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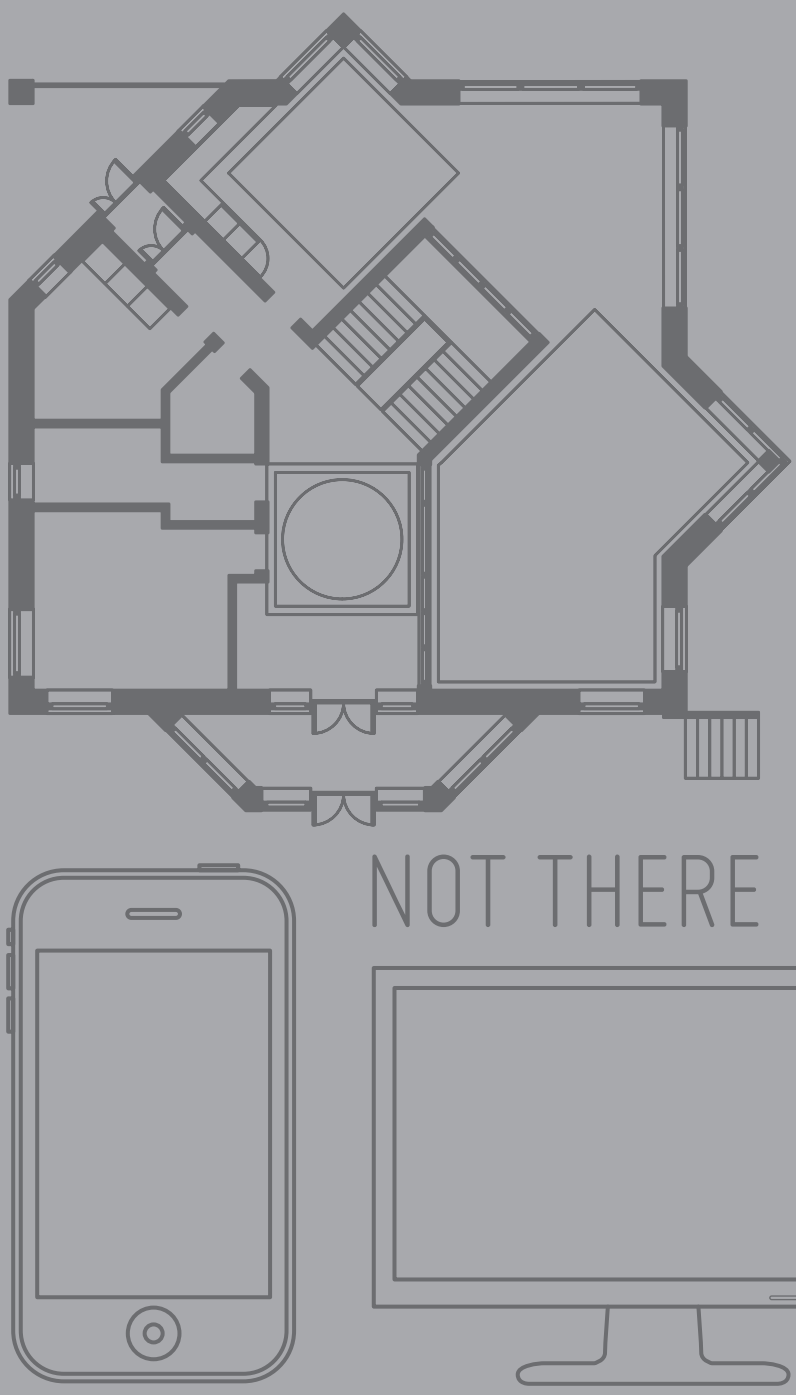
VOL 19 NO 2 VOLUME EDITORS **LANFRANCO ACETI** AND **RICHARD RINEHART**
EDITORS **ÖZDEN ŞAHİN**, **JONATHAN MUNRO** AND **CATHERINE M. WEIR**

This LEA publication has a simple goal: surveying the current trends in augmented reality artistic interventions. There is no other substantive academic collection currently available, and it is with a certain pride that LEA presents this volume which provides a snapshot of current trends as well as a moment of reflection on the future of AR interventions.



