

Will New Technologies Impair the Critical and Imaginative Capabilities of Students?: Virtual Harlem, an Experiment in Learning Environments.

James J. Sosnoski

For years now, my colleagues have decried the erosion of critical thinking. Some of them noted that their students seemed to prefer information to understanding. Some of them complained that an unreflective and passive acceptance of the social, political, and economic status quo was the prevailing attitude. Instead of raising questions that take issue with the way things are, students, my friends observed, seemed more resistant to change than we did at their age. Knowledge has been turned into a commodity, they argued. One remarked that Plato, who believed an unreflective life was not worth living, is surely “rolling over in his grave.”

For many of my colleagues in the Humanities, students are about to experience an even worse threat—the loss of their imaginations. It is bad enough, their argument goes, that films have replaced novels and that lyrics have replaced poems, but now simulation will replace imagination. The hole in dike is video technology, first celluloid, now digital. During the 20th century, instead of reading a novel, students found it more satisfying to see the film, giving up their imaginations to images on screens and sounds from speakers. In the 21st century, the argument continues, video technologies are so prevalent that one’s imagination is little more than a memory of videoscapes on countless screens in every corner of our lives. According to some of my colleagues, we can predict further and further loss of our ability to imagine. And the greatest potential thief of the imagination of all is now released upon us, their argument forecasts, to seal our fate forever—virtual reality.

Although many of my colleagues who are unsympathetic to the use of technology in research and teaching can be considered Luddites, not all of the concerns voiced by critics of technology can be easily dismissed. Ken McAllister’s essay in this volume enumerates some of them. Before I discuss the Virtual Harlem project as a collaborative learning network, I would like to share some concerns that have surfaced in the course of the project about the use of instructional technology.

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Probably my foremost concern is that what will be learned by visitors to Virtual Harlem will have more to do with technology than with the Harlem Renaissance or African American Culture. I am not so much concerned about the obvious aspect of this problem—that the technology will be more interesting than the material it is presenting—as I am about the obverse—that the material being presented will be less compelling because of its technological representation. Take, for example, the comment made in “Integrating Technology In the Distance Learning Classroom,” namely, that students were not interested to return to the Virtual Harlem cityscape because they felt that they had already “seen” it. This reveals that, for these students, the experience of Virtual Harlem was largely seeing it in VR. Once that had happened, nothing more was to be learned. Given the wealth of visual detail in Virtual Harlem, it is not likely that students who visited the site had no more to learn.

Another concern I have is that Virtual Harlem will not be taken seriously as a historical representation of the Harlem Renaissance but will, instead, be seen as a kind of entertainment. At this point in time, were Harlem Renaissance scholars asked to review the project as a “history” of the Harlem Renaissance, they would say that it was inaccurate, superficial, and grossly partial at best. VR is an extraordinarily difficult mode of historical representation and what has been done to date only hints at what might be done in the future.

Finally, I fear the impatience of both Virtual Harlem’s antagonists and advocates. Scholars who have little sense of the labor intensive computer work it takes to build Virtual Harlem will be impatient about its current deficiencies and, perhaps, push the project into the hands of commercial developers. At the same time, I am concerned about the impatience of its advocates, including myself, rushing to show people what we’ve done and putting ourselves in a kind of jeopardy with viewers who will judge us on the actual rather than the potential outcome.

I am not concerned, I might add, with the scenarios I first mentioned—that the development of VR scenarios as an instructional technology will result in losses of the critical and imaginative abilities of students. In this essay, I suggest that neither of those scenarios are necessary outcomes of emerging technologies, particularly instructional ones. In the conversations where claims like the ones above are proffered, the outcomes of the cultural shifts from print environments to electronic ones are painted with such broad strokes that it is impossible to identify in any detail what changes have actually occurred that might demonstrate students are nowadays less critical or less imaginative. It is easier to find evidence that students are far more critical of the platitudes that schools present for their edification, suggesting that their ability to be critical is not entirely lost. Whereas students may less often (and I’m just guessing) imagine the settings and circumstances of stories they read, they inversely seem far more imaginative in dealing with electronic media than ever before, their myriad web pages giving

testimony to their creativity.

If we narrow the issues involved to two answerable questions, I believe we can realistically assume that many-if not all-students are not only critical of what they study and how they study it but also imaginative in finding ways to improve the learning environments of their choice. (Note that I have couched my claim in language that implies that student criticism and creativity is possible only in learning environments that welcome them which do not always include classrooms.) If we ask: "do students question what they learn and how they learn it?" the answer is surely, "yes." If, in addition, we ask: "do students show creativity in their school-work?" we would probably have to pause for a moment. However, if we "deconstruct" the opposition work/play, then we can readily point to various ways in which student cultures are highly creative. However, both of these answers seem to suggest that students are critical of schoolwork and prefer cultural play. Without making any claims to evaluate the "merit" of student criticism or creativity, I propose that a change in learning environments, one that matches changes in the cultural fabric of our global society, is well worth exploring. With this in mind, I describe in what follows a learning environment designed to make full use of available technology, including virtual reality and other high-end media such as video conferencing and 3D graphics. This particular environment in fact depends upon the criticism and creativity of its learners and thus alters the traditional paradigm of instruction according to which the masters teach apprentices how to become experts.

