

SHOULD ARCHAEOMINERALOGY NOW FOLLOW GEOARCHAEOLOGY INTO THE FAMILY OF ORGANIZED SCHOLARLY FIELDS?

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First, I want to congratulate and thank Professor Kostov and the Organizing Committee for arranging this International Conference on Geoarchaeology and Archaeomineralogy. In this paper I focus on archaeomineralogy because I believe this is the first international conference on archaeomineralogy. This is a historic event. It is fitting that Professor Kostov and others here today are the pioneers in developing this field in Eastern Europe. We should note N. P. Yushkin's 2005 conference in Russia on 'Archaeomineralogy and the Early History of Mineralogy'.

Science is the creation of scientists. Each branch of science has its own unique history. What is said and done at this conference should help establish archaeomineralogy as a recognized and defined scholarly field of study. The related fields of archaeometry, geoarchaeology, archaeometallurgy, and gemmology already have achieved this status and recognition. They followed the path historically taken by scientific disciplines: by holding international meetings, publishing books and articles, developing pathways for university study, and finally developing some form of scientific organization.

What is the nature of archaeomineralogy? Without mineralogy (as well as petrology and gemmology) there can be no archaeomineralogy so surely it is partly a natural science, and just as surely it is based on the labors of archaeology and history.

Thus archaeomineralogy must be considered a multidisciplinary, if not interdisciplinary, pursuit of knowledge concerning the human exploitation of minerals and rocks. I consider archaeomineralogy to be quite distinct from the history of mineralogy.

Archaeomineralogy is a derivative science. We do not have any unique methods or paradigms. Both archaeomineralogists and geoarchaeologists use the proven methods of earth and mineral scientists, archaeologists, chemists, and historians of science. We depend on archaeologists, museum curators, rare-book librarians, and archivists. But, as far back as Theophrastus we do have a unique set of questions to be answered.

Historically, in common with other sciences, archaeomineralogy has had periods of relative inactivity alternating with periods of intense activity highlighted by the ancient Greeks, Pliny, the prodigious Islamic scholars of the Middle Ages, the reawakening during the Renaissance, Agricola – these are all known to you. With over 2000 years of development archaeomineralogy is thus a fairly mature field of inquiry. Our science is historical and empirical rather than theoretical. Every age and every geographic region present us with abundant opportunities and we have the responsibility to challenge the accepted authorities when new evidence is uncovered.

Allow me for a moment to compare archaeomineralogy to geoarchaeology. If we need a founding date for geoarchaeology I would choose the publication of Charles Lyell's 'Geological Evidences for the Antiquity of Man' in 1863, the first book on geoarchaeology. It was a defining text. Since then there have been many geoarchaeologists who have made significant contributions to our understanding of ancient human lifeways through studies of the natural environments that affected human evolution and social development.

Yet it was not until the middle 1970s when I organized the first international geoarchaeological meetings and the first professional society: the Archaeological Geology Division of the Geological Society of America, that geoarchaeology became an organized scientific specialty. The geoarchaeological literature at that time was sparse indeed. Much of it was in what is called the 'gray literature' as appendices to archaeological reports. I and others then established the publication outlets, annual meetings, and graduate programs necessary for geoarchaeology to become an organized scholarly field. Geoarchaeology is now a well-recognized scientific specialty world wide.

I cannot predict the future course of development of archaeomineralogy. Geoarchaeology was founded and initially nurtured by geologists; yet now most geoarchaeologists are educated in archaeology and anthropology departments at least in North America. I think this evolution is both wise and necessary. In the name geoarchaeology, archaeology is the core noun with geo a modifier. In other words a

geoarchaeologist uses geologic concepts, methods, and knowledge base to solve archaeological problems. I have suggested elsewhere that archaeological geology might be seen as somewhat different from geoarchaeology. For example, the determination of ancient shorelines (using core drilling, sedimentology, and geomorphology) can be important for archaeology but geologists do such investigations quite apart from any archaeology.

I have spent my entire academic career straddling two disciplines. My Ph.D. is in geochemistry yet research in geochemistry is not geology as applied to chemistry but rather it is chemistry applied to geologic problems. So it seems the better name would be chemical geology. I spent the last decades of my university career, first as a professor of geology and archaeology, then finally as a professor of geoarchaeology, which I think is the more appropriate title.