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LEONARDO ELECTRONIC ALMANAC, VOLUME 19 ISSUE 2

Not Here Not There

VOLUME EDITORS
LANFRANCO ACETI AND RICHARD RINEHART

EDITORS
ÖZDEN ŞAHİN, JONATHAN MUNRO AND CATHERINE M. WEIR

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KASA GALERİ

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Operational & Curatorial Research in Contemporary Art, Design, Science & Technology

Not Here, Not There: An Analysis Of An International Collaboration To Survey Augmented Reality Art

Every published volume has a reason, a history, a conceptual underpinning as well as an aim that ultimately the editor or editors wish to achieve. There is also something else in the creation of a volume; that is the larger goal shared by the community of authors, artists and critics that take part in it.

This volume of LEA titled *Not Here, Not There* had a simple goal: surveying the current trends in augmented reality artistic interventions. There is no other substantive academic collection currently available, and it is with a certain pride that both, Richard Rinehart and myself, look at this endeavor. Collecting papers and images, answers to interviews as well as images and artists' statements and putting it all together is perhaps a small milestone; nevertheless I believe that this will be a seminal collection which will showcase the trends and dangers that augmented reality as an art form faces in the second decade of the XXIst century.

As editor, I did not want to shy away from more critical essays and opinion pieces, in order to create a documentation that reflects the status of the current thinking. That these different tendencies may or may not be proved right in the future is not the reason for the collection, instead what I believe is important and relevant is to create a historical snapshot by focusing on the artists and authors developing artistic practices and writing on augmented reality. For this reason, Richard and I posed to the contributors a series of questions that in the variegated responses of the artists and authors will evidence and stress similarities and differences, contradictions and behavioral approaches. The interviews add a further layer of documentation which, linked to the artists' statements, provides an overall understanding of the hopes for this new artistic playground or new media extension. What I personally wanted to give relevance to in this volume is the artistic creative process. I also wanted to evidence the challenges faced by the artists in creating artworks and attempting to develop new thinking and innovative aesthetic approaches.

The whole volume started from a conversation that I had with Tamiko Thiel – that was recorded in Istanbul at Kasa Gallery and that lead to a curatorial collaboration with Richard. The first exhibition *Not Here* at the Samek Art Gallery, curated by Richard Reinhart, was juxtaposed to a response from Kasa Gallery with the exhibition *Not There*, in Istanbul. The conversations between Richard and myself produced this final volume – *Not Here, Not There* – which we both envisaged as a collection of authored papers, artists' statements, artworks, documentation and answers to some of the questions that we had as curators. This is the reason why we kept the same questions for all of the interviews – in order to create the basis for a comparative analysis of different aesthetics, approaches and processes of the artists that work in augmented reality.

When creating the conceptual structures for this collection my main personal goal was to develop a link – or better to create the basis for a link – between ear-

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lier artistic interventions in the 1960s and the current artistic interventions of artists that use augmented reality.

My historical artist of reference was Yayoi Kusama and the piece that she realized for the Venice Biennial in 1966 titled *Narcissus Garden*. The artwork was a happening and intervention at the Venice Biennial; Kusama was obliged to stop selling her work by the biennial's organizers for 'selling art too cheaply.'

"In 1966 [...] she went uninvited to the Venice Biennale. There, dressed in a golden kimono, she filled the lawn outside the Italian pavilion with 1,500 mirrored balls, which she offered for sale for 1,200 lire apiece. The authorities ordered her to stop, deeming it unacceptable to 'sell art like hot dogs or ice cream cones.'" [1]

The conceptualization and interpretation of this gesture by critics and art historians is that of a guerrilla action that challenged the commercialization of the art system and that involved the audience in a process that revealed the complicit nature and behaviors of the viewers as well as use controversy and publicity as an integral part of the artistic practice.

Kusama's artistic legacy can perhaps be resumed in these four aspects: a) engagement with audience's behaviors, b) issues of art economy and commercialization, c) rogue interventions in public spaces and d) publicity and notoriety.

These are four elements that characterize the work practices and artistic approaches – in a variety of combinations and levels of importance – of contemporary artists that use augmented reality as a medium. Here, is not perhaps the place to focus on the role of 'publicity' in art history and artistic practices, but a few words have to be spent in order to explain that publicity for AR artworks is not solely a way for the artist to gain notoriety, but an integral part of the artwork, which in order to come into existence and generate interactions and engagements with the public has to be communicated to the largest possible audience.

