From Silicon Valley to the Valley of Teotihuacan: The "Yahoo!s" of New Media and Digital Heritage

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This article examines the convergence of new media and archaeology, specifically cultural heritage management. I examine the events involving Yahoo!'s creation of a global, "electric anthropology archive." This archive was part of the company's "mixed reality" time capsule project to transmit user-generated digital contributions from the UNESCO World Heritage Site of Teotihuacan, Mexico. Working through the specifics of how this new media mogul operationalized the functionality of Web 2.0 at a cultural heritage site, I identify the salient components of what is new about this emerging technology (a "platform shift") and how it parallels ethical and legal demands to open archaeology to greater public involvement (a "paradigm shift"). Considering the emerging centrality of users in new media, I examine the potential of new media for academic projects by discussing the integration of a wiki, a particular and defining type of new media, into the investigation of what constitutes heritage for locals at Teotihuacan. Current concerns in archaeology, such as the need to create and maintain digital databases as well as the granting of restrictive Intellectual Property Rights (IPRs) over the material of the discipline, may be creatively and productively worked through by using such new media. [Key words: digital heritage, new media, open source, platform shift, Teotihuacan, Web 2.0]

Introduction: Cultural (Digital) Heritage

A World Heritage Site (WHS) always attracts a lot of attention. Such archaeological sites are viewed as material representations of irreplaceable heritage on a global scale and are defined and protected through the United Nations' UNESCO declarations (e.g., UNESCO 1988). Teotihuacan, Mexico is no exception (Figure 1).[1] Replete with two monumental pyramids (the Pyramid of the Sun being the third largest pyramidal structure in the world) set amidst the ruins of a once densely populated, urbanized city (the first of its kind in Mesoamerica) that covers more than 20 km^2, "Teotihuacan," or the "place where the gods were born" as the Aztec later identified it, has attracted a broad range of interests throughout the pre-Hispanic, historical and recent past. It continues to do so today. These interests run the gamut from the archaeological (Figure 2) to new age spiritualism (Figure 3).[2]

Indeed, because of its material complexity Teotihuacan has historically been the venue for both groundbreaking archaeological projects (e.g., Millon 1964) and celestial celebrations. Similar to other prominent archaeological sites around the world (e.g., Bender 1998; Carmichael et al. 1994; Castañeda 1996; Hodder 2004), Teotihuacan looms large in "new age" and traditional spiritual practices and references (Webmoor 2007a). Unfortunately, aside from a few cultural anthropologists or anthropological archaeologists, little attention has been paid to these sites *as* material anchors for a diverse array of associations. This is especially surprising at Teotihuacan, given that it has been a cornerstone of myth building from pre-Hispanic pilgrimages and oracles to 20th-century nationalism and identity politics (Boone 2000; Ruiz 1997; Vasconcelos 1925). Teotihuacan continues to innervate a multitude of relations. With an estimated three million visitors every year, making it the single largest revenue generator in Mexico's substantial archaeo-tourism industry, the monumental site is the locus for a variety of engagements at a multitude of scales, whether local, Mexican, or global. While the spiritually oriented rituals that regularly occur on-site, performed by Mexico City Aztec dance troops, Toltec

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FIGURE 1. Pyramid of the Sun from Avenue or Street of the Dead, Teotihuacan, Mexico. Photo: Ivan Quiñones.

shamans from Los Angeles, and Gaia worshippers from Europe, attract more anthropological attention, the majority of visitors come for economic opportunities, archaeological interest, or purely for diversionary reasons. When the net was cast wide in a recent study to ascertain how Teotihuacan *works* as heritage, rather than viewing it as inert material for meaning ascription, the archaeological zone divulged a complex ''heritage ecology'' of interrelated associations that center upon the site but extend far and wide in practice (Webmoor 2007a). Rather than being the primary activity or purpose of the site, archaeological activity and information production serve more as an ''engine'' which drives multifarious activities that range from the spiritual and traditional to the recreational and diversionary. Yet, there persists a parochial attitude within heritage management concerning these non-archaeological activities. Working at Teotihuacan, I often heard the derogatory term *yahoos* being used to refer to the unsanctioned, occult practitioners who regularly gather at the site for rituals.

Enter Yahoo!, the billion-dollar, international Internet company based in the Silicon Valley of California. To celebrate the media giant's 15th anniversary, Yahoo! announced that it would create a ''time capsule'' to gather together a snapshot of contemporary human life. Beginning October 10, 2006, the search firm began collecting textual and audio–visual contributions from any and all interested parties worldwide—the total collected was estimated in analog terms to represent about 5 million books' worth of data (OCRegister.com 2006). Submissions were amassed on Yahoo!'s servers through remote uploading via the Internet. Like the YouTube phenomenon, where ''broadcasting yourself'' has become a generational movement, the ease of uploading digital media from any networked location enabled a global pastiche of local, often intimate, content: poems, sound bytes of nature or birthday parties, mp3 songs, video clips of happy events, and images of loved ones, for example. Contributors cataloged their submissions under various general themes appropriate to the capsule's digital record of

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FIGURE 2. Excavation during the Temple of the Feathered Serpent Restoration Project in the Ciudadela, Teotihuacan, Mexico. Photo: Timothy Webmoor.

human heritage, such as "love," "family," "beauty," "happiness," "sorrow," and "faith." Once sorted and archived, Yahoo! hired an Internet artist to "mashup," or mix all of the content using a dynamic, Flash program interface (Figure 4).[3]

Through the end of October 2006, interested visitors or contributors could read, watch, and listen to the collected content stored on Yahoo!'s servers through the

FIGURE 3. "Aztec bailador" or dancer in the plaza of the Pyramid of the Sun, Teotihuacan, Mexico. Photo: Timothy Webmoor.

Internet interface, as well as easily add their own with a mouse-click (Figure 5). Yet the server life of digital information is still uncertain. A recent study warns there was not enough storage space for the estimated 161 billion gigabytes of digital information produced in 2006 (*Wired Magazine* 2006). Within archaeology, a discipline keen on preservation *of* and *for* the long term, the server life of digitized primary data, excavation reports, artifact collections, and publications recently figured in a National Science Foundation–funded symposium (Kintigh 2006). Theoretically, digital information, as mathematized code, is impervious to media degradation and so seems ideal for preservation (Manovich 2001:27–30). Initial enthusiasm for the "digital turn" from old media to new media celebrated the possibility of endless replication without corruption (Chun and Keenan 2006). Binary code as a discreet and parsable "language" can be endlessly "uttered" without alteration (Manovich 2001:51). This in contrast to analog media, such as ethnographic field-books, photographs, stratigraphic profiles, maps, or artifact drawings, which inexorably degrade as their celluloid or even acid-free paper media-carriers wear and age. The widespread emergence of digital media as a form of storage—whether digitization of analog media into code via scanning or digital-original media as with digital cameras and video—does present a greater degree of media longevity. The line of a map may wear away, be torn off, or bleed into shades of gray when wet. With reproduction and publication, the tonal and continuous quality of analog information (the edges of the printed line or chemical emulsions of photographic celluloid, for example) makes information conveyed in analog especially vulnerable to corruption. But digital information is discreet and quantified so that reproduction of a work becomes replication of numbers.

In practical terms of media storage, however, this coding of digital information makes digital media beholden to computers. All new media, encompassing digital forms of older media, are nothing if not for computerization. They require, at some point in their creation, rendering, or display, computer-assisted manipulation (Manovich 2001:19). Most often, this information permanently resides in digital databases on computer servers. We might say that computers are the constant collaborators, or creative prostheses, for scholars, technicians, and artists of the digital age. Consequently, the fate of digital media is the fate of computers and their programs; and the fate of digital media stored on servers, for instance the fate of the digital heritage collected by Yahoo!, is the fate of server longevity. The bytes making up images, sound clips,

