

New Directions for Cultural Virtual Reality: A Global Strategy for Archiving, Serving, and Exhibiting 3D Computer Models of Cultural Heritage Sites

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Abstract: In the past decade, the application of 3D computer technology to cultural heritage has been widely accepted by archaeologists, architectural historians, and cultural authorities. This paper argues that the field of virtual heritage now faces two challenges: *campanilismo*, or the privileging of local heritage over global heritage; and the lack of preservation. A solution is proposed for both problems: creation of a world virtual heritage center and network with the missions of collecting, maintaining, and distributing computer models of cultural heritage sites; and of organizing exhibitions of virtual heritage on global themes.

Key words: Virtual heritage; digital preservation; *campanilismo*; World Virtual Heritage Center; Immaginare Roma World Expo; Archéovision, SAVE.

1- The last ten years of 3D computer technology applied to cultural heritage

As we look back on ten years of activity in applying the new technology of 3D computer modeling to archaeology and architectural history, we can observe great progress on many fronts. The costs of creating and demonstrating 3D models have fallen dramatically, and today standard PCs can run models, even real-time models. Computer modeling has become a widespread, well-understood technique. Scholars comprehend the need of publishing not only their 3D data but also the related metadata and documentation. Practitioners have formed international scholarly societies and are holding regular meetings. Notable among these are the Archäologie

und Computer (www.stadtarchaeologie.at/), Computer Applications and Quantitative Methods in Archaeology (www.caa2006.org/), International Society for Virtual Systems (www.vsmm.org), VAST (vcg.isti.cnr.it/vast05/index.php), and, last but not least, Virtual Retrospect (www.virtualretrospect.estia.fr/en/2005_prog.htm).

As the quantity of archaeological models has increased, so, too, has the quality. Today we can create our own movies of the virtual worlds we create, populated with human beings and objects. We can even output our movies in high-definition stereo video. All this was impossible a decade ago, except for movie studios such as DreamWorks or special effects companies such as Industrial Light and Magic. For their part, real-time models are no longer just visual but can include 3D localizable sound and even touch.

Perhaps the most important positive development of recent years is that, beyond the narrow circle of digital archaeologists, cultural authorities, too, have finally "gotten it" and now understand the importance and utility of 3D models for documenting a site and presenting it to the public. A number of exhibitions and museums have used 3D models, and some local virtual heritage centers have even started to be created. A proposed ICOMOS treaty on the interpretation of cultural heritage sites recommends the use of computer models in place of physical restoration or anastylosis to the greatest extent possible (http://www.enamecenter.org/pages/public_progr_charter.html).

2- New dangers we face: *campanilismo* and “the death of the digit”

While these developments are to be applauded, there are two dangers that I wish to discuss in this paper: first, in our enthusiasm to embrace 3D computer technology and to apply it to cultural heritage, we run the risk of falling into the trap of a cultural heritage “arms race,” in which particular cultures compete with each other to celebrate their own historical monuments and to ignore those of the rest of humanity. Second, in our rush to recreate the cultures of the past, we are ironically not taking care to preserve the new virtual culture that we are creating in the present.

I will argue that these two problems, although quite different, can have the same solution: establishment of a World Virtual Heritage Center (WVHC). Obviously, just by creating a WVHC, we cannot completely eliminate the two problems, but we can at least mitigate their worst effects and create a powerful alternative to what is rapidly becoming “business as usual.” But before I propose the solution, let me talk more about the problems in order to make the case in detail that they are real and worthy of our attention.