I believe that collaborative learning environments provide settings wherein students have the opportunity to be both critical and creative. My belief is based on "cues" I've taken from the Virtual Harlem project and the collaborative learning network it has inspired. I am not suggesting that Virtual Harlem has demonstrated my belief but that there are promising signs in this experiment. To date this experiment in learning has produced inconclusive results. In fact, university students in the Harlem Renaissance courses associated with the project; while generally favorable in their reactions to it (see Park, et al.), do not provide much evidence of critical thinking or creativity. This might be explained by noting that two of three instructors of these courses have very limited experience with technology. Nonetheless, the responses of four other groups are far more encouraging. The programmers who have worked on the project have shown tremendous creativity in their work. Second, the adults who have visited the project, for example the MOBE members (see Aghahowa), have responded with enthusiasm and excitement. Their responses contrast with student responses, which might be explained by the fact that the Harlem Renaissance is an expression of print culture. For many students acquainted with new media culture the Harlem VR scenarios were not as exciting as those in films they have seen and the subject matter is less enticing than images of their cultural heroes and heroines. By contrast, the adults are closer in time to the enter-

tainers and artists of the Harlem Renaissance. A third group whose reactions have been quite positive are the foreign faculty and students who, perhaps, find the virtual experience of a culture that they do not live in more immediate than print can make it. Finally, the fourth group is comprised of the project's critics. While this group is not very large it has shown by far the most intense reaction to the project. What is striking about this group is that they are not against the project; they wish it to succeed (see McAllister). Most want to see the project done "better" (variously understood) and are impatient with the delays in changing it or unhappy that the project is shown at all since it is at such an early stage. There is a provocative and hopefully productive tension in the project between the first group (the programmers) and this last group (mostly literary scholars).

With these parameters in mind, I will turn to the design of the project. After describing the Virtual Harlem project and the ways in which it is structured as a CLN, I will point to the ways in which this learning environment is designed to foster critical thinking because of its reliance upon the creative imaginations of its denizens.

Virtual Harlem

Virtual Harlem is a digital model of 30s Harlem, N.Y., at the height of the Harlem Renaissance. At this point in time, the model includes about 10 blocks of Harlem out of the 20 or so that are associated with Harlem during its Renaissance. Virtual Harlem includes buildings such as the Savoy, the Lafayette Theatre, and the Cotton Club; the only building that visitors can enter. As visitors move through the streets, they can encounter several famous figures—Langston Hughes, Marcus Garvey, and Paul Robeson, as well as several residents of Harlem in the 30s in routine activities. Cars and a trolley move up and down the streets. Inside the Cotton Club, one can watch several very brief performances. In sum, this seminal model already presents a rich, though incomplete, environment to visitors. (See Carter, Park, et. al., McAllister for more detailed descriptions of Virtual Harlem.)

The digital model of Virtual Harlem can be accessed through several delivery systems. The fullest version, the immersive CAVE environment (see Pyfer), requires visits to a visualization lab such as UIC's Electronic Visualization Lab to experience the virtual reality scenarios. A 3D version of Virtual Harlem is available on the WWW. Several videotapes of Virtual Harlem tours are available and, upon request, specific tours can be videotaped for particular groups. CD-ROMs of Virtual Harlem can also be made. Finally, web sites on Virtual Harlem are accessible through standard browsers.

The fact that the digital model of virtual Harlem can be accessed through a variety of technologies from the high end to the low end is a key to the network's content. Every effort has been made to allow for work done at the higher end to be translatable into pro-

grams at the lower end. Even more important is the fact that work done at the lower end can be translated and viewed at the higher end. From a practical point of view, this enables students who have relatively modest experience with technology to contribute to the project and find their contributions shown in more sophisticated versions of Virtual Harlem.

An important aspect of the project is that it produces many versions of Harlem. This allows for alternative views of Harlem during its Renaissance. Constructing *the definite* Harlem is not the goal of the project. Instead, showing Harlem's past as one that has been constructed by its proponents and displaying the variety of perspectives that have been used in interpreting the Harlem Renaissance is its goal. This is an important aspect of the critical dimension of the project. Each version is, in effect, a comment on each other version. Each requires a defense, which makes explicit the points of view involved. It is important to recognize that one can easily move from one model to another in an electronic environment. One can, technically speaking, go on demand from daytime to nighttime or from the 20s streetscape to the 30s streetscape to Harlem in 2001. Similarly, one can move from the rather sanitized Harlem of the present construction to a Harlem with drug dealers, brothels, and bars. Such multifaceted perspectives built into Virtual Harlem will eventually allow the construction of particular interpretations of the Harlem Renaissance by showing what they emphasize, include, and exclude. A multivalent model of Harlem is the ultimate goal of the Virtual Harlem project.

