

Although graduate school will help me develop the academic skills I need to teach, conduct research, and preserve world cultural heritage objects, I will need to supplement this experience to realize an additional professional goal, to develop sustainable business models that increase accessibility and awareness of our world's cultural heritage. It is my hope that such models will increase the general public's interest in these areas, attract more funding and talent to the humanities, and help to increase communication and therefore innovation in the field as a whole. During the course of this essay I will describe the motivation for developing such models, the role of graduate school, and specific areas where I will need to supplement my graduate school experience, both in terms of information and financial support, to achieve this professional goal.

Sustainable business models for digitizing, archiving, and disseminating humanities data is relevant, necessary, and represents some interesting research opportunities in computer science. The destruction of ancient Buddha statues by Afghanistan's Taliban government, and the burning, looting, and plundering of "eight thousand years of human history," in Iraq, both due to sanctions and the war, underscore the necessity of finding creative ways of preserving these objects for future generations ("Crisis in Iraq"). The importance of these issues, and the role of technology in addressing them is recognized by organizations like the United Nations' Educational, Scientific, and Cultural Organization (UNESCO), and the European Digital Library I2010 project. However, funding for the humanities in the United States is a fraction of that for the sciences. The budget request of the National Endowment for the Humanities (NEH) for fiscal year 2007 seeks \$140.955 million, as opposed to the \$6.02 billion requested by the National Science Foundation (NSF), and the \$28.4 billion requested by the National Institutes of Health in fiscal year 2007 ("2007 Budget Request", "Fiscal Year 2007", "US NSF - About"). Compound that with the influx of funding from corporations in the sciences and health care industries and it is clear that humanities must do something to increase its value in the eyes of our society and thereby attract the talent and resources that our world's cultural heritage deserves. One approach is to develop sustainable business models for digitizing, archiving, and disseminating humanities data.

In addition to being necessary, this goal represents some interesting challenges, especially in terms of the requirements of a business model for the humanities. Since cultural objects belong to everybody, no one business should hold exclusive rights to data once it has been digitized, for this would be a direct contradiction to the principle of increasing accessibility to humanities data. Furthermore, since such an endeavor should archive these objects, data should be represented in open formats, not trapped in proprietary formats. Finally, people should be free to create derivative works from the data produced, facilitating innovation. Some examples of corporations that successfully profit from freely available data include Google, which provides a "value-added service" to freely available data by indexing the web for searching (Crane). The relevance of businesses like Google, Yahoo, and Microsoft to the availability to ancient texts was recently mentioned in a CNN article on Google Books and the Open Content Alliance ("Google library: Open culture?"). Another requirement of such a business model would be the availability of the source code implementing these services. Since I hope to increase humanities research, mechanisms for arguing theories on datasets, such as services, should be able to be analyzed, adapted, and improved. Open sourcing the code for these services accommodates this requirement (Smith). Several businesses using an open source business model include Red Hat and Mandriva Linux. The base operating system for Apple's OS X, Darwin, is also open source. These companies can

still make a profit by seamlessly integrating their services in an easy to use, manageable product, and through selling their domain expertise (M. Weaver).

The technological questions I hope to explore during my Ph.D. work represent the next logical step in my formal education and research experience. I have already been exposed to digitizing and archiving texts and images. Now I hope to expand this knowledge to diagrams and physical artifacts such as paintings, sculptures, or even buildings. Through applying computational geometry to developing a diagram markup language, ultimately I will develop a generic way to represent (and thus generate) diagrams using a domain-specific language. Researching ways to create, disseminate, and visualize 3D datasets while useful, will also provide the general public with an exciting mechanism to learn about and interact with their heritage. While my computer science training will prove very useful in solving problems outside of the humanities, it will give me a unique insight into how such technologies could be scaled, further developed, and used within the context of a business.

My background, combined with my proposed research will give me the technological skills necessary to accomplish these academic goals. However, in order to apply these concepts within the context of a business, I need a business mentor to provide constructive feedback to my research and suggestions as to how these ideas might be used in business, both in general and specifically to businesses serving the humanities. I need a business mentor to help me to develop metrics to measure my research performance in terms of its utility towards accomplishing this goal. I need a business mentor to help me to develop a business model to preserve and increase accessibility to cultural heritage objects. In return, I represent a mechanism for making deeper connections into research involving computer science (US News and World Reports 2007). Furthermore, I would act as a vehicle for getting technology and ideas of interest to the business mentor into the program (bidirectional exchange) ("MIT Media Lab Graduate Fellows"). Finally, as a Computer Science research professor, I would grow the mentor's network of well-educated professionals through professional contacts and graduate students.

While my academic background is solid, I need a business mentor to teach me how to frame such research with respect to industry. In return I offer extensive technological experience, a solid work ethic, and an undying curiosity that would undoubtedly serve a mentor or sponsor well, especially in the context of graduate program with ties to industry. During my entire academic career, I have exhibited a curiosity, drive, and ability to work with others. If given the opportunity, I will use these strengths to develop a plan that is realistic, profitable, and compelling, a plan that will increase the value of humanities in the eyes of our current society and preserve our world's cultural heritage for generations to come.

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