The first question we must ask is why are we making 3D computer models of cultural heritage sites. Of course, there are many answers that have been given to this question: we do it because they are powerful means of communicating our knowledge about a site; they offer the best tool for documenting the state of a monument; and they permit us to study problems that could not otherwise be investigated. Here I am thinking about such issues as how well a no-longer intact building originally functioned or how it was aligned with other built or natural features in its environment.¹

But the question I am posing is prior to those answers because the standard replies to my question all presume that studying and teaching our cultural heritage are obviously worthwhile things to do in the first place. But I would suggest that they are anything but that. Cultural heritage is a branch of history, and, as such, it has become as problematic as has history itself. To justify this claim, I will cite the work of two leading thinkers—the American political scientist, Samuel Huntington; and the German philosopher, Juergen Habermas. In citing these two thinkers, I do not mean to embrace their views, which, in any case, are incompatible. Indeed, the very incompatibility of Habermas and Huntington—who, as far as I can tell, seldom if ever refer to one another—is a source of strength: it allows us, so to speak, to “triangulate” in on the status of history today. Whether or not we agree or disagree with the thought of Huntington and Habermas, we can use their work to highlight how problematic the topic of history has become in today’s world. And I would suggest that the more problematic history is, the more problematic is the activity of creating virtual cultural heritage, at least in the ways we have seen to date.

¹ For twelve basic motivations in creating a virtual model of a cultural monument, see Veltman 2001 : 271-72.

In his influential book, *The Clash of Civilizations and the Remaking of World Order*, Samuel Huntington reminds us that, “...history is alive, well, and terrifying.”² Around the world, Huntington observes, conflicts between peoples persist not because of a battle for control of territory or resources but simply over cultural traditions that are seen as irreconcilable as they are immutable. As Huntington puts it, “wars between clans, tribes, ethnic groups, religious communities, and nations have been prevalent in every era...because they are rooted in the identities of people. These conflicts tend to be particularistic, in that they do not involve broader ideological or political issues...They also tend to be vicious and bloody, since fundamental issues of identity are at stake.”³ In a similar vein, Liah Greenfield, in her much-praised study of the history of nationalism, stresses how persistent is national identity and how resistant it is to change.⁴

For his part, Juergen Habermas sees history as the mainstay of the nation-state, which is now obsolete in the global age. Moreover, Habermas never held the nation-state in much esteem in the first place. Like many analysts of nationalism since Renan, Habermas saw it as something that “was more or less concocted from the invented traditions and the fictional history of a single community with a common ancestry, language, and culture.”⁵ Like Huntington, Habermas sees this “fiction” of community as powerful precisely because it helps give individuals their sense of identity.⁶ The fact that a national identity is “concocted” does not make it any less persistent or pernicious. If Huntington sees the danger in raw historical events, whose memory can keep the vicious cycle of outrage and revenge alive in peoples, then Habermas places the emphasis more on the dangers of historians who keep telling the same incendiary tales: “the Cold War is carried on today by historiographic means.”⁷

Huntington and Habermas have diametrically opposed solutions to the problem of national identity. The pessimistic Huntington would preserve the nation state but impose new rules of behavior on it to ensure that cultural diversity is a cause of celebration, not conflict among nations. He would

² Huntington 1996 : 259.

³ Huntington 1996: 252.

⁴ Greenfeld 1995.

⁵ Finlayson 2005 : 123. For an example in Habermas, see Habermas 2001 : 51-57. For Renan’s view of nationalism, see Renan 1996 : 41-55.

⁶ Cf. Finlayson: 2005, 123: “the ideas of the nation and national consciousness began to work hand in hand with the political structures of the state to imbue its citizens with a sense of belonging to a single political community, and with a sense of their collective cultural and political identity.”

⁷ Habermas 2001: 43. At pp. 29-31 of the same book, Habermas discusses the historian’s responsibility to keep his approach and perspective uncontaminated by that of his readers precisely so that the writing of history does not simply keep confirming old prejudices and keeping alive old national grievances.

also have mankind create a more peaceful and cooperative world by stressing the things that unite, not divide, us.⁸ In contrast, for the optimistic Habermas, the nation state's days are numbered and what will replace it are, first, transnational organizations like the European Union and ultimately a United Nations with real power.⁹