"By then, Kusama was widely assumed to be a publicity hound, who used performance mainly as a way of gaining media exposure." [2] The publicity obsession, or the accusation of being a 'publicity hound' could be easily moved to the contemporary group of artists that use augmented reality. Their invasions of spaces, juxtapositions, infringements could be defined as nothing more than publicity stunts that have little to do with art. These accusations would not be just irrelevant but biased – since – as in the case of Sander Veenhof's analysis in this collection – the linkage between the existence of the artwork as an invisible presence and its physical manifestation and engagement with the audience can only happen through knowledge, through the audience's awareness of the existence of the art piece itself that in order to achieve its impact as an artwork necessitates to be publicized.

Even if, I do not necessarily agree with the idea of a 'necessary manifestation' and audience's knowledge of the artwork – I believe that an artistic practice that is unknown is equally valid – I can nevertheless understand the process, function and relations that have to be established in order to develop a form of engagement and interaction between the AR artwork and the audience. To condemn the artists who seek publicity in order to gather audiences to make the artworks come alive is perhaps a shortsighted approach that does not take into consideration the audience's necessity of knowing that interaction is possible in order for that interaction to take place.

What perhaps should be analyzed in different terms is the evolution of art in the second part of the XXth century, as an activity that is no longer and can no longer be rescinded from publicity, since audience engagement requires audience attendance and attendance can be obtained only through communication / publicity. The existence of the artwork – in particular of the successful AR artwork – is strictly measured in numbers: numbers of visitors, numbers of interviews, numbers of news items, numbers of talks, numbers of interactions, numbers of clicks, and, perhaps in a not too distant future, numbers of coins gained. The issue of being a 'publicity hound' is not a problem that applies to artists alone, from Andy Warhol to Damien Hirst from Banksy to Maurizio Cattelan, it is also a method of evaluation that affects art institutions and museums alike. The accusation moved to AR artists of being media whores – is perhaps contradictory when arriving from institutional art forms, as well as galleries and museums that have celebrated publicity as an element of the performative character of both artists and artworks and an essential element instrumental to the institutions' very survival.

The publicity stunts of the augmented reality interventions today are nothing more than an acquired methodology borrowed from the second part of the XXth century. This is a stable methodology that has already been widely implemented by public and private art institutions in order to promote themselves and their artists.

Publicity and community building have become an artistic methodology that AR artists are playing with by making use of their better knowledge of the AR media. Nevertheless, this is knowledge born out of necessity and scarcity of means, and at times appears to be more effective than the institutional messages arriving from well-established art organizations. I should also add that publicity is functional in AR interventions to the construction of a community – a community of aficionados, similar to the community of 'nudists' that follows Spencer Tunic for his art events / human installation.

I think what is important to remember in the analysis of the effectiveness both in aesthetic and participatory terms of augmented reality artworks – is not their publicity element, not even their sheer numbers (which, by the way, are what has made these artworks successful) but their quality of disruption.

The ability to use – in Marshall McLuhan's terms – the medium as a message in order to impose content bypassing institutional control is the most exciting element of these artworks. It is certainly a victory that a group of artists – by using alternative methodological approaches to what are the structures of the capitalistic system, is able to enter into that very capitalistic system in order to become institutionalized and perhaps – in the near future – be able to make money in order to make art.

Much could be said about the artist's need of fitting within a capitalist system or the artist's moral obligation to reject the basic necessities to ensure an operational professional existence within contemporary capitalistic structures. This becomes, in my opinion, a question of personal ethics, artistic choices and existential social dramas. Let's not forget that the vast majority of artists – and AR artists in particular – do not have large sums and do not impinge upon national budgets as much as banks, financial institutions, militaries and corrupt politicians. They work for years

1. David Pilling, "The World According to Yayoi Kusama," *The Financial Times*, January 20, 2012, http://www.ft.com/cms/s/2/52ab168a-4188-11e1-8c33-00144feab49a.html#axzz1kDck8rzm (accessed March 1, 2013).

2. Isabelle Loring Wallace and Jennie Hirsh, *Contemporary Art & Classical Myth* (Farnham; Burlington, VT: Ashgate, 2011), 94.

