16

Liquid Architectures and Site-Specific Fractures in Reality

In one way or another, all {digital artworks and environments} are concerned with possible relationships between the physical space and the virtual, and what distinguishes them are the balance between these two realms and the methods employed to translate one space into the other. Some artworks try to translate qualities of the virtual world into the physical environment, others strive to map the physical into the virtual; and yet others are aimed at fusing the two spaces.
—CHRISTIANE PAUL[1]

Liquid Architecture

Marcos Novak discusses computer technologies and cyberspace in terms of "liquid architecture," an abstracted and fluid, yet still physical form of space, what he terms "a sense of space not frozen in time. Illustrations of this can be found in various notions of electronic space, virtual space, three-dimensional renderings of spaces not actually built or imaginary spaces of the future."[2] These spaces are characterized by response, change, and exchange: "an architecture that opens to welcome me and closes to defend me . . . where the next room is always where I need it to be . . . an architecture that breathes, pulses, leaps as one form and lands as another."[3] Novak relates cyberspatial concepts of liquid architecture to the future of real-world architecture, where buildings are responsive, their spaces evolve like a living organism, and "judgements of a building's *performance* becomes akin to the evaluation of dance and theater."[4] Ted Krueger conceives a parallel image for his revolutionary new ideas for the design of "smart" buildings and environments that he also calls "liquid architecture." He argues for "the possibility of an intelligent and interactive architecture conceived of a metadermis referencing work in the fields of mobile robotics, intelligent structures and skins, and interactive materials."[5]

Such interactive architectural spaces are now emerging from companies such as Nox Architects, whose Salt Water Pavilion (designed by Kas Oosterhuis, 1997) at

Waterland in Neeltje Jans, the Netherlands, captures real-time meteorological data that alter lighting within the space and the flow of running water down its walls. The linked Fresh Water Pavillion (FreshH20 EXPO, designed by Lars Spuybroek, 1997) has no horizontal or vertical planes, and multiple sensors activate light, sonic, and visual transformations. "Architecture and media are so 'fused' that even the very act of walking trigger sensors to convert the visitors' movements into waves of virtual water . . . projected onto the grids around them. . . . The building becomes animate, *alive*."[6] Elsewhere, computer-aided design's revolutionizing of architecture is epitomized by the magnificent Guggenheim Museum in Bilbao, Spain (designed by Frank Gehry, 1997), a breathtaking space like an ultramodern cathedral for the arts, which is constructed using thousands of panels, each with a different and unique shape and size, and computationally calculated to interlock with one another.

"Performing" Architectural Space

Liquid architecture's dual sense of an external kinetic physical design and an internal interactive and responsive space has been adopted as an important model and metaphor for a number of artists. Gretchen Schiller's *trajets* (2000, with Susan Kozel) is a movement-based interactive installation based on visual and physical interactions in a three-dimensional moving space. *trajets* comprises twelve motorized suspended screens that move in response to the visitor's paths through the installation space, spinning in front, beside and behind the visitor's body as they pass by them (figure 16.1). This creates a dynamic interplay of movement between the visitor and the screen, a kind of dance between the architecture of the installation and the visitor. *trajets* uses the vision-sensing software program *Eyes* (developed by Robb Lovell, who, with Scott Wilson developed the

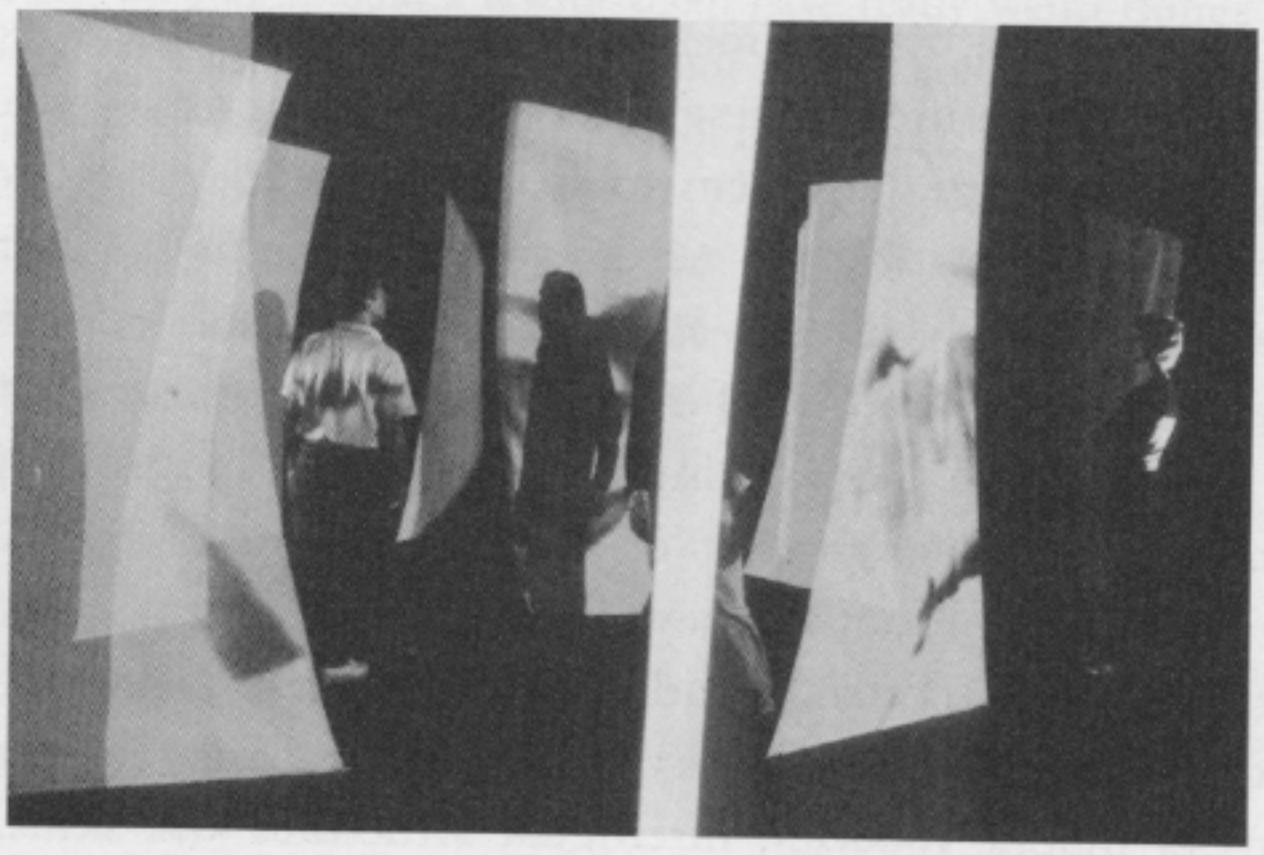

Figure 16.1 The fluid and dynamic "liquid architecture" of Gretchen Schiller and Susan Kozel's interactive installation *trajets* (2000). Photo: Florence Morisot.

responsive computer system which drives the piece), "force-field" simulation software, a video synthesizer, and custom-made hardware. The force-field simulation translates people (located with *Eyes* in Opcode's software *Max*) into point sources of monopolar magnetic fields, and computers activate the twelve screens, which are each connected to their own step motor and cabled to a motor driver box.

The screens also serve as projection surfaces, adding to the "liquid" effect. The projected images include bodies filmed in various textured environments that change and mutate in response to visitor movement, sometimes recognizably figurative and at other times more abstract, suggesting only traces of bodily movement (figure 16.2). The installation is intended to elicit the public's kinesthetic responses within a moving architecture and is as fluid as the movement of the images and the visitors themselves. The limits of the active space are defined by a string of lights, which wend their way around the perimeter of the screen environment. As the visitor approaches, two of the screens pivot as if to make an entrance to ease the path into the heart of the forest of screens permeated by ambient sound (by Jonny Clark), and peopled by image traces of human motion. The conception of the space is in one sense distinctly related to the futurist idea of a machine aesthetic, as the screens open, close, spin and dance. But unlike the machismo futurist aesthetic *trajets* is calming, gentle, nonthreatening, a chance to immerse oneself in a world and architecture that is in constant flux, but that delights rather than disorientates.