Virtual Harlem as a Prototype

Because of its significance—as a virtual experience of the Harlem Renaissance and African American culture, the Virtual Harlem project can serve as a prototype for similar projects. Some subjects that are routinely taught in conventional classrooms, especially those that need to be visualized to be understood, have proved to be an attractive learning experience for both students (and the general public) as virtual reality scenarios. Medical schools, for example, now often feature virtual reality representations of anatomical subjects like the human heart. Virtual hearts are wonderfully flexible teaching tools that can be seen from a variety of perspectives. Another area that has developed rapidly is the use of virtual reality in architecture. A building can be experienced as a “lived in” entity in a virtual reality scenario and thus the designs for buildings not yet constructed can be “tested” virtually. A third area is cultural heritage (see Johnson). Caves that have existed in China for decades and that are currently eroding have been reconstructed so that people can still experience their spectacular beauty. Cultures that no longer exist, Greek culture for instance, can be recreated in virtual scenarios. And, of course, the culture of 1930s Harlem no longer exists except in virtual form.

What is special about the Virtual Harlem project is that it is designed as a collaborative learning network—the builders of

Virtual Harlem are collaborators in a network the aim of which is to learn about the Harlem Renaissance. Persons who are interested in the Harlem Renaissance or Harlem, N. Y. can contribute to the building of the model(s) as long as they follow the project's protocols. In addition, like other visualization projects (where models are constructed of the subject matter being studied), the cross-disciplinary collaboration is extraordinary (see below). These aspects of the project render it a potential prototype for other endeavors involving new instructional technologies. Let me explain.

The overall objective of the Virtual Harlem project is to integrate education in African American culture with the most recent advances in instructional technology and distance learning. The educational objective is to acquaint the public with one of the most astonishing periods of African American Cultural Heritage—the Harlem Renaissance. The technological objective is to acquaint students at several levels of the educational system, especially minority students, with advances in technology, particularly with the use of virtual reality technologies. These objectives—to **educate** and to **experiment**—are integral to our conception of a Collaborative Learning Network. Persons who collaborate in the project can share their *research discoveries* or their *study interests* in the Harlem Renaissance with others in the network thus disseminating knowledge about it and promoting continued explorations into this historical period and its urban setting. At the same time, the technological infra-structure of a global electronic network provides innumerable opportunities for teachers, students, and interested non-academics to *experiment with* or *learn about* the network technology over a complete range of relevant hardware and software at both the low and high end. By participating in a CLN, persons come into contact with the entire range of technologies employed in the project, if not in a “hands-on” manner, then, at least, at the conceptual level since all of the technological discussions and experiments are available to anyone in the network.

As we envision it, a CLN—because of its complex structure—requires that persons in the network be both teachers and learners. The technical staff has to learn about the Harlem Renaissance from the non-technical staff. Similarly, the non-technical staff has to learn about the technologies of networking from the technical staff. Within this framework, everyone in the network is both teacher and learner at some level or with respect to some area of study. The unusual combination of disciplines in the project—African American culture, literary, historical, urban, gender, social, anthropological, artistic, graphic, dramatic studies, communication, psychology, engineering, computer science, and visualization—mandates that no one person in the network will be the master of any one perspective. At the same time, the diversity of perspectives allows each person in the network to view the subject matter and the technology from a previously unfamiliar perspective. Moreover, since the project is based on virtual reality scenarios at the higher end of the technological spectrum, a certain excitement

is continuously generated, especially when persons enter the network and view the work that has been completed.

Because of its subject matter—the Harlem Renaissance, this project has the potential to link scholars and students from all over the world who are studying and researching African American culture into a learning network. At the time of writing, nine universities and one super computer center are associated with the Virtual Harlem network: University of Illinois at Chicago (UIC), Central Missouri State University (CMSU), the University of Missouri-Columbia (MU), the University of Arizona (UA), Columbia University (CU), Växjö University, Sweden, Morgan State University (MSU), Vassar College (VC), the Sorbonne IV, Paris, and the SARA Super Computing Lab in Amsterdam. Several of these universities have already been linked to each other for discussions of the Harlem Renaissance in connection with courses about it.

The structure of a Collaborative Learning Network such as Virtual Harlem—its cross-disciplinary collaboration, its multi-university network, its links to communities, its capacity for experimentation and self-criticism, its exchange of teacher/student roles, and its integration of technologies—make it a prototype for future learning networks.

Key Features of the Virtual Harlem Project

There are several features of the Virtual Harlem project that contribute significantly to its potential as an instruction technology. From the point of view of its subject matter, Virtual Harlem is a **learning environment** in which participants **virtually experience** a **dramatic, visual history** centered in Harlem, New York during its “Renaissance” period. From the point of view of the mode of learning, Virtual Harlem is an environment that enables a subject matter like the Harlem Renaissance to be studied by **modeling** its historical context as a **dynamic system of social, cultural, political, and economic relations**. From the point of view of learning outcomes, Virtual Harlem is an environment that **configures** its visitors as a set of **cultural counter-stereotypes**.