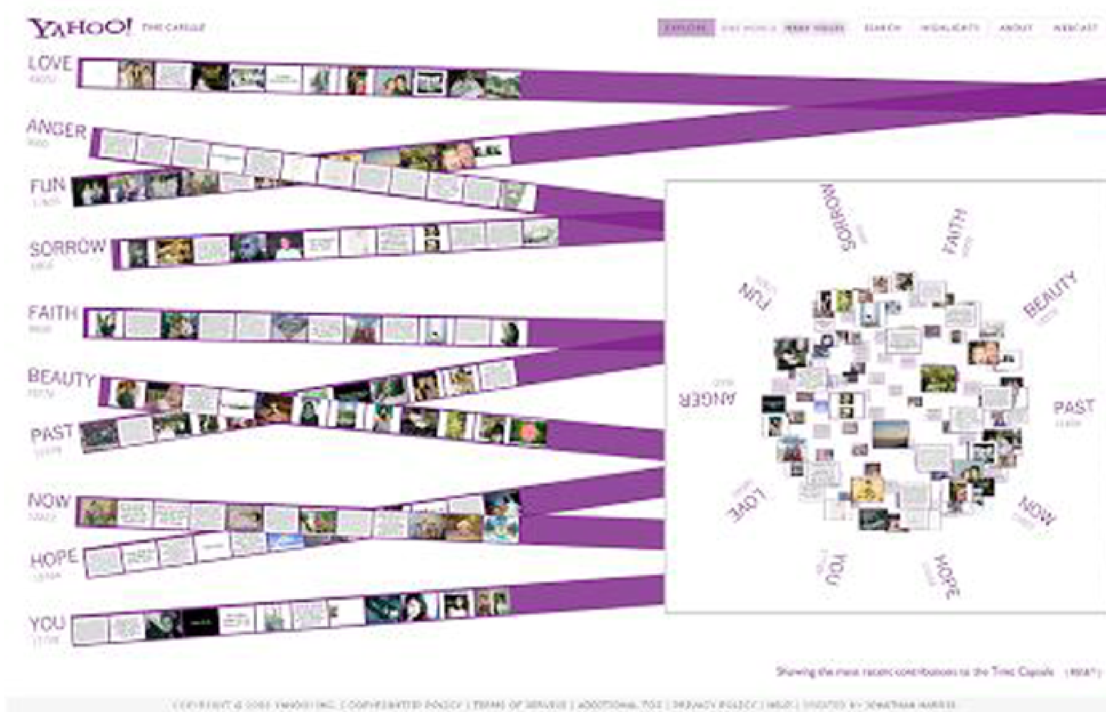

FIGURE 4. Still image of the flash-generated Yahoo! digital time capsule. Image: Jonathan Harris.

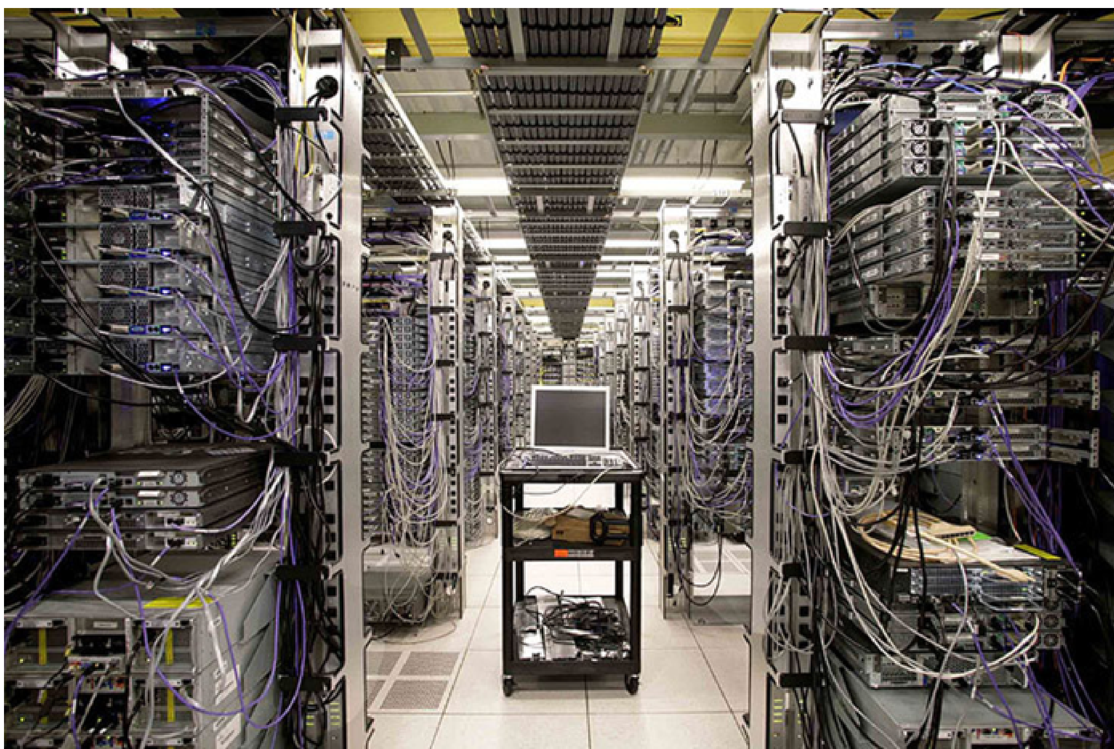

FIGURE 5. One of Yahoo!'s "server farms" and a look at the infrastructure of digital heritage preservation. Photo: © Richard Morgenstein for Yahoo!.

video, or statistics must be "back-uped" in case of crashes, migrated to new servers as technology upgrades, and protected from corruption-inducing spam robots. Moreover, digital media must still be lossy compressed in order to accelerate their upload and retrieval across bandwidth connections linking remote servers. All of these factors pose issues of degradation and information loss.

Yahoo! worked out a hybrid solution that may be the model for academic archives. The server version of the time capsule was to be only one component of the project. A "hard copy" of the time capsule was buried on the Sunnyvale, California, grounds of the corporate offices and another copy was presented to the Smithsonian Folkways Recordings archives in Washington, DC, "to be preserved, studied and shared with future generations" (Sys-Con Media 2006a). However, in keeping with the ethos of "digital democracy" inherent in the conception and content of the time capsule project, the company wanted to laser the digitized information in real time as a public, physical event at a prominent locale.[4] Where was this media-bundling to be beamed into space? This Yahoo! chose the top of the Pyramid of the Sun at Teotihuacan (Figure 6).

If the convergence of archaeology, high-tech corporations, and space lasering sounds like a throwback to a 1970s science fiction plot, the inspiration for such an undertaking cannot be far off. Following in the original steps of the affable yahoo Carl Sagan, this digital time capsule was made in hopes of communicating to digitally attuned extraterrestrials the diversity of life and culture on Earth. As a spokesperson for Yahoo! stated: the purpose was to join the "past and present with the universe's potential future by sharing today's culture on earth with other life that may exist light years away" (*Subzero News* 2006). The reasoning for their choice of Teotihuacan was as follows: "We have this incredible ancient site," remarked Srinija Srinivasan, Yahoo!'s editor-in-chief, "and from that site we can project contemporary content" (CNN News 2006). For those working in heritage management, the notion of popular culture utilizing the sites of the archaeological imagination for consecration of events and beliefs offers little surprise. Archaeology historically derives from antiquarian popular engagements and, willingly or not, innervates the contemporary buzz at heritage sites (Schnapp 1996). It is only the acknowledgment of this mutual relationship, fostering non-antagonistic consideration of all those participating in the archaeological imagination, that is relatively novel (Bender 1998). "*What is new*," as Srinivasan continues, "is the ability to capture this information in such scale" (CNN News 2006, emphasis added).

FIGURE 6. "Aztec bailadores" or dancers in front of the Pyramid of the Sun during a ceremony in honor of "the place where the gods created time." The top of the pyramid, believed to collect and condense energy from the sun, is usually thronged on Sundays when visitors from all over Mexico come to climb to the summit. Photo: Timothy Webmoor.

Yahoo!'s announcement to transmit the time capsule from Teotihuacan added more fodder for commentators in the "blogosphere." Indeed, events transpired so quickly that only the news blogs seemed capable of updating the rapid developments. While the Instituto Nacional de Antropología e Historia (INAH), the Mexican government's cultural heritage managers, initially granted permission for the time capsule project, they announced just two weeks before the digital gala that permission to go ahead was rescinded (C/Net News 2006a). A representative of INAH told Yahoo! that "we are the guardians of the heritage of Mexico [and the event] posed technical and operational problems that might damage Teotihuacan" (C/Net News 2006b). It was determined that the laser installation on the pyramid, combined with the large crowds expected to gather to witness the launch, would pose adverse effects to the archaeological structure. The message was clear: not one more yahoo at Teotihuacan—even if this one might

bring international publicity and an estimated millions in potential pesos as revenue for the Valley of Teotihuacan and its businesses.

Yahoo! was not aware of its bad timing. Historically, going back to the earliest management of the site, archaeological interests of conservation have clashed with the interests of the local residents of the Valley of Teotihuacan. Until more recently, this has primarily concerned landownership and income generation (Webmoor 2007a).[5] In unison with major archaeological projects undertaken at Teotihuacan, the Mexican government issued decrees (*los decretos*) to expropriate landholders and move agriculturalists and shepherds off of the central area of the site. The first occurred after Leopoldo Batres' work in 1907, the second in 1964 during the Teotihuacan Mapping Project, and the most recent in 1988 in conjunction with the listing as a WHS and the implementation of a more extensive perimeter management plan. Since the WHS listing, INAH has exerted efforts to mitigate the dissonance between their conservation goals and uses of the valley residents. One successful approach included the hosting of public outreach lectures at a newly established Center for Teotihuacan Studies (*el centro de estudios teotihuacano*s; now closed under ambiguous circumstances). With UNESCO recognition, INAH's auspices grew to oversee 1,730 hectares of land in the valley, most of which came to be labeled "perimeter C," or the "Area of General Protection." Tensions have grown apace with this oversight, though now disagreements revolve around INAH's control of construction in the valley—articles 12 and 13 of the UNESCO (1988) decree impose restrictions on all new building constructions.