Stephan Silver's background in architectural design has a significant influence on his dance performance installations such as *Virtuoso* (1998) to create what he describes as "a landscape of moving architecture," where visitors travel through narrow, sensor-activated paths of flapping gauze curtains, inhabited by dancers. In *Synfonica* (2000), participants

Figure 16.2 A visitor walks through the responsive kinetic screens of *trajets* (2000). Photo: Florence Morisot.

pass through a black corridor and emerge within a series of corridors and spaces lined with sheets of white gauze, and activate sounds and projected images as they trigger floor pressure pads, light sensors, and ultrasonic devices. Within the space, lit only by the projections, dancers move improvisationally in response to the changing sonic and visual environment, sometimes rolling on the floor under one sheet to emerge at the feet of an audience member in a different corridor or area. Multiple computer animations, programmed using *Director* software, are projected from a number of angles and mirror the clear, geometric shapes of the choreography: squares, triangles, circles, lines, planes, and cubes. As the visual patterns and shapes transform, the dancer's phrases and movements follow suit, physically echoing their open, rounded, angular, and zigzag lines. The animations' bold, richly colored geometric designs directly echo the art movements of the twentieth-century avant-garde, and Silver emphasizes the performance's links to "the Bauhaus, de Stilj, Italian Futurism and Russian Constructivism."[7]

Elizabeth Diller and Ricardo Scofidio draw from architectural theory and practice to create navigable part-physical, part-virtual spaces such as a set dining table in *Indigestion* (1995), which is projected onto a flat horizontal surface. The digital projection includes the hands, but not the bodies, of the dinner guests, whose disembodied conversations critique stereotypes of gendered behaviour. In CHOREOTRONICS Inc.'s dance performance *Byte City* (1997), nine Plexiglas tubes hung on a grid comprise an architectural Sound Field Event Activator (SOFEA), each tube emitting different sounds inspired by nine different geographical locations in New York City. Different members of the company (the costume, lighting, and sound designers, the choreographer, and so on) developed nine sections of the event independently, based on different site maps of Manhattan, which were then performed within the SOFEA structure and its complex sound fields. The company suggest the design concept feigns the structure of cyberspace "in a physical and virtual layering of time and place . . . revealing the enigmatic nature of space and distance in our ever changing world."[8]

The physical architectural spaces of city centers (Manhattan 1989, Amsterdam 1990, Karlsruhe 1991) provide Jeffrey Shaw with his raw material, which he translates into navigable 3D environments. Each virtual building is to scale and is accurately mapped to the real geographical environment, but its shape is transformed into that of a colored, three-dimensional word. Users sit on an exercise bicycle and peddle and steer "through" the large projection in front of them, while a computer analyzes and translates the bicycle's speed and direction in relation to the visual journey. In *The Legible City: Manhattan* (1989) the brightly colored word buildings are composed of texts from fictional monologues written by, among others, Donald Trump, ex-mayor Ed Koch, and a Manhattan taxi driver. Christiane Paul suggests that the city becomes "'information architecture' where buildings consist of stories that are site-specific, related to and enhancing the location visited and thus pointing to the history of immaterial experiences that are not immediately accessible through the tangible form of the building itself."[9]

Sarah Neville's *Calculus of the Nervous System* (2000, with Matt Innes) charts the volatile working relationship between Charles Babbage and Ada Byron Lovelace, daughter of Lord Byron and credited with writing the first computer program, who Babbage called "the Enchantress of Numbers."[10] It is staged within a theater installation designed to echo the architecture of Babbage's 1834 conception for his "Analytical Engine" (popularly considered to be the first significant precursor to the modern computer) on top of which the company mix video, play the harp, and perform. Neville's earlier *Ada* (1998, with Heliograph Productions) transposes Lovelace's story to the twenty-first century, and her original experiments and predictions are reinterpreted through her future counterpart's development of artificial intelligence, electronic music, and the calculus of the human nervous system. Her Lovelace character creates avatars and virtual worlds that, like both the computer and Lovelace herself, become "prone to paralysis, crashes and corruption."[11]

Lynn Hershmann charts Lovelace's life in her feature film *Conceiving Ada* (1994, featuring Tilda Swinton as Lovelace), where "themes of love, sex, artificial life, computers, DNA transference, history and memory intertwine."[12] The movie provides a fascinating early example of another mode of computational liquid architecture through its use of virtual sets, using a custom-made process (LHL Process for Virtual Sets) enabling the settings to be rendered in real time. Rather than postproducing the composite images of the actors and the virtual backgrounds later, as is the industry norm, the performers were able to "inhabit" the sets and watch themselves within them via a monitor during takes. The film used 385 photographs that were digitally manipulated and composited, and static scenes were animated through Quicktime movies to produce licking flames in fireplaces, rain falling on the windows, and even virtual doors that actors opened and walked through. Ada Lovelace has thus emerged as a popular heroine within digital arts, as well as a revered figure in feminist cyber-theory, where her life story has been frequently told, most memorably in Sadie Plant's dazzling discourse on women and new technology, *Zeros + Ones: Digital Women + The New Technoculture* (1998).

Performing Houses

A mixture of real and virtual liquid architecture provides the setting for Keith Armstrong's solo performance *Hacking a Private Space in Cyberspace* (1995). A child's playhouse stands center stage, and Armstrong uses small gestures of his right hand to activate VRML menus to build digital 3D shapes and blocks that are projected onto the physical house. The projected graphics mirror the house's shapes and structure but are misaligned, until a final hand movement from Armstrong maps the VRML projection precisely to the scale and position of the physical structure. To the strains of the song "I Wanna Be Like You" from the Disney movie *Jungle Book* (1967), Armstrong slowly walks along a catwalk above the audience until he stands above the house, looking down. The final section of the performance, which Armstrong calls "Virtual Inhabitation," ends with

him stepping off the catwalk and crashing down through the roof of the physical house, which collapses, as the VRML projection and stage lights fade to black.

The Builders Association's distinctive multimedia theater take on Henrik Ibsen's *Master Builder* (1994) involved the construction of a three-story house in a 17,000-square-foot New York warehouse. The house was wired with MIDI triggers (which audience members could explore during the daytime before performances) enabling the performers to activate music and sound effects, thus playing the house like an instrument. During the performance, sections of the house were gradually demolished to reveal new perspectives and to unearth both the house's skeletal structure and the skeletons of the characters' pasts.

Navigable VRML architecture provides the central feature of Uninvited Guests' theater production *Guest House* (1999), which integrates projections from the company's CD-ROM of the same name. A computer operator positioned behind a table at the front of the stage navigates through the CD-ROM, watching the performance and two computer screens, which face the audience. Computer-generated VRML images of buildings and rooms are projected onto a "wall" comprising six thin, white wooden screens, each six feet high and three feet wide. Graphical rooms with names such as "Attic Room, Topsham," "Bedroom, Seattle," and a school "Geology Classroom, 1980s" hang and rotate in midair. They are visually entered and their interiors explored around 360 degrees. Meanwhile, tape-recorded "vox pops" are played of adults and children describing rooms they have known or seen, sometimes "prompted" by a live actor who asks the disembodied voices questions through a microphone. The six screens are separated and moved around the stage on wheels, as a "director" character coaches actors in short scenes. He explains to one how he should enter a room and unpack rocks from his briefcase; and rehearses another in the intricacies of how to vomit realistically following a night of heavy drinking. A woman at home in her underwear catches a Peeping Tom, and turns the tables by forcing him to strip at gunpoint. He undresses. As he is about to remove his underwear, the director intervenes with "that's enough," and the scene ends.

The moveable screens are positioned to create different spatial configurations such as small, walled rooms, where performers sit recounting spaces they know, or stories from their past. The face of one actor hidden behind the screened walls is projected via a live video camera onto the side of his claustrophobic "room" as he confesses how he bullied a child at school, then became his friend, and then became the victim of his new friend's bullying. As he talks, a female actor, visible to the audience, stands at the side, holding a light to illuminate his face inside the room. She occasionally bends her head down behind the screen and out of audience view to talk to the man in the room space. Her head suddenly appears with his in the video projection, far larger than her "live" body, which still stands visibly on stage and seems both (physically) connected and (visually) disconnected from her video-image head and shoulders. In another scene, a female actor describes a

room with a bay window and tiger-skin sofa, which is seen as a VRML projection, while a (video) close-up of a live male actor's face (who is hidden within a screened room) is displayed within the projection using a picture-in-picture effect. "Turning to your right you see a bed settee with broken springs," she says, and the computer model pans right to reveal it, while the man's close-up within the image turns in sync to see it. This simple and effective composite image both locates him inside the VRML room and makes it seem as if the room is part of his mind, or his body.

