale regional economic organization. Does Pini's catalogue of pre-palatial seals and sealings in and of itself offer enough evidence for the "systematic and regular application" of seals that most of us would consider "administration"? I questioned whether one could view the single Myrtos sealing as a "reproducible singleton", i.e., the sole surviving evidence for what might have been a fuller system of seal applications. Certainly one must multiply our surviving Linear A tablet material from major sites like Zakro, Knossos, and even Hagia Triada to get a full picture of how neo-palatial Minoan administration must have worked.

Jean-Claude Poursat's analysis of the proto-palatial hieroglyphic material from Quartier Mu at Mallia led to a similar debate about what materials, inscribed or sealed, one can consider "archival". This problem is especially acute at sites which offer limited data: Hasanlu, Mallia and many later Minoan sites, including the major centers where later habitation often destroyed earlier evidence. In the Mycenaean period, classification of inscriptions from the main palace centers as archives, deposits, bureaus and so on, has been accomplished⁵. Aravantinos now presents us with an illustration of a collection of sealings from Thebes which, from find circumstances, we would consider a deposit. But their large number and intentional collection might indicate a step taken toward "archival processing".

2. We have all agreed that publication of the backs and sides of sealings is essential to an understanding of their functions. Would it be possible for casts of the backs of Near Eastern sealings to be added to the full collection of Aegean casts housed at the center of CMS in Marburg? Such a central repository would certainly facilitate future research.

3. Although not part of the brief of this conference, Michelle Marcus's paper and subsequent discussion by Joan Aruz, Bonnie Magness-Gardiner and John Younger have made it clear that differences in seal style (design, iconography and quality) should be taken into consideration. Stylistic elements can be clues to understanding patterns of use, general and particular. This was clear in Marcus's treatment of local vs. Assyrian style seals at Hasanlu. Magness-Gardiner has pointed out that the very quality of seals can be related to the status of the users or owners in highly unpredictable ways. Both Ann Blasingham and Judith Weingarten have used the grouping of seal designs and motifs around particular themes to understand the workings of administrative and social networks in Early through Late Minoan times.

4. A major problem raised in regard to Minoan seal use, particularly within an administrative context and directly related to this last approach, concerned look-alike seals. What defines a look-alike? To what degree of accuracy must one seal be a copy of another in order to have functioned as a look-alike within Minoan or Mycenaean culture? Are slight variations in motifs and themes meaningful; and, if so, what purposes do they have?

An associated problem concerned the degree of legibility required of a seal impression. This came up especially in the case of the Minoan roundels since the technique of impressing seals on the perimeter of a flat clay disc might be thought conducive to producing blurred or distorted images. Recall that on the Minoan counter-inscribed nodules, unlike the Mycenaean, the seal impression is carefully avoided by the inscriber. Still in the Near East where rolled cylinder impressions often overlap and blur one another, as Marvin Powell and Joan Aruz pointed out, it was the symbolic act of making a seal impression—consequently something that

5 J.-P. OLIVIER, *Les Scribes de Knossos* (Rome 1967) and T.G. PALAIMA, *The Scribes of Pylos* (Rome 1988).

could be done with one's fingernail or the cloth of one's garment—that was particularly important. Erik Hallager indicated that the roundel impressions lose at most 10-20% of the seal image. Many are entirely clear reproductions of the seal designs. Erik Hallager, Malcolm Wiener, and Cynthia Shelmerdine emphasized the limited numbers and specialized natures of sealing transactions in all periods; and I pointed out that, since the official in charge was dealing with a few known craftsmen or tradesmen, it would be an easy matter to summon a particular party, in case any questions or disputes arose, and then to compare his seal impression to the at least 80% legible impressions on the edge of the roundel.

Marvin Powell used the analogy of a modern credit card as a transactional instrument, while I pointed out that illegibility of signatures was no impediment to getting the checks drawn from NEH funds cashed in order to reimburse participants in the conference for travel expenses. According to the arrangement I had made, I simply produced a list of signatures headed by my own and by my bank account number. Thus the bank had no way of checking and no particular desire to check the many signatures of the foreign or American scholars receiving payment. The essential point was that the bank's procedures for signing were followed and that I was a known "transactor" whose signature could be checked in case of any subsequent problems. An elaborate system was in place, and everything was done *pro forma* to satisfy the requirements of this system.

5. We have not reached a consensus about the ultimate origins of Minoan and Mycenaean sealing systems, but that does not mean we should not continue to try. Malcolm Wiener has summarized very well not only the the two major schools of thought : Weingarten's that the earliest Minoan *system* was a fairly direct importation from the Near East; Pini's and Younger's that one can trace antecedents to the Minoan system earlier on Crete and on the mainland which support a hypothesis of internal development within Minoan culture itself; but Wiener has also called to our attention the important historical ramifications of these two lines of interpretation. We might also ask why the Cretans, if using Near Eastern practices as models, did not adopt the cylinder seal as their primary identifying device. Were they already under Egyptian influence which determined their choice of stamp seals ?