But despite their different visions of how a peaceful world can someday be brought about, Huntington and Habermas clearly agree that much of our current woe derives from the nation state and its citizens' sense of national identity. But how is national identity invented and transmitted? This brings us back to cultural heritage, for it is precisely through educating people about their distinguishing cultural monuments—physical and linguistic—that their sense of self-identity is forged. This commonplace was clearly expressed by Koichiro Matsuura, the Director General of UNESCO in a recent statement: “cultural heritage [is] a constituent part of national identity,”¹⁰ which was echoed by the American historian, Peter Stearns, who justified the study of history today because “it helps provide identity, and this is unquestionably one of the reasons all modern nations encourage its teaching in some form.”¹¹

It might therefore follow that if we want to reduce tension and conflict in the world, we ought not to be keeping national identity alive through the protection and indeed promotion of cultural heritage. We might instead welcome the “march of progress” and rejoice more than protest when heritage sites are destroyed by development. Of course, no one here believes that

⁸ Huntington 1996: 316-321.

⁹ Habermas 2001: 55-57. Finlayson 2005: 134-135: “Habermas concedes that, from a global perspective, European politics is really just an extension, not a transformation, of the politics of national self-interest...If lasting and effective political solutions to global problems are to be found, they must be sought ultimately at the level of a cosmopolitan world politics...The ultimate aim is for the creation of a political united nations with the power not just to make resolutions, but to implement them..” It is interesting to note that Renan, too, predicted that the system of nation states in Europe would evolve someday into a confederation: “The nations are not something eternal. They had their beginnings and they will end. A European confederation will very probably replace them,” in Renan 1996: 54.

¹⁰ See the statement dated 27-06-2003 on “Iraqi Cultural Heritage: second UNESCO mission at portal.unesco.org/en/ev.phpURL_ID=13199&URL_DO=DO_TOPIC&URL_SECTION=201.html (seen October 7, 2005). This is, of course, a commonplace; cf. “Australia's national heritage comprises exceptional natural and cultural places which help give Australia its national identity,” quoted at the head of an online article on “National Heritage” posted by the Department of the Environment and Heritage of the Australian Government (www.deh.gov.au/heritage/national/ [seen October 7, 2005]). Cf. The Assistant Director General for Culture, Mounir Bouchenaki, recently noted that cultural properties “are more and more connected to questions of identity,” in Bouchenaki, 2001: 1.

¹¹ Stearns, 1998.

this is the right course of action or we wouldn't be attending this conference. And I hasten to add that I completely agree with you that encouraging the destruction of our cultural heritage would no less an act of madness than the suppression of the study of history in our schools.

From this point of view, it is interesting to revisit the 1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage.¹² The Preamble of the Convention is the place to go to find its rationale and motivation. That turns out to be fairly simple and uncontroversial: great sites and monuments around the world are at risk of damage or destruction, and their loss would be irreparable and thus should be avoided. So far, so good. But things get more complicated when the authors of the Preamble briefly discuss the criteria for a place's inclusion among the great natural or human sites around the world. They write that “the deterioration or disappearance of any item of the cultural or natural heritage constitutes a harmful impoverishment of the heritage of all the nations of the world” (Preamble), and various articles stress the “universal value” of any given heritage site.¹³ Indeed, the key for a site's selection as a World Heritage Site is precisely that it must be “of outstanding universal value” and meet at least one of ten additional selection criteria. But when we look at those criteria, we are surprised to see that among the qualities that can be present in a place worthy of classification as a World Heritage Site is that it be an “exceptional” or even “unique.” But how can something be universal and at the same time exceptional or unique?

To be sure, there is a reason for this seemingly strange logic. It is that, as the Nara Document on Authenticity (1994) puts it: “a fundamental principle of UNESCO [is]... that the cultural heritage of each is the cultural heritage of all.”¹⁴ Thus, all cultural heritage sites and monuments are universal, in the sense that they belong to humanity as a whole. So, in the parlance of UNESCO “universality” operates not on the level of intrinsic artistic value (despite the phrase “outstanding universal value” in the 1972 Charter) but on the level of ownership. Loss of a cultural heritage site constitutes “impoverishment” in the sense of economic loss: we need the 1972 Charter to protect our collective property, not our collective identity. Clearly, then, a site can be both universal—the common property of mankind—and unique. But in the last sentence, and in the 1972 Charter, the word “unique” pertains to a qualitative judgment. Since the number of cultural heritage sites on the planet is for all practical purposes infinite—especially when we add the new category of “intangible” cultural heritage¹⁵—then, as good

¹² For the text, see whc.unesco.org/world_he.htm (seen October 8, 2005).