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with small salaries, holding multiple jobs and making personal sacrifices; and the vast majority of them does not end up with golden parachutes or golden handshakes upon retirement nor causes billions of damage to society.

The current success of augmented reality interventions is due in small part to the nature of the medium. Museums and galleries are always on the lookout for 'cheap' and efficient systems that deliver art engagement, numbers to satisfy the donors and the national institutions that support them, artworks that deliver visibility for the gallery and the museum, all of it without requiring large production budgets. Forgetting that art is also about business, that curating is also about managing money, it means to gloss over an important element – if not the major element – that an artist has to face in order to deliver a vision.

Augmented reality artworks bypass these financial challenges, like daguerreotypes did by delivering a cheaper form of portraiture than oil painting in the first part of the XIXth century, or like video did in the 1970s and like digital screens and projectors have done in the 1990s until now, offering cheaper systems to display moving as well as static images. AR in this sense has a further advantage from the point of view of the gallery – the gallery has no longer a need to purchase hardware because audiences bring their own hardware: their mobile phones.

The materiality of the medium, its technological revolutionary value, in the case of early augmented reality artworks plays a pivotal role in order to understand its success. It is ubiquitous, can be replicated everywhere in the world, can be installed with minimal hassle and can exist, independently from the audience, institutions and governmental permissions. Capital costs for AR installations are minimal, in the order of a few hundred dollars, and they lend themselves to collaborations based on global networks.

Problems though remain for the continued success of augmented reality interventions. Future challenges are in the materialization of the artworks for sale, to name an important one. Unfortunately, unless the relationship between collectors and the 'object' collected changes in favor of immaterial objects, the problem to overcome for artists that use augmented reality intervention is how and in what modalities to link the AR installations with the process of production of an object to be sold.

Personally I believe that there are enough precedents that AR artists could refer to, from Christo to Marina Abramovich, in order develop methods and frameworks to present AR artworks as collectable and sellable material objects. The artists' ability to do so, to move beyond the fractures and barriers of institutional vs. revolutionary, retaining the edge of their aesthetics and artworks, is what will determine their future success.

These are the reasons why I believe that this collection of essays will prove to be a piece, perhaps a small piece, of future art history, and why in the end it was worth the effort.

Lanfranco Aceti
Editor in Chief, Leonardo Electronic Almanac
Director, Kasa Gallery

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Site, Non-site, and Website

In the 1960's, artist Robert Smithson articulated the strategy of representation summarized by "site vs. non-site" whereby certain artworks were simultaneously abstract and representational and could be site-specific without being sited. A pile of rocks in a gallery is an "abstract" way to represent their site of origin. In the 1990's net.art re-de-materialized the art object and found new ways to suspend the artwork online between website and non-site. In the 21st century, new technologies suggest a reconsideration of the relationship between the virtual and the real. "Hardlinks" such as QR codes attempt to bind a virtual link to our physical environment.

Throughout the 1970's, institutional critique brought political awareness and social intervention to the site of the museum. In the 1980's and 90's, street artist such as Banksy went in the opposite direction, critiquing the museum by siting their art beyond its walls.

Sited art and intervention art meet in the art of the trespass. What is our current relationship to the sites we live in? What representational strategies are contemporary artists using to engage sites? How are sites politically activated? And how are new media framing our consideration of these questions? The contemporary art collective ManifestAR offers one answer,

> *"Whereas the public square was once the quintessential place to air grievances, display solidarity, express difference, celebrate similarity, remember, mourn, and reinforce shared values of right and wrong, it is no longer the only anchor for interactions in the public realm. That geography has been relocated to a novel terrain, one that encourages exploration of mobile location based monuments, and virtual memorials. Moreover, public space is now truly open, as artworks can be placed anywhere in the world, without prior permission from government or private authorities – with profound implications for art in the public sphere and the discourse that surrounds it."*

ManifestAR develops projects using Augmented Reality (AR), a new technology that – like photography before it – allows artists to consider questions like those above in new ways. Unlike Virtual Reality, Augmented Reality is the art of overlaying virtual content on top of physical reality. Using AR apps on smart phones, iPads, and other devices, viewers look at the real world around them through their phone's camera lens, while the app inserts additional images or 3D objects into the scene. For instance, in the work *Signs over Semiconductors* by Will Pappenheimer, a blue sky above a Silicon Valley company that is "in reality" empty contains messages from viewers in skywriting smoke when viewed through an AR-enabled Smartphone.