1. *Virtual Harlem as a subject matter*

Virtual Harlem is a **learning environment**. Visitors can enter Virtual Harlem and navigate through it as a way of learning about the historical context, the events, the everyday life of persons who were living in Harlem at the time (See Pyfer). Unlike a conventional classroom in which the subject matter being studied is available to students mostly in textbooks, on blackboards, or in slides projected on the wall, Virtual Harlem is a locale that has to be experienced. Students enter a cityscape that can be experienced, albeit virtually, as if they were tourists visiting Harlem, NY via a time machine. To visit Virtual Harlem is to undergo a **virtual experience**.

Virtual Harlem is a **visual history**. Techniques of computer simulation and visualization have been developed to the point that it is now possible to present historical events in virtual space and time, not only showing the location of the event but also tracking it through a temporal sequence. Virtual Harlem, for example, is the most important historical location for events that comprise what literary historians refer to as the Harlem Renaissance. Technically, it is possible to show temporal sequences [; or;], for example, one can visit Virtual Harlem during the day and then later at night. Although, the project has not yet developed to this point, we plan to show the historical changes in Harlem from the 1920s to the mid 1930s. Concomitantly, we intend in our design to show the periods within the Harlem Renaissance that correspond to those changes by indicating the development or demise of movements and periodicals, the migration of artists and musicians, the changes in the character of the neighborhood.

Virtual Harlem is a **dramatic presentation** of the history of the Harlem Renaissance. Scripts of everyday life are built into the presentation to dramatize the historical events (see Sosnoski/Portlock). Students can interact with figures that “live” in Virtual Harlem and whose character and behavior are as historically accurate as we can make it. Though such experiences are fictive by definition, the dramatizations are governed by an effort to interpret what it felt like to live in Harlem during the 1930s and to encounter the many great artists who worked there. While admittedly an unconventional form of history telling, whose historiography has yet to be developed, every effort is being made to give students an experience of the past that matches scholars’ interpretation of it. The governing genre in this endeavor is history, not fiction, not even historical fiction. The fictive elements arise from the absence of video or audio documentation. Whereas it is possible to write sentences such as “residents of Harlem could purchase the “Crisis” at a local news stand, a dramatization of that event requires a specific figure to approach the news stand and ask for a copy of the “Crisis” (see Tappan). Since we do not have photographs of that event or recordings of what was said, that figure in Virtual Harlem cannot represent a actual person who lived in Harlem at the time. Yet, to dramatize the historical generalization (residents purchased the “Crisis” at local news stands) does not entail the genre of fiction. The stories told in Virtual Harlem are governed by historical constraints.

2. Virtual Harlem as a mode of learning

Virtual Harlem is a “**virtual model**” of the historical Harlem. Because Virtual Harlem is designed as a model of the historical Harlem building it requires historical research and promotes learning by modeling which is one of the most important facets of Virtual Harlem as a learning network. Recent developments in educational theory confirm that building computer models of the subjects being studied is an effective way of learning about a sub-

ject for many students. While such techniques have been used for years in architecture and fine arts departments, once computers became a widely used educational tool, computer-modeling spread rapidly into many subject areas. CAD programs (Computer Assisted Drawing) have been employed in engineering studies for decades. The development of Geographic Information Systems software (GIS), to take a more recent example, is now used extensively in urban planning. Students in Cognitive Psychology use computer generated models of cognition as a featured aspect of their methodology. There is software (Stella and Inspiration, for instance) that enables children in grammar school to study scientific subjects by making computer models of them. Modeling has entered humanistic study. Dramatization has been the form it has taken. Helen Swartz developed an innovative program that allows students to stage Shakespeare plays. Educational MOOs, which have been widely used in the humanities, are websites that allow students to interact with each other in a kind of virtual drama. Virtual Harlem is the first instance of the use of virtual reality technology to model a humanistic subject.

Hypothetically, Virtual Harlem is a “**dynamic system of relations.**” Virtual Harlem is comprised of many elements: buildings, people, cars, events, communications, markets, and other phenomenon. These elements can be understood as a “**neighborhood,**” a dynamic system of relations. People live in buildings, pay rent, buy goods, make decisions, respond to injunctions, talk, sing, dance, drive, and involve themselves in multifarious relations with the other elements in the immediate environment. Computer models allow for the computation of a variety of possible systemic relations and provide a way of understanding the historical period. “Systems dynamics” has been used for years as an instructional technology both in this country and abroad. This approach, as I tried to suggest above, is built into Virtual Harlem.

From another perspective, the Virtual Harlem project is a project in “**urban archeology.**” We have plotted out the surface of historical Harlem and drawn a map of its topography. At various locations on the map, we have dug deeper into its history to obtain a closer look at the development of that site. For example, whereas some buildings are no more than facades to mark the space they occupied at a particular moment in history, others can be explored in much more depth of detail. What the researchers unearth about a particular place, is then recreated virtually. As a representation of a “neighborhood” in a city, the Virtual Harlem project can be extended to other neighborhoods in New York City. As a representation of a city, the Virtual Harlem project can be extended to other cities and their neighborhoods. Virtual Chicago is already in the planning stages at the Great Cities Institute of UIC.