Such moments of physical/spatial separation, which are digitally united, as well as bouts of onstage hiding, which are electronically revealed, work to unify the disparate physical and virtual spaces that make up the mise-en-scène—open stage space, screen configurations, walled rooms, computer monitors, 3D computer-generated projections, and 2D live video relay. But while the relationships between real and virtual space are intriguing and complex, the performance content is less so, and ultimately disappoints. There is too little connection between the behind-the-scenes sequences of the director coaching the actors and the live and audio-recorded descriptions of rooms, and the descriptions themselves become monotonous. No real surprises or drama emerge from the graphical spaces and buildings explored, and the spoken texts do not progress to other levels to establish a new space of their own, somewhere out of the ordinary. The descriptions and recollections remain deliberately, stoically mundane, and are frequently delivered with undue slowness and seriousness:

> You are in a living room in the seventies. It looks strangely familiar. In front of you, you see a bay window that looks out onto the street. Turning to your right you see a bed settee with broken springs. On either side of it are two armchairs that are more comfortable to sit in. On the wall there's a reproduction of a painting by Millais. It's a scene where a peasant couple are standing over their son's grave. In the corner of the room you see a black and white television, and next to that a white glossed shelving unit with a gas fire fitted into the middle of it. You notice a music box on one of the shelves. Turning to your right and to the floor you notice an unfinished jigsaw puzzle on a coffee table and on the wall a family photograph with two adults and nine children in it.

As in many digital theater performances, there is a marked contrast between the progressive technological innovations and the safe and prosaic nature of the postmodern text and dialogue, which relies on an audience's appreciation of the meaningfulness of meaninglessness, the significance of insignificance. The deconstructive impulse may reassure performance groups that the ever-referring and deferring properties of text makes banality intellectually compelling, but (at least for us) this swimming in clichés, repetition, and the mundane has now become so exhausted that it signifies performative drowning rather than waving (or treading water, at best).

Sensual and Sonic Liquid Architecture

Sonic modulation and liquidity is a central feature of interactive installations that employ computer sensors and systems to monitor visitor movement and to activate and transform audio files in response. Fluid, responsive sound is often key to the physical and immersive experience of installation (over its observation merely as a picture to be seen), establishing moods and eliciting emotional responses that emphasize and enhance the visitor's connectedness to the space. Choreographer and digital artist Sarah Rubidge's interactive works, including *Sensuous Geographies* (2003), where visitors are blindfolded to focus attention on the centrality of liquid sound, investigate the subtle sensations that permeate the body and give the individual a very particular sense not only of being in that specific space but also of "being in the world" from moment to moment. Her earlier installation work combined responsive sound and music with visual imagery, including *Halo* (1998), where the visitor is surrounded in a darkened space by the light of naked bodies moving and flying above their heads on two massive screens (14 m high × 10 m wide) placed opposite each other some 10 m apart. A "halo" of circling bodies forms, or they walk toward and away from the visitor, each figure interacting both with the live participants (traveling from side to side as the visitor does, or rising and falling to command) and with each other (clustering in groups, forming halos when they "touch" each other).

An interest in social interactivity rather than the one-to-one engagement of a single user installation permeates Rubidge's work, and the intersections, interactions, and sonic/kinetic improvisations of participants provides the core to her most inspiring work, *Sensuous Geographies* (2003, with Alistair MacDonald, Maggie Moffat, and Maria Verdicchio). Nine glimmering gold, white, and bronze translucent banners surround the space, creating a spatial architecture (or geography) through which visitors move—they also serve as distributed projection screens. Among the banners are hung several brilliantly colored luxuriant silk robes, which "guides" dress the visitors in and remove their shoes before providing instructions: (1) enter the space and stand still for at least 15 seconds. Listen, locate yourself in this new resonant space. (2) When you are ready, turn and let your body follow the sound you have identified as your personal sound signature. Then just let yourself be taken by your sound through the space. (3) You may leave the active space and stand on the periphery, and reenter the active space at any time. The visitors are then given a blindfold or veil to wear, ensuring that the space is experienced through senses other than sight—primarily hearing, but also touch, and the sense of proximity to others (figure 16.3).

The active space (4.5 m square) is delineated by a black, soft floor cloth, under which are placed different materials (cut-up duvets, garden bark, bubble wrap, sand) that provide haptic textures for the visitors' feet, and another mode of architectural, sensory engagement with the space. A genuinely immersive sound environment is achieved by the placement of speakers both around the periphery of the active space and the periphery of the space as a whole. As visitors step onto the floor cloth, an individual sound strand accom-

Figure 16.3 Participants don elaborate coloured robes, and veils or blindfolds ensure the environment is experienced through bodily senses other than sight in Sarah Rubidge's *Sensuous Geographies* (2003, with Alistair MacDonald, Maggie Moffat and Maria Verdicchio). Photo: Jem Kelly.

panies them—*their* sound—that they control and modulate through their movements. A motion tracking system follows the visitors via a video camera mounted in the ceiling using color recognition to identify each visitor's robe and hat individually. An interactive sound system (built in *Max4/MSP*) then interprets the data to modulate the users' individual sound strands according to the direction the visitors are moving in, their speed, and when they are still. Proximity to other visitors is a further parameter for sonic transformations, allowing the movement of the group as a whole to affect and build the sound environment.

The experience is delicate, corporeal, uplifting and distinctly liquid. You identify a sound, individual and unique only to you, and hear it modulate and transform in relation to even your slightest movements. You follow your sound, hearing and feeling its changes, and become aware of other shadowy figures moving around with you and of other alterations in the sound textures. You tentatively join in the game, traveling with other visitors, leaving them alone, standing still, listening, waiting, building the sound world, then feeling the sensations it generates, hearing the textures you are helping to create. Suddenly something feels different; the drone providing the ambience has transformed.

Your body feels more upright, your attitude more playful as a new sound world emerges, with which you engage differently. You participate in a spontaneous and almost childlike game involving what one reviewer calls "a personal/group signature tune that constantly shifts and cannot be repeated. On one level it is happy play, on another it taps into notions of wordless communication and issues of identity"[13] (figure 16.4).

The sounds range from the musical to the environmental and are structured according to three central features; the frame/engine; the players; and an operator who sits outside the space at a computer. The frame/engine determines aspects of structure—for example, it limits the number of simultaneous layers (polyphony) and the number of simultaneous processes that are applied dynamically to the sounds. Each participant controls one layer of sound against a changeable contextual sound layer, while the operator makes choices as to which sound materials are allocated to each of the visitors at a given time, and which contextual layer is playing.

The space is thereby "played" in a musical way, and as in many forms of musical improvisation, individuals listen and make space for others, respond, contradict each other, and build duets and ensemble sequences together, while the operator makes particular sonic choices depending on the behavior and energy in the space (figure 16.5). The operator might offer particular materials to a very energetic participant who wants to explore extremes of space, and very different sounds to someone more concerned with delicate movements and tiny details of sound. Each sonic environment generated in the installation has a different sensibility that affects the way the visitors feel in their bodies, and this modifies the quality of their movements while simultaneously changing the musical dynamics and ambiences of the sound space itself.

As they engage with the space the players make a personal journey, a collective journey and an observed journey (by visitors watching or awaiting their turns). Digital imagery—luminous, ethereal figures that echo the colors of the costumes—immerses the space and is manipulated in response to visitor movement using Troika Ranch's *Isadora* system. As in Rubidge's earlier work, the video images (of performers dressed in the colored robes and performing simple pedestrian movements) are radically processed to the extent that they offer only traces of the original human forms, emphasizing the flow of movement and heightening the jewel-like colors of the costumes. These liminal figures appear and disappear on the banners, walking, crouching, rising, gesturing, moving slowly across the banners, toward and away from the visitors, fading away from time to time only to reappear, distributing abstracted choreographic forms around the space.

Sensuous Geographies is a thus a complex, multistranded, dynamic entity that is in a constant state of motion, a never-ending audiovisual liquid architecture always in flux. Participating and immersing oneself in the subtle and exquisite performance of *Sensuous Geographies* is to experience how the space and music feels through the body's intimate "knowledge" (in Bergson and Merleau Ponty's sense of the word as a conjunction between sight/image and direct bodily/physiological perception) of this liquid environment. A

Figure 16.4 The atmospheric and minutely responsive installation space for *Sensuous Geographies*. Photo: Jem Kelly.