AR is being used to activate sites ranging from Occupy Wall Street to the art exhibition ManifestAR @ ZERO1 Biennial 2012 – presented by the Samek Art Gallery simultaneously at Bucknell University in Lewisburg, PA and at Silicon Valley in San Jose, CA. From these contemporary non-sites, and through the papers included in this special issue of LEA, artists ask you to reconsider the implications of the simple question *wayn* (where are you now?)

Richard Rinehart
Director, Samek Art Gallery, Bucknell University

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“Image as Place”

The Phenomenal Screen in Kit Galloway & Sherrie Rabinowitz’s *Satellite Arts 1977*

by

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ABSTRACT

This paper examines the phenomenal effects of Kit Galloway and Sherrie Rabinowitz’s 1977 satellite artwork, Satellite Arts 1977. *Most accounts of live feedback video works from the 1970s stress the “narcissism” of the encounter with one’s own body on the screen. This essay, however, argues that while* Satellite Arts *does collapse the distinction between self and other, it does not result in the narcissism Rosalind Krauss claims is inherent to video.* Satellite Arts, *instead, models a version of Maurice Merleau-Ponty’s “chiasm,” and diagrams what phenomenological experience might be like when mediated through a television screen. In doing so, Galloway and Rabinowitz hypothesize an ethics of engagement with others in mediated environments. Through their interventions in time, space, and place Galloway and Rabinowitz model what it might be like to be simultaneously real and virtual, self and other, subject and object, seer and seen, here and there, now and then.*

In 1975, artists Kit Galloway and Sherrie Rabinowitz applied for funding from an unusual source, the National Aeronautics and Space Agency (NASA). NASA had just issued a call for proposals from non-profit groups that wished to experiment with the American–Canadian CTS satellite. Galloway and Rabinowitz quickly returned to the United States from Paris, where they had been living, and within a few months they had secured NASA’s cooperation for *Satellite Arts 1977*, one of the earliest artistic experiments with satellite technology. [1] Working under the name Mobile Image, Galloway and Rabinowitz used NASA’s satellites, staff, and equipment at the Ames Research Center in Mountain View, California and the Goddard Space Flight Center in Greenbelt, Maryland to link sets of dancers in the two cities. They created a bi-directional, bi-coastal, real-time television link between the two locations. The artists did not simply put the remote participants in audio-visual contact by using the monitor as a ‘window’ onto another place, or adopt the split-screen format of conventional television broadcasts, which manifest physical distance as a graphic divide in the image. [2] Instead, they transformed the television screen into an immersive space for embodied interaction, and modeled a new technologically enabled way of being in the world. [3] Through its interventions in time, space, and place, I will argue, *Satellite Arts* models a version of Maurice Merleau-Ponty’s “chiasm,” and diagrams what phenomenological experience might be like in the space age. In doing so, Galloway and Rabinowitz hypothesize an ethics of engagement with others in mediated environments. They imagine what it might be like to be simultaneously real and virtual, self and other, subject and object, seer and seen, here and there, now and then.

SATELLITES IN ’77

1977 marked the 20-year anniversary of the Soviet Union’s launch of *Sputnik 1*, which catalyzed the space race and the Cold War. Five years later, the United States followed the Russians into orbit with the first telecommunications satellite, *Telstar*. If *Sputnik* indicated that man had conquered space by creating an object that could escape Earth’s atmosphere and briefly colonize a small swath of the cosmos, *Telstar*, and the other telecommunication satellites that quickly followed, demonstrated man’s conquering of time: the new technology enabled instantaneous, real-time audio and visual contact between distant sites, joining them in a simultaneous ‘now.’ [4]

Man’s sudden mastery of both space and time was put on display in the mid-1960s in a series of satellite ‘spectaculars.’ These live television events illustrated the power of satellite telecommunications to connect far-flung people and places. While the producers of programs such as *Our World* (1967), a live, global satellite program about the world’s exploding population, claimed to show images of global unity and the harmonious interconnectedness of the world’s diverse peoples, Lisa Parks argues in *Cultures in Orbit: Satellites and the Televisual* that satellite spectaculars, in fact, did just the opposite: they highlighted how the fantasy of a “global present” as enabled by satellite