3. Virtual Harlem’s learning outcomes

Since there are several “learning pathways” in Virtual Harlem’s network, there are several possible outcomes. I will focus on two

general outcomes: for visitors and for builders.

For Visitors to Virtual Harlem:

Virtual Harlem is a “**configuration**” of the Harlem Renaissance. It allows visitors to re-imagine Harlem as one of the seminal locations in the development of African American culture. Because Virtual Harlem provides a virtual experience of the Harlem Renaissance, it has the capacity to configure and/or re-configure this period in visitors’ memories, that is, to introduce images of behavior (“scripts”) into a visitor’s worldview (“cognitive framework”). The modeling techniques used in this approach, which are present in the Virtual Harlem Project, can lead to a form of “deep learning” to which we refer as “re-configuring” (“counter-stereotyping” as a form of “cognitive reframing”).

The Virtual Harlem project is based on the following hypotheses:

- That visitors to Virtual Harlem who “interact” with figures of the Harlem Renaissance frequently during the course of a semester are likely to undergo a “deep learning” experience during which they re-configure their views of African American culture. This type of educational experience is not available in conventional classrooms.

- That persons engaged in building a model of Virtual Harlem are likely to undergo a “deep learning” experience during which they re-configure their view of learning. This type of educational experience is not available in conventional classrooms.

Stellan Ohlsson argues that ideas that are fundamental to knowledge domains are acquired through “deep learning.” He writes: “Unlike other types of knowledge, fundamental ideas cannot be acquired through discourse or concrete experience, because those ideas are the very tools by which the mind interprets both discourse and experience.” Such ideas are acquired through a process he terms, “deep learning,” during which the cognitive frameworks (abstract general frames or concepts) persons use to understand their experience in particular knowledge domains undergo a transformation. “New fundamental ideas are acquired by instantiating an abstract schema in a novel way; the new instantiation gradually assimilates pieces of the relevant domain, until it has effectively become the new center of that domain. Abstract schemas, in turn, are generated by combining and transforming prior schemas.” His research points to the following observation: reading about a theory has little impact on students unless they have acquired “an abstract schema of the fundamental concept *in another domain.*”

Professor Ohlsson’s research includes experiments with Virtual Reality scenarios that provide “another domain” through which

students can experience “fundamental concepts” before they learn them in the context of the knowledge domain with which experts associate them. UIC’s Electronic Visualization Laboratory directed by Tom Defanti (<http://www.evl.uic.edu/>) is a world leader in virtual reality technology, and two of its staff members, Andy Johnson and Jason Leigh, who head the educational component, have been instrumental in the development of Virtual Harlem. They have also worked closely with Stellan Ohlsson who writes:

New technologies for presenting interactive 3-dimensional worlds have been developed at UIC’s Electronic Visualization Laboratory (EVL). This technology is a means for presenting students with alternative experiences that contrast with everyday experience in educationally relevant ways. The objective of [“the Round Earth”] project [was] to explore the potential of virtual reality to support deep learning. During the fall of ‘97 and spring of ‘98, a pilot project [used] virtual reality to teach young children that the Earth is round, a concept that prior research has shown is difficult to grasp. Future applications of virtual reality will focus on more complex learning targets. (<http://www.uic.edu/depts/psych/ohlsson-1.html>)

Working from the assumption that the “deep learning” process is often highly “analogical,” we extend Professor Ohlsson’s research into the ways in which persons map their personal worlds through experiments related to the Virtual Harlem project similar to the ones Professor Ohlsson is conducting. Since Virtual Harlem is a representation of African American culture, it comprises a part of a person’s worldview (a “sector of a world-map” — the mental construction of space which persons use to locate their experience of distance from their present location). One hypothesis governing the project is that sectors of personal worldviews parallel knowledge domains. Unlike knowledge domains, which “give order to abstract concepts”; however, the components of world-views provide general narratives, “configurations,” that shape personal experiences as a “way of worldmaking” (Goodman). These configurations (narratives of personal interactions) make up world views that are situated, cognitively, in a personal map of the world.

A correlative hypothesis is that configurations undergo a process of transformation similar to the one Professor Ohlsson describes with respect to “fundamental ideas.” Because configurations are the stories that are fundamental to personal maps of the world, they can be said to constitute a “cultural domain” parallel to a knowledge domain. Such domains are often shared—in the case of knowledge domains by the members of a discipline, and, in the case of cultural domains, by the members of a culture. Theoretically, then, it is possible that a person may replace a stereotypic configuration of African American culture with one that reflects its history more accurately (a “counter-stereotype[“]).

Theoretically, it is possible that persons may enjoy transformative learning experiences during which their mental construction of a city neighborhood is transformed (re-configured) as the result of virtual experiences of its history.