Just before Yahoo!'s request, disagreements between INAH and residents over construction permits had come to a head. Wal-Mart had used economic leverage at the national level in Mexico City to construct a store within the protected perimeter C—just 2 km from the Pyramid of the Sun. A furor developed over the perceived bias of INAH in granting the go-ahead to the international corporation. The agency, routinely held up, or even denied, residents' requests to enlarge their kitchens or add new rooms to their homes. In addition, constructing a Wal-Mart so close to Teotihuacan juxtaposed two potent symbols—both of monumental proportions—that stirred opposing sentiments in the valley, in Mexico City, and even internationally. Would Mexico continue to cull favor with international investments in a neoliberal future? Or might the local economies and traditional life ways of Mexico preserve a proud past? Protests, riots, hunger fasts, and vandalism had upstaged the archaeological site and its pyramids for the entirety of the end of 2004.[6] Dubbed "Teotihualmart," the affair was a public relations nightmare for INAH. They were branded by heritage-minded Mexicans as traitors for selling out the past for more immediate financial gain. In fact, damage was done to subsurface structures in the process of laying the foundation for the superstore. Yet a sampling of the opinions of local residents and Mexican visitors to Teotihuacan indicated that the vocal and vociferous opposition may have been in the minority. Only 25.4 percent of 471 respondents, when asked "whether Wal-Mart has affected Teotihuacan," responded "definitely" or "yes." The other 74.5 percent who responded were more sanguine to the superstore, especially those who reported making more than 30,000 pesos a month (the "upper-middle class" when compared with the income of the overwhelming majority of respondents who made $<5{,}000$ pesos a month).

So when another perceived beacon of a non-Mexican, transnational future requested to transmit laser lights from atop the Pyramid of the Sun, INAH did not grant permission. This time INAH had to stick to the letter of the law (INAH 1983) and avoid local ire, particularly as INAH's statutes were being rewritten to better incorporate wider societal input (INAH 2005).

Undaunted by the denial and determined to dig-in its digital data at a historical location, Yahoo! looked elsewhere. With less than a couple of weeks to go, and with bloggers posting their suggestions and coverage, an alternate venue of antiquity was selected. Happening October 25–27, 2006, the digitized media of the time capsule was beamed into space from Jemez Pueblo, New Mexico (Figure 7), considered to be one of the oldest, continuously inhabited dwellings in North America.

With the same simple technology used to create the capsule, the digital webcasts of the live, two-day event may still be accessed on-line at Yahoo!'s video archives.[7] To augment participation even further, Yahoo! accepted digital media contributions for the physical capsule for several weeks afterward at their capsule website. It was not an insignificant, techy-only event. An estimated 1.25 million people from over two hundred nations watched and participated in this "electronic anthropology archive" (Sys-Con Media 2006a, 2006b)—not to mention the several thousand additional "gamers" whose avatars attended the parallel, real-time "mixed reality" event in the alter-world gaming environment of SecondLife (Figure 8).[8]

New Media Matters

"In just a few short weeks, thousands of people around the world have uploaded memories and ideas they want to preserve, creating an important anthropological

FIGURE 7. Still image from Yahoo!'s time capsule "launch" at Jemez Pueblo, New Mexico. Resembling more of a Pink Floyd laser show-cum-Burning Man spectacle, the image content of the time capsule is projected onto the red rock walls of the pueblo. Photo: Rob Lee.

FIGURE 8. The Yahoo! time capsule "mixed reality" event in SecondLife. Replete with a digital rendering of the red rock walls of Jemez Pueblo, the avatars in this "re-creative" digital environment participated in (near) real time as the "FirstLife" activities unfolded. See note eight. Image: "freshelectrons."

collection that documents this moment in time," said Jerry Yang, co-founder and "Chief Yahoo" (Webpronews 2006).

Unsurprisingly, I think that this hugely successful new media mogul is leading an important trendsetting agenda. Specifically, it is a media movement which transcends popular culture and academic practices. It is directly relevant, perhaps now more than ever, for archaeology. This is the utilization and diffusion of new media that is rapidly reconfiguring the old media infrastructure of "Web 1.0" with what has been loosely described as "Web 2.0" (Figure 9).

To be sure, Web 2.0 has become a buzzword. Technological turnover happens rapidly, and the public recognition of Web 2.0 may already portend the advent of "Web 3.0."[9] What is key is that it entails a "platform shift" that has valences with and facilitates the paradigm shift occurring in archaeology and anthropology at World Heritage Sites such as Teotihuacan. These shifts entail the democratization of participation. Just as archaeology is confronting an "external mandate" to integrate public involvement in archaeological practice from research design, to resource interpretation, evaluation, and representation, so too Web 2.0 is hardwired by new media to operate via nonhierarchical networks of individuals and technologies collaboratively determining both form and content of what's on-line (Figure 10).[10]

Two quick examples help clarify what this involves. Compare an encyclopedia, for example, either an analog or on-line (Web 1.0) Britannica, to Wikipedia.[11] The first selects entries from experts, edits, and publishes the results. Form and content are set. This contrasts to the "flat hierarchy" of Wikipedia that relies upon radical trust in allowing anyone with Internet access to post new entries and edit existing ones. The content grows organically. Even the formatting or "skin" of information in Wikipedia may be modified. The first offers a product; the second a service. Additionally, allowing for the costs of being on-line, the first costs, while the second is free. This leads to the second example of the distinction. Proprietary software products or suites (such as Microsoft or Adobe) offer, at a cost, entire informational architectures (literally what information may hang together) within which to operate. The parameters are set for how users may engage with information. Indeed, monopolizing how users may engage with information set the stage for the infamous battling software corporations and their lawsuits of the 1990s.

Web 1.0		Web 2.0
Ofoto	⇒	Flickr
mp3.com	⇒	Napster
Britannica Online	⇒	Wikipedia
personal websites	⇒	blogging
evite	⇒	upcoming.org and EVDB
page views	⇒	cost per click
screen scraping	⇒	web services
publishing	⇒	participation
directories (taxonomy)	⇒	tagging ("folksonomy")
direct management systems/databases	⇒	wikis

FIGURE 9. Distinctions between Web 1.0 and the participatory platforms of new media and Web 2.0 are listed, with examples of specific services and software. Adapted from Tim O'Reilly.

In contrast to these market share products, much of Web 2.0 is powered by "open source software." Open source inverts the ideals of Western, free market entrepreneurship by canonizing "the right to distribute, not the right to exclude" (Weber 2004:1). A form of social experimentation enabled by a political economy of openly sharing and (re)mixing software code, open source encourages collaboration, participation, and creativity and involves individuals generating freely distributed software services catering to specific needs.[12] It is not, properly speaking, a commodity that falls neatly within Euro-American models of political economy. Open source begins from a very different fundamental assumption about what motivates individuals to work and create. Instead of financial need and personal accumulation, open source proponents feel creativity and personal fulfilment are motivating factors. Instead of copyright, where property rights are asserted, the "open source initiative" manifesto stipulates conditions to ensure "copyleft": open source software should allow modification and free redistribution; should not restrict who software is distributed to or how it is applied (e.g., business applications versus genetic research applications); should not restrict use of other software or be specific to particular software interfaces; and licensing agreements should extend to all redistributions (Open Source Software Initiative 2006; see Weber 2004). Open source challenges not just the explanatory power of micro- and macroeconomic models, it puts cultural activity back at the center of what drives high-tech development. A "soft revolution" for more than just rebellious hackers and altruistic types, open source powers many of the programs and services widely in use every day.[13]

Yahoo!'s time capsule exemplifies the ethos of this Web 2.0 digital democracy. The capsule was participatory media in a reinforcing sense: the media used allowed for rapid, inclusive, and distributed participation. Size constraints, shipping, and publishing costs would not have allowed for the physical accumulation of