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technology was steeped in "Western discourses of modernization, global unity, and planetary control." [5] While claiming to create a McLuhanesque "global village" by using satellites to link geographically and culturally separated places and peoples, *Our World* actually "divided the world once again" by emphasizing the difference between life in the various hemispheres, and making it clear that the "industrialized" and "free" North and West stood against the "hungry" and "developing" South and East. [6] That is, while ostensibly aiming to bring together approximately 500 million viewers from 30 nations, *Our World* dramatized distance, difference, and otherness by means of the technology that only a few countries had. [7] Moreover, the millions of viewers of *Our World* (who were located primarily in the privileged, satellite-owning North and West) were not put in contact or joined together by the satellite transmissions. They were mere witnesses to the functioning of the space-age technology. Viewers watched the hosts of the show connect the 'here' of the television studio, to the various 'there' of the satellite uplink sites. The viewers were neither here nor there; they were on the outside looking onto a "global now" that did not include them. Televisual transmission may have achieved transcontinental instantaneity, but its multi-directionality did not include the audience in any of its vectors.

1977 also marked the year in which the first satellite artworks 'launched.' Galloway and Rabinowitz, along with several other contemporary artists, began experimenting with the same satellite technology that made spectaculars like *Our World* possible. [8] Unlike the networks, artists working with satellites did not attempt to disguise the inequalities inherent in the structure of satellite technology (as well as in the access to and ownership of the equipment); they brought these qualities to the fore. *Satellite Arts,* in particular, sought out the aesthetic qualities specific to satellite transmission, and discovered how the structure of the screen determines the viewer's relationship to distant others. If *Our World* used satellite technology to "divide the world," and emphasized the otherness of distant people and places, *Satellite Arts* hypothesized how one might use satellites to intimately and ethically connect with other bodies on and through the screen.

Satellite Arts 1977

Satellite Arts exists as an archival video recording of a series of live satellite test transmissions, closed-circuit video rehearsals, and a collaborative dance in a composite video space performed over a live satellite transmission. [9] The documentation presents the three parts as components of a single work. [10] According to Galloway, "the performances were tests and the tests were performances." [11] Following Galloway's lead and the structure of the archival documentation, my discussion of *Satellite Arts* will give equal weight to all of the component performances. Together, the various parts articulate a new understanding of how space, time, and the body might intersect on the surface of the screen. Before showing how this artwork challenges the conventional structures of satellite telecommunication and models a chiasmic phenomenological experience with the other, it is necessary to describe the three parts of the performance in some detail.

In July of 1977, Galloway and Rabinowitz began the preliminary tests for *Satellite Arts* by transmitting signals between NASA Headquarters in Washington, DC and The Goddard Space Flight Center in Greenbelt, MD. The artists knew that staging a collaborative, improvisational performance over satellite transmission would not be an easy feat. The purpose of the July tests was to experiment with live satellite transmission to understand the specific problems and phenomena bi-directional video telecommunication would produce. Though only preliminary tests, the July performances constitute some of the most interesting

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Figure 1-2. *Satellite Arts 1977,* 1977, Kit Galloway and Sherrie Rabinowitz (Mobile Image). Video stills. Copyright Kit Galloway & Sherrie Rabinowitz. Reproduced with the permission of the Artists. Sherrie Rabinowitz appears on a split screen with a monitor showing her satellite-transmitted image in a video feedback loop during the July tests for *Satellite Arts 1977*.

segments of the project. They capture the disorienting first encounter with satellite latency, and expose the fiction of the "simultaneous now" of satellite telecommunication.