¹³ Cf. Articles 1, 2, 8, 11, 12, 15, 19.

¹⁴ Nara Document on Authenticity, article 8; for the text see <http://www.international.icomos.org/charters/charters.pdf> (seen October 7, 2005).

¹⁵ Cf. the Convention for the Safeguarding of the Intangible Cultural Heritage (adopted by UNESCO on October 17,

stewards of our collective wealth, we must prioritize. And it is at that point that a value judgment about what to protect and what not becomes inevitable.

Lurking behind the text of the 1972 Charter is an intuitive grasp of the necessary dialectical relationship between the universal and the exceptional: what is exceptionally or uniquely valuable can only be so judged from a universal point of view; and what is truly universal (i.e., in this context “unexceptional” or commonplace) can only be determined by taking into account all exceptions and unique cases. The universal and the non-universal thus require each other for contrast, definition, and validation. Precisely because, as collective property, humanity’s cultural heritage is unlimited, we must decide to protect a specific piece of our collective tangible or intangible heritage not so much because it is universal as because it is in some way special. This insight tells us something potentially useful about virtual cultural heritage and what I see as a dangerous trend that is developing in our approach to it.

The insight of the 1972 Charter Concerning the Protection of the World Cultural and Natural Heritage is that we must always set the exceptional and unique in the context of the universal in order to appreciate its special status. The danger I see in virtual heritage is that instead of setting the special into the larger context of the universal, we are typically—if unconsciously—falling into the trap of what the Italians call *campanilismo*. This word has been aptly defined as an “absolute love and allegiance to one’s own ‘campanile’ (bell tower), to...one’s own city, one’s own region.”¹⁶ In so far as it increases a citizen’s identification with his homeland and therefore encourages investment in and preservation of its cultural heritage, past and present, *campanilismo* can be a good thing.¹⁷ But, when taken to an extreme, as it often is, it has a bad side, too, which the distinguished British historian Peter Burke equated to Freud’s concept of the “narcissism of minor differences.”¹⁸

2003); for the text see: unesdoc.unesco.org/images/0013/001325/132540e.pdf.

¹⁶ Stortoni-Hager 2004.

¹⁷ Thus, in American urban planning, the economic and social benefits of urban preservation are well known; cf. Morse 2004: 147-179.

¹⁸ Burke 2004.. Cf. the following passage: “The phenomena described above form part of a reaction to globalization rather than an autonomous movement, but we cannot afford to neglect them. They illustrate a widespread anxiety over the weakening of traditional identities at a time when new ones are not fully formed. Sigmund Freud coined a vivid phrase to describe what we see happening around us: the ‘narcissism of minor differences’, what the Italians call *campanilismo*. The Dutch anthropologist Anton Blok has extended Freud’s point to argue that it is the threat of the loss of traditional identities that triggers the narcissism. The consequence is an increasing concern with cultural purity, which may take an extreme form

Is such narcissism relevant to virtual heritage today? Unfortunately, I would have to answer “yes,” for the simple reason that almost all our computer models made to date have been produced for specific purposes and have been shown to the public as support for exhibitions on limited topics. A good case in point is perhaps the most impressive show ever to center on virtual heritage: the show “Immaginare Roma World Expo” that is running this fall in Rome.¹⁹ This show is installed in the Markets of Trajan in the heart of the city. Since the lab I am associated with has four different products on display, and I was myself on the Scientific Advisory Committee, if my remarks appear to be critical, this is a case of self-criticism as much as anything else.