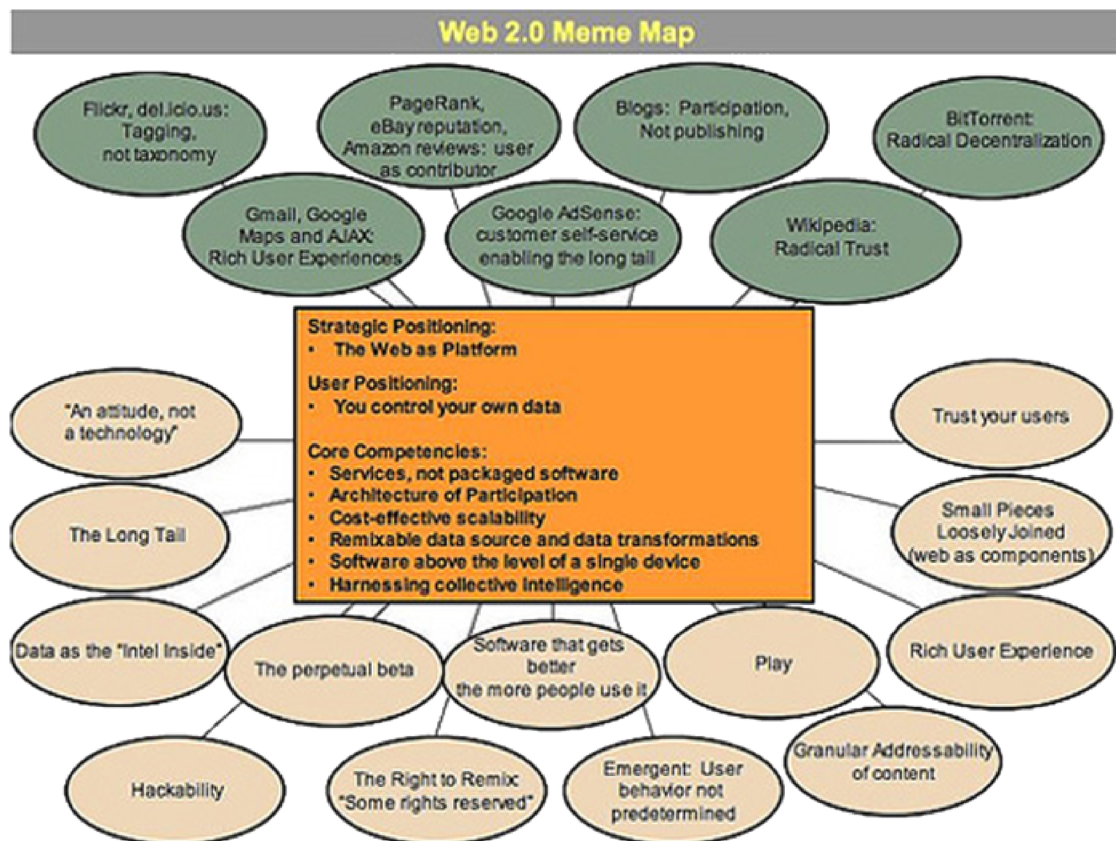

FIGURE 10. A "map" of Web 2.0 as a distributed (global) and flexible computational platform. Application packages (top) catering to user-generated content and services, as well as their informing values (below), radiate out from the core principles of the "web as platform." Image: Tim O'Reilly.

equivalent analog information. This widespread participation cocreated a media-rich manifestation of "the human condition" that would not have been possible, even for the intrepid Carl Sagan, to assemble in analog. In its particular form as digital heritage, the Yahoo! time capsule manifests much more of the experiential human condition for future generations to un-forget the past—and hopefully turn a sympathetic eye(s) or ear(s) of Sagan's extraterrestrials!

While exploring the "transcoding" of computer culture to debates and methods in archaeology and anthropology has just begun, new media studies have charted the ramifications of emerging technology for cultural activity (Ginsburg et al. 2002; Miller and Slater 2000).[14] As may be expected for a new, transdisciplinary field—an arena of inquiry crossing academic, private, artistic, and popular activities—there is little consensus as to what constitutes "new media." New media is not simply synonymous with digital media. In fact, most new media theorists (Bolter and Grusin 1999; Chun and Keenan 2006; Fogg 2003; Manovich 2001; Wardrip-Fruin and Montfort 2003) highlight the historical continuity of representational media from Alberti's Renaissance perspectival drawings to Daguerre's daguerreotypes of the 1830s, the Lumière Brothers' *Cinématograph* in the 1890s to the emergence of computing with IBM and Alan Turing's calculating machines of the 1930s. Within this literature, media are "new" or "emerging" to the extent that they combine computerization and connectivity (Chun and Keenan 2006:1; Manovich 2001:27–48). "Digital" may be considered a shorthand or operational descriptor for how new media works. As already mentioned, digital information is various media—image, sound, text—rendered into mathematical code which can easily be manipulated by computers and quickly transmitted from computer to computer via the connectivity of the Internet. In practical consequence, this means that media are now mutable and combinable. Unlike photography, cinema, or music, the media machine of the computer can quickly alter and combine—to "re-version"—simply by applying algorithms to the code. This allows a great deal of customization and retooling for disparate and individualized goals. Additionally, new media, once

broken down into code, may easily and quickly be transmitted and shared across the cyber highway of the Internet—or the outer reaches of interplanetary space with Yahoo!'s laser.

Together, these qualities of computerization and connectivity allow for the phenomenon of the interconnected information society in which we live and work. We are immersed in media. New media computer culture transcodes into everyday personal, social, and professional existence. More than ever before, we are multitaskers because of new media functionality: we send e-mails, post comments on a blog, Google information or view Google maps, and write an article in Word, all the while switching application windows on our computer. Yet much like critical archaeologists, dis-embedding our context of archaeological production for us to examine in the light of day, much that is new for working with new media is taken for granted. Considered through the lens of political economy, the media machine of computers interconnected via Web 2.0 platforms moves us, whether as academics doing Google scholar searches or as children doing cut and paste of web material for classroom projects, beyond being classifiable as strictly "producers" or "consumers." The new logic of the media economy has us doing consumption *and* production almost simultaneously through the interface of the web. So we use the information service of Wikipedia; but we inevitably troll a bit, led by the hyperlinking until we find an entry to which we might even contribute. Users come to define this mixed role for engaging with new media.

According to new media guru Howard Rheingold, the hardware of increasing global connectivity combined with the software enabling of individualized control over content and form heralds a social revolution of "radical participation" (Rheingold 2002). It is what allowed Yahoo! to host and laser its e-archive. Unlike economic or political revolutions, this soft revolution is information driven. Users increasingly participate in, and control, the global Internet archive of information. More and more embedded in how we routinely gather information, socialize, or synaesthetically experience through video and sound, the Internet as medium may finally be actualized as McLuhan's "extension of man" (McLuhan 1964:8; and Borgman 1984:196)

Considering media as a social, perceptual, and cognitive prosthesis, the concept of the user-generated content focus of new media and Web 2.0 anticipates the emergence of a universal, collective intelligence of the neural-net. Completing a Habermasian ideal speech situation with technologically grafted "speech," Pierre Levy's idealism of real-time, universal democracy echoes much of the Californian tech-utopianism (Levy 1997; though see Dreyfus 1979). Whether new media will ultimately matter *that* much is improbable. Perhaps Yahoo!'s new media time capsule will be tragically "unreadable" as a bit of antiquated "old media" when it is finally reopened. Yet the ramifications of new media, of a read-and-write cultural logic, for society at large cannot be doubted. For academics in general, and archaeologists in particular, dealing with a public demanding more "user permissions" over cultural heritage, what will be the face of the new (version 2.0) interface?

Wiki Works

The "window" as information interface has been ubiquitous from the Renaissance's Alberti to Microsoft's eponymous interface. Web 2.0 will not change this main frame of engagement (Friedberg 2006; though see note 8). Sharing its technological trajectory with developments in early 20th-century cinema and current digital video (Manovich 2001:287–292), new media interfaces will increasingly converge with digital video, particularly in the capacity as mobile and web-connected personal multimedia devices. Like the early cinematic experiments challenging the confining dimensions of the screen, media convergence in single, multi-platform devices in the practice of archaeology will "open" the framed interface of information by locating it within live, synesthetic environments as prosthetic information tools (cf. Jenkins 2004; e.g., Webmoor 2005; Witmore 2004). Such new technological apparatuses will further develop the model of the computer touch screen as interactive window. Part visual display, part control panel, the computer screen will increase its interactivity with new media technologies.

