

## **The Silent Past and Liberal Education**

Talk to Phi Beta Kappa, Beta of New Jersey, November 5, 2021

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Many thanks, Dr. VanderKam, for your generous and kind introduction.

Congratulations to all the inductees this evening. You have earned this recognition through your extraordinary academic accomplishments. Your path to this evening, however, began when you accepted Princeton's offer of admission, which brought you to an institution whose core values are those of the liberal arts. Regardless of whether you are pursuing an AB or a BSE degree, you have taken a wide breadth of courses that focused on principles and ways of thinking about important questions rather than just getting simple answers.

I came to Princeton to be the first director of studies of Princeton Inn College, which then became Forbes College. In this capacity, I acquired an executive understanding of the Princeton engineering curriculum. I didn't need to know how to *solve* a differential equation, only to understand how a course in differential equations fits into the program of study.

Princeton University, and the School of Engineering and Applied Science have kindly encouraged my active scholarly practice, as well as being particularly supportive of the connections between engineering and the liberal arts.

It's a testimony to the fundamental liberal arts values of Princeton that an archaeologist has been able to serve as the undergraduate dean in the School of Engineering and Applied Science. Everywhere else, my job would be done by someone trained as an engineer or at least someone with a technical background.

I should note that I am not the first non-engineer in my position. My predecessor, Hal McCulloch, was a scholar of Latin literature -- Catullus, Tacitus -- and was called to the E-Quad from Butler College, where he had been the director of studies.

The invitation to speak tonight has been an opportunity to recall my own Phi Beta Kappa induction dinner, Delta of Pennsylvania, a long time ago. The speaker that evening was Ruth Dean, a specialist in Palaeography, the study of handwriting on ancient manuscripts, about which I knew nothing. Professor Dean made the case for Palaeography being an important field of study, and I came away understanding that if I ever crossed paths with the topic again, at least I had heard about it before and knew what fascinated a palaeographer. So when you encounter prehistoric archaeology years from now, maybe visiting Stonehenge, you'll be able to say, "I heard someone speak about that once."

I study the earliest farming societies of Europe, about 7000-5000 years ago, and thus I engage in a branch of scholarship called "prehistoric archaeology" or just "prehistory". In the United States, its roots lay in the nascent discipline of anthropology a century ago, and thus it is often called "anthropological archaeology". I say that I do "archaeology in the anthropological tradition," since I look at broad patterns of change over time and compare these patterns over wide areas. I've been lucky to excavate some important sites in Poland and to make contributions to understanding topics like household organization, animal traction, the earliest dairy production, and prehistoric wealth.

When people learn that I study archeology, they often think that it's an interesting hobby. "It's just like a big jigsaw puzzle," they say. Yes, a big jigsaw

puzzle, but one in which 90% of the pieces are missing ... and there's no picture on the box.

In reality, archaeology is a serious academic discipline, and my branch of it uses the physical traces of past peoples to ask questions about their social, cultural, economic, and spiritual lives. We don't just study their artifacts and buildings, but also their animal bones and plant remains. Bovine milk lipids in ceramic sieves that we excavated in Poland provided the earliest evidence for making cheese, about 7,000 years ago. Stable isotopes of carbon and nitrogen in human bones enabled us to determine that people buried with copper artifacts about 6,000 years ago had better diets than those who didn't have such items, suggesting nascent social differentiation. ... A few more pieces in the puzzle.

During the 99% of the human experience that took place before the advent of writing, pre-literate people shaped the characteristics that make us human and laid the foundation for modern societies. Even when records exist, many people did not record their stories, so archaeology is important in complementing historical texts to give a voice to those who did not write.

Recently, however, I've been thinking about how archaeology fits in a liberal education, and that's what I would like to talk about this evening for a few minutes.

Perhaps surprisingly, my thinking on this topic has been informed by having been involved with engineering education at Princeton for the last quarter-century. Archaeology and engineering are not all that far apart in many respects ... despite all the equations in the latter. Both fundamentally deal with the physical consequences of human choices, by which people make structures,

machines, processes, networks, and decisions. Seeing my own discipline through the lens of Princeton's liberal engineering education and core values of the liberal arts has been an illuminating experience over the last 25 years.

### Important Questions

A liberal arts discipline should engage important questions and cultivate intellectual and practical virtues. Speaking from the perspective of a prehistorian, let me first identify some important questions we study:

- First, there's the emergence of societies at the dawn of humanity: use of tools, fire, and capacity for sociality and kinship.
- Why are humans so successful? Twice they spread from ancestral heartlands in Africa to populate the earth.
- The flowering of human intellect: art, ritual, even personal ornamentation, that helped people to make sense of their world and promoted symbolic communication.
- Things get really interesting, at least to me, after the Ice Age, when changes in residential patterns, storage, and concepts of ownership and property start being found, and people began to interact over long distances.
- I'm especially interested in the transition from foraging to farming: why did this happen in multiple places around the world? Why did people accept the risks of agriculture? How did cultivating crops and raising livestock shape human social interactions?
- Agriculture facilitated the development of persistent differences in status, power, and wealth: societies that are capable of producing surpluses, using animals for draft power and transportation, making durable metal objects,

and being comfortable with risks and uncertainties are incubators for social differentiation.