The documentation of the July tests shows Rabinowitz on camera sitting in front of a curtained backdrop in the Ames Research Center in Mountain View. She appears to be sitting next to a monitor showing her own image repeated in the deep space of video feedback. The monitor looks to be just inches from her right shoulder. On closer examination, however, one can see the dividing line of a split screen running along the edge of the monitor and curtain. She is, in fact, facing the monitor displayed on the left side of the screen. Rabinowitz is looking at a feedback monitor that shows her in a split screen with that same split-screen monitor. The split screen cleverly disguises this disjuncture in space, but makes apparent a dramatic gap in time. The daisy-chained images are out of sync. There is a significant lag between her actions on the right side of the screen and their appearance on the split-screen feedback monitor. This is because the instantaneous video signal is being bounced off a satellite circling the earth, high above the atmosphere. A 'live' video signal transmitted by satellite travels at the speed of light, but it must cover a great distance, and this distance is manifest visible temporal lag. Traveling from earth, into orbit, and back again resulted a latency period of about ¼ second. During the trial, Rabinowitz playfully experimented with the delay, making small gestures with her hands and head. A quick motion with her arm on the live right side of the screen hops to the left a brief moment later, and then successively tumbles down the corridor of feedback images. Rabinowitz's immediate past is displayed in space rather than disappearing with passing time. She and her 'live' image exist in different times. The lag makes visible the technological fact supporting the performance: Rabinowitz may look as if she is sitting next to her image, but it has traveled through the cosmos to meet her back on the screen.

While the satellite latency produced a charming and comical effect when Rabinowitz engaged with her own image, it would cause problems for performers wishing to respond to one another in real time. To test the effects of the delay on collaboration and improvisation, Galloway took Rabinowitz's place in front of the camera. The documentation shows him sharing a split screen with a NASA technician at the space agency's headquarters in Washington, DC. On the tape, the

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two men attempt an exercise: Galloway makes a motion, and his partner imitates it as quickly as possible.

Playing this simple game is, in fact, quite hard. The temporal gap between the two movements is even greater than in Rabinowitz's experiment with the playback monitor, because now there are two delays: the satellite latency and the synaptic lag of imitation. Galloway begins the test by opening and closing his hand at a regular interval, and his partner follows suit. They attempt to sync their images by counting beats and, eventually, they fall into phase. The men have to concentrate to correctly control their images. They need to look at their side-by-side representations and use the feedback to control their slow avatars on the monitor; the only time-space that matters is that of the screen, which does not exactly correspond to either of the physical sites.

The July test performances exposed the problems that latency would cause for real-time interaction and the difficulty of engaging with other bodies in the specific space-time of the screen. It is easy to conceive of live video telecommunication as providing a window onto a distant place, as satellite spectaculars like *Our World* implied. Bringing two (or more) sets of images together on a screen will result in another model: the screen is not simply a device that frames and transmits a camera's view; it is a parallel space, which doesn't mirror any single reality and is governed by its own laws of time and space. It becomes a meeting ground, or as the artists termed it, an "image as place." [12]

The specific conditions the "image as place" is determined by how the sets of source imagery come together to form an "immaterial architecture" for the bodies to inhabit. Galloway and Rabinowitz spent the months between the July test performances and the final performances in November rehearsing with the Mobilus dancers in Optic Nerve's San Francisco studio. They used closed circuit video to explore the various ways an "image as place" might be constructed, and the specific aesthetic effects each arrangement would produce. Rabinowitz described the importance of this choice in a 1987 interview with *High Performance*:

> *The video image becomes real architecture for the performance because the image is a place. .. If you have a split screen, that defines the kind of relationship that can take place. If you have an image mix or a key, other relationships are possible. So it incorporates all the video effects that are used in traditional video art, but it's a live place. It becomes visual architecture.* [13]

Each arrangement creates a specific organization of space and enables particular visual phenomena to occur. The artists experimented with a large variety of spatial arrangements, however the split screen and the mixed image are of particular importance for the work. The former represents the conventional mode of simultaneously presenting two satellite feeds. The latter emerged through their tests as an alternative way of bringing people together into a single screen that had drastically different aesthetic and phenomenal effects.

Figure 3-4. *Satellite Arts 1977*, 1977, Kit Galloway and Sherrie Rabinowitz (Mobile Image). Video stills. Copyright Kit Galloway & Sherrie Rabinowitz. Reproduced with the permission of the Artists.
Kit Galloway and a NASA technician attempt to sync their movements over a live satellite feed with a quarter-second delay during the June tests for *Satellite Arts 1977*.