Given that, we need look no further than the "windows" we routinely view to see one of these Web 2.0 interfaces. A wiki is a type of "social software" that characterizes the platforms of Web 2.0. Social software denotes any software platform that operates via computer-mediated communication and that fosters community formation. As such, the term may be applied to familiar "older media" such as e-mail, electronic mailing lists, and instant messaging (IM). However, it typically corresponds to the new media platforms which have moved from these one-to-one and one-to-many forms of electronic communication to more open and democratized, many-to-many mediums such as blogs and wikis. A wiki, meaning "quick web," differs from Web 1.0 web pages in several key ways we might expect given an understanding of the user model of new media. Indeed, while the hyperlinking intra- and

inter-structuring of traditional web pages launched much discussion concerning the liberation of readers from closed and controlled narratives in a manner paralleling postmodern and historiography manifestos (Haraway 2003; White 1973), the differences between "static" web pages and wikis compelled one theorist of media to update a book on hypertext with a re-edition on "hypertext 2.0" (Landow 1997[1992]). While there are a bewildering variety, primarily open source, all share several key functionalities that underscore the many-to-many and "quick" descriptors. Based upon "plain-text," "mark-up language" approximating the word processing text more familiar to nonprogrammers, as opposed to more technical programming languages (such as HTML typically used for websites), a wiki facilitates direct and personal control over what is displayed. This greater interactivity includes both open posting of commentary (like the more familiar blogs) *and* open editing by users (as opposed to blogs). Looking at the window of a wiki, there is a typical array of functions, such as "post a comment," "attach file," "edit this page," "new page," "view changes," and "add an image." With these, a "web page" becomes more like a control panel, with viewers-as-users not restricted to what web designers have coded in HTML. They may also elect to contribute their own text, sound, or video. Additionally, with open editing users may also place their own hyperlinks, and so augment the sphere of possible connections with personally relevant sources of information or content. A wiki administrator, generally the individual or group who created the wiki or the "host" running the servers, may tailor this interactive functionality by requiring passwords to edit, view pages, or post comments, but the latent, technical capacity to allow radical participation remains. Finally, all of these modifications of form and content of a wiki, unlike most security protocol blogs, happen in real time. Wikis accelerate participation in, and responsiveness to, the on-line global information archive (the World Wide Web).

Enthusiasm must be tempered, though. This new digital technology and infrastructure is no informational or political panacea.[15] Much is collected but much still slips by. If Yahoo!'s laser had launched from the top of the Pyramid of the Sun, what would have been rendered of the local human condition—of those watching the laser show from the surrounding pueblos? Unfortunately very little. The content of the time capsule still remained largely confined to participants from Europe, North America, and East Asia. Mexicans in general contributed very few submissions. Although the 2000 census by the Instituto Nacional de Estadísticay Geografía (INEGI) places the population of the pueblos surrounding the archaeological zone at nearly 60,000 and dramatically increasing every year, Yahoo! never planned to involve local residents in its digital desires. Yahoo! could quite have easily lasered its capsule from the apex of the Luxor pyramid in Las Vegas—which was in fact suggested. But there was a felt need to convey longevity; perhaps because the past is nostalgically viewed as the antithesis to the media-driven acceleration of the present. Such romantic attachments to the past are not unique to a "techy" generation raised on Indiana Jones. Such elision is really a consequence of a long-standing separation endemic to archaeology itself. Conceptually splitting off archaeological sites from the contemporary residents who border them has been common practice in the history of Teotihuacan and other sites of the archaeological imagination. Local denizens are generally seen only as laborers for archaeological projects, or, more often than not, seen as dissonance for archaeology producing its knowledge of these places. With the notable exception of Gamio's (1922) early pioneering work and some unpublished work on oral history and local caves, modern teotihuacanos have been physically and culturally removed from the site. There may, in fact, be no cultural affiliation between contemporary dwellers and the valley's pre-Hispanic forbears. Archaeologists often cite such reasoning for restricting nonspecialist involvement—in part, no doubt, because of the litigious precedent established in the United States concerning archaeological materials and "cultural affiliation." At Teotihuacan, ironically, any cultural ties surviving Spanish colonialism would have been disrupted by a century of land expropriation in the valley—a removal catalyzed by archaeologists themselves with *los decretos*.

Yet, as the Wal-Mart fiasco made publicly visible, many local residents and Mexican visitors contest a presupposed cultural severance to the archaeological site. While Yahoo! may not have included digital recordings of other contemporary uses of Teotihuacan's Pyramid of the Sun in their laser launch, I did begin a project inspired by Yahoo!'s demonstration of the capacity to manifest more of the human condition through using software widely and cheaply available. In collaboration with INAH and the five local pueblos, I undertook a study to bring forward more of the contemporary "living heritage" of this mainstay of the archaeological imagination.[16] My starting point was to assume integral connections between the archaeological zone and local residents, visitors who were Mexican Nationals and employees. Archaeological significance for the site is well reported. More esoteric beliefs, such as new age "Toltec" ideas about Teotihuacan, can also be

found at bookstores and websites catering to these specialty interests. This is especially so given that much of this interest, archaeological or new age, involves international publication and financial support. Like Yahoo!'s would-be Teotihuacan launch, however, where would Mexican, especially local, associations with the site be made visible?

In conjunction with interviews with informants and spokespersons—INAH supervisors, local mayors, and traditional *alcaldes* who led much of the anti-Wal-Mart activities—and working as an archaeologist on-site, I formulated a questionnaire comprising 36 questions to register just why the site was so important. These questions ranged from inquiring how they learned about Teotihuacan to whether they visit to gather energy to whether INAH ought to preserve the natural environment. I then restricted my sample to several stratifying categories: tourists who were Mexican citizens; individuals who worked on-site in either official (e.g., archaeologists and security guards) or unofficial capacities (the many wandering craftspeople [*vendedores ambulantes*]); and residents of the valley. After administering a representative sample of 471 questionnaires, I ran descriptive statistics as well as exploratory factor analysis to see if responses to the questions covaried in a manner that might reveal underlying patterns. What became apparent were key associations that are often missed by archaeologists: particularly practical, everyday associations built around spiritual, economic, and even recreational activities. It was not that the Mexicans surveyed in the study did not appreciate Teotihuacan for archaeological reasons. Most, in fact, displayed a thorough knowledge of relevant archaeological accounts. But there were a host of other beliefs and practices, related to background variables such as income, gender, and on- and off-site exposure through media and education that were held in noncontradictory fashion (Figure 11).

The project concluded that heritage at Teotihuacan is better thought of along lines as an "ecosystem" anchored at the site (Webmoor 2007b). That is, when brought under scrutiny, heritage resists identification as something "frozen" in archaeological artifacts and landscapes. Rather than physical property, it is a set of changing relations between contemporary people and materials from the past. Heritage, reconfigured as relations which are lived and have very real consequences for the present, likewise challenges the notion of heritage management as principally concerned with preservation and conservation. Archaeological sites such as Teotihuacan support a range of local lifestyles which intersect and are mutually dependent. As a discipline, archaeology often ignores the impact of its

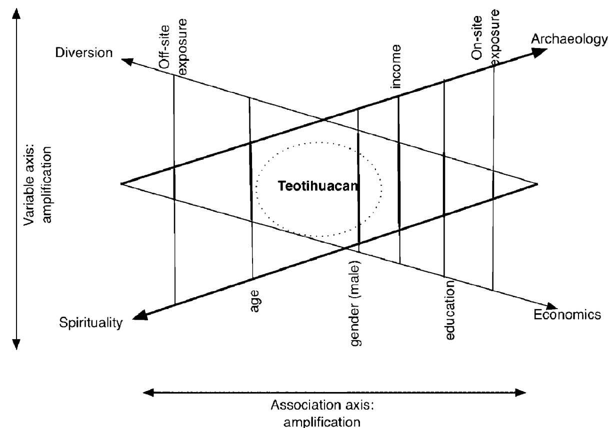

FIGURE 11. Multidimensional representation of the "ecology" of associations comprising Teotihuacan: relative importance of variables in relation to associations determined by where variable lines (vertical) intersect respective association lines (diagonal) (heritage not given for simplicity).

activities on interrelated relationships, partly because they are less documented and less visible. Putting material on-line related to these "secondary" relationships with the site was an attempt to bring these other contemporary associations into accessible view.

Material for the project, such as audio interviews, statistical graphs, and digitized, completed questionnaires, was placed upon a wiki hosted on a server at Stanford, which is accessible in the expanding Internet cafés in three of the five pueblos (Figure 12). While I still invariably serve as form and content manager of the project, all material is stored as a digital archive on

FIGURE 12. A popular Internet café off of the main plaza in San Juan de Teotihuacan. At the time of the project there were three Internet cafés in San Juan, but the proprietor of this café, a 24-year-old computer engineer, hopes several new cafés will be opened in the coming year. Photo: Timothy Webmoor.

the wiki and was commented upon in real time as the formulation, collection, and write-up occurred. Like the contributions to Yahoo!'s project, the digital technology of the Teotihuacan project increases functionality in three key ways: (1) richer media capture—for example, audio and video, as well as digitized text and images; (2) greater collaboration—both in determining content and in commentary; (3) distributed and accessible retrieval—though visits to local Internet cafés are necessary. Furthermore, as a wiki—as quick web—it accelerates all three of these functionalities.