- Finally, archaeologists study the emergence and growth of large-scale institutions, such as religions, trading networks, empires, and states, many of which are associated with urban societies, commerce, and warfare.

These are all fundamental and profound questions about what makes us human, and you can't rely on written texts to study them at their pre-literate roots. Other disciplines in the liberal arts also address big questions. Individual studies that seem esoteric add pieces to their large puzzles, but they all add up.

### Intellectual and Practical Virtues

The role of the liberal arts in cultivating intellectual and practical values is the classic instrumental argument for the liberal arts, leading to the development of critical thinking skills and the ability to communicate well in speaking and writing. Let me enumerate some contributions the study of archaeology makes in this area:

- Working with primary evidence: the products of past peoples and their contexts. "Context" is an important word in archaeology, since the most spectacular object is largely meaningless unless you know where it was found, in what soil layer, and what was with it. This is true in just about everything, but in archaeology, context is key.
- Mastering a body of knowledge: there is a tremendous corpus of archaeological literature in journals and books, while key sites provide case

studies in the recovery, analysis, and interpretation of finds. In the liberal arts, you immerse yourself in a body of knowledge such that you feel ownership of it.

- Thinking critically about relevant data and evaluating divergent interpretations: archaeological evidence is ambiguous, and that is OK. Every month brings a new discovery, and some of these overturn earlier interpretations. Understanding biases and priorities of scholars, applying Occam's Razor to convoluted explanations, and simply being comfortable with multiple interpretations characterize all liberal arts disciplines, and archaeology is no exception.
- Archaeological data can be quantified and analyzed statistically, as well subjected to chemical and physical analysis. The relative abundances of artifacts and their changes over time can be analyzed statistically. Strontium isotope ratios in teeth can show whether someone grew up locally or moved from somewhere else. Being able to integrate insights from other disciplines is an essential dimension to the liberal arts.
- Formulating an argument: there are few established orthodoxies in archaeology, and the questions and challenges of archaeology are sufficiently novel that students are empowered to take risks and try out fresh insights. In my view, such empowerment to think independently and seek fresh insights distinguishes the liberal arts from fields that focus solely on learning how to apply standard practices.
- Effective expository writing; and presenting and defending conclusions: like all disciplines in the liberal arts, archaeology requires its students to construct persuasive arguments based on evidence. These communication

skills transfer across topics. The nature of archaeological evidence means that writing about it is akin to the writing done in science and engineering, while its narrative interpretation is like the writing done in the humanities and social sciences. Clarity and precision using an economy of prose are just as important aspects of archaeological writing as they are in all the liberal arts. Also, the visual nature of archaeological finds makes presentations much more stimulating than bullet points.

### Archaeology as Liberal Education

In the final minutes available to me, let me comment on a few more abstract qualities that the study of archaeology can bring to a liberal education.

- Global scope: every continent has an archaeological record, even Antarctica where the material traces of exploration are frozen in time. Studying archaeology enables you to travel around the world even if you don't leave your home. It expands your knowledge of geography: the fact that the Nile flows north means that Lower Egypt is up and Upper Egypt is down on the map. The ecology of the Huang He river valley differs from the Yangtze such that millet was the main prehistoric crop of one and rice in the other.

At Princeton, we believe that a global perspective is a critical element of our liberal education, and archaeology can take you to distant lands both in practice and in your mind, over many thousands of years. The novelist L.P. Hartley wrote, "the past is a foreign country," so archaeology's global perspective is measured not only in latitude and longitude but also in time.

- Potential to stimulate the imagination: a stone axe is not a piece of rock but something shaped purposively by a human being. The mind of that person contained motivations, interests, fears, and skills that we cannot see, but we can only imagine. What was life like in a hamlet of Neolithic farmers six millennia ago? How did the people interact? How did they see their world? If we just stuck with measuring, counting, and classifying our tools, potsherds, and bones, archaeology would be really boring. Archaeologists make informed speculations and generate hypotheses about the makers of the artifacts, filling in gaps in the evidence with our mind's eye until more data emerge.

### Conclusion

I'm keenly aware that I'm standing between you and the **after-party**, so let me conclude. You're wondering about the engineering connection in all this. I think if you were to substitute "engineering" for "archaeology" in this talk, you would be able to say many of the same things about how engineering plays a role in a liberal education. For example, the study of engineering within a liberal arts framework engages big, global questions and empowers students to think independently and creatively, while providing a social, historical, aesthetic, and ethical context for their designs.

The case for archaeology as a liberal art is essentially the same argument for the engineering education we offer at Princeton as liberal education. Both convey a sense of awe at the human capacity for innovation and technical accomplishment to solve problems that have social, economic, cultural, and symbolic dimensions.



So, just as the iconic Golden Gate Bridge is more than simply steel and concrete, Stonehenge is more than a pile of rocks in England.

Congratulations again! ... and thanks very much for listening!