Among the new kinds of media works that are being created with the invention of digital arts software are interactive panoramas and cinemascapes. In these works, users navigate environments that appear visually contiguous (like painted and photographic panoramas) or both spatially and temporally continuous (like moving long takes and cinematic pans). What is different is that these digital environments include layered and composited elements which often disrupt the authoritative stance of objectivity that contiguous and continuous representation is commonly used to represent.

For example, the expression of verisimilitude that is established through fixed and naturalistic relations of scale and position in many documentary photographic panoramas is disrupted when elements from outside the temporal-spatial frame of the photographic moment are layered upon the image. In a naturalistic work, elements in the mise-en-scène will conform to expectations (largely shaped by cultural and aesthetic conventions) that the depicted elements are of common origin (they might actually have been seen together in a particular place and time) and that they are painted in a way that maintains certain formal and spatial relations, such as those of painterly style and perspective. Similar conventions apply in nonfiction work, the primary difference being the degree of legitimacy given to technological mediation (and this degree varies). A documentary photograph may constitute an authoritative record of how elements were arranged as seen from a certain perspective at a certain moment, but people who were there and saw the scene from other positions may remember the scene differently. Works, such as John Rechy's Mysteries and Desire, discussed later in this essay, use digital panoramic environments to challenge naturalistic conventions and the relationships (e.g.,
part-to-whole, observer-to-object) that they frequently reinforce. Once dialectically opposed characteristics, such as continuity/contiguity and montage or exposition and narrative, now coexist. They are no longer mutually exclusive; the compositing and layering of materials on a continuous or contiguous environment enables the simultaneous presentation of both syntagmatic and paradigmatic elements. Multimedia is also multimodal.

The impact is significant. As is true with web interactivity in general, scrolling digital environments like those discussed in this essay bridge critical and creative modes of representation. Exposition, poetry, and narrative coexist and share the screen environment with other expressive forms, like music, video, graphics, and games. Cinematic and photographic viewing experiences are equally readerly ones. Passive “viewers” become active “users.” The differences between researcher, artist, and user may also dissolve. The researcher and artist may use the same or similar programs to gather and compose their materials. The intended audience may likewise view such works with the same programs, and may even respond to or reconfigure what the artist or researcher has produced.

In a number of new works users may follow—or participate in—the process of building propositions, arguments, or expression. This encourages a critical and methodological shift from product to praxis: theory and practice merge in (the potentially ongoing) process of creative activity. By following what choices the researcher-artist makes, the user is actively drawn to consider alternatives. In some cases these alternatives may even be represented through alternate routes through the same materials.

Pans and Panoramas

Robert Baker patented the concept of panoramic paintings in 1787. His groundbreaking works include The Panorama of Edinburgh (1788), which he presented in his home, London from the Roof of Albion Mills (1792), which was shown in a rented space, View of the Fleet at Spithead (1796), which is shown in a small split level rotunda that Baker built for the purpose in Leicester Square, London, and the highly successful Battle of Abonlair (1798), which also was shown there. The success of these works led to his receiving international invitations and also spurred a flurry of copycat projects initiated by other artists and entrepreneurs. The popularity of panoramas endured, in waves, for a century, until the rise of cinema in the 1890s (Oettermann 1997, 6). Many of these nineteenth-century painted panoramas depicted exotic sites and battle scenes, and the majority were created for display in rotundas. Viewers stood on platforms in the center of a circular environment, from which point they enjoyed unobstructed 360-degree views of the work surrounding them. It is frequently suggested that this panoramic point of view corresponds with a desire for control—a control characterized by omniscience, sight, and separation from the object of one’s gaze. Art historian Bernard Comment writes:

The invention of the panorama was a response to a particularly strong nineteenth-century need—for absolute dominance. It gave individuals the happy feeling that the world was organized around them and by them, yet this was a world from which they were also separated and protected, for they were seeing it from a distance. (Comment 1999, 19)

However, one might ask whether the desire for control does not simultaneously beile a certain loss of control, ceded to the technological apparatus of the rapidly industrializing societies where the form gained popularity. With a panorama, the viewer remains merely a passive spectator to a world of attractions that encompasses her (and extracts her labor and money).

The term panorama is derived from the Greek pan, “all,” and horama, “view”; a 360-degree view offers spectators an impression of wholeness. Just as in viewing an actual landscape, in looking at a panorama the spectator sees how each element is connected to the next. The viewer has the impression of seeing everything—of being able to grasp the image as a whole. Paradoxically, the inverse may be more accurate. The panorama offers the viewers an illusion of commanding a total view of a moment; actually, it is the image that encompasses the viewer in the exotic locales of its form (the panoramic rotunda) and of its content (foreign lands, ancient worlds, battlefields). It is impossible for a spectator to grasp a panorama in its entirety; it offers more than a person with two eyes can see at a single glance. As one turns, a viewer must remember what can no longer be seen while looking in some other direction. Both in actuality and in this medium, the impression of unity is provided by a spatial and temporal seamlessness in which each element is both defined and confined in its relationship to the next element in the image and in its relationship to the view as a whole. The illusion is maintained if one does not see a break in the contiguity of the image or in the temporal continuity of the viewing experience. This illusion of seamlessness is one of the characteristics of panoramas that new media artists have been exploring, as, for example, by showing how even the
same scrolling scenes can lead in differing directions or by including layered materials that evoke differing temporal modes.

In his essay "Walking in the City," Michel de Certeau contrasts the experience of admiring a 360-degree view of New York from the top of a skyscraper with the experience of walking in the streets. His description of the view from the skyscraper is much like that of looking at a painted panorama. The viewer exalts in the opportunity to grasp a sense of the whole while also being separated from it:

To be lifted to the summit of the World Trade Center is to see the city's grasp. One's body is no longer ... possessed, whether as a player or played, by the rumble of so many differences and by the nervousness of New York traffic ... When one goes up there, he leaves behind the mass that carries off and mixes up in itself any identity of authors or spectators ... It transforms the bewitching world by which one was "possessed" into a text that lies before one's eyes. It allows one to read it, to be a solar Eye, looking down like a god. The exaltation of the scopic and gnostic drive: the fiction of knowledge is related to this lust to be a viewpoint and nothing more. (1984, 91–92)

In the 360-degree painted panorama, the viewer is similarly protected and contained by the remote viewpoint. Standing at the axis of a circular view, the spectator is omniscient and also invisible; the spectator looks out into a world that does not look back.

What both the panorama and the view from the skyscraper share is contiguity—the seamlessness that provides an illusion of wholeness. The unifying elements of a panorama are spatial and provide a structure for interpreting the elements that comprise the scene. The same is true of the overview of the city from a skyscraper: the flow of events is contained within a spatial order. According to Certeau, the cityscape is itself a text. This kind of text is only deciphered from afar, not unlike the way a panorama is deciphered. However, unlike a conventional panorama, with the city view, one then descends the tower and enters the city at street level. There, up close, walking in the streets, experience is fragmented. In walking along streets, turning this way or that, one selects routes that one cannot simultaneously see from above. The viewer becomes a user. Her experience is shaped by unfolding events, unpredictable occurrences, interruptions, and spontaneous acts as well as by choices she makes. The experience of walking in the streets is an active kind of montage.