Thinking in terms of new media, this project wiki retains the functionality of a traditional HTML web page. While text-based with hyperlinking, streaming audio and video were also incorporated for richer, experiential information. Archives of data, such as the original questionnaires, interview transcripts, and statistical information, could also be easily stored. Customization of the site, while more limited than with HTML coding and Flash programs popular with professional websites, is also possible. As new media, the wiki is, however, more malleable. It is mercurial media, rapidly accommodating changes and additions while being translucent in operation. Rather than requiring training in HTML code and intervening web design software, such as Dreamweaver, Flash, or Update, all design changes, content additions, or hyperlink addendums to the wiki occur directly at the web browser interface. The wiki collapses the distinction between editable background files on servers and the "projection" of such data on the visible web. Neither "off-line" work in desktop applications nor server permissions and file transfer programs are required. Collectively, the trade-off in design customization and display features of Web 1.0 websites for bare bones markup language in Web 2.0 platforms affords greater interactivity of a window of a wiki on the web (Figure 13). Viewing images, reading text, or clicking a hyperlink, podcast, or video icon are all possible. But now there is the customization and participation available on a personal level through the post a comment, edit this page, or add an image features. A wiki moves us from viewing the web to engaging with it as we would our own desktop computer (Figure 13).[17]

In addition to the ease of use and heightened interactivity, the most appealing attributes of wikis are that they are distributed free as open source, are easily installed on institutional or private servers, or even personal computers with permanent connections to the Internet, and no technical expertise is required to manage them. In effect, wikis allow the desktop publishing of rich, collaborative, and personalizable content with global distribution. While a form fit medium for collaborative projects in anthropology and archaeology, allowing unprecedented participation in the consultation and research process, the question remains whether wikis will work.[18] The proliferation of social software in China, the Middle East, and India, with an estimated worldwide creation of a blog every half-second, does not translate directly to uptake in international archaeological projects. There remain cultural, technological, and generational divides. At Teotihuacan, as was witnessed with Wal-Mart's intru-

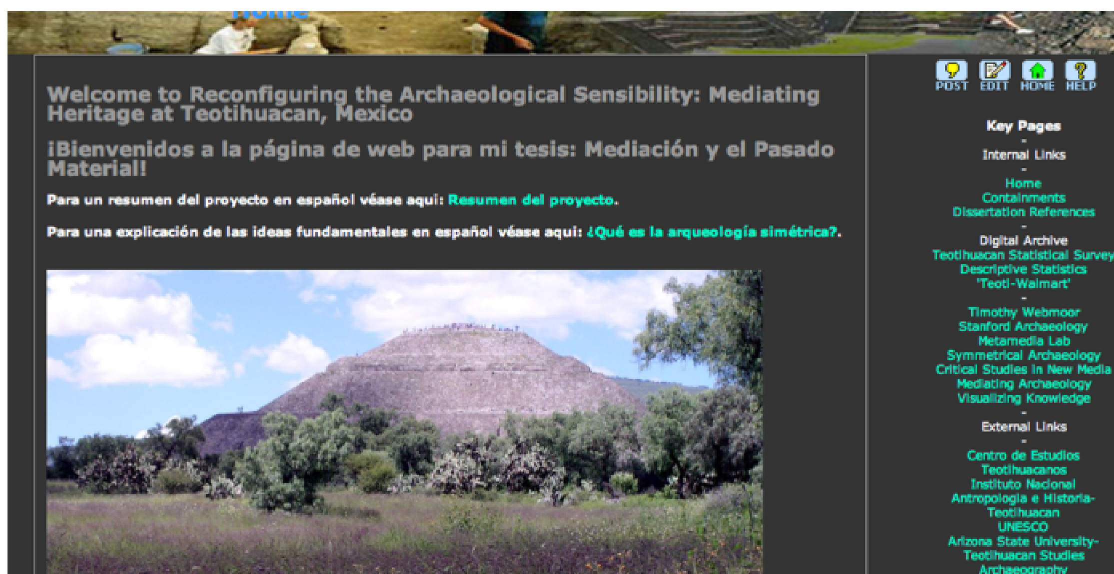

FIGURE 13. Screenshot of the project wiki. Fully customizable and otherwise resembling a "static" web page, wikis additionally incorporate interactive features, such as "edit" or "post comments" (upper right in image).

sion, there is dire interest for greater public participation in, and control over, heritage management, but there remains hesitancy to make transparently public what are often personally held convictions in a highly politicized climate. Nonetheless, with new media rapidly expanding worldwide, the interactivity of Web 2.0 will become more of a commonplace feature of archaeological projects, particularly those with public outreach components, and initial reluctance may give way to the enabled radical participation of the next social revolution.

Conclusions: Media and the New Cultural Heritage Logic of Mixing

Some in archaeology are concerned with using new media to enable yahoos, or individuals, whether local or global, who form "alternative" associations with sites of heritage. These discussions narrowly focus upon the growth of the e-cademy, or the electronic publishing by a growing number of academic journals and the rise of personal or collaborative blogs dedicated to scholarly topics (Chippindale 1997; Richards 2006). In large part, this was an issue already present with Web 1.0. Adopted early, on-line journals moved to meet the new (inter)face of scholarship—on the computer. The concern, however, is with "unsanctioned" desktop publishing. The common complaint with this type of "broadcasting," often with greater readership due to universal distribution and unrestricted, free access via the web, is the lack of professional peer review, editorial control, and legitimacy. While these are valid concerns, the underlying issue is fundamentally one of information management and the threat to the economy of traditional publication. Publishers are understandably nervous about what this portends for academic book sales. In fact, this is where the Association of American University Presses works against most coalitions in academia who attempt to provide more scholarly material on-line. The issue quickly becomes litigious as it involves the interpretation (in the United States, but closely related set of issues abroad) of the 1976 Copyright Act that first codified "fair use" in statutory form. Previously, rapid and less expensive distribution of academic texts was at stake. Kinko's Corporation paid $2 million for xeroxing course packets. Today, convened by a new brand of "cyber lawyers," such as Lawrence Lessig, issues of what constitutes "fair use" and electronic distribution have morphed with new media, and the mixing and mashups of *user-generated content* on the web, into complex issues of *freedom of creativity* and the *entrepreneurial spirit* (Lessig 2004). The Digital Millenium Act of December 1998 (Europe passed the similar EU Copyright Directive or EUCD in 2001) broadened the definition of "copyright infringement" by criminalizing the development of Internet technologies that *may be used* to circumvent copyright control; and it heightened the penalties for infringement over the web. As a result, e-publication has become one aspect of an entire feud, inside and without of academia, over the status of creative and informational works in free societies. Copyright controls are increasing. Is this increase meant to keep abreast of new digital technologies that facilitate copyright infringement? Or is it, as others such as Lessig (2004) argue, meant to satisfy the lobbying interests of some very powerful players in Washington to profit from ideas?

Ultimately, information management may be the real preoccupation for academics. The ease or rapid publication with new media results in an excess of information available on the Internet. Staying "cutting edge" will mean searching through this expanding and multifarious on-line archive. This is why searching becomes the preoccupying function of Web 2.0, contributing to the success of media moguls like Yahoo! and Google developing robust search services.

The ramifications of new media and the platform shift to user enabling are much broader, however, than e-publication. For archaeology, the rise of digital databases of information and the logic of mixing as the new model of cultural activity become the matters of new media concern. As stated earlier, such user-enabled functionality is not simply the take-up of the shift to Web 2.0 principles and technologies. There is profound symmetry between the logic of new media work and archaeological practice. For the discipline there is a dire need of digitizing databases and for cocreating cultural heritage (Kintigh 2006; Nicholas and Bannister 2004; Smith 2004; UNESCO 2001; Vogt-O'Connor 2000). The first need involves preserving and, most importantly, providing longevity for access to archaeological information. The second is the move to incorporate the "external mandates" from non-archaeological groups to participate in heritage management; and, most critically, offers a way forward to mitigate against such groups foreclosing access to archaeological information under the nascent application of Intellectual Property Rights (IPRs). Wikis and other new media can service both of these needs. Like Yahoo!'s time capsule, wikis enable the collaborative manifestation of a wide range of information. They even track, or archive, this process of cocreation. Secondly, they provide an easy user interface with search capabilities for creating digital databases. Most significantly, such databases and their wide array of information are easily accessible.

Together, these functionalities may help mitigate the controversy over applying IPRs on the part of local

and indigenous groups to archaeological information by making research and dissemination of results collaborative, transparent, and under a flat hierarchy of authorship. Collaboratively made from the "ground up," the extension of IPRs to the products of archaeological practice would fall more properly under nonrestrictive Creative Commons type of licensing, rather than restrictive Copyright, Patent, or Trademark.[19] Accessing global content on the Internet archive, easily mixing this digital information to suit particular, local purposes, and broadcasting such remixed cultural productions to be shared, retrieved, and remixed again, characterizes the new logic of digital, human heritage. Indeed, there are a host of complex issues to be sorted out. The legality of mixing cultural productions is a contentious and as yet nebulous feature of the digital age (Lessig 2004). I am not suggesting wikis or other new media on their own will serve as the be-all to end-all. Sometimes it takes a dramatic crossover of academic and private industry interests, though, to short-circuit creative collaborations between these pursuits. So rather than parochially insisting upon academically derived solutions to archaeological problems, the discipline ought to take part in the encompassing transdisciplinarian sensibility which extends from the Silicon Valley to the Valley of Teotihuacan. When we think of managing the past, archaeology should indeed take the "Yahoo(!)s" of the world seriously.