The exhibition is sponsored by the City of Rome and is set in one of the city’s prime archaeological sites, the Markets of Trajan. A *Call for Applications* was widely distributed this summer. It encouraged applications from “research institutes, private companies, freelance professionals, public or private authorities and professional studios that have developed projects in virtual reality, computer graphics, multimedia and virtual storytelling, linked to any of the Expo’s itinerary sections.” The sections include the Ancient City of Rome; the Roman Empire; Rome Online; Research and Experimentation. The two main criteria for selection were archaeological quality and technical innovation. In the event, over forty submissions were chosen for exhibition. The Expo has received extensive and favorable coverage in the media, and thousands of people have already seen it.

So far, I don’t have any strong objection to raise because it is clear that often shows on specific themes like this have been and doubtless will continue to be held, whether or not they use information technology. But it is important to realize that Expo is seen not as an end in itself but as the first step toward creation of a permanent Virtual Heritage Center for the City of Rome. As the promoters put it, the proposed center will present “the rich cultural heritage of ancient Rome, which even nowadays is present throughout the world and continues to amaze and inspire us.”

Rome is not the only city with such a planned center. Before it reaches the implementation stage, it is worthwhile pausing to consider the basic concept. Why, for example, should Rome’s virtual heritage center limit itself to ancient Rome? Even if we grant that a center in Rome, sponsored by the city

in movements of ethnic cleansing, or a mild form, like the French government’s campaign against *franglais*.”

For the concept in Freud, cf. Freud 1961: 101: “Closely related races keep another at arm’s length: the South German cannot endure the North German, the Englishman casts every kind of aspersion upon the Scot, the Spaniard despises the Portuguese.”

Shaw 1998, goes so far as to see narcissism as the root cause of genocide in the twentieth century.

¹⁹ See <http://www.buildingvirtualrome.org/>.

government, must inevitably emphasize the city's cultural heritage, why limit the coverage to antiquity and ignore other periods for which virtual reconstruction could be just as validly and fruitfully applied, for example the long and rich urban history of medieval Rome, many of whose prime monuments—such as Old St. Peter's—have long since vanished? Why not also use the center as a place to show Rome of the future by requiring major new building projects to submit 3D computer models of the proposed project and the surrounding context, as has been done, for example, in Los Angeles for new buildings and in Sweden for new highways.²⁰ This could allow the citizens of Rome to visualize and therefore take a more active interest in the future of their own city. Finally—and most important of all—why limit the activity of the Rome Virtual Heritage Center to Rome? Why not use the center as a virtual gateway to the rest of Italy, and why not indeed use the center as a way of setting Roman culture—ancient, medieval, or modern—into a broader global context?

Of course, you have to start somewhere, and it may be that the promoters of the Rome center set forth their project description in a very focused way in order to give the proposed center a definite identity, and to take advantage of the fact that ancient Rome is still fascinating and has therefore inspired many more VR models than any other civilization of the past. They perhaps also did not wish to scare off potential political and economic support by appearing to start something too open-ended and utopian. In fact, if these were the motivations, then they were very intelligently chosen since they in effect repeat a winning strategy already seen in twentieth-century Rome with physical urban models. I refer here to the famous *Mostra Augustea della Romanità* of 1937-38²¹ which led directly to the creation of the *Museo della Civiltà Romana* in 1955.²² Both the show and the museum were based on amassing an impressive array of physical models of ancient Rome and its Empire; and they were inevitably products of the hyper-nationalist ideology of Mussolini's regime.

It would be unfair to suggest that the backers of the proposed Rome Virtual Heritage Center have similar motivations. They clearly do not. Indeed, we need not invoke the bugbear of Mussolini to see the retrograde limitations of the proposed Rome center. At a minimum, it can be understood as a translation into the digital medium of the great national and urban-historical museums that sprouted up all over Europe during the nineteenth century in the heyday of the nation states.²³

3- Possible solutions

Before it is too late, I hope that the other such centers in the planning stage can see the need for new institutions

implementing the ideas about cultural heritage incorporated in the various UNESCO and ICOMOS charters to which I have already referred. These make it clear that the old nationalistic model of cultural heritage will not do, especially in the age of globalization when, as Huntington and Habermas remind us, understanding among peoples is more necessary than ever.