Like the panorama, the illusion of cinematic long takes and pans are based on continuity and contiguity; the integrity of the image is not interrupted. Early naturalistic recordings, such as the films of the Lumière brothers, presented single takes, constructing an experience of verisimilitude though this expression of temporal continuity—a forever reviewable slice of time—and contiguity, although the experience of the integrity of contiguous elements becomes limited by the frame. Like panoramas, cinematic long takes create a sense of omniscience; the chance to monitor what is going on is never interrupted, as is also the case, for example, with security cameras. The paradox of seeing and not seeing the whole is exaggerated all the more in the cinematic pan. While the seamlessness of space and time suggests that the world beyond the frame remains fully intact, verification is frustrated by the limits of the frame line; the spectator must wait for the technology to deliver the confirmation of wholeness that is established by a rhetorical convention. Technology determines how the image goes around and not the viewer.

It is through its representation of time that film in general, and long takes and pans in particular, augment the qualities of verisimilitude. The evocation of verisimilitude was something that panorama artists struggled with during the latter part of the nineteenth century. They added lighting effects, smells, wax statues, platforms that rocked to simulate boat rides, and reenactments (particularly in battleground panoramas) (Schwartz 1998). But the more artists tried to replicate actuality, the more they also accentuated the differences between the natural world and their constructed ones. In a response in La Nature (June 15, 1889) to a Transatlantic Company panorama about an ocean voyage, one critic characteristically wrote, "What the illusion lacks is a light breeze, floating pavilions, the sound of the lapping of waves" (Cormont 1999, 193). The disinterested, omniscient viewpoint of the panorama also imposes a separation of time between the viewer, turning and choosing what to look at, and the scene on view. In this regard, the painted panoramas expresses an absence of time. It is this absence that is magnified by the awkward attempts to include elements like wind and waves that exist in, mark, and measure time. Film, which draws viewers into its own time conditions, satisfies some of these limits of verisimilitude but introduces others (e.g., linearity).

Film technology imposes an authoritative organizational structure; the time-base of the technology imposes a constant (the frame-rate) by which the content (the images) is mediated. This is very much like the authority that is constructed through other technological institutions of time, such as the universal time system, train schedules, mechanized assembly lines, and
workplace timecards. With film, the rate of the flicker of images is essentially fixed. Through montage, ideas in one shot are connected to those of another. Each cut is a rhetorical device; it proposes an idea through an editing strategy (continuity, association, dialectics, etc.). The compositional and montage choices have much in common with the poetic and rhetorical choices of writing; in digital media these parallel systems begin to come into contact with each other.\(^2\)

In his discussion of walking in the city, Certeau suggests that the skyscraper overview offers a rhetorical proposition: the city as a text. The singular and unified view of actuality from above contrasts with the fragmented one in the streets. Certeau continues his linguistic analogy: the view is structured and unchanging, like a fixed text, whereas walking, which is fluid, fragmented, and can go in any direction at any moment, is like speech. The former (viewing the city, reading the text) is abstract and objective, the latter (walking, speaking) immediate and subjective. In the former, the expression of actuality is visual and static; it is an image that is singular in form and more or less constant. In the latter it is temporal and grows out of a web of experiences and their significations, the meanings of which are continually being reevaluated. In comparing these dialectics of overview/walking and grammar/speech, Certeau argues that the viewpoint from on top of the high-rise provides an abstract concept that is unable to account for the diverse forms of expression and time encountered in walking. Walking is a kind of active montage by which one gathers experiences. In walking and talking, movement is fluid:

if it is true that forests of gestures are manifest in the streets, their movement cannot be captured in a picture, nor can the meaning of their moments be circumscribed in a text. . . . Their rhetorical transplantation . . . constitutes a “wandering of the semantic” produced by masses that make some parts of the city disappear and exaggerate others, distorting it, fragmenting it, and diverting it from its immobile order. (1984, 102-3)

To extend Certeau’s analogy, readers and walkers are users, navigating texts that require actions, choice making, and perhaps responses. Perhaps, like the city, the screen space is an environment to be navigated, a landscape in which to walk. Digital panoramas maximize this spatial metaphor by extending the parameters of the screen environment and offer visual platforms in which continuous or contiguous elements may coexist with materials that are fragmented or montaged. Thus, as the borders between reading and viewing break down, so do those between navigated and linearly cinematic forms of reception. In my own work, panoramic methods of production have led to the creation of what I term cinemascapes: navigable visual environments of cinematic materials. Panoramas and cinemascapes present users with seemingly contiguous (and perhaps continuous) representations, and in many cases users interact with fragments contained in those environments.

These elements—temporally continuous long takes, spatially contiguous pans or panoramas, montages, text, photos, and so forth—must not be exclusive. Through compositing, layering, and interactivity, new forms of cinematic panoramas are integrating panoramic and cinematic form, problematizing their conventional divisions and forcing a redefinition of their compositional languages. These interactive panoramic environments provide the opportunity for the kind of “wandering semantic” that Certeau describes, while at the same time they undermine his claims of representational boundaries. While no form may lay claim to being able to map and make visual the infinite and symbolic fields of subjective experience, these new forms for media do provide ways to draw multiple expressions of time and expression into a common space, disrupting boundaries of contiguity without destroying them.

**Mysteries and Desire: Searching the Worlds of John Rechy**

A number of works employ interactivity in panoramic environments to explore what is hidden in the details of the contiguous image—details that users must tease out through navigation, play, and deduction. One such work is Mysteries and Desire: Searching the Worlds of John Rechy. Designed in Macromedia Director using Quicktime Virtual Reality (QTVR) panoramas, the CD-ROM work is the result of a collaboration between Rechy and the artists of the Labyrinth Project at the Annenberg Center of Communication at the University of Southern California.

Mysteries and Desire is a kind of autobiography that makes use of interactive panoramic environments to present a series of interpretations of the author’s life experiences, with particular attention to the symbols and conditions of being a gay writer in mid- to late-twentieth-century Los Angeles. A short introductory video loop links users to one of three sections, the themes
light, employing mouse actions to trigger aesthetically compelling responses. Panoramic media provide the structural framework for each section.

The first section is a kind of scrapbook made up of photos that, when clicked, lead to narrated passages from Rechy's essays and fiction, interviews with people who have known the writer, and other biographic materials.