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The Metamedia Lab at the Archaeology Center, Stanford University, innervates an intellectual and technological short circuit with Silicon Valley innovators that cannot be underestimated as a source for inspiration, ideas, technologies, and refinements. For this, thanks go to my fellow cofounders of the lab, Michael Shanks and Chris Witmore, as well as to Ian Hodder for discussions concerning new media's relevance to archaeological practice and globalizing processes. The text benefited from the feedback I received at the Critical Studies in New Media Workshop at Stanford, the Society for the Social Studies of Science conference in Vancouver and the American Anthropological Association in San Jose. I want to thank Shelly Errington, Mike Wesch, and Ruth Tringham for the opportunity to participate in the Society for Visual Anthropology session. For the better photographs that make up the Teotihuacan project, I am grateful to Ivan Quiñones.

Notes

1. Adapted from an e-text, streaming videos were embedded in the original version of this article. The medium (as the message) determines much of the form *and* content of communicational works. Typesetting the following article precludes audio and moving visual. As this article is an attempt at a "crossover" publication, advocating the merging of analog with digital, I will list where the pertinent videos may still be accessed at their YouTube URLs. An earlier e-version of this article may also be accessed at http://humanitieslab.stanford.edu/MediaAndCulturalHeritage/Home. Instituto Nacional de Antropología e Historia (INAH) video of Teotihuacan: http://www.youtube.com/v/0eZWz0D8HWc.
2. Video of "Aztec bailadores": http://www.youtube.com/v/mVscwk-5r8E.
3. Yahoo!'s interface was accessible through the launch on October 25, 2006, at their website: http://timecapsule.yahoo.com/capsule.php. Now the curious can find a message about when they plan to reopen the capsule.
4. http://www.democraticmedia.org/.
5. See García Robles (2007) for a similar study of Oaxaca.
6. A complete, digitized repository of Mexican popular press articles relating to the affair, from August 2004 until after Wal-Mart's opening in November 2004, are available at http://humanitieslab.stanford.edu/Teotihuacan/715.
7. http://timecapsule.yahoo.com/yahootime/webcast_archive.php?l=en&intl=us.
8. http://secondlife.com. Interest and use of this on-line gaming-cum-social-network phenomenon in archaeology is emerging in the form of sites of "parallel heritage," or digital recreations of archaeological sites in this partially immersive three-dimensional environment. Of interest for cultural anthropologists are the parallel "computer cultures" and the complex social relations that are developed. For an ethnographic study of SecondLife, see Boellstorff (2008).
9. While augmenting the participation of individuals (through contribution to the content and form of the Internet), Web 2.0 is still largely confined to a participatory interface of two dimensions. An Internet user, positioned before the archetypal "window" of the Graphical User Interface (GUI) of the computer monitor, may view three-dimensional material imbedded in the window, but nonetheless remains outside of, and at a distance from, the media environment (a concrete example is the act of viewing the videos listed below). Indeed, some have argued that in this respect, new media perpetuates the old Renaissance perspectival ideal of the view-through-a-frame (Friedberg 2006). Immersive, Virtual Reality (VR) challenges this participation-as-a-viewer interface, but requires (as of now) both prohibitively expensive technological apparatuses to accomplish the effect and immense bandwidth capacity for these environments to be transmitted to remote users. Developing out of military and gaming technologies, however, the on-line virtual world of SecondLife approaches the future of immersive participation through the Internet. VRML, or such near-immersive, three-dimensional Internet mediums, is already provoking new media artists and archaeologists to experiment with on-line, three-dimensional archives. In a reflective consideration of the possible uses and ramifications of these imaginatively

inexact secondary worlds, new media artist Lynn Hershmann teamed up with Stanford University's Metamedia and Humanities Labs for the Presence Project to explore animating the archives with digital technologies: http://presence.stanford.edu:3455/LynnHershman/261 L2. A video of the new media archive is available at http://www.youtube.com/watch?v=68s3zggpUCE. For the earliest and most complete archaeological *re-creational* sites in SecondLife, visit ROMA and its archaeological excavation for secondlifers: http://slurl.com/secondlife/ROMA/214/25/22; or OKAPI and the interactive database of Çatalhöyük, Turkey: http://slurl.com/secondlife/Okapi/128/128/0. Video of ROMA is accessible at http://uk.youtube.com/watch?v=YKjInBEP31s. With rumors of Google purchasing SecondLife, the stage may be set for the development of a new(er) Web 3.0 where interface may be via our on-line avatars walking into virtual banks, perusing university library shelves, sitting in virtual cinemas, and further exploring archaeological sites and on-line databases.

10 I term the "external mandate" to include both the mounting insistence by indigenous communities for more control over archaeological research pertaining to their cultural material, as well as the growth of professional organization codes of ethics to accommodate these non-disciplinarian requests. The former, figuring prominently in the United States with the passage of the Native American Graves and Repatriation Act (NAGPRA, Public Law 101–601) of 1990, prescribes legally binding standards as well as punitive measures to ensure consultation. The latter, such as the American Anthropological Association's (AAA) principles of professional responsibility and code of ethics, the International Council of Monument's (ICOMOS) statement of ethics, the European Association of Archaeologists' (EAA) code of practice, the Institute of Field Archaeologists' (IFA) code, or the ethics of the Australian Association of Consulting Archaeologists Inc. (AACAI), encourage consultation and integration of indigenous and local stakeholder concerns in archaeological practice. Cumulatively, there has been a pronounced change over the past decade in how heritage management is conducted.

11 http://britannica.com/; http://wikipedia.org/.

12 Philosophically rooted in Richard Stallman's work in the 1980s at MIT with the "Free Software Foundation," "open" in open source, as with the "free" in its predecessor, is mistakenly taken to mean at no cost or *gratis*. While this is often the case, the founders behind such software emphasize "freedom" as in *libre* (Weber 2004:47–49).

13 Google's 10,000 cluster servers that power our searches run on Linux, and nearly 40 percent of all large American companies use Linux in some form. Most web pages you visit work with Apache. Hollywood movie special effects are generated with machines running Linux. Even Yahoo! enlists the open source FreeBSD to run its directories (Weber 2004:6).

14 For cultural anthropology, the theoretical debates of the 1980s concerning power relations and the representativeness of writing up fieldwork resulted in largely textual experiments at mitigating this "crisis of representation" (Clifford 1988:52–54; Clifford and Marcus 1986). Dialogic, multivocal, or "polyphonic" approaches attempted to open up the process of speaking for informants as representing—through textualization and visualization—"the other" takes place within power relations. A similar focus emerged for the so-called postprocessual archaeologists in regard to the living descendants of archaeological "cultures" and with a more general criticism of the authority of the archaeologist to "speak for the past" (Leone et al. 1987; Shanks and Tilley 1992; Trigger 1984).

15 Indeed, a dystopian vision of Web 2.0 cautions the embrace of digital idealism. "Intellipedia," or a wiki utilized by the various intelligence-collecting agencies of the U.S. government, has recently gone into operation as a potential solution to the current administration's efforts to accelerate information gathering and sharing under an integrated Homeland Security (*San Francisco Chronicle* 2006). For a recent discussion specific to anthropological concerns, see Kelty and Marcus (2007).

16 The project, part of a move to digitally designed dissertations, is available through the Metamedia Lab at the Stanford Archaeology Center: http://humanitieslab.stanford.edu/Teotihuacan.

17 The increasingly popular Google Docs, a wiki hosted by Google, attests to the utility of what amounts to an on-line word processor for collaborating professionals.

18 A quantitative evaluation of the effectiveness of wikis as collaborative tools in pedagogical settings and heritage management is currently underway through a joint study by archaeologists at Göteborg University, Sweden and Stanford University.

19 http://www.creativecommons.org.

References

Bender, Barbara
1998 Stonehenge: Making Space. Oxford: Berg.

Boellstorff, Tom
2008 Coming of Age in Second Life: An Anthropologist Explores the Virtually Human. Princeton, NJ: Princeton University Press.

Bolter, Jay, and Richard Grusin
1999 Remediation: Understanding New Media. Cambridge, MA: MIT Press.

Boone, Elizabeth
2000 Venerable Place of Beginnings: The Aztec Understanding of Teotihuacan. *In* Mesoamerica's Classic Heritage. David Carrasco, Lindsay Jones, and Scott Sessions, eds. Pp. 371–396. Niwot: University Press of Colorado.