Worldviews, in this theory, are formed by a thought process called "configuring." This process involves the way the memory stores experiences through cognitive scripts (stories), which are very general since they are abstracted from experiences. These narrative abstractions are sometimes referred to as "Memory Organization Packets (MOPs)," "scenes," or "scripts." On the basis of these scripts, persons draw inferences about human behavior. For example, when a person encounters a man who is gay, he or she might draw the inference that this person is "effeminate." This is not a logical inference but an analogical one based on the "model" of "gay men" in his or her map of the world, usually derived from the media rather than actual encounters with "gays." The "model" of a homosexual in a person's map of the world is usually embedded in a set of "scripts" that portray "gay behavior." If you ask a person who has never actually experienced gay culture what do homosexuals do, answers to the question by that person are drawn ("scripted") from the "configurations" in his or her map of the world often mediated by TV and films. Another example would be the configurations created in the American populace by the media coverage of events such as the hostage crisis and the Gulf War. When a culturally dominant group challenges the configurations shared by a minority group, they are usually understood as "myths." Behind every prejudice is a set of myths populated by scapegoats and stereotypes. The mass media often depends upon them. African Americans are subject to various myths about their cultural behavior. Shows like "I Spy," "Cosby," or even the recent more realistic TV shows about African Americans no doubt have some effects on re-configuring the African American experience for many Americans. However, such *fictional* shows can only have a limited impact and whatever impact they may have is difficult to study.

As I emphasized earlier, Virtual Harlem is a construction of the *historical* Harlem, New York, during the height of the period known as the Harlem Renaissance as a virtual reality scenario. Recall that the aim of the project is to allow visitors to the site to experience the Harlem Renaissance virtually by playing roles in the stories of the figures who lived in Harlem, NY at the time. We anticipate that these virtual experiences of the Harlem Renaissance will result in "transformative learning"—re-configurations of African American culture. This seems likely since the phenomenon of "configuring" entails an identification with a figure (recognition of resemblances between virtual experiences and personal experiences) similar to the one readers of novels or viewers of films experience. In extended experiences of Virtual Harlem, users/visitors are most likely to understand the historical scripts by analogy to their personal experiences. This allows for the incorporation of the virtual experiences into the cognitive map of their world, potentially altering or replac-

ing prior “stereotypical scripts of African American culture.”

NOTE: We have yet to gather data on this hypothesis but have developed several grant applications to acquire funds to do so.

For Builders of Virtual Harlem

Virtual Harlem is an instructional technology that integrates various technologies to form a networked learning environment. The persons engaged in building the Virtual Harlem environment have the opportunity to learn how to deploy the technologies it employs. At the minimal level, builders learn how to use the various software or hardware involved. This can be as simple as learning how to send a file as an attachment or it can be as complex as learning Yrgasil, the version of C++ used in the project. On the other hand, some students may become acquainted with 3D graphical software or with video conferencing software and hardware as a direct result of their work on the project. No student is required to learn any software in order to participate and may help build the environment by conducting traditional research in the library in collaboration with someone who is more adept with the requisite technology.

Since the technological learning outcome is readily understandable, I will not elaborate further here except to note that a hoped for secondary outcome is that minority students who find Virtual Harlem engaging and who wish to participate in its construction will thereby choose to learn technologies they otherwise might avoid. In this respect, it is important to remember that the builders are also visitors and may experience several outcomes as a consequence of their involvement with the project. This is also characteristic of a collaborative learning environment like Virtual Harlem.

The Intersecting Learning Paths in CLNs

It may be helpful in understanding the structure of a CLN to introduce the idea of a “learning pathway.” Sometimes discussions of learning seem to imply that learning takes place ONLY in a classroom. As we all know this is far from the case. We often learn more outside the classroom than in it about a particular subject. For this reason, and because the Virtual Harlem project requires students to go outside of their classrooms and visit other sites, I will describe several typical learning paths (movements from site to site) that occur in the Virtual Harlem project. Let me begin with a student taking a course in the Harlem Renaissance.

If we think of a learning pathway as a journey of discovery, then we might designate a conventional English literature classroom as the site of departure. A student may be assigned to read a work introducing the Harlem Renaissance as a period of literary history from her textbook. This would lead her home or to the library where the reading might take place before she returns to the classroom. This “trip” would be repeated many times in the learning path. At some point, that student may go to the immersion CAVE

instead of the classroom and experience Virtual Harlem, followed by a trip to a computer center to record her response to it. If she decided as her term project to take on a research endeavor that culminated in adding some information, say about a building that was yet to be built in Virtual Harlem, this would necessitate a trip to the library and/or to a computer lab with Internet access in search of photos and accounts of, say, the Dark Tower (an important salon). This decision would likely lead to the preparation of a research paper not only submitted to the instructor but also presented for “publication” in Virtual Harlem. Since a literature student or instructor would probably not be able to build a 3D Dark Tower into the VR scenario, the “publication” of the Dark Tower would be handled by someone who could.