6. We must consider the related question of the origins of the writing systems that are used simultaneously with seals and sealings for purposes of administrative control. If the Minoan seal and sealing system is Near Eastern or Near-Eastern-influenced, why does the earliest writing on Minoan seals take a hieroglyphic form and why does writing almost totally occupy the surfaces of such seals, rather than being ancillary or complementary to iconographical representations as in the Near East ? Marvin Powell has proposed that the differences between Near Eastern and Minoan-Mycenaean written administrative systems can be explained by differences in the intensity of settlement, in the very sizes of the respective systems, in the length of time the respective systems had to evolve, in the complexity of scribal hierarchies, and in the degree to which scribes—and written information—became essential to the workings of society as a whole. Here we are reminded once again what relative cultural backwaters the Minoan and Mycenaean societies were.

7. Marvin Powell has also stressed that the highly evolved economic and social systems of the Near East made great use of sealed written records, i.e., what he terms "documents", while the Minoans and Mycenaeans made no use of such documents. This introduces a further problem. There must have been some need, even in what we might consider the more primitive Aegean systems, for something equivalent to "documents". It hardly seems likely that such texts would have been kept exclusively on perishable materials. What then takes their place ? How are the contractual relationships which we see in Mycenaean tablets and sealings (e.g., the

land disputes in the Pylos E- series and the *o-pa, a-pu-do-si*, and *qe-te-o* transactions in Aravantinos's Thebes sealings—and sealings elsewhere) and perhaps even in Hallager's Minoan roundels made and kept valid?

8. Such concerns led immediately to a related question: to what extent did the ownership and use of seals permeate Minoan and Mycenaean societies? Who would have owned seals? How were they distributed? What were the rights and obligations connected with seal ownership and use? Here Aegeanists are again in a worse position, because no readable texts discuss such matters, and all non-hieroglyphic seals known to be of the Minoan and Mycenaean palatial periods are uninscribed⁶. John Younger, estimating from the number of finds, their distribution, and probable population figures, adopts the extreme view that almost all Minoans and Mycenaeans would have owned seals⁷. If so, how were they used at each stratum of society? We should rightly ask whether there was not some cut-off point in social or legal or economic status below which seals would not have been used. In the Near East some slaves had seals, but only because they belonged to an upper economic class. Marvin Powell emphasized that in the Ur III period, as well as at other times in Near Eastern history, palace centers should be conceived of as large urban centers. The population of these centers stood in contrast with the broader, for the most part anonymous populations in the countryside and in smaller settlements along rivers and land routes. In his view those people who receive the barest mention in any records at all belonged to an elite stratum of society, perhaps the upper 10%.

I emphasized that the same must hold true for Mycenaean society. Again the number of individuals mentioned in the fairly complete archives from destruction levels of sites like Pylos and Knossos must represent only a fraction of the overall population. Even if we reasonably multiply the number of individuals mentioned to take into account the certain fact that at other periods of the administrative year the central administration would have compiled information about other facets of the overall economy, we would still arrive at a small percentage figure. It is hard for me to imagine that the labor force of women receiving rations in the A- series at Pylos or employed in regional cloth workshops in the L- series at Knossos would have owned and used seals. They would never come into the higher or more complicated levels of the economic system that required the use of these devices. Moreover Shelmerdine pointed out that one must take into consideration the decline in seal manufacture in the Mycenaean period at a time of increasing population as a reflection of the fact that only a limited percentage of people used seals. She also pointed out that the tomb finds of the III A period indicate a pattern of concentration of several seals in wealthy burials only. This would seem to bear out a pattern of use restricted to the upper strata of society. Exactly how those strata were determined is a broader question.

Finally here again Aegeanists must admit that the paucity of our written documentation leaves us ignorant, even for the Mycenaean period, of the principles or applications of law and of the fine grades of official, social and economic stratification so much better attested in the Near East. Therefore, we are at the mercy of the limited physical data available in reconstructing the range of uses for seals. We have nothing like the Old Assyrian caravan texts which mention the sealing of bags of tin, silver and gold. Nor do we have texts of sealed receipts and disbursements, labor contracts, loans and gifts, donations and offerings to temples, and so on. Of course, it is sobering to contrast the 25,000 documents from a 30-year span in Ur III with

6 CMS V, no. 415 and CMS II, 2, no. 213, are the only seals known to me which have non-hieroglyphic writing on them. The first is from an LH III C context; the second is a chance find.

7 For example, for the Late Bronze Age we have extant over 4000 seals and some 500 sealings, and we have at most three seals used to impress any of the sealings.

the fewer than 7,000 texts total from all Minoan and Mycenaean sites during the second millennium B.C.

Yet we must not let our new-found sobriety bring with it an intimidating pessimism. Because of the restricted numbers of the Aegean data, they are published and studied comprehensively and exhaustively. Thus we have for nearly all clay records and sealings the kind of knowledge about find contexts and physical characteristics which Fiandra decries as missing for the Near East, where sealings have often been published with little reference to exact find-spots or their relationships to one another. For all the major Mycenaean centers we have full treatments of the tablet-writing bureaucracies. Louis Godart's palaeographical studies in *GORILA 5*, as Erik Hallager's study of the roundels has illustrated, now ushers in an age when similar work can be done for the Minoan centers.