In the second section, users find themselves on a street corner in front of a church. One portal from this panoramic image leads into the church, where users discover interactive elements in the stained-glass windows and in the confessional; provocative graffiti blending gay and religious imagery is found in the alley behind the church, presumably a secret meeting place. A series of links leads users to a comic strip based on an advertisement for a bodybuilding device. The comic shows a scrappy boy who has sand kicked in his face on the beach by a tough guy. The boy responds by purchasing weights and becoming a muscleman. Rechy offers viewers two ways of exploring the materials. One is an essay on the role of the muscleman in gay culture; the other is an animated photo sequence evocative of the visual iconography of the muscleman in the contexts of athleticism, power, and sexual desire. The choice of which route to follow is in the hands of the viewer, literally: the computer mouse is represented on the screen by a small iconic barbell. If the reader-viewer starts to lift the barbell and "work out," the reward is a kaleidoscope of evocative and sensual body transformations. If not, the reader-viewer listens to the exposition. In this way, a user learns how simple actions become a kind of language: using specific gestures at specific moments will yield special, surprising responses.

Thus, from within a panorama, viewers enter into layers of materials that evoke, as much as explain, Rechy's views of gay cultural conceptualizations of the body. The panoramic structure allows the author to bring diverse methods of interpretation together on a common platform. Among the resulting messages offered by Rechy's work are that no single form of representation is good for all seasons, and that meaning is as much to be found in the movement between modes, costumes, performances, and personas as in any particular content-event.

The panoramic device also solves some presentational problems of working with fragmented, linked materials. It provides a common framework in which elements of a theme or a moment may reside. The elements play to, and revolve about, the invisible axis at the center of any panorama—the user. But in contrast to the painted panorama, in this kind of work the user is invited to participate in the scenes and travel through their portals.
What we will have of what we are: something past . . .

What we will have of what we are: something past . . . is a multi-panorama online work written and developed by John Cayley in collaboration with Giles Perring and Douglas Cape. At the top of the screen is a twenty-four-hour clock whose hour numbers are laid over day and night images of London taken from the top of Saint Paul’s Cathedral. The user clicks on the clock to enter the work. The clock slowly turns, suggesting a chronological structure, and the user is dropped into a naturalistic scene—a panoramic photograph presented using QTVR—that is indeed determined by the time selected. Small pop-up windows announce each location and provide clues as to how to navigate the scene. For example, a user entering at 8 a.m. finds herself in Richard’s Flat. Richard sits on his bed in a T-shirt and underwear, his hand on the telephone message machine. Clothes are scattered on the sofa. The explanatory text reads, “Richard has been missing Helen’s calls, messages of mixed media will have been left, handwritten, beside him.” The letter on the bed contains a link.

There is no beginning or end to the story; navigating in this manner, the user can drop into scenes in any order. Moreover, the structures of time as given by the clock and the location as established by the naturalistic panoramic photos are deceptive; users are trapped within circular narratives interlinked like magician’s rings that connect, disconnect, and reconnect in time frames that differ depending on which character one is following. Parallel to the naturalistic, technologically determined structure is another subjectively, achronomically, and the choice of using the cathedral to represent this is apt.

One of the unique features of Saint Paul’s Cathedral is the Whispering Gallery, which runs around the interior of the dome. A whisper at any point along its wall is audible to a listener with her ear held to the wall at any other point in the gallery; due to the peculiar acoustics of the dome, however, words spoken normally do not carry in the same way. In the dome, time is mirrored across the circle; at any given point, one hears whispers from the opposite point.

In What we will have of what we are: something past . . ., such whispers are linked to dreamy, black-and-white imagery. The methods suggest that for each naturalistic and temporally specific color image there are corresponding and seemingly timeless memory fragments—whispers that echo across a divide between inner mind and the outer worlds. The links that trigger these whispers and imagery are often media objects such as letters and phone mes-

FIGURE 17. Except from What we will have of what we are: something past . . ., produced by John Cayley with Giles Perring and Douglas Cape (2003). http://www.z360.com/what.
and continuity editing—devices by which a filmmaker drives home ideas in the flow of action. Cayley’s works demonstrate how layering and linking in panoramic form can allow the mediamaeker to interconnect parallel temporal structures, at least within the design limitations of the finite cycles of the work itself.

Another example of using layered motion imagery to destabilize temporal continuity is Tirtza Even and Brian Karl’s Counterface, in which a dark glass plane in a metal frame is mounted on a gyroscope-like double axis so that it can be rotated up and down as well as sideways. The primary (or outdoors) stream is a video pan that can be viewed right-to-left or left-to-right. While multiple exposures have been used in linear film since its earliest days, digital tools offer many more options for manipulating the time-image as a composite element; the resulting works have more in common with the layered (still) photographic montage popular in the 1910s and 1920s than with cinematic montage. Window slats provide mysterious points of entry and exit. Long takes recorded in the same place at different times are composited using masking techniques so that differing events are compressed into a single image causing individuals to seem to appear and disappear in midaction in seemingly continuous environments. The effect is haunting.

As with Cayley’s work, the project uses new media tools to expand the experience of individual scenes and to present materials that are connected by topic but vary by mode. Here, users may rotate the glass to halt the pan and view action unfolding in the depth of the image, along the virtual z-axis. By turning the frame up or down on its x-axis, users trigger a parallel (indoor) sequence of interviews that can then be navigated by turning the frame left or right. The gaps created by presenting concurrently accessible materials also evoke a sense of absence, in terms of what seems to be erased from the documented surface, and the potential for concealed elements to reemerge.

From Something That Happened Only Once to The Unknown Territories

Something That Happened Only Once is an animated photographic panorama for projection on one or two walls, and The Unknown Territories is a series of spatially organized interactive cinemascapes combining video clips, pop-up interactive panoramic photographs, and other materials over contiguous, scrolling environments. Both explore questions of contiguity and montage. Playing on the conventions of the cinematic pan and long take, the time-based structure in a work like Something That Happened Only Once emphasizes questions of expectation and temporal unity, whereas the interactive scrolling environments of The Unknown Territories draw attention to questions of praxis and choice making.

Something That Happened Only Once slowly revolves, like a cinematic pan. Each cycle takes about ten minutes, and in most presentations two different cycles are shown. Some installations present these loops using dual projectors that connect along a single edge. The seamless panoramas may at first appear to be a naturalistic or documentary representation of a busy plaza in Mexico City. The project was recorded around lunchtime in Coyocan Plaza, where about a dozen actors—provocateurs of a sort—were scattered among the crowd, some performing roles for the camera and others provoking responses from the public. The actions are photographed. These photographs are then layered and composited so as to create what at first seems to be a seamless panorama, and elements are animated so that some characters may appear to move. The audio is also layered; found sounds mix with fragments of text that are spoken and sung. The audio may play in stereo or surround-sound.

A conventional panorama is not one moment but a collection of moments seamlessly combined. The layered elements in Something That Happened Only Once float freely at rates shaped by their own narrative trajectories. This layering separates individual actions (and the characters who perform them) from the singular, authoritative order of time implied by the technological apparatus of the pan. As the image turns, the user will recognize that the second time around is not the same as the first. The structure
of the cycles resembles a Möbius strip. Events that begin in the first cycle may be shown to develop in a second one, while those that would seem to begin in the latter cycle may conclude in the former, such that there is no beginning. Or, rather, there are many beginnings, and each is determined by the actions of individuals rather than by the seamless backdrop. The effect of this is that users cannot rely on the temporal apparatus of the recording device as a means of making the elements of the space conform to a single narrative. Instead users must identify characters and follow their narrative trajectories through a temporally destabilized space.