For Huntington, one of the best ways of promoting understanding is through cultural initiatives to stress what he calls the “commonalities” of the great civilizations: “...the third rule for peace in a multicivilizational world is the *commonalities rule*: peoples in all civilizations should search for and attempt to expand the values, institutions, and practices they have in common with peoples of other civilizations.”²⁴ In Habermas' thought, there is a noticeable absence of attention to what has been aptly called the “soft power” of culture.²⁵ He would instead create a cosmopolitan mentality based on our common embrace of human rights, which he sees as transnational—and not merely Eurocentric—in nature.²⁶

Without getting into this debate, which concerns more the realm of political science than the cultural politics we are considering here, we can at least urge a broadening of Habermas' grounding of the new cosmopolitan mentality in a cultural as well as legal argument. If the nation-state formed its citizens by an education steeped in the linguistic, artistic, and architectural monuments of a certain people, then the transnational, globalized world system of today must form its world citizens' sense of collective identity through appropriation of the entire cultural heritage of mankind. The way has already been paved by the UNESCO Convention of 1972 Concerning the Protection of the World Cultural and Natural Heritage. Now thanks to new media such as virtual reality, the opportunity has arisen to give real, concrete meaning on the level of the individual world citizen to the convention's claim that humanity's cultural heritage is our common possession and has “universal value.” Through digital media, the world's cultural monuments can be represented or, if need be, reconstructed in a non-material form so that they can be readily transmitted from one corner of the globe to another and become the raw material from which educators, moral and political leaders can construct a new cosmopolitan identity.²⁷

²⁴ Huntington 1996: 320.

²⁵ See Nye, Jr. 2004.

²⁶ See Habermas 2001: 113-129, especially p. 119.

²⁷ I understand cosmopolitan identity in the sense of Vertovic and Cohen 2002: 4: “Cosmopolitanism suggests something that simultaneously: (a) transcends the seemingly exhausted nation-state model; (b) is able to mediate actions and ideals oriented both to the universal and the particular, the global and the local; (c) is culturally anti-essentialist; and (d) is capable of representing variously complex repertoires of allegiance, identity and interest. In these ways, cosmopolitanism seems to offer a mode of managing cultural and political multiplicities.”

²⁰ Cf. Chan, et al. 1998; I. Heldal et al 2005.

²¹ See the excellent study by Scriba, 1995.

²² See Liberati Silverio 1988 : 6.

²³ See Schaer 1996 : 75-85.

This digital conversion is also all the more possible and appropriate because of another feature of the contemporary world famously overlooked by Habermas: the effect of the Internet and interactive new media generally on the public sphere.²⁸ Habermas is famous for giving a “linguistic turn” to the political science of the Frankfurt School. More recently, post-Habermasian writers such as James Bohman, have given Habermas’ thought what might be called a “new media twist.” Thus, Habermas’ tragic story of a public sphere that started as an open and democratic space in the eighteenth century only to be hijacked by the commercial interests of mass media in the nineteenth and especially twentieth centuries, has a happy ending with the arrival of the Internet, the World Wide Web, blogs, etc. Certainly, we can see a “neo-Enlightenment” public space in action in the purely political realm of the cyberworld. One need only think of how the famous “Downing Street Memo” made its way via the Internet from the UK into public debate in the USA in the Spring of 2005.²⁹ What is happening with politics can also happen with the cultural content of the cyberworld and, indeed, it is already happening on the level of contemporary cultural production (film, TV, etc.). But we need to pay more attention to the possibilities afforded by the new digitized public sphere for the transmission of the cultural products of the past.