So, what about archaeomineralogy? The name now is becoming entrenched and I think there is little profit in anguishing over the name. I suggest the focus of those who do archaeomineralogy should be on expanding and strengthening the opportunities for research and publication, including a minimum level of secure funding and additional means of passing on our knowledge to university students and young scholars in research universities and research institutes, including museums.

I have published a great deal of geoarchaeology but very little that was focused primarily on archaeomineralogy except the book 'Archaeomineralogy' (Springer, 2002), which will be out in a revised and expanded Second Edition in 2009. Some of my experiences doing archaeomineralogy in the field in the Eastern Mediterranean region were a bit discouraging. My experiences pointed to the need for either more lithology or geoarchaeology in the education of archaeologists or else having a lithological expert on excavation staffs. I have had the task of identifying large numbers of rock and mineral artifacts that had been recovered and cataloged from archaeological excavations and surveys. Up to 40% were misidentified, even to the point of identifying the igneous rock felsite as a marble.

There have been at least two articles published with the approximate titles, 'Why Archaeologists Don't Care About Archaeometry'. Archaeometrists and archaeological scientists can provide critical information about artifacts so a lack of interest by many archaeologists and a lack of better integration of natural science and archaeology I find perplexing, but the situation is improving. Yet it seems likely that many archaeologists know little about archaeomineralogy although new information from this field can enhance archaeological results and conclusions. Interdisciplinary communication cuts both ways so I suggest we continue to make serious efforts to increase the participation of archaeologists in meetings such as this one.

I used the term 'organized' in the title of this address because archaeomineralogy in one form or another has been practiced in an independent and unorganized manner since Theophrastus published his 'Peri Lithon' ('About Stones') circa 300 BC. He attempted to classify what was known about human interest in and use of minerals, gems, and rocks. A historical look at archaeomineralogy begins with Theophrastus.

After approximately 2300 years of intellectual development it seems appropriate to put a little more organization into scholarly efforts to blend mineralogy and gemmology with archaeology and history. This conference is one effort in such organizing – bringing together the disparate scholars dedicated to archaeomineralogy.

Looking to the future of this emerging scientific specialty one might ask the question: is archaeomineralogy a sub discipline of geoarchaeology or a sub discipline of the history of Earth science? But perhaps this is not an important question. More importantly, in the future there should be abundant new opportunities for historical approaches to uncovering the development of human uses of rocks and minerals. But I believe there are even more opportunities for mineralogists (and archaeometrists), with their powerful analytical instruments, working with archaeological artifacts, to determine what was never part of the written record. Early cultures have been largely defined by their range of material products, mostly geologic in nature. Archaeomineralogy, like geoarchaeology, has the luxury of working with rock products, which are exceptional durable. Future practitioners of archaeomineralogy will be subject to a variety of reward systems based on the nature of the institution where they do their research. Unfortunately, recent history has shown that most institutions are not well suited to accommodate interdisciplinary pursuits. In research universities major publications are the keys to the reward system. Yet I hope archaeomineralogists will spend time building the infrastructure (as I have done for geoarchaeology) needed in archaeomineralogy in its formative years. Discipline building in the early stages is often driven by only one or a few individuals. The rate of development and changing nature of our emerging scientific specialty is, of course, unknown. Electronic publications may some day push the printed page into obscurity; new research-funding arrangements may dictate our priorities for research; new career positions and entirely new types of institutions may be critical in shaping all emerging fields of inquiry, including archaeomineralogy.

The application of the Earth sciences to humanistic and historical areas of scholarship is expanding. The future is likely to see more international conferences such as this one. Will the future bring a university course titled 'archaeomineralogy'? I thought of teaching such a course in an archaeology department fifteen years ago but the pressure to teach other things was too great. The intellectual foundations of archaeomineralogy are firm but I am not sure a niche is available currently in any university or research institute. Perhaps Eastern Europe will lead the way. Fortunately the internet allows us adequate communication to share infrastructural problems and ideas as well as scholarly results.

Archaeomineralogy does not have a unifying principle to rally around such as Charles Lyell's 'Principle of Uniformity'; yet it is obvious from the size and energy of this conference that the future looks bright. All the processes by which archaeomineralogical knowledge will be further institutionalized are yet to be determined but we have the scholarly methodologies and, importantly, we now have the professional identity to move forward. I close by again congratulating the organizers of this important conference for their role in promoting this scientific specialty.