Although contrary to many conventions of panoramic representation, these strategies may be truer to natural processes of cognition than those of the conventional long take or pan. In looking at the world, attention jumps from one action to another, glossing over areas that are bland. If the goals of the viewer change such that the details matter, otherwise ignored aspects of experience are then looked at closely (Goodman 1978). The slow pans used in works like Something That Happened Only Once accentuate this tension between sight and apparatus, because they draw attention to how the frame line becomes a marker of time; this experience is magnified when the work is played on two adjoining walls, spiraling in opposite directions from a common border.

To explore how interactivity may enhance understanding of these questions of representation and authority, I developed a series titled Unknown Territories, which includes the sections "Voyage into the Unknown" and "Canyonlands: Edward Abbey in the Great American Desert." Edited video sequences, interviews, archival images, uncaptured video logs, photographs, and original text documents are layered and composited upon seamless illustrated scrolling environments. In scrolling through these panoramic environments, viewers build their own documentaries based on the unique paths they construct. The format is particularly well suited to documentary projects in that it allows makers to include supporting materials that, although exciting and valuable, might be cut from a linear work because they depart from the primary thread or are simply not cinematic.

An interactive documentary humanities project about how perceptions of place are shaped through writing and the arts, the series takes its name from the label applied to unmapped areas on early-nineteenth-century maps of the American Southwest. This project weaves together text, sound, and image from the works of explorers and geographers, developers, environmentalists, artists, and writers to ask how we come to know and imagine an "unknown territory." The format allows for the inclusion of maps, diaries, photos, draw-
Conclusions and Discussions

The digital theorist Lev Manovich has been a proponent of the idea that uses of new media tools are giving rise to a new, hybrid language—a way of communicating that includes both prior methods of expression and new ones (Manovich 2002). In writing about the impact of design software like Adobe After Effects on how images are edited and how they are used to communicate ideas, he writes:

The working method is neither animation nor graphic design nor cinematography, even though it draws from all these areas. It is a new way of making image media. Similarly, the visual language is also different from earlier languages of moving images. (Manovich 2006, 5)

Whether or not it fully constitutes a language, digital media have unique argumentative and expressive characteristics: a digital rhetoric and poetics. Layers, links, paths, and multimodal juxtapositions impact how one idea, word, or image might lead to another, and these are only a few of the mechanisms that shape invention and expression.

The examples in this essay explore representations that are spatially and visually cohesive but temporally multivalent. Questions of subjectivity and narrative choice raised by these panoramic works are also explored in game design and in works for immersive environments, such as CAVEs (Cave Automatic Virtual Environments).

The rhetoric and poetics of the new media replication old media—holding their characteristics in a new light. What had seemed to be fundamental characteristics of old media, such as the spatial contiguity of panoramas or the temporal constant of film projection, are pulled apart, juxtaposed, and recomposed in new and hybrid forms.

Works like those discussed in this essay could not have been imagined using other media. All explore characteristics unique to computing. The tools used in these works are still evolving, and new applications for these tools are being developed in other fields and disciplines. Works like these are imagined by adapting digital tools to advance goals that might not have been anticipated by the hardware and software developers, and this in turn frequently, although often indirectly, impacts how the tools are further developed or how new tools come to be invented.

The emerging rhetoric and poetics of digital media are a result of this kind
of adoption (across fields), adaptation, and reinvention, which cycles between independent innovators, information technology professionals, researchers, scholars, artists, and almost all other users as well. This level of exchange was less common or even nonexistent in the growth of most nondigital media tools, from the printing press to the film camera; and when it did occur, it was mostly between specialists.

In computing, all works are multimedia and we are all multimodal; makers and users move fluidly among concepts, cultures and forms of expression. Once positioned by media as relatively passive readers and viewers, the individuals who now navigate digital works are computer users. While few might watch a movie in the cinema and immediately find themselves loading a film camera, most who view digital works like those in this essay will soon—or even simultaneously—do other things on a computer as well. The flow between engaging works like these and doing other personal work is seamless, as is the cycle by which the poetics and rhetoric of works are interpreted, adopted, and adapted. In this sense, there is a new kind of contiguity defined by our networks and exchanges, by the extensions of ourselves in the digital environment. And this contiguity is also a montage.

Notes

1. There is a corollary in gaming: It is often the case that the more figures resemble humans the more they evoke a sense of the uncanny border between the living and the mechanically reproduced, what animation and gaming designer Glenn Entis (2007) describes as the "the zombie effect."

2. For further discussion on the relation between the long take and montage see Coover (2001, 2003).

3. "What we will have of what we are: something past..." (2003), http://www.256c.com/what.


5. For example, social scientists like Eric Margolis, president of the International Society of Visual Sociology, are adopting digital techniques like these to help students develop interpretive historical and ethnographic models.

References


Re-place: The Embodiment of Virtual Space

JEFFREY SHAW, SARAH KENDERDINE, AND RODERICK COOVER

Jeffrey Shaw is one of the pioneers of interactive cinema and haptic digital arts. He creates technological topographies in which the spectators construct meaning by engaging both physically and intellectually with the environment. The space of these works is literary, cinematic, and geographic, with a focus on presence—confronting the challenge of how to understand "being" in spaces that are technologically mediated and virtual.

In the following pages, Jeffrey Shaw and the artist and curator Sarah Kenderdine of Museum Victoria (Australia) describe a series of projects by Shaw and one, PLACE-Hampi, that Shaw and Kenderdine coauthored. These descriptions are grouped into three sections; after each, Shaw responds to questions posed by Roderick Coover.

Embodied Interfaces: Legible City and Distributed
Legible City; configuring the CAVE; Web of Life

In Legible City, created with Dirk Groeneveld (1989–1991), the viewer bicycles through a virtual city constituted by an urban architecture of computer-generated three-dimensional letters that form words and sentences along the sides of the streets. The layout is based on the ground plans of Manhattan, Amsterdam, and Karlsruhe, and traveling in these cities of words becomes a literal journey on many levels. While peddling an exercise bike, the viewer can freely explore over fifteen square kilometers of content. This may be compared with conventional interfaces—keyboard, mouse, joystick—that trans-
municates with and affects the audiovisual behavior of all the installations. The artwork's algorithmic emergent tapestry of audiovisual and thematic correspondences is activated and modulated by patterns derived from the palms of visitors' hands, which are scanned and entered into the system from the local and remote input terminals. The varied and always uniquely individual palm lines appear on the installation's screen, then merge into and activate a singular sequence of transformations on the screen and the musical score that accompanies the imagery. The visual network is programmed as a self-organizing system, utilizing biology-derived metaphors such as neuronal growth. The topic of networking logic is at the core of the Web of Life project. As in the Net, where we move from single-user cause-and-effect models to multiuser emergent-behavior models, Web of Life sets out to create a paradigmatic and aesthetically formed exposition that both describes and evokes the core experience of emergence, thereby inviting and revealing the inexhaustible vernacular of shared individuated connectivity via the crafting of strategies that can reembody the disembodied spaces of digital fragmentation.

