COMPOUNDING INFORMATION:
THE EVER GROWING BODY OF KNOWLEDGE

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From the times of prehistoric peoples to the modern era, the purpose and method of recording information has changed substantially. Whether it is an oral history passed down from generation to generation, a cave painting, a vellum scroll blotted with iron-gall ink, or a pixilated image on a high-definition video, humans have always found a way to record information. The compounding of information, the continual layering of new knowledge upon previous knowledge, building an ever-growing body of information that can be shared and expanded, is a significant historical issue, and one worthy of further examination.

As Jerry Bentley points out in his article, "Shapes of World History in Twentieth-Century Scholarship," ancient people lacked "access to distant parts, but they displayed considerable interest in understanding how their own experience fit into a larger scheme of things."[1] The first people were not only focused on their own individual survival, but also on the survival of their communities. Perhaps that is what sets humans apart from other animals. So, to this end, developing a body of knowledge concerning, for example, what to eat and what not to eat, allowed people to live longer and better lives. If a group of primitive people were to watch one of their comrades eat a mushroom, only later to see that friend convulse and fall dead, they likely would commit to memory the notion that such a mushroom should be avoided. They then, no doubt, would pass on this newfound knowledge to others in the community. Voilà! Information was recorded and passed on to others, and this new knowledge becomes part of the body of knowledge (the history) of the people involved. This information, concerning a particular community avoiding a particular mushroom in a particular area, provides an example of local, if not parochial, history. However, if more primitive people in the community try to eat other items and the result of such experimental food tasting is likewise committed to memory

[1] Jerry H. Bentley, "Shapes of World History in Twentieth-Century Scholarship," American Historical Association (August 1997), http://www.riseofthewest.net/thinkers/bentley01.htm (accessed April 7, 2013).

and passed on to others, the body of knowledge grows. As the children of these community members learn the body of knowledge and proceed to pass the knowledge on to their children, who would likely add additional information, they in turn would pass on the still larger body of knowledge to the next generation. In time, the body of knowledge would grow into a large catalog of information that would invariably be shared throughout the community and likely to other communities as well.

Compounding information in this way would at last have created a problem for primitive people. Most people lack the capacity to memorize such a voluminous body of knowledge. Certainly, there would be particular individuals in a society with the mental skills requisite to commit much of the body of knowledge to memory, and they would be held in high regard for their talent. However, there is only so much information one can effectively memorize. Thus, some of the information would undoubtedly be forgotten or misremembered, and subsequently be passed on to others incorrectly or incompletely. To solve this problem, humans created writing. A written language formalizes the body of knowledge. According to J. M. Roberts in *A Short History of the World*, "the invention of writing opens more of the past to us."[2] With a written language, newly learned information can be added to the body of knowledge without fear of forgetting what was learned. Also, new information could be compared to previously learned information and scrutinized. A person in one community may have died from eating a certain type of mushroom, but a person in another community recorded that the mushroom was safe to eat. Why? What was the difference between the situations that provided the different results? Was it the same type of mushroom in both communities? Did the person who died eat anything other than the mushroom that may have caused the death? Inquiry such as this, which is the basis

[2] J. M. Roberts, *A Short History of the World* (New York: Oxford University Press, 1993), 42.

of the modern scientific method, would invariably lead to additional, more accurate information to add to the body of knowledge. Admittedly, such inquiry could be the product of word-of-mouth discussions, and does not exactly necessitate writing; however, as a result of writing, information is recorded and compounds much more efficiently, without the boundaries of an individual's memory. In addition, writing allows the body of knowledge to continue long after an individual has died or moved away. With writing, the community can have a collective memory that can retain far more than the collective memory that is possible with oral communication alone.

While Bentley contends that it is only in the twentieth century that "a more analytical and professional world history made its appearance" due to the prior lack of access to information,[3] one can unquestionably see a glimpse of analytical history in the works of ancient historians. At the dawn of writing c. 3500 BC, the Sumerians formalized their body of knowledge. They solidified their religion, chronicled the exploits of their kings, codified laws, and recorded the events of their daily lives.[4] While reading and writing was reserved for a privileged elite, the body of knowledge grew and compounded nonetheless. As time passed and written language became more universally accessible to the middle and lower classes, the body of knowledge grew dramatically as scientists proved and disproved the hypotheses of scientists before them, as philosophers contemplated and debated the thoughts of their contemporaries and philosophers of long ago, and as people continued to find recipes for what is good to eat and what should be avoided. Conquerors such as Nebuchadnezzar, Cyrus the Great, Alexander the Great, Julius Caesar, the Aryans, and Shi Huangdi carried their civilizations' bodies of knowledge with them as they subdued their enemies. It is no accident that Jesus likely spoke Aramaic, Hebrew, Greek,

[3] Bentley.
[4] Roberts, 42-47.

and Latin, based on the succession of conquests that affected the area now known as Israel and Palestine. It is also no accident that where early Christianity spread, the bodies of knowledge from the Hebrews, Greeks, Romans, and other civilizations associated with Christianity spread with it. As each successive generation or conquering civilization came and went, the body of knowledge added another layer.

A clear example to illustrate this compounding or layering effect of information is evident in examining the historian Arrian of Nicomedia (mid-80s to late-160s). Arrian's study of Greek philosophy, his time as a Roman soldier and politician, and his writings, connected his life in the Roman Empire with his Greek upbringing and heritage. The overlapping layers of historical dominance by Greece and Rome had a great influence on Arrian's thinking and writing. Arrian borrowed military tactics he learned from his research on Alexander the Great, most importantly Alexander's use of the phalanx and cavalry, to repel the Alani from Cappadocia, where Arrian served as governor.[5] While the Roman governor Arrian learned military tactics from the long-dead Macedonian general Alexander, Alexander had learned implementation of the phalanx and cavalry from his father, Philip. Philip's use of cavalry tactics was likely influenced by the Persian tactics made famous by the successes of Cyrus the Great. Persian meddling in Greek affairs sparked Philip's and, subsequently Alexander's, effort to combat Persia. Philip, while king of Macedonia, was probably heavily influenced by the "hoplite" military strategy of ancient Greece, particularly that of the Spartans, who used a phalanx to attack its enemies. The Spartans were, no doubt, influenced by the military tactics of the Mycenaeans and the Trojans who came before them. The layers of knowledge go very deep indeed into history, to the beginning of humanity itself. There could have been no Arrian of

[5] A. B. Bosworth, "Arrian and the Alani," *Harvard Studies in Classical Philology* 81 (1977): 242. http://www.jstor.org/stable/311121 (accessed January 5, 2013).

Nicomedia, as we know of him today, without Alexander the Great. Likewise, there could have been no Alexander the Great without Philip or Cyrus or the Spartans.

From the beginning of humanity, humans have learned from each other. The more they learned, the more they were able to accomplish with the expanded body of knowledge. As the amount of collective knowledge increased, the growth and compounding of knowledge was limited or slowed by the confines of the individual human memory capacity. Writing created a way of recording information that allowed an explosion of collective knowledge. Each successive generation built upon the knowledge base of the generations before, to allow more complexity and perhaps more opportunity for greater achievements. Modern technology, such as the Internet, offers a unique way of compounding our layers of collective knowledge, leading perhaps to another explosion of human collective knowledge. As humans now have a global knowledge base that is increasingly accessible as technology improves around the world, the possibilities for innovation are limitless.

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