Borgman, Albert
1984 Technology and the Character of Everyday Life. Chicago: University of Chicago Press.

Carmichael, David, Brian Reeves, and Jane Hubert, eds.
1994 Sacred Sites, Sacred Places. London: Routledge.

Castañeda, Quetzil
1996 In the Museum of Maya Culture. Minneapolis: University of Minnesota Press.

Chippindale, Christopher
1997 From Print Culture to Electronic Culture. Antiquity 71(274):1070–1074.

Chun, Wendy, and Thomas Keenan, eds.
2006 New Media, Old Media: A History and Theory Reader. New York: Routledge.

Clifford, James
1988 The Predicament of Culture: Twentieth-Century Ethnography, Literature, and Art. Cambridge, MA: Harvard University Press.

Clifford, James, and George Marcus, eds.
1986 Writing Culture: The Poetics and Politics of Ethnography. Berkeley: University of California Press.

C/Net News
2006a Mexico to Yahoo!: Not on Our Pyramid. Electronic document, http://news.com.com/Mexico+to+Yahoo+Not+on+our+pyramid/2100-11397_3-6125105.html, accessed October 12, 2006.
2006b Yahoo Kicked Off of Pyramid. Electronic document, http://news.com.com/2300-1026_3-6125120-1.html, accessed October 12, 2006.

CNN News
2006 Yahoo Laser to Ask: Anybody There? Electronic document, http://www.cnn.com/2006/TECH/space/10/10/insider.aliens/index.html, accessed October 11, 2006.

Dreyfus, Herbert
1979 What Computers Can't Do: The Limits of Artificial Intelligence. Rev. edition. New York: Harper Colophon.

Fogg, B. J.
2003 Persuasive Technology: Using Computers to Change What We Think and Do. San Francisco: Morgan Kaufmann.

Friedberg, Anne
2006 The Virtual Window: From Alberti to Microsoft. Cambridge, MA: MIT Press.

Gamio, Manuel
1922 La Pòblación del Valle de Teotihuacán. Vol. 1–5. México, DF: Instituto Nacional Indigenista.

García Robles, Nelly
2007 The Management of Archaeological Resources in Mexico: Oaxaca as a Case-Study. Society for American Archaeology. Electronic document, http://saa.org/publications/oaxaca/cover.html, accessed September 10, 2007.

Ginsburg, Faye, Lila Abu-Lughod, and Brian Larkin, eds.
2002 Media Worlds: Anthropology on New Terrain. Berkeley: University of California Press.

Haraway, Donna
2003 Cyborgs to Companion Species: Reconfiguring Kinship. *In* Chasing Technoscience: Matrix for Materiality. Don Ihde and Evan Selinger, eds. Pp. 58–82. Bloomington: Indiana University Press.

Hodder, Ian
2004 Archaeology Beyond Dialogue. Salt Lake City: University of Utah Press.

INAH
1983 La defensa del patrimonio cultural. México, DF: SEP INAH.
2005 Ley de fomento y difusión de la cultura. México, DF: INAH.

Jenkins, Henry
2004 The Cultural Logic of Media Convergence. International Journal of Cultural Studies 7:33–43.

Kelty, Christopher, and George Marcus
2007 Open Source Experiments. Anthropology News 48(2):3–4.

Kintigh, Keith
2006 The Promise and Challenge of Archaeological Data Integration. American Antiquity 71(3): 567–578.

Landow, George
1997 [1992] Hypertext [2.0]: The Convergence of Contemporary Critical Theory and Technology. Rev. edition. Baltimore: Johns Hopkins University Press.

Leone, Mark, P. B. Potter, and P. A. Shackel
1987 Toward a Critical Archaeology. Current Anthropology 28:283–302.

Lessig, Lawrence
2004 Free Culture: The Nature and Future of Creativity. New York: Penguin Books.

Levy, Pierre
1997 Collective Intelligence: Mankind's Emerging World in Cyberspace. New York: Plenum.

Manovich, Lev
2001 The Language of New Media. Cambridge, MA: MIT Press.

McLuhan, Marshall
1964 Understanding Media: The Extension of Man. Corte Madera, CA: Gingko Press.

Miller, Daniel, and Don Slater
2000 The Internet: An Ethnographic Approach. New York: New York University Press.

Millon, René
1964 The Teotihuacan Mapping Project. American Antiquity 29(3):345–352.

Nicholas, George, and Kelly Bannister
2004 Emerging Intellectual Property Rights in Archaeology (With Comments). Current Anthropology 45(3): 327–350.

OCRegister.com
2006 Yahoo!'s Time Capsule. Electronic document, http://blogs.ocregister.com/sciencedude/archives/2006/10/yahoos_time_cap.htm, accessed October 20, 2006.

Open Source Software Initiative
2006 Open Source Definition. Electronic document, http://www.opensource.org/docs/definition.php, accessed September 10, 2006.

Rheingold, Howard
2002 Smart Mobs: The Next Social Revolution. Cambridge, MA: Perseus Basic Books.
Richards, Julian
2006 Archaeology, E-Publication and the Semantic Web. Antiquity 80:970–979.
Ruiz, Roberto Gallegos, ed.
1997 Antología de documentos para la historia de la arqueología de Teotihuacan. México, DF: INAH.
San Francisco Chronicle
2006 Intellipedia. San Francisco Chronicle, November 1, 2006.
Schnapp, Alain
1996 The Discovery of the Past: The Origins of Archaeology. London: British Museum Press.
Shanks, Michael, and Christopher Tilley
1992 Reconstructing Archaeology: Theory and Practice. 2nd edition. London: Routledge.
Smith, Claire
2004 On Intellectual Property Rights and Archaeology (With Comments). Current Anthropology 45(4): 527–533.
Subzero News
2006 Yahoo! Time Capsule. Electronic document, http://www.subzeroblue.com/archives/2006/10/yahoo_time_capsule.html, accessed October 11, 2006.
Sys-Con Media
2006a Internet Time Capsule Data Beamed into Space: Images Projected at Ancient Native American Pueblo. Electronic document, http://www.sys-con.com/read/290602.htm, accessed October 26, 2006.
2006b More Than 1.25 Million People from Almost 200 Countries Chronicle and Share Humanity Around the Globe via Internet Time Capsule. Electronic document, http://www.sys-con.com/read/290602.htm, accessed October 26, 2006.
Trigger, Bruce
1984 Alternative Archaeologies: Nationalist, Colonialist, Imperialist. Man 19:355–370.
UNESCO
1988 Report of the World Heritage Committee Eleventh Session. Paris: UNESCO.

2001 Preserving Our Digital Heritage: A UNESCO Perspective. Report of the Organization's Executive Board. Paris: UNESCO.
Vasconcelos, José
1925 La Raza Cósmica. Los Angeles: California State University.
Vogt-O'Connor, Diane
2000 A Precarious Balance: Collection Access and Intellectual Property Rights. CRM 5:61–65.
Wardrip-Fruin, Noah, and Nick Montfort, eds.
2003 The New Media Reader. Cambridge, MA: MIT Press.
Weber, Steven
2004 The Success of Open Source. Cambridge, MA: Harvard University Press.
Webmoor, Timothy
2005 Mediational Techniques and Conceptual Frameworks in Archaeology: A Model in "Mapwork" at Teotihuacan, Mexico. Journal of Social Archaeology 5(1):52–84.
2007a Reconfiguring the Archaeological Sensibility: Mediating Heritage at Teotihuacan, Mexico. Ph.D. dissertation, Department of Anthropology, Stanford University. Electronic document, http://humanitieslab.stanford.edu/Teotihuacan/Home, accessed December 10, 2007.
2007b What About 'One More Turn After the Social' in Archaeological Reasoning? Taking Things Seriously. World Archaeology 39(4):563–578.
WebProNews
2006 Yahoo! Time Capsule Detours to New Mexico. Electronic document, http://www.webpronews.com/topnews/topnews/wpn-60-20061025YahooTimeCapsuleDetoursToNewMexico.html, accessed October 26, 2006.
White, Hayden
1973 Metahistory: The Historical Imagination in Nineteenth-Century Europe. Baltimore: Johns Hopkins University Press.
Wired Magazine
2006 Tech Researchers Calculate Digital Info. Electronic document, http://news.wired.com/dynamic/stories/I/INFORMATION_EXPLOSION?SITE=WIRE&SECTION=HOME&TEMPLATE=DEFAULT, accessed March 6, 2007.
Witmore, Christopher
2004 Four Archaeological Engagements with Place: Mediating Bodily Experience Through Peripatetic Video. Visual Anthropology Review 20(2):57–71.
Yahoo!
2006 Yahoo! Time Capsule Webcast. Electronic document, http://timecapsule.yahoo.com/yahootime/webcast.php, accessed October 27, 2006.