Roderick Coover. I would like to begin with the question of what is the same and what is different about creating art with digital media—in particular how a cinematic activity is transformed, on the one hand, into a haptic experience and, on the other hand, into a readily one of prewritten paths and passages. In The Cinematic Imaginary after Film, a book you coedited with Peter Weibel, you draw attention to works of artists like Friedrich Kiesler, who made media-mixing works in the 1920s, and Stan VanDerBeek, who developed the 1963 Movie Drome. Are there ways in which these works are still relevant today, or has something changed that renders them distant, historical reflections of their own age, an age that we are leaving or have already left?

Jeffrey Shaw. Early on I wrote:

The activity of both art and science has always been the interpretation and recreation of reality. It is an exercise of the human imagination, creating concepts, forms and images that imbue our lives with meaning. Art continuously redefines itself in response to cultural transformations. Nowadays these transformations are very closely linked to the pace of technological developments, and therefore it is appropriate that art addresses itself to technology on the most fundamental level of its aesthetic and conceptual discourses. (Shaw 1999)

And recently, Terry Smith wrote:

We are starting to see that in the years around 1980, shifts from modern to contemporary art occurred in every cultural milieu throughout the world, and did so distinctively in each. Just what happened is only now becoming clear, even to those who most directly participated in the events of those days. We can also see that, even as they were occurring in the conflict zones, these events inspired a critique of spectacle capitalism and globalization on the part of a number of artists working in the advanced economies. They developed practices—usually entailing research over time, widespread public involvement, and lengthy didactic presentations—that critically trace and strikingly display the global movements of the new world disorder between the advanced economies and those connected in multiple ways with them. Working from similar perspectives, other artists were inspired to base their practice around exploring sustainable relationships with specific environments, both social and natural, within the framework of ecological values. Still others work with electronic communicative media, examining its conceptual, social, and material structures: in the context of struggles between free, constrained, and commercial access to this media and its massive colonization by the entertainment industry, artists' responses have developed from net.art towards immersive environments and explorations of avatar-user (visual information user) interactivity. (Smith 2009, 7–8)

Every gesture in art is a historical moment, a momentary embrace of, or revulsion against, the exigencies of current conditions. Works endure either because those conditions (in whatever permutation) also endure, or (as in Kiesler) because they prefigure the shape of things to come or because they themselves are the progenitors of condition change. A comprehensive reading of art history would say that it is a process of creative inquiry into the infinite complexity of the world via ever-changing strategies of representation and embodiment, and its works remain relevant as long as they continue to inform/inspire this inquiry. On a perceptual (and sensual) level this world presents itself as a totally immersive environment, and an artform that wants to represent and elucidate its psychogeography is driven toward the form of a gesamtkunstwerk whose inclusive strategies transform the viewer into a protagonist. Thus we have, for example, the trompe-l'oeil entireties of the Ba-
worlds through digital media is through your exploration of “interface”—the point of exchange between humans and computers. How do you define the concept of interface in a context of works that are physical and haptic? The term coincides with an apparent shift in which “viewers” become “users.” What does this mean for embodied works?

JS. An understanding of the new role of the user interface in the context of the manufacture of interactive artworks must firstly recognize its operational requisites. To quote Wikipedia:

The user interface (or Human Machine Interface) is the aggregate of means by which people—the users—interact with the system—a particular machine, device, computer program or other complex tool. The user interface provides means of input, allowing the users to manipulate a system, and output, allowing the system to produce the effects of the users’ manipulation.

But the “complex system” that constitutes an interactive artwork embodies aesthetic and conceptual formulations that articulate these input/output processes as artistically defined components of the total experience. The “creativity” that traditionally expressed itself in the invention of new modalities of representation here extends itself into the search for new modalities of communication between the human and the computer, such as vision or touch.

The major achievements in interactive art over the last thirty years show a profusion of idiosyncratic and often eccentric approaches in the design of their user interfaces, as each artist seeks to mold the uniqueness of each work’s user experience. Fundamental to all of these experiments is the creative engagement of the user—his or her input is integral to the work’s possible paths of self-revelation, and at the same time this input modifies those paths to create a unique moment that constitutes the ever-unfolding “liveness” of an interactive work. This constitutes a new relationship between the producer and the consumer of artifacts, one where the builder of the interactive system and its users participate in a situation of cocreative formulation, discovery, and experience. Another major significance of this development is the fact that such artworks are never conclusive—they are always in a state of continuous reformulation and refreshment at the hands of their users—and their cultural longevity will be measured by the extent to which they continue to offer inspiration for such user engagement.

RC. Simultaneous with evolving interface design is a reconceptualization of
the “frame” or film “shot”. The analog frame directs viewer attention and fixes a set of relations in memory (one thinks here of Bergson and Deleuze); in digital environments, however, the elements that constitute an image are in flux and its dimensions may be boundless. Works like Legible City, configFiguring the CAVE, and Web of Life seem to make use of new interfaces to take aim at the notion of the frame—is that right?

JS. My expanded cinema installations of the 1960s (which I usually titled “Disillusionsary Situations”) marked the beginning of a long-term research effort to expose and “explode” established cinematic, proscenium, televisial, and painterly framing conventions and to create a fluid indeterminate arena of shared experience that would constitute a co-space of artistic expression and user (inter)action. My commitment to and enthusiasm for new media (inflatable structures in the 1960s and 1970s, computer-aided visualization systems since then) is based on the appreciation of how these media are able to offer unprecedented opportunities to articulate such an open space of artistic experience, and each of my works researches/articulates one or another nuance of this capability. Of course the liberation of the image from the frame is as fraught as is the struggle for existential liberation defined by mortality. Magritte perfectly pictured this paradox, while the Renaissance invention of perspective was a heroic achievement of pictorial liberation that the Mannerists quickly realized had to be disfigured to be more “true.” Ultimately one can only talk about artistic freedom by acknowledging and subverting constraints, like the Oulipian writer George Perec’s novel A Void (1994), where he manages to avoid that most basic prop of traditional syntax: the letter e. Works like configFiguring the CAVE, Place—a user’s manual, and Web of Life go about transcending the traditional framing of artistic representation by creating expanded and virtual frames: the stereoscopy of configFiguring the CAVE offering an immersive set of nested spheres that extend into optical infinity, the modular architecture of Place—a user’s manual simply multiplying itself forever in every direction, the networked intercommunicative space of the Web of Life allowing the work to be virtually connected and copresent at multiple locations worldwide. Simply put, I am fascinated by the space outside the frame, whose ubiquitous absence entails utter potentiality. That is why my recent work has been so engaged with strategies of panoramic visualization, where the viewers can let their attention wander into the periphery to discover something that might reframe everything.

RC. You draw several analogies to writing traditions—to the use of constraints by writers like Perec and to the conceptualization of the city as a text. What shapes this relationship between language and image in Legible City and in your works in general?