Thus, in founding new virtual heritage centers around the world, it would be a shame to miss the opportunity afforded by digital technology to “move bits not atoms.” The old nationalistic museums were justifiable on several grounds, not the least of which was practical: when you collect unique physical artifacts, you cannot expect them to be in more than one place at a time. If you want to put a museum in the middle of a country, it is more practical to give it the mission of collecting the works of art near to hand and within its jurisdiction. But if virtual heritage centers could be internationally networked,³⁰ ideally through an organization such as UNESCO, then they could easily share computer models of the heritage sites they possess. It costs nothing to FTP a computer model from one place to another. There is no limit on how many copies of a model can be in use in the world. So instead of shows on “Rome and its Empire” we could instead get comparative shows about imperialism at different periods in human history; or shows about the world in a certain period such as the fifth century B.C. or the second century A.D. Then what is locally exceptional or unique could be set into a universal context, the better to be appreciated for its distinguishing characteristics and the less to be exploited for purposes of *campanilismo*.

There are two pieces of good news that can be reported, both dating to September of this year. They make me hopeful my argument that heritage institutions should have a global vision

²⁸ On Habermas’ concept of the public sphere, see Habermas 1989 and the reactions in Calhoun 1992 and Crossley and Roberts 2004.

²⁹ For the story, see Smith 2005; for the document itself, see www.timesonline.co.uk/downingstreetmemo.

³⁰ On the (not very encouraging) history of museum networks, see Veltman 2001 : 264-65.

and reach will ultimately be accepted. First, there is at least one such virtual reality center that sees its mission in this way: Archéovision at the University of Bordeaux.³¹ Archéovision opened its doors on September 9, 2005 and since then has hosted over one thousand visitors.³² Housed in a new building near the Department of Archaeology of the university, Archéovision consists of modeling labs, an exhibition space, and a visualization theater. The theater currently shows Archéovision’s computer models of sites ranging from ancient Egypt to Renaissance France, thus attesting to the center’s ambitions to cover the globe. It has begun to create strategic alliances with similar labs elsewhere, and I am happy to say that my institution is one of Archéovision’s first partners. And my institution will be opening a virtual reality theater with a similar mission early next year. So the idea is starting to take hold and spread, at least at universities. What we need next is for a public museum to take up the idea.

The second piece of good news is that my institute’s proposal to the National Science Foundation to institute the project we call SAVE™ was approved for funding in September. SAVE™ stands for “Serving and Archiving Virtual Environments.”

The purpose of SAVE™ is to provide the framework for creating, archiving, and distributing online such real-time, scientific 3D cultural heritage models. I like to imagine the user interface of SAVE™ as an adaptation of Google Earth or of NASA’s World Wind model of the planet textured by satellite photographs. SAVE™ would add a time-bar to the representation of the earth so that instead of simply flying down onto a particular spot of the planet, as you can do today, the user could choose a certain date and see reds dots scattered around the earth indicating places where there are 3D reconstructions available for that place and time.

What services will SAVE™ offer to end-users of virtual environments? Most important of all is *access*: as computer models multiply, an Internet-based finding aid becomes more and more necessary. Equally desirable are *interoperability*, *data exchange*, and *portability*. Users need to be able to find and, ideally, to download and combine models from different sources and in different file formats.

SAVE™ will thus offer all users a convenient place to come for virtual time travel, and it will offer some users various premium services. For example, companies will be able automatically download and license a model for commercial use in derivative products. Schools and universities can obtain site licenses for the use of multiple copies of a model. Curators at virtual heritage centers can easily find just the models they need to create the kinds of comparative, globalized exhibitions that I called for earlier in this paper.

³¹ See http://archeovision.cnrs.fr/en/index_e.htm (seen October 8, 2005).

³² See http://archeovision.cnrs.fr/en/actua_e.htm.