The learning path of the literature student, in all likelihood, would have to intersect with the correlative learning paths of several other students before the Dark Tower could be added to Virtual Harlem. These intersections would “deepen” the learning experience to the extent that the students and instructors involved were in dialogue with each other. Without going into the same detail, I hope it is easy to imagine an engineering student beginning his learning path in a classroom on C++ in the Engineering building and at some later point taking on the project of constructing in 3D code the image of the Dark Tower as his term project. A third student in Fine Arts might start out in a computer graphics class in the School of Art and Design and follow a learning pathway that eventually intersected with the first two students adding an aesthetic dimension to the design. A Women’s Studies student might intersect with the group in an effort to portray the women in the Dark Tower setting accurately. If they collaborated, taking perspectives they would not otherwise have considered into account would thereby enrich their learning experience.

Since it would be tedious to read the details of the many additional learning pathways that might intersect or be juxtaposed to those I have mentioned, I would ask you to imagine the likely collaborative learning pathways that would go into building the Dark Tower into the current cityscape. Envision, for instance, students with a history or cultural studies learning pathway intersecting with the learning paths I’ve identified. Consider students from psychology or sociology or urban anthropology who might be studying the impact that the Dark Tower is having on visitors to Virtual Harlem. And let’s not forget the dramatic scripts that creative writers and theatre students need to write and enact in order to dramatize the events that took place in the Dark Tower.

These learning paths would also inevitably intersect with those of students from other universities who were researching the Dark Tower or some of the persons that were its habitual guests. If some of the learning paths did not intersect smoothly but, instead, clashed and contradicted each other, the learning would take another turn as students would then be forced to encounter perspectives they had never before engaged, a likely scenario as more universities from abroad join the network.

Though the network formed by the intersections of these varied learning paths has the potential to be quite volatile, it is nonetheless governed by the same set of research ideals its professorial constituents are advocating and the situation is potentially a mirror of any lively intellectual or discourse community, which Mary Louise Pratt aptly describes as a “contact zone.” All the learning paths come into contact with each other because they all lead to Virtual Harlem. Ideally, all paths are attempts to visualize the past.

The Potential for Developing Students’ Imaginations in the Virtual Harlem CLN

It is because the Virtual Harlem project is an attempt to visualize history by building a virtual model dramatizing it graphically that the imagination is a necessary component of the project. That its builders are VISUALIZING it is an inescapable aspect of Virtual Harlem. This is not possible without exercising creative imaginations-albeit they would not produce the same kind of activity in every case. Let’s begin with the obvious uses of the imagination and work toward the less familiar ones.

It is not accidental that creative writers are involved in the project. Nor have they been asked to leave their imaginations out of this work. Since everyday life in the 1930s cannot be experienced directly, it can only be imagined. To suggest that historians are necessarily unimaginative and methodically leave their imaginations at home when they go to work is an indictment of them, not a complement to them. To say that creative writers cannot be historians is to suggest that our intellectual life has become so specialized that no person can take on more than one disciplinary stance. This objection forgets that Virtual Harlem is a collaborative learning network in which the intersection of a creative writer’s learning pathway with an historian’s learning pathway is a learning event richer than any solipsistic one can be.

In speaking about the intersection of the learning of a creative writer and an historian, I am not implying that historians are incapable of imagination and that creative writers are incapable of scholarship. Insight of any form requires imagination, at least as I define the term-the capacity to see experiences from unaccustomed perspectives. For some persons imagination is the formation of a mental image of something that is not real. But it is also the formation of a mental image of something that is not present to the senses, for example-the past. Rather than debate historiography in this essay, I hope you will grant me the notion that historians use their imaginations and that building Virtual Harlem with historical constraints in mind requires imagination.

There are, of course, many other forms of imagination that are required, though some of them may be less familiar to humanities scholars, for example, programming. To write a program demands imagination especially when the outcome is a set of images. It might be difficult for someone who has not written a program recently to have a sense of how this can be the case, so I will sim-

ply note that many of the programmers in the Electronic Visualization Lab at UIC are Fine Arts majors. As evidence I will simply cite Tim Portlock's essay in this volume.

The Potential for Developing Critical Thinking in the Virtual Harlem CLN

To make this next claim, I need to rely on a distinction between the act of being critical and the belief in a particular criticism. I introduce this distinction because I have found that some of my colleagues who claim that contemporary students are uncritical find this to be so because students do not believe in the criticisms they proffer in their classes. It is certainly unfair to accuse a person of being uncritical because that person does not make the same criticisms that you do. At the same time, I wish to recognize that certain modes of critical thinking are less and less often required in university curricula. In this respect I note that, whereas as an undergraduate liberal arts major I was required to take courses in philosophy, none of my students in the university have ever had that task required of them. Similarly, few contemporary students are required to take courses featuring thinkers like Marx or Foucault or Irigaray. Additionally, I note that the emphasis on training for the job market in the contemporary university life militates against thoughtful reflection. Having made these observations, I would claim that students can foster critical skills through technology.