JS. A city is simultaneously a tangible arrangement of forms and an immaterial pattern of experiences. Its architecture is a linguistic morphology, its ground plan a psychogeographic network, and its streets a labyrinth of narrative pathways. In Legible City the viewer rides through a virtual city whose architecture is made up of letters and texts. The bicycle trip through these cities of words is consequently a journey of reading. Choosing the path one will take is a choice of certain texts and their spontaneous juxtapositions. The identity of these new cities thus becomes the conjunction of the meanings these words generate as one travels freely around in this virtual urban space.

The Manhattan version of the work (1989) follows distinct, fictional story lines created through monologues by ex-mayor Ed Koch, Frank Lloyd Wright, Donald Trump, a tour guide, a confidence trickster, an ambassador, and a taxi driver. Each story line has a specific lettering color. The bicyclist can choose one or another to follow the path of a particular narration. In the Amsterdam (1990) and Karlsruhe (1994) versions, all the letters are scaled to have the same...
proportion and location as the actual buildings they replace, resulting in a transformed representation of the actual architectural appearance of those cities. The texts for these two places are largely derived from archival documents that describe somewhat mundane historical events that took place there.

When first conceptualizing Legible City in 1989, I was referencing a number of avant-garde tendencies that strongly interested me including Lettrism, concrete poetry, haptic poetry, and the Situationist notions of urban psychogeography and the dérive. I was also very struck by the seventeenth-century author Madeleine de Scudéry's *Carte de Tendre* (1654) when I came across it in the 1980 Centre Pompidou Paris exhibition catalogue *Cartes et Figures de la Terre*. This map of the fictional country where Scudéry's novel *Clélie* (1779) takes place, is a topographic allegory representing the stations of love as if they were real paths and places. Recently I found the relation I had envisaged between the *Carte de Tendre* and Legible City reiterated in Guy Debord's publication *Internationale Situationiste* 3 (1959, 14-15), where he puts the map of Tendre side by side with an aerial map of Amsterdam; he too was articulating the notion of a shared emotional topography between these two places. And in this context we must also think of the psychogeographic conjunction of the two Venices in Italo Calvino's *Invisible Cities* (1974).

With Legible City I was also responding to the iconographic nature of computer graphics (CG) in the late 1980s. In the nonscientific and commercial sector, this often manifested itself in the form of "flying logos," simply because CG technology at the time was limited in its capacity to display more complex objects. In other words, the early manifestations of CG occupied a space of concrete poetry by default, albeit in the banal guise of advertising. Most importantly, CG was able to give text a spectacular new three-dimensional tangibility—suddenly letters could fly and twist and join in space, an apotheosis of which is the opening title sequence to George Lucas's first *Star Wars* film.

Legible City, being a real-time interactive CG artwork, was similarly constrained by the technology available in the late 1980s—a finite number of flat, shaded polygons was the scope of current CG performance. But at the same time, this capability was perfectly suited to the aesthetic and conceptual formulation of Legible City—so one could say it is a work that is both technologically and artistically symptomatic of its time. This is an important aspect of the full appreciation of any technologically assisted artwork, because temporal technological conditions (both technical and cultural) strongly influence the artistic formulation—in the best cases, such conditions inspire and enhance the artistic production, but they can also cripple it (which is one cause of a simplistically negative attitude to media art in general).

The use of text (and hieroglyphs and symbols) has been a recurrent feature of my practice. Following Legible City, for example, I became interested in the possibility of users actually creating their own texts in the virtual world—a sort of graffiti capability. This led me to develop voice-activated texts in Place—a user's manual that each user could create. These textually construed virtual domains are quite distinct from other works of mine such as *The Narrative Landscape*, *Heavens Gate*, and *Web of Life*, which luxuriate in their layered density of images. Yet I see both attitudes as being facets of the psychogeography of contemporary machine culture. On the one hand, there is an almost obscene proliferation of images and of the visual manipulation, combination, and transformation that is afforded by digitalization. This offers reason enough for one to recoil and seek hope in an iconoclastic embrace of the word—language as a refuge of "truth" in a world being saturated (made speechless) by "untruthful" images—reason to feel an affinity with those artistic traditions that have belied the image and elevated the word to the greatest heights of visual expression. On the other hand, it is exactly that power of digitalization that is freeing the image from its traditional analog constraints—enabling one to conjure a cultural imaginary with such virtuosity and vitality that it is difficult to resist its expressive possibilities, and this despite its almost simultaneous commercial depreciation. So in my work, I find myself oscillating between these two positions, and now and then attempting a merger. An interesting possibility for the latter emerges when one considers an image that is determined by its algorithmic description, that is, by language.

RG. Does this correspond to the perpetual tensions in digital-media works between reading and viewing and between unconstrained "browsing" and the framed, focused, or delineated trajectories of many of our expository and narrative traditions?

JS. That tension between unconstrained movement and narrative focus is actually one of the primary dramatic and aesthetic properties and qualities of interactive new media. It is the place where an artistic construct is modulated (deformed/reformed/informed) by the action of the user, and it is the place where the user takes personal possession of (and responsibility for) the work. To be wholly successful such an artwork will endeavor to give aesthetic and conceptual "shape" to this process of indeterminate unfolding by "crafting" the design of its operative algorithms in such a way that the work can maintain and extend its expository/revelatory coherence under all circum-
stances, and thus continue to express its integrity (value) as a singular artistic proposition. In this context it should be said that the social media currently in vogue—such as YouTube, MySpace, and Second Life—operate so exclusively as user-articulated frameworks that one should distinguish that phenomena from what I am describing here.

Cinematic Narrative and Immersion: Points of View III; T_Visionarium, EVE

Points of View III (Shaw 1984) is an early interactive narrative installation in which each “user” makes a personal audiovisual journey through the work and in so doing generates a unique real-time performance for the rest of the public. This work is a theater of signs where both the stage and protagonists are represented by 3-D computer graphics and where the interactivity of a flight simulator lets the user shift his or her virtual point of view with respect to the visual setting. The representation of each of the figures on the stage is done with a character derived from Egyptian hieroglyphics, and the resulting constellation of signs is used to articulate a world model with a particular set of aesthetic and conceptual relationships. For its sound tracks, sixteen people were invited to write short narratives that reference all of the characters in the work. Using a single joystick to explore both the sound and image landscape, the viewer generates an extemporaneous transcriptive conjunction of spoken narratives that is openly linked to the shifting configurations of the hieroglyphic imagery.

T_Visionarium (Brown et al. 2008) utilizes AVE (Shaw and Del Favero 2004), the world’s first 360-degree stereoscopic projection theater. Its 120-square-meter circular screen surrounds the audience and provides the conditions for a completely immersive three-dimensional cinematic experience. For the T_Visionarium project, researchers at the iCinema Centre in Sydney captured twenty-eight hours of digital free-to-air Australian television over a period of one week. This footage was automatically segmented and converted into a large database containing over twenty thousand video clips. Each clip was then manually tagged with descriptors known as metadata, which defined its properties. The information encoded included the gender of the actors, the dominant emotions being expressed, the pace of the scene, and such actions as standing up or lying down. Having the video data segmented in this way deconstructs the original linear narrative into building blocks that the viewer can then associate and reassemble in an infinite number of ways. In the projection environment, three hundred video clips are simultaneously distributed around the huge circular screen. Using a special interface, the viewer can select, sort, rearrange, and link these video clips, creating new sequences that then play in the all-encompassing viewing space. Thus the viewer is provided with an engaging density and intensity of ever-changing recombinant narrative formations.