9. Another crucial issue is the original interaction between formal writing and seals and sealings in the earliest phase of Minoan administration. Jean-Pierre Olivier's study of the hieroglyphic seals introduces immediately the problem of the tension between what I call "lexical information", i.e., the message conveyed by the formal inscription on a seal, and what John Younger and Michelle Marcus would term "aesthetic or stylistic messages", i.e., the information conveyed by pictorial designs, iconographical conventions, and even by the shapes and materials of the seals themselves. The Cretan hieroglyphic seals form a special and rather short-lived class of devices. Why were they ever invented? What purposes did such "lexically oriented" seals perform in contrast to "iconographical" seals? I would tend to see several of the seemingly decorative or iconographical motifs on hieroglyphic seals as nascent hieroglyphic signs, but it is perhaps impossible to explain all such signs that way. The extremist view, of course, is Olivier's: the hieroglyphic signs on many of these seals are not real inscriptions *stricto sensu*.

Jean-Pierre Olivier has also pointed out that the recurrence of sign groups on the separate class of hieroglyphic seals and their impressed sealings (and in some cases even on clay inscriptions) suggests some sort of institutional koine in the proto-palatial period. He proposes "palace" or "temple" and hints that this evidence may imply the existence of one central controlling authority. However a division of authority between such institutions as "palace" and "temple" in the proto-palatial period might also be used to explain the peculiar and separate existence of the hieroglyphic seal and its applications. The disappearance of Cretan hieroglyphic writing and sealing might then be seen as more than a process of administrative transformation, and instead as reflecting a shift in the balance of power among institutions within Minoan society. This gets us dangerously close, however, to viewing Cretan hieroglyphic along Egyptian lines which Jean-Pierre would like to avoid.

10. The next step is to examine how writing and seals are used, once permanently separated from each other. How do formal texts in the Minoan-Mycenaean scripts and devices with images interact through time? Younger would like to see the greatest tension between the two at the end of the Minoan neo-palatial period. He correctly stresses the limitations mere size imposes on the amount of lexical or iconographical information a seal can convey. Perhaps, however, we might also see the LM I B period as the high point of cooperation between the two systems. Obviously each was vital to Minoan economic organization, and we at this time have evidence for the spread of written records into the Cycladic islands where Minoan seal styles had already penetrated. Thus one observes a Minoan-Cycladic-mainland glyptic koine at a time when a relative koine in administration based on both the Linear A script and sealing practices prevailed throughout Crete.

11. A connected question then is how did these devices, procedures, and styles become widespread. What might have been the commonality of interests or conditions that made these types of koine possible ? Precisely why did they exist ? How did regional workshops and regional controlling bureaucracies communicate with one another ?

12. Ingo Pini and John Younger are agreed that there is an abrupt break in seal manufacturing in LM III A:1/LH III A:1. What causes this discontinuity ? Do systems grow so complicated that lexical systems alone can store the information necessary to assure the smooth working of economies and societies ? Or is centralization a key factor ? Written records increase in size, number and efficiency. Certainly after this break sealing is an ancillary practice at best. Yet sealing is well-attested, both independent of and in conjunction with formal writing. This is a supreme paradox. The devices themselves are no longer produced, but their practical applications continue and are obviously used and accepted by the central bureaucratic organizations. Younger points to the disappearance of other specialized crafts : for example, the manufacture of faience and of stone vases. But the Mycenaean palaces certainly had the power, resources and prestige to command all sorts of specialized crafts and industries. There is something very peculiar here.

13. Malcolm Wiener turned our attention to larger historical considerations, which were often neglected because of the specialized interests and concerns of most of the participants. His emphasis on the vital need of the early Cretan palaces to acquire important metals counterbalances my own over-concentration on essential agricultural and other local products. Such activities would certainly have put the Cretan elites in contact with Near Eastern-Syrian systems. Here we might ask what is cart and what is horse in the ability of the fledgling palace centers to conduct trade with and be influenced by Near Eastern societies. Artefactual and documentary evidence for contacts with the Near East, Egypt and Syria can be pushed well back into the third millenium, clearly pre-palatial times⁸. Might gradual internal evolution have progressed hand in hand with a gradual familiarization with Near Eastern practices ?

14. Wiener properly weighed the pros and cons of the most radical idea advanced at this conference, namely Weingarten's that Crete in LM I B was administered exclusively from four major centers : Khania, Knossos, Hagia Triada and Zakro. In his closing commentary can be found a list of extenuating factors that might cause the current archaeological record on this and other points to be misleading.

We have then at the end of this conference far more questions than when we started, certainly a mark of our collective success.

8 L. GODART, "Quelques aspects de la politique extérieure de la Crète minoenne et mycénienne", in *Res Mycenaeae* 132-134.