Part of my argument depends upon the learning technique of modeling. Models allow students to see the forest that the trees make, which, I think, is a remarkably salutary event. For me there is nothing that obliterates critical understanding so much as to be given a morass of details minus any sense of purpose or motive for studying them. To take a simple example, I would suggest that to read all of the literature of the Harlem Renaissance and never be able to locate any of its writers in Harlem N.Y. takes them out of the socio-economic context in which they lived and makes them into ethereal authors of poetry and fiction rather than persons who could never enter the Cotton Club as patrons. This example is intended to underscore the motive for abstracting the artists from their socio-economic context, a motive that is not often made explicit. It also calls attention to the motives underlying the Virtual Harlem project which have been made rather explicit earlier in this essay.

Another aspect of modeling as a learning technique is that it engages the complexity of experience. In some respects, I am simply repeating my earlier point—that looking at the trees can prevent you from seeing the forest. Yet, this perspective adds another dimension, one that the contrast between forest and trees might easily obscure. It is not the case that the forest is simple and that the trees are complex. Rather, the forest is more than the number of trees in it. And, it has more than trees in it. Further, some of them are dead; others are just springing up. In short, the forest can

only be understood as a forest if it is understood as a dynamic and complex ecological system. This is a dimension that the experience of Virtual Harlem brings to our understanding of the Harlem Renaissance—you have to pass Marcus Garvey to get to the point on the street where Langston Hughes is standing.

There are many other senses of critical thinking that can be related to building virtual models but I will mention only one more—criticism, as a skill, is based in the activity of comparing. The startling difference between a model of an event and the actual event is that one may represent that event in many ways whereas it only happens once. Modeling, as it takes place in a project like Virtual Harlem, produces many Virtual Harlems, not one. This brings critical skill to the forefront of the project. The fact that many digital and mental models of Harlem exist leads readily to comparisons among them, which is the basis for critical thinking. Each builder of Virtual Harlem tends to work with a mental model of the enterprise that rarely matches the virtual model projected by the computer. Moreover, a student's mental model of Harlem, garnered from reading about it, usually contrasts sharply to the computerized model. Further, many versions of Virtual Harlem already exist in various directories. Programmers tend to download a copy of Virtual Harlem to a directory where they can enter their work. Some versions of Virtual Harlem contain cars. Others don't. Some have guides, others don't.

For some this situation is untenable. Yet, one might wonder why that should be the case. What expectation exists in a person who believes that there is one coherent describable model of Harlem that is "true" to its history. I suggest that such an expectation is uncritical if not naive. Encounters with the incredible complexity of our beliefs when they clash in the combat zone of learning is, to my mind, an exacting delineation of the way things are. Developing a critical skill, as far as I can tell, is co-extensive with refusing to simplify complexity.

One of the outcomes of a collaborative learning network is that whatever gets produced is negotiated socially by the collaborators in the acknowledgement of differences among them. This negotiation is the deepest, that is, the most transformative aspect of learning in the Virtual Harlem project. It occurs among and between persons from disciplines that have been kept separate in the academy and thus, under ordinary circumstances, have very little to do with each other.

Virtual Harlem Prototypical Counter-Stereotype

However exciting the potential in the design of the Virtual Harlem project may be, it is yet to be realized. It is probably safe to say that, to date, only a few people have experienced the transformative learning experience I have attempted to delineate above. It so happens that I am one of them. Fortunately, I am not the only one. The project has generated considerable excitement, especially among educators who work with technology. More workers are

needed. The scope of the project is immense. There is so much more to do. We are at its seminal stage.

Why then publicize an unfinished project?, you might fairly ask. The answer is simple, the more collaborators, the further the project can go. Thus we have to make the project known to attract collaborators to it.

Because of its subject matter,-the Harlem Renaissance,-this project has the potential to link scholars and students from all over the world who are studying and researching African American culture into a learning network. As in the instance of Växjö University in Sweden, it provides a strong connection to a community of scholars on African American culture that makes it feasible to offer courses on subjects such as the Harlem Renaissance at universities that have never done so. Perhaps even more important is the fact that minority students at the beginning level of the educational system-high school, early college, community cultural center participants-may have an avenue to learn technologies that would not otherwise be available at their educational level. At UIC, for example, the Communication Department's Unit for New Media Studies is working with the Great Cities Institute to make participation in the project available to minority students in Chicago's West Side where the largest concentration of African Americans live. The Virtual Harlem CLN also has the potential to introduce learners to systems thinking and visual thinking, two evolving modes of intellection that have come to the forefront as educational goals due to the increasing availability of computer assisted learning.

I think of Virtual Harlem as a "prototype" because it is an instance of the use of technology in cultural studies. As I mentioned earlier, Virtual Chicago may well follow Virtual Harlem. Any segment of cultural history can be studied in a collaborative learning network. But what makes Virtual Harlem special is that it can alter peoples' view of African American culture. As a learning experience, it is counter-stereotypical.

Work Cited

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