The EVE (Shaw 1993) interactive cinema system in many ways is an apotheosis of this research trajectory. First developed at the ZKM Karlsruhe in 1993, this “expanded virtual environment” is a large inflatable dome, in the optical center of which a video projector is mounted on a motorized pan-and-tilt device that can move the projected image anywhere on the dome surface. A head-mounted device worn by one of the visitors tracks the position and angle of his or her head and controls the position of video projector such that the projected image follows the direction of the viewer’s gaze. This allows the viewer to move the picture frame over the entire dome surface and interactively explore the virtual computer-generated or filmic spherical image that is presented there. In this way, EVE constitutes a space of representation that almost entirely surrounds the viewer; its head-tracking user interface embodies the notion of a fully immersive world of multivarious images and events that reveal themselves to the inquiring gaze of the viewer.

RC. One thing that is changing is how one works with “images.” German cultural critic Florian Rotzer writes, “Today looking has come to mean calculating rather than depicting external appearance. . . . We build machines . . . not just to connect perception and process, but more importantly to internalize these and connect them with the millions of rhythms and cycles in our body.” Practically speaking, what have been the significant limits to how images still function (and are made) in developing projects like these. Which changes in computer software and hardware have most changed your way of using (and thinking about) the computer in art production?

JS. Concerning Florian’s positions on new media I have a more skeptical attitude: everything is different and yet everything is the same. I recognize (and embrace) the new qualities of our machine culture, and yet I question how deep-going this newness is existentially. In other words I feel myself more of an avant-gardist than a new-ager.

On the other hand, I affirm the prospect and necessity that art has to reinvent itself continuously, and that in our time this constitutes a new identity that in many respects fundamentally differentiates it from its past forms and purposes. Here are some of its “new” features:
• Its interactivity, enabling tangible coreative input from the user.
• The notion of an open, "unfinished" artwork that always (and forever) reveals itself in different ways in response to different (and unrepeatable) user input.
• The notion of the artwork that is not a space of representation per se, but more a space of exploration and (self-)discovery. Interestingly, the digital capability to construct a user-navigable virtual space of almost infinite dimensions aligns well with this purpose. Legible City (Amsterdam) has a virtual area of over ten square kilometers, and each of the PLACE installations presents a modular space that repeats itself indefinitely in all directions.
• The creative action of the artist now largely having to take place in the immaterial domain of algorithmic design. Such an artwork is essentially a software construct, whose visible (and other sensory) properties are simply the manifestation of code operating in a computational environment. This shifts the creative practice of art very much away from being a manual craft into one of conceptual engineering.
• The social operation of the digital artwork becoming essentially performative. Even a single-user interactive art installation (as mine usually are) offers itself to the general public as a sharable performed experience. And in works like Televirtual Chat Chat (Shaw 1993b) and Distributed Legible City, the virtual space created by the artwork becomes itself a shared social environment for its visitors. The recent massive popularity of social-media sites on the Internet confirms this essential aspect of new media.

A radical feature of an artwork whose forms derive from its algorithmic architecture is the possibility of designing algorithms that are subject to change due to user or environmental input, or that change independently of any external input due to the ability of the computational system to modify itself—that is, as a consequence of software instructions that imbue the system with some form of "artificial intelligence." The idea of auto-creativity in a man-made machine is an age-old fascination (linked of course to the machine's potential to replicate itself)—as if the making of such a "device" would exemplify the peak of human creativity. Many contemporary artists are not at all embarrassed by this idea and see the digital realm as offering a unique opportunity to experiment with auto-creative processes as the next logical step in art's cultural trajectory.

RC. This seems to engender new kinds of creative relationships between artist and engineer. Could you give an example of how this played out in actuality? I imagine it can cause one to rethink the artist's role and the relationship of the artist to audience (when the audience is looking at a work that might be as much "made" by a machine as the artist-engineers who created the machine/jS. There are only a few new-media artists with the all-round capability to conceptualize, design, and build such typically complex works. More usually, they require a working relationship between artists and technicians with various skills such as programming and electromechanical engineering. This is not a historically new situation—many artists in the past ran studios where persons with various skills contributed to the work. And, multiple agency in the theater and cinema is almost axiomatic. What is new, perhaps, is the uniquely creative role that such engineers can have in the construction of a digital media artwork. In my own practice, there are numerous instances where programmers have become identified as coauthors because of this level of contribution. Furthermore, media artworks are (usually) not dependent on idiosyncratic individual artistic skills, as are needed, for example, in painting, so they can open themselves to a more cooperative process of creation where
the outcome is constituted by the conceptual, aesthetic, and critical interaction of individuals who have a closely shared enthusiasm and vision. In my own practice such cooperations have been a hallmark and are integral to the vitality of its (and each contributor’s) development.

A project that fascinates me would be an exhibition titled "Artists Make Machines to Make Art"—focusing on machines that are creative facilitative devices rather than art objects per se. The camera obscura, of course, a paradigmatic historical example, followed by the multivariable apparatuses built—often invented—by painters, sculptors, filmmakers, writers, musicians, and so on to enable them to undertake their specific creative objectives. Contemporary media art practice is very much about artists building machines—especially interface devices and software engines—to engender specific forms of artistic expression and particular modes of user interaction. Such software architectures can be highly complex machines, with levels of autonomous behavior that extend the definition of the creative process whereby artists become the conceptual engineers of systems of aesthetic capability rather than of circumscribed objects.

Embodying Place: Place—a user’s manual and Place-Hampi

In Place—a user’s manual, a rotating platform with three video projectors allows the viewer to interactively rotate his window of view around a large, circular screen, and so to explore a virtual three-dimensional world constituted as a constellation of eleven photographic landscapes. These images, cylindrical panoramas recorded with a special camera in locations including Australia, Japan, the Canary Islands, Bali, France, and Germany, are simple landscapes of ground and sky that repeat themselves in all directions. The ground on which they are positioned is marked by a diagram of the kabbalists’ sephirotic tree; the position of each panorama reflects a relationship between the landscape’s scenery and the signification of that location on the diagram. The viewfinder on the interface camera offers an aerial view of the diagram and allows the viewer to see the exact position of the eleven panoramas. Moving texts are generated by the voice of the viewer and leave traces of their presence in this virtual world.

Place-Hampi builds on the interactive cinema paradigm launched in Place—a user’s manual. Its central feature is a motorized platform that allows the viewer to rotate a projected image within a cylindrical screen nine meters in diameter and to navigate a three-dimensional environment of panorama.