Figure 16.5 Two participants interact using their bodies and personalized electronic sounds in *Sensuous Geographies.* Photo: Jem Kelly.

different type of physical consciousness is at play, like that domain described by Henri Bergson as "deep consciousness," by Anthony Damasio as "core consciousness," and by Gerald Edelman and Giulio Tononi as "primary consciousness." But most of all it seems to encapsulate Gilles Deleuze's notions of "affect" and "becoming." *Sensuous Geographies* is, in a very real sense, a "sensational" space, a space where in Deleuzian terms "every sensation is a question,"[14] but a question without an answer—a space of becoming, which never becomes.

The Body's Liquid Architecture

The body itself becomes a type of kinetic liquid architecture in performances where digital projections are mapped directly onto the performer. Li Chiao Ping creates slow, poetic dances where her body is entirely immersed in projections of written text; in *String* (2000)

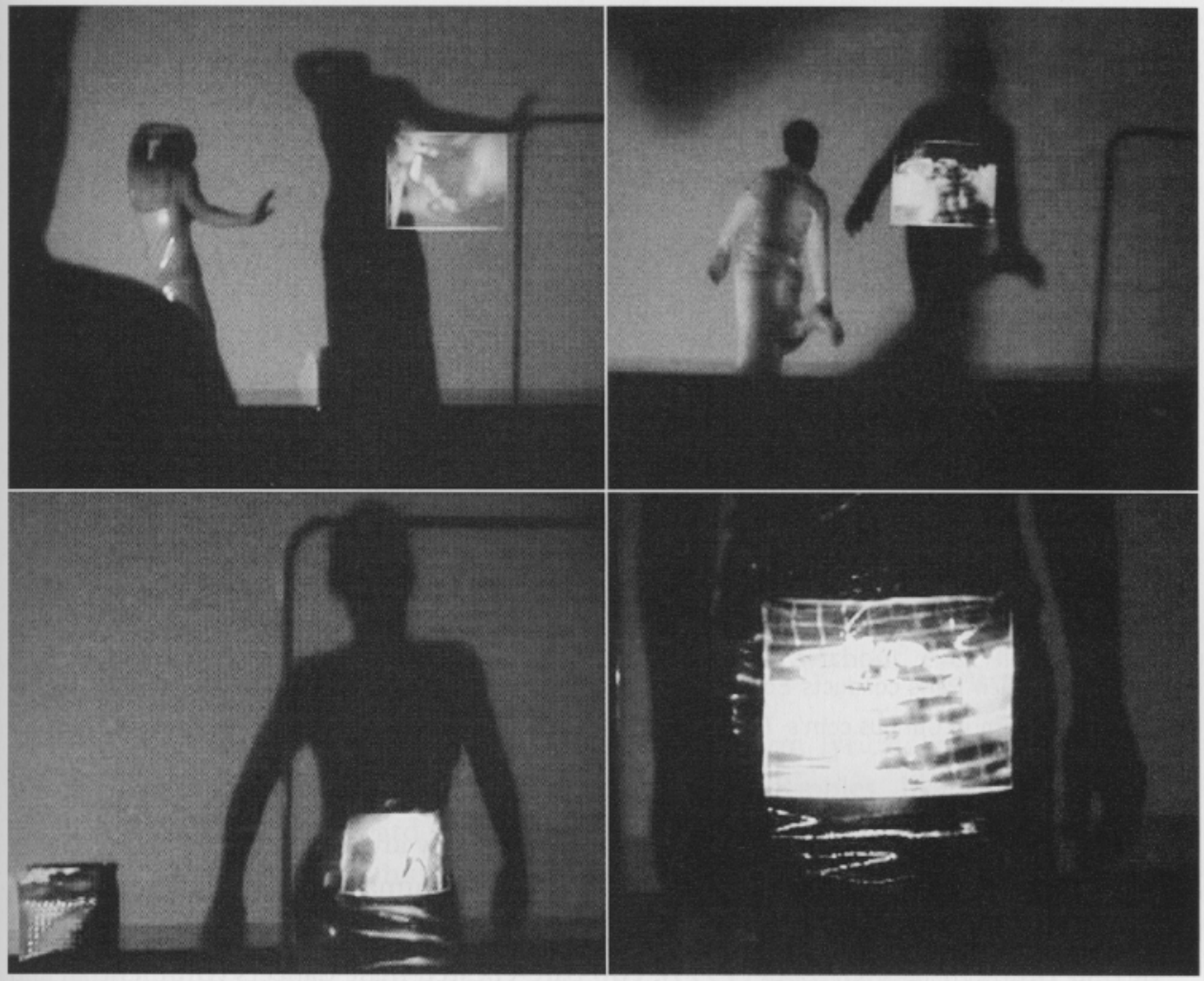

Figure 16.6 Sophia Lycouris dances around a projection before repeatedly submitting her body to its beam in *String* (2000).

Sophia Lycouris dances around and across a projection, and repeatedly reacts like it is an unwelcome memory or technological invasion as it is beamed onto her belly (figure 16.6). In Curious.com's theater production *The Day Don Came with the Fish* (1997), Helen Paris is caught in the projector's beam as an image of a man's face is directed onto a clear, six-inch diameter disk that hangs and spins slowly in front of her face. The male face fills the disc, and as the beam passes through it, the image is enlarged and projected onto Paris's face behind. In another sequence she provides hand gestures in accompaniment to a French recording of Edith Piaf's "Je Ne Regrette Rien" while a wave-pattern line provides another "interpretation." Its zigzag pattern rapidly contracts and expands, dancing across her face and body in synchronized response to Piaf's vocals, which suddenly hit a scratch in the record, jumping and continually repeating the word "*rien*" (nothing) (figure 16.7). The yellow-green line pattern is intensified later into vast swirls of rapidly mutating, tendril-like patterns that seem to consume a live figure standing in darkness onstage. The thin

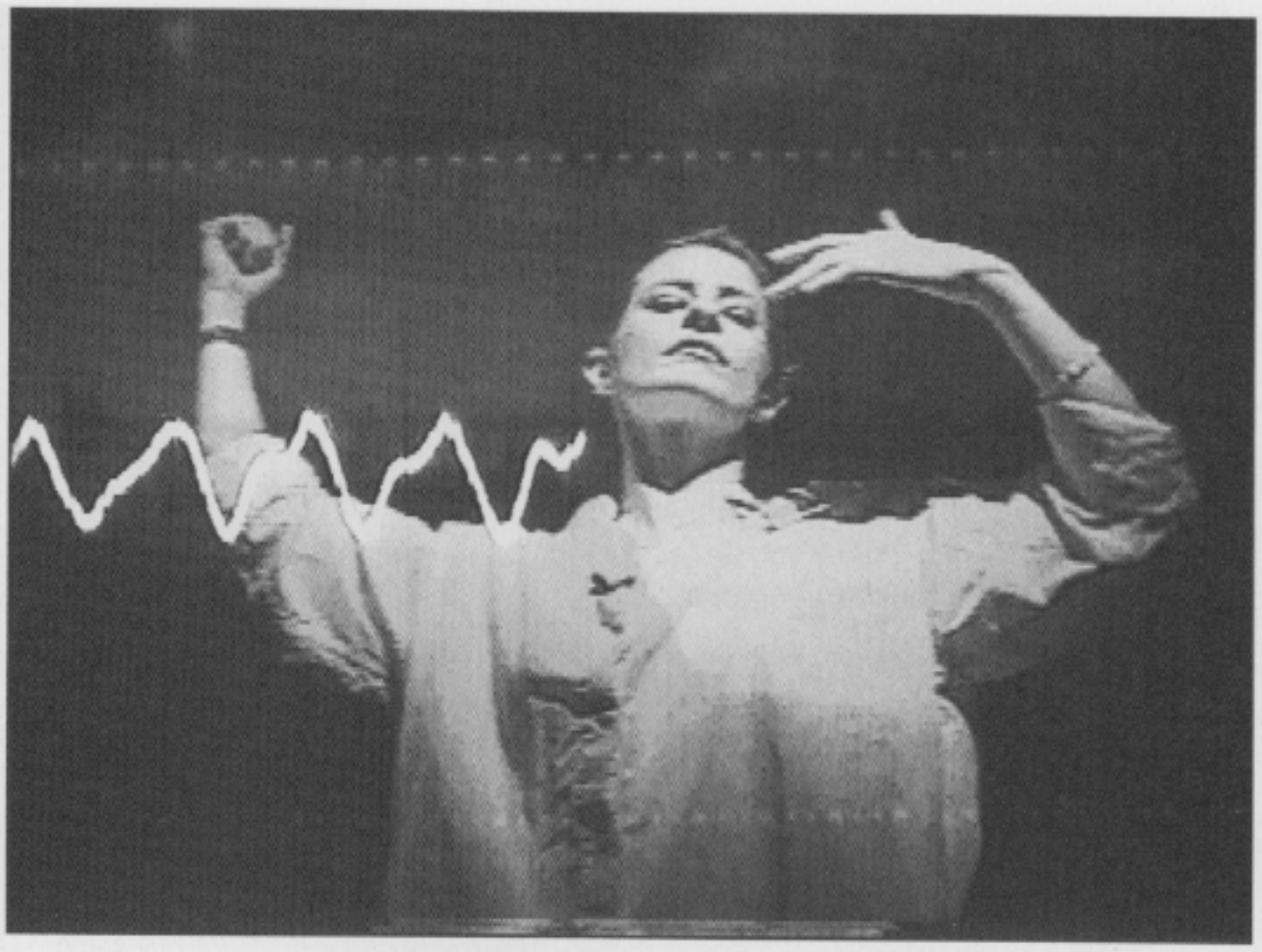

Figure 16.7 Helen Paris conducts Edith Piaf's "Je Ne Regrette Rien" in synchronization with a mutating zigzag wave pattern in Curious.com's *The Day Don Came With the Fish* (1997).

patterns of light, like animated scribbles, dance frantically around the body in an upside-down V pattern, recalling the robot Maria's electrical animation in Fritz Lang's movie *Metropolis* (1927).

In Bud Blumenthal's *Rivermen* (1999), two bare-chested male dancers (Blumenthal and Fernando Martín) move around a stage that is intermittently bathed in dramatic shafts and pools of light, and then divided into hard-edged, geometric shapes by overhead digital projections (designed by Antonin De Bemels). The downward projection system visually covers the dancers as though immersing them in aquatic and abstracted spaces; or sometimes focused side lighting illuminates their bodies, separating them from the pools of color and vividly transforming shapes on the floor on which they dance. The floor effects enhance both the sense of bodies wading, floating, running, and dancing through liquid and the aim to effect what Blumenthal calls a "poetic coherence" that underlies his digital dance aesthetic. Blumenthal conceives the performer-immersing digital effects in terms of a "third dancer" onstage, which, like the two live dancers, also appears to operate in three dimensions:

> With the special projection set-up the video image acquires a new status. It is no longer limited to the two dimensions of a screen. It becomes once again light. It constitutes a moving surface supporting the dance and acts upon the dancers' bodies, transforming them, integrating them into its own structure. . . . The surface reveals itself to be a third partner. A third body is an extension of the dancers' bodies and vice versa . . . resulting in the creation of a harmonious ensemble that is at

times put in danger by one of its constituents. A violent ritual leading to a greater adhesion between three bodies. . . . The video is temporal—developing in time like the dance, like a river, like music. . . . The sound, dance and décor move as one event.[15]

The claim is not hyperbolic, and watching *Rivermen* compels and draws one in, enveloping the audience (as the projection effects do to the performers) in rich visual, aural, and choreographic textures. As they caress the performers and bathe the space, the light effects and graphic forms seem to unfold like pieces of sheer silk or heavy, velvet material—as phenomena with weight rather than simply of light. The electronic soundtrack is equally dense and weighty, mixing cicada-like effects, deep-space sci-fi atmospherics, classical music influences, and techno-beats. Circular overhead projections provide shimmering visual pools of rippling blue water, as the dancers move in fluid and expressive choreography, like underwater creatures. In a contrasting section, the dancers intertwine, fight, and mirror one another inside an oblong projection on the floor, its colors flecked and straited by narrow, vibrating lines that move and scan along the surface, creating a distinctly electronic image like a television being tuned without ever finding a clear signal.

In a beautiful, evocative section the two men perform lyrical, extended movement phrases inside a green-yellow, hard-edged floor shape. Ripples, like tiger-skin striped waves, encroach inward toward them from the sides, moving in different directions, some hard-edged, others softer, immersing the two dancers as they move in contact, in slow motion (figure 16.8). The ripples wriggle like snakes as planes of light open and close, fan out, contract, and expand, taking on a life of their own. The projection becomes

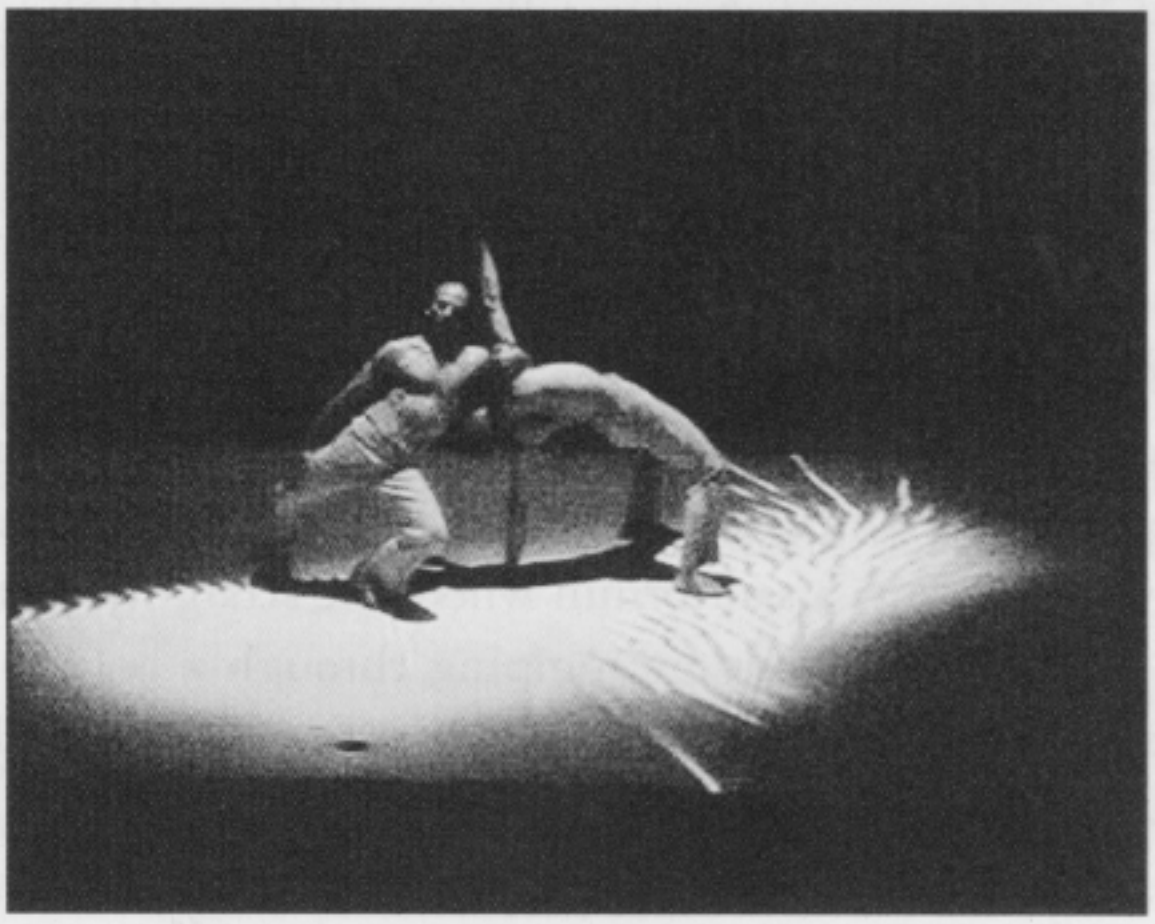

Figure 16.8 Bud Blumenthal and Fernando Martín are immersed in rippling "liquid light" in *Rivermen* (1999).

smaller, focussing and concentrating attention on the dancers, illuminating only their tiny figures in the vast darkness of the stage. Then quite suddenly it expands, its light-play flooding the whole stage with aquatic ripples, an effect like a view from underwater, looking up at the wavy surface as the sun breaks out from the clouds above. The two dancers slowly arch their backs and extend their limbs in a contact sequence to the hypnotic, meditative sound of a pulsing, modulated musical note. The sound transforms to a sustained tone, like a signal frequency, and so do the projections and the choreography, as the dancers split from their intimate duet and take positions at either side of the stage in a green (stage right) and violet oblong (stage left). Separating the two shapes down the centre line of the stage floor is a buzzing, waving white line like an electrical charge or branch of fork lighting. Water has become fire, and the choreography emphasizes the changing dynamic, the men dancing with angular, muscular movements until their hands finally meet over the fizzing white line, which suddenly fades away.

Fracturing Space

Slavoj Žižek describes virtual space in topological terms as "a hole in reality," a type of supernatural fracture in the fabric of space that is always just out of view, "a floating anamorphotic shimmer, only accessible with a glance over the corner of one's eye."[16] When virtual spaces, objects, or bodies are projected into performance spaces, a similar sense of a "fracture in the fabric of space" can often be discerned; one "reality" (stage, site, or installation) is punctured by another "reality" (a digital image or representation). Equally, performance companies may use this virtual hole in reality not to differentiate the two realities but to combine them; using the doubling of space synergetically to demarcate a new, unified "mixed reality" space.

The members of British art and theater collective Talking Birds are particularly fond of holes and fractures in space, and describe their aim as "the transformation of spaces, both real and constructed."[17] Four projections on gauze screens create a zoetrope effect at the climax of their story of a traumatized nuclear scientist and a wall-of-death rider, *Persistence of Vision* (2000); and a three-layer staging was created for *Smoke, Mirrors and the Art of Escapology* (1998) including an understage (and unseen) futuristic prison. Its story is told through soundscapes, and video projections directed vertically from below through a perspex "ice" sheet and onto a curved perspex screen suspended three meters above the stage. The stage level represents a sanitorium where the straightjacketed wife of Houdini attempts her own form of escapology by jumping through a hole in the floor ice-sheet. The level above the stage is the space where a prisoner from below finally makes his escape in classic conjuror style, climbing up a rope and disappearing.

A sense of space and place is disrupted threefold in Frank Abbot's *Displace* (2000). A shaky, blurred 360-degree video pan of a valley on the Isle of Skye is projected within an installation/performance room, using a rotating projector on a robotic camera surveillance platform. Video-mixed into this shot is another circular camera pan, a prerecording of the

same installation room the audience is in, but empty. At the same time, a live robot camera suspended in the middle of the space pans around audience members who stand against the walls, and provides webcast viewers with a third space and time perspective.

Digital Fractures in Public Spaces

Space is a practiced place. Thus the street geometrically defined by urban planning is transformed into a space by walkers. In the same way, an act of reading is a space produced by the practice of a particular place: a written text, i.e.: a place constituted by a system of signs.
—MICHEL DE CERTEAU[18]

In site-specific digital performance, Žižek's notion of a hole in reality is often strongly pronounced, as virtual objects and environments appear in places they are least expected, "puncturing" preconceptions of the physical environment. The digital incursion into physical space undermines traditional, fundamental ideas of site, space, and place as expressed, for example, by Michel de Certeau, who reads place "as an ordered and ordering system . . . defined by its internal stability":[19]

A place [*lieu*] is the order (of whatever kind) in accordance with which elements are distributed in relationships of coexistence. It thus excludes the possibility of two things being in the same location [*place*]. The law of the "proper" rules in the place: the elements taken into consideration are *beside* one another, each situated in its own "proper" and distinct location, a location it defines.[20]

For Nick Kaye, precise notions of site and place in site-specific art have always been problematic, whether or not they incorporate virtual technologies: "the more directly the site is pressed toward, the more elusive and complex this point of definition proves to be."[21] He notes how this issue is further exacerbated in the documentation of live site-specific art and performance, and makes a point equally germane to our understanding of how digital images and environments operate when situated within site-specific contexts:

In the writing of non-place over place, the troubling of oppositions between virtual and real spaces, in the implication of the map in the production of its object, the eroding of the material integrity of the art object, and in the uncovering of processes of slippage, deferral and indeterminacy, these practices approach their various sites in a blurring of the distinctions under which a work's integrity and place is fixed.[22]

It is interesting to relate these ideas to a piece such as Susan Collins's innovative and delightful *In Conversation* (1997) which "exists simultaneously in three locations: on the World Wide Web, in the gallery, and on the street."[23] Passers-by in the English seaside town of Brighton encounter the image of a speaking, animated mouth, which is projected onto the sidewalk, its voice amplified through loudspeakers (figure 16.9). The mouth

Figure 16.9 Web camera view of passers-by in Brighton stopping to observe and converse with a projection of a speaking mouth on the sidewalk in Susan Collins's *In Conversation* (1997).

speaks the words of online users watching the street in real time via a hidden surveillance webcam, whose text messages are spoken by the mouth through text-to-speech software. The mouth becomes a virtual intermediary (Collins draws comparisons with séance mediums) and literal mouthpiece for the real-time conversations that ensue between the remote interactors and the frequently bemused people on the street. The live surveillance footage is also projected onto a large screen inside Brighton's Fabrica Gallery, "framing the action outside cinematically, a drama unfolding in real time."[24]

The disembodied mouth, particularly at night, is a surreal, compelling, and crowd-attracting presence. When first exhibited in 1997, people kept returning to it on the street day after day to continue conversations, and it attracted equal popularity with the many voices behind it on the web, with the site recording more than a thousand daily hits. The mouth's dialogue frequently mixed and combined different users' real-time text messages (with the normal 10–20 second network chat delay), and "slippages and imperfections became integral to the work, as sometimes words stumbled out on top of each other to form an unintentional collective sentence, usually irrevocably altering the original intended meaning."[25] Street participants heard only one voice, however, *Victoria*, one of the selection of Mac OS computerized voices, chosen by Collins for its apparent androgyny.

The "voice" performing these messages could be quite persuasive, if not manipulative. A man on his way home, while the piece was installed in Amsterdam, found himself captivated . . . repeatedly trying to leave, only to be called back, compelled by this computerized disembodied voice. The online visitor (quite possibly made up of more than one person in more than one location) eventually asks him for a kiss, following which the man is seen bending over to kiss the projection of the mouth on the pavement.

On occasion, for instance if it was raining and there were no pedestrians, the online users would take over, communicating directly to each other and turning the whole street into a chat channel. On other occasions they would encourage their partners in the street to perform—quiet literally to sing or dance—sometimes using the text dialogue to create percussive, rhythmic "music."[26]

In "The Actual and the Imagined," Collins argues that just as Oliver Grau conceptualizes classical *trompe l'oeil* architecture as a collage of illusionistic space and physical space,[27] works such as *In Conversation* collage several physical spaces with virtual space to create illusions which are as much psychological as they are visual or aural. *In Conversation* exists in and across different kinds and forms of spaces—physical, virtual, public, and private—and its experience is perceived quite differently depending on the space where the participant is. Moreover, "these spaces provided not only the ideological context for the piece but became part of the work itself, requiring an active engagement from viewers in order for the work to exist."[28] She then poses a crucial question: "So where, ultimately, is the work?" and concludes that "uncontained and with no fixed viewpoint, the work becomes effectively located everywhere and nowhere."[29] This "everywhere and nowhere" artistic conception of space has been posited many times in relation to telematic and online artworks and is a seductively simple, but ultimately vague and misleading position. Networked technologies certainly link and connect different places enabling remote communication, image and sound transfer, and so on, but the physical location of the participant remains the overriding spatial position of both the artwork and the viewing subject.

For the pedestrian encountering *In Conversation*, the artwork (the mouth) is in an exact and specific spatial position on the sidewalk; for the Web interactor, the artwork also exists in a specific space: the computer screen at their home (or wherever they happen to be) (figure 16.10). While the online participant is conscious that they are watching and communicating with another space, it too is quite specific (not "everywhere and nowhere"): the street area framed and captured by the surveillance camera. The pedestrian may wonder where the voice comes from, but will be in little doubt that it is simply linked to someone (or some computer) watching somewhere out of view; he or she is certainly unlikely to mistake the voice for some supernatural or godlike everywhere and nowhere presence. Networked interactive artworks no more collapse or dissolve spatial realities than telephone conversations do: rather, they connect spaces and transfer data between them.

This is not to diminish the power and charm of *In Conversation* or the importance and originality of such artworks. But Collins's spatial innovation has nothing to do with

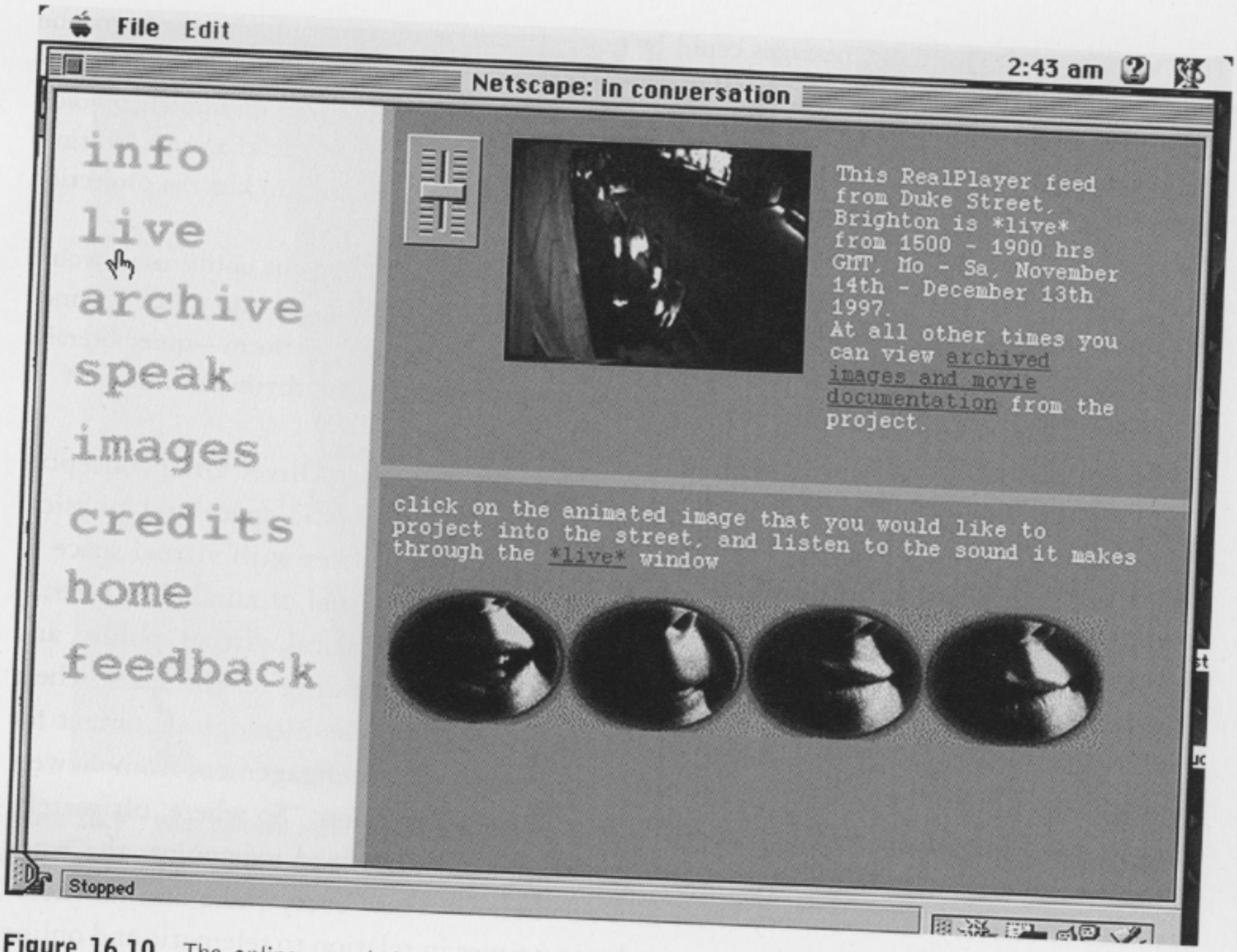

Figure 16.10 The online users' view of *In Conversation* showing the mouth, street webcam, and various interactive menus.

everywhere and nowhere. On the contrary, the originality and success of the piece derives from spatial specificity, the wonderful idea of projecting a computerized, talking mouth in a place where it is wholly unexpected—on a public sidewalk—where it engages with all who pass by and thereby reaches people outside traditional gallery visitors. It derives its originality as a *site-specific* interactive artwork, not a non-site-specific one, as she tries to maintain.

Site-Specific Holes in Reality

Notable large-scale events bringing digital fractures into site-specific public spaces include Desperate Optimists' *Urban Shots* (1999) set in the large outdoor car park of a large abandoned tower in Jena, Germany. Seen by more than ten thousand people, it included a live video feed, 16 mm film, stunts, a live band, and trained, performing police dogs. For Rafael Lozano-Hemmer's *Vectorial Elevation* (1999–2000), huge light sculptures were built in Mexico City's Zocalo Square and were activated by Web participants; and

in *Body Movies* (2001) he surrounded Rotterdam's 1,200-square-meter Schouwburgplein Square with giant projections beamed by robotically controlled projectors that cast images of people from around the world onto screens and the square's walls:

> However, the portraits were faded out by powerful lights on the floor of the square and became visible only if passers-by threw shadows onto the walls, which made the portraits appear inside their silhouettes. While the project itself has a distinctly performative aspect, it gained new dimensions when people repeatedly returned to the site to stage their own gigantic shadow plays.[30]

Projected movement motifs and video imagery of derelict land in Chicago provides the background for the Anatomical Theatre's dance production *In Effect Invisible* (1994). Onscreen dancers crawl through boarded windows and walk barefoot through alleys strewn with broken glass as they navigate the forgotten areas and crumbling edifices of the city. Streb Company's outdoor circuslike dance performance *PopAction* (1995) centers on an Olympic-size trampoline and a padded pit flanked by twenty-foot scaffolding towers. The six dancers jump from the towers and flip and somersault on the trampoline, triggering sensors to activate a range of MIDI audio samples including gunfire and breaking glass. For *ActionHeroes* (2000), their celebration of American stunt artists and daredevils such as Evel Knievel, Cannonball Joe, and Annie Taylor, a moveable performance space Elizabeth Streb calls a "box truss power pocket" was employed, which incorporated moving walls and "maverick screens" onto which digital projections were beamed.

Public buildings have provided the location for some arresting performances where digital media has disrupted the normal day-to-day perception of space and reality. Keith Armstong's collaborative project *#14* (1996) took place in the heritage listed Spring Hall Baths in Brisbane, Australia, where the empty pool shell was flooded with computer projections, while the audience watched from the balconies above. Drawing on the pool's history, the performance also explored wider issues of space, gender, and personal and spatial boundaries (figure 16.11). In *Body Spaces* (2000) Petra Kupper's The Olimpias company worked with young disabled people to create three site-specific installation spaces within a large hospital in Manchester, England. Pathways defined both by floor images of footsteps and the traces of a wheelchair wheel were marked on the floor. Visitors moved through motion-sensor activated environments triggering digital video projections and *Director*-programmed multimedia sequences on hanging screens, as well as photographs and textual fantasy narrative exhibits. The piece beautifully explores the graceful movements of wheelchairs and the aesthetics of disabled dance, and provides new perspectives on everyday hospital spaces, their signs and objects.

Andrea Polli's international collaborative project *The Observatory* (1997) is set in the cylindrical tower of an eighteenth-century observatory in Lithuania and uses line-tracker robots controlled by performers which draw complex lines and patterns in black chalk around the space. Polli suggests that "the cylindrical tower space served symbolically as

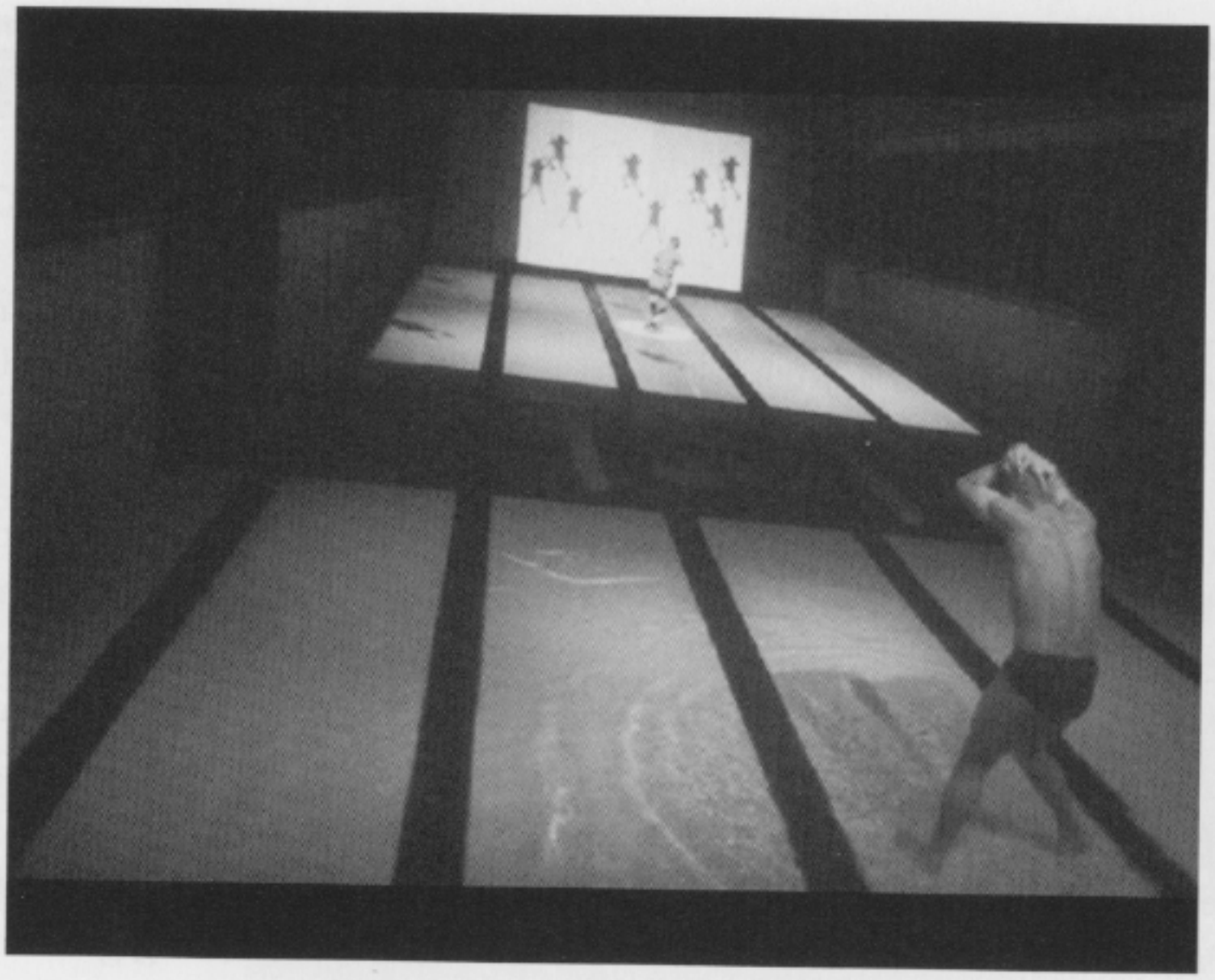

Figure 16.11 "Liquid architecture" is created using varied imaginative projections to transform an empty public swimming pool in *#14* (1996), Keith Armstrong's collaborative project with #14 collective.

interior mind space and in this performance the chalk marks left as a record of an event could be seen as a map of the mind."[31] Clubs, bars, and discotheque spaces have been used (and theater spaces have been transformed to resemble them) for new-wave events which fuse performance, digital video-jockeying (VJ-ing) and a club experience, such as Barriedale Operahouse's *Cay—admit possibilities* (1998), a five-hour event mixing DJ-ing, VJ-ing, dance, and digital media projections. La Fura dels Baus describe their *Foc Forn* (1992) as "the first discotheque in the world where the music was played by robots. The first where an artificial rain refreshed the people. The first where the robots and the audience were melted in an oven."[32] Staged within a large artificial structure, this "discotheque without music" was programmed by a computer that also controlled robot DJs within the space.

Self-styled "Slavic pixel princesses" Slavica Ceperkovic and Michelle Kasprzak use real-time video-scratching techniques to create humorous and ironic montages of television images of female domesticity, consumer culture, and cooking. Dressed in aprons, the two women stand side by side, each controlling their own video projector as they mix and scratch through four simultaneous digital video sources. Cooking programs and daytime television consumer features are the dominant video samples in their *take take, cake cake* (2000), which wittily satirizes the role of women as mothers and nurturers, placing them in a banal and unreal world of consumerism and television trash culture. Like digital VJ

versions of performance artist Bobby Baker, Ceperkovic and Kasprzak use their cooking demonstrations to satirize society's expectations of feminine domesticity, highlighting the role of the mass media in perpetuating the clichés and stereotypes. They also use cookery as a direct metaphor for their real-time digital video editing:

> Who says the cool digital simulacra have to be so completely tasteless? Might it depend on the "ingredients" and how they are put together? . . . Kneading shots—wrenched from their original rareified contexts—into new sequences, cutting in special ingredients where appropriate, folding the conventions of television in upon themselves. Is it simply humble electronic borsht or gloriously pixelly strudel?[33]

Conceptual Architectures: Joel Slayton

Joel Slayton's mammoth "drive-through" celebration of information theory and cultural identity, *DoWhatDo* (1992), takes place in a giant car park in San Jose, California, with audience members driving to vantage points in their automobiles. Two hundred performers, drawn from different communities, arts groups, and cultural organizations parade, skate, fence, and dance while their live camera images are projected on giant screens, including "a three-dimensional projection screen structure controlled by networked interactive multimedia computers. Live video-feeds of both performers and audience are composed with pre-recorded computer animation and digital movies through a real-time projection control system."[34] Meanwhile, looming above the crowds is a performer standing in the cradle of a crane, who provides a slick, though at times impenetrable, evangelist-style lecture on Gordon Pask's DoWhatDo information theory.[35] *Conduits* (1994), Slayton's sequel to *DoWhatDo*, was staged on the Palo Alto City Hall Plaza and used an elaborate computer-controlled set design "resembling an on-site movie set," and was designed as "a teleconferencing theatrical event exploring the function of public art and perceptions of cultural identity."[36]

For his *98.6 FM* (1992) performance, Slayton collaborated with choreographer Tandy Beal and deep space microwave artist Michael Heively to explore the history of television broadcasting as deep space transmission. A custom-designed interactive video-disk system with real-time processing of images provided projection onto a monitor wall onstage, and a computer translated the choreography, set design, and event logistics into binary code. Six microwave transmitters on stage beamed the digital information into space, toward the Cusp of Hercules constellation where, says Slayton "the deep space sculptural form will pass in 60,000 light years."[37] This particular "hole in space" notion is in one sense hilarious and absurd, a Dadaist statement for the technological age, but, in another, it is a wonderful piece of digital conceptualism. While it is easy to chuckle at the depth of postmodern irony of his idea (and Slayton has indeed a highly sophisticated sense of humor) at another level he is deadly serious. A digital performance "artwork" has been sent millions of miles away, where it may or may not be received and seen by someone or

something in sixty thousand years. It is a bold, distinctly neo-futurist gesture, an artistic exploration of the ontological potential of digital technology as an (outer) space-time arts communications medium.

In Slayton and the Californian CADRE Institute's *Panamint Launch at Lucky Jim Wash* (1999), experimental rockets were launched toward the China Lake Naval Weapons Testing Center in California's Death Valley from a desert site adjacent to it. The piece transposes Deleuze and Guattari's philosophical notions of lines of flight and lines of demarcation into the political contexts of war, polemical gestures, and the wider networks of military, satellite, and telecommunications systems. Slayton is a truly precious and unique artist/theorist/scientist who provides such idiosyncratic and futuristic theories and performance events that one sometimes wonders, quite complimentarily, whether he himself may be from another planet. As well as being one of the most distinct and original technological artists working today, he is also one of the sharpest techno-culture theorists and commentators. We will leave the last words of our discussion of site-specific performance and fractures in reality, quite appropriately, to him. His description of *Panamint Launch* provides a delightful insight into his avowedly political and conceptual approach to site-specific performance, as well as his distinctly macro thought processes.

> So what was this site-specific performance? The combination of the desert landscape (Baudrillard's American wasteland), guns (along with their close cousin, the camera), a military border (the mesh of stratified social and physical spaces), free flowing alcohol (or any intoxification feeding postmodernity), and explosives (intensifications that allow, among other things, bifurcation, lines of flight, instantiation and emergence), meshed with the art-historical romantic macho riskiness of our latent modernist models to yield the artwork known as the *Panamint Launch at Lucky Jim Wash*.[38]