A split screen constrains the dancers to their separate halves of the screen. If a figure on one side of the split screen attempts to cross the boundary line, it disappears into the fold between the images. In the rehearsals, the Mobilus dancers tested the boundaries of the split screen, emphasizing how it both bridges and maintains physical distance. The dancers leaned on the dividing line, as if the immaterial and physically non-existent boundary were a wall. Alternately, they bowed their heads into the center of the screen, and decapitated their figures in the fold.

The artists found the split screen structure to be limiting, for the dividing line prevented the participants from interacting with each other's images. A mixed image, on the other hand, which blends the two feeds into a single image, allows the dancers to occupy any part of the screen. It thereby highlights when the bodies are out of sync. Dissolving the split screen has a profound effect on how bodies can interact in the space. [14] In the rehearsals, the dancers explored the mixed space with only their hands. Over a black back-

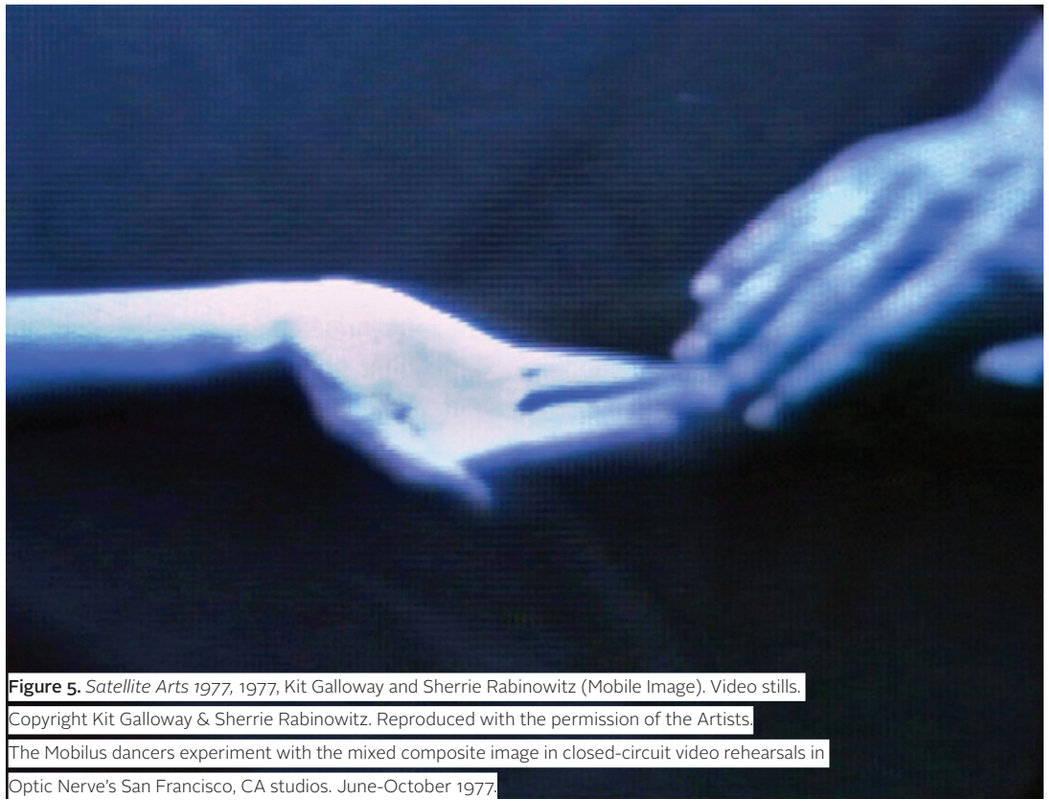

Figure 5. *Satellite Arts 1977*, 1977, Kit Galloway and Sherrie Rabinowitz (Mobile Image). Video stills. Copyright Kit Galloway & Sherrie Rabinowitz. Reproduced with the permission of the Artists.
The Mobilus dancers experiment with the mixed composite image in closed-circuit video rehearsals in Optic Nerve's San Francisco, CA studios. June-October 1977.

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Figure 6 *Satellite Arts 1977,* 1977, Kit Galloway and Sherrie Rabinowitz (Mobile Image). Video stills. Copyright Kit Galloway & Sherrie Rabinowitz. Reproduced with the permission of the Artists. Feedback monitors showing the composite image space lined the outdoor performance area during the November satellite transmissions for *Satellite Arts 1977*.

ground, the dancers reach from outside of the frame toward the center of