FIGURE 24. Interior view of PLACE-Hampi (2007) showing the motorized platform, cylindrical projection screen, stereoscopic panorama of Hemakuta Hill Hampi, and composited animation of the elephant deity Ganesh. The installation was co-supervised by Sarah Kenderrine and Jeffrey Shaw, with John Gittings and Paul Dooberman. Photo: Jeffrey Shaw.

mas photographed at the UNESCO World Heritage site Vijayanagara Hampi, in southern India. These stereoscopic images are linked through narratives and enlivened by animations of Hindu gods and mythological events. These events reveal the folkloric imagination of contemporary pilgrims active at the temple complex. The single-user interface allows viewers to control their forward, backward, and rotational movements through the virtual scene as well as the rotation of the image. In walking around the viewing space, they also synesthetically engage their bodily movements with the stereoscopically perceived world, creating a heightened sense of presence.

RC. Physically, can you explain the technology of these works and how they compare to CAVEs or other immersive environments? What specific advantages do immersive environments provide, and this technical approach in particular?

JS. All of the Place installations embody the same visualization and interaction paradigm—one that I invented for Place—a user’s manual in 1995 and that derives from the ZKM installation first presented at the ZKM in 1993. In this paradigm, the user moves a projection window so as to explore a surround-
ing virtual scene. The Place installation has a nine-meter-diameter projection screen, with a motorized platform at its center from which a portion of that screen is projected upon. Rotation of the platform by the user controls the rotation of the projection window and the user’s exploration of the panoramic scene. In this respect the Place installation has a greater affinity with a head-mounted display than with the CAVE. A head-mounted display also presents a restricted viewpoint, and the viewer has to turn and tilt his or her head to discover the complete scene, whereas a CAVE would simply project the scene in its entirety. Paradoxically, it is the human manipulation of a constrained projection window that offers a more kinesthetic experience than in a CAVE, simply because it demands a more concerted bodily effort on the part of the user, and furthermore, what appears on the screen is more closely linked to choices made by the viewer—that is, an active seeking out of information. Other perceptual and kinesthetic factors also come into play: the dynamic process by which a personal mental picture of the complete 360-degree scene is constructed in the viewer’s mind as he or she explores its features; the user’s experience of physical rotation on the platform that aligns his or her body with the virtual point of view, thereby making more tangible (even somewhat hallucinatory) the sense of tangible presence in that space; and the obligation of other viewers in the installation to walk around and follow the rotation of that platform and the projected images, thereby causing a psychophysical conjunction of real and virtual movement that amplifies every viewer’s sense of the actuality of the scenes presented and the immediacy of their visit.

One distinction between Place: Hampi and the earlier Place works is the later work’s use of stereoscopic 3-D projection. Stereoscopy is a feature of most immersive displays because of its ability to give a more tangible experience of the three-dimensional properties of situations and objects. Every monoscopic display from PDA to Omnimax forces the viewers to focus their eyes on the two-dimensional surface of the screen, thereby belying the third (depth) dimension of the image being presented. A stereoscopic display, on the other hand, allows viewers to focus their eyes both in front of and beyond the screen surface (to infinity in fact) so that the depth of the projection can be experienced as an immersive reality. In works like Place: Hampi and Web of Life, the projection screen becomes a transparent window that reveals a space of representation that effectively conjoins with the viewer’s space of being (and action).

RC. In terms of how the works are made, Place—a user’s manual and Place: Hampi employ video compositing and layering, with realtime CG characters and pre-animated ones reacting to the movements and actions of audience members via tracking systems. How has this changed the way in which narrative elements function? And, I imagine transparency of the technology must be a problem...

JS. Place: Hampi in its present form presents animated three-dimensional Hindu gods that have been composited into the three-dimensional panoramic photographs that were shot at Hampi. During the viewer’s exploration of these scenes, these figures can be “discovered” at certain locations. But the animations themselves are pre-rendered and simply play over and over again in a seamless loop.

The next version of the Hampi project, which is currently in production, will be implemented in ICinema’s AVIE environment. This is a 360-degree fully projected stereoscopic display. In AVIE each viewer’s physical location and bodily gestures can be detected by infrared video cameras and used as input to influence the projected imagery. Our intention is to populate two of the Hampi panoramas with computer-generated autonomous narrative agents who will react in real time to the physical disposition of the viewers with respect to the scene. In one instance, a group of temple monkeys will be these reactive agents. In another scene, a group of virtual tourists will autonomously respond to the viewers’ proximity, identifying them also as tourists, who they proceed to photograph. In each of these “experiments,” the viewer experiences the shock of a virtual world that is dynamically aware of his or her presence and behavior, and continuously and autonomously modifies itself accordingly. This modicum of machine intelligence is enough to create a so-called co-space—a merging of the physical and the virtual, enabling simultaneous interactions between the real and virtual worlds, irrespective of its obvious technological contrivances (and constraints), such a co-space promises to introduce a whole new dimension into the narratives of immersive virtuality—one where autonomous machine agents are socially copresent and coactive with human agents.

RC. Walking in your multimedia environments suggests the integration of time-based media like film and spatially represented arts like panorama. As with bicycling in Legible City, the walking articulates a changing relationship (similarities, differences) between humans and machines in relation to information processing and meaning. Is that right?

JS. Yes.

RC. Walking, then, seems to be one of the ways you construct conditions for exploring both the human experience of “presence” and what presence means
in a world of machines... Perhaps this had practical implications in making works that explore presence or even impacted your understanding of what it might mean to construct (or articulate) presence in artwork?

JS. The success of the Nintendo Wii is largely due to the way it extends the range of physical interaction offered to its players. The effectiveness of such a device was prefurigured by the earliest examples of media art, such as my Legible City and David Rockefeller’s Very Nervous System (1986; see Cooper 1995). But already in the nineteenth century, the attraction (and commercial success) of Panorama painting, as Erkki Huhtamo has rightly pointed out, was that one could stroll around it as a flaneur—an attraction that was lost once seating was set up in the cinema, to be replaced by a more modern fascination, that of the voyeur (Huhtamo 2004).

A denominator in so much media art is the intention (once again) to reengage the body of the viewers, to affirm their bodily presence in the mediated space, and conjoin them in an extroceptive, proprioceptive, and kinesthetic relationship with the artwork. There are at least two drivers for this ambition: to revitalise the sociocultural operation of art in general because of its dysfunctional state, and to adhere this revitalisation to a technological imaginary that has become the central ideology of our time. Samuel Beckett said, “To find a form that accommodates the mess, that is the task of the artist now” (Bair 1978, 31). Because the technological imaginary is a domain of digital immateriality, the existential success of this project necessitates its embodiment as a cultural prosthesis where we can critically register and enact our presence. When machines increasingly determine the spatial formations of this world (and the world of art) and can even inhabit it as autonomous agents, the core challenge on every level is to articulate and give meaning to these new modalities of “being” in this world. To address this challenge, the artworks we are making operate as laboratories of confrontation, interaction, and self-reflection around this issue, using technological and aesthetic constructs that delve deeply to elucidate its properties, problems, and potentialities.

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