But SAVE™ will service not only the needs of end-users to find in one place all the scientifically validated models of our cultural history. It will also serve the requirements of creators of such models. For them SAVE™ will be a clearinghouse for technical and scientific standards and best practices. It will be a digital repository when models meeting SAVE™'s standards could be deposited. It will offer creators some premium services. For example, like a scholarly journal, it can offer peer review of models so that the production of a model and associated scholarly metadata and documentation can count as a born-digital publication. It can offer file format translation, long-term maintenance as the underlying software used to create or run a model evolves. And it can offer creators a chance to correct, change, or otherwise update their models as new insights and discoveries dictate.

Beyond these services to users and creators, SAVE™ would respond to an even more pressing need: that of *archiving* models in order to ensure their survivability (Frischer 2002). It is ironic that we who work so hard to preserve the culture of the past very often take little heed about protecting our own work. Perhaps the reason is that whereas the sites and monuments we model are physical objects, our models are ultimately just computer code. But as has been increasingly realized in Europe and elsewhere, by neglecting to take measures to preserve our work, we risk becoming bad examples of the more general problem that has been memorably called “the death of the digit.”³³

To get ourselves to focus on this problem, we can once again learn from recent work done by UNESCO and ICOMOS. At a conference held at Victoria Falls in 2003, Michael Petzet, the President of ICOMOS, stated:

The material from which the monument as an object of remembrance is made can thus be just as variable as the degree of “materialisation“ of the spiritual message that the monument represents - from the traces of a prehistoric settlement detectable now only in the dark-coloured negative form of potholes, to the immense stone blocks of an “immortal“ pyramid created as it were for eternity. As an idea that took on shape, the monument is in any case more than a tangible ‘object’ consisting of a certain material. There are even monuments whose materials are so ephemeral that they are in need of renewal again and again; indeed even the mere replica of a monument that no longer exists materially could still ‘evoke remembrance of something.’

I would suggest that our 3D computer models—though not mentioned by Petzet—are an excellent case in point. They are quite immaterial, and they, if not carefully protected, are equally ephemeral. Luckily, they are easily replicated and that gives us a first line of defense against their disappearance. But for their long-term survival, much more needs to be done.

³³ This useful phrase was attributed (wrongly, as far as I can tell) in a DigiCult document (www.digicult.info/downloads/html/6/6-212.html), to Feeny 1999.

The purpose of SAVE™ is to ensure that our virtual heritage digits not only do not die, but that they continue to be fruitful and multiply. Needless to say, it would make sense, for logical and practical reasons, to house SAVE™ in the proposed World Virtual Heritage Center. The WVHC could also be the administrative home of the proposed global network linking the various local, regional, and national virtual heritage museums that are starting to be created around the world (fig. 1).

The WVHC will be a place where standards and best practices are tracked and promoted; where models of individual sites are deposited, maintained, and distributed via the Internet to users all over the world; and where changing exhibitions present work going on in this field all over the world. Moreover, the WVHC could be a network as well as a “bricks and mortar” building: through partnerships with local, regional, and national virtual heritage centers, it could help work done in one corner of the world to be known and used all over the globe. This is important because, if virtual heritage is not international in scope, it runs the risk of becoming less a tool to promote peace and understanding among peoples than just another weapon to glamorize one culture at the expense of all the others.

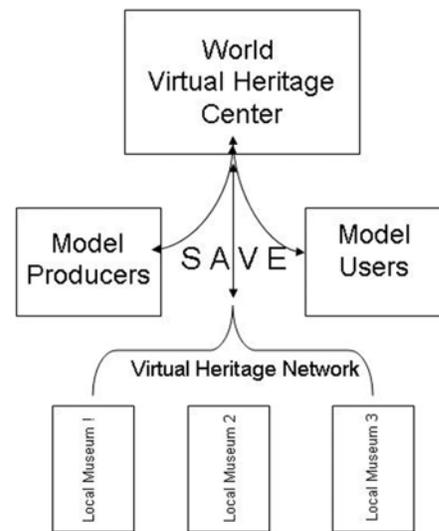


Fig. 1: Interrelationships between the proposed World Virtual Heritage Center and Network, SAVE™, local virtual heritage museums, scientific model creators, and end-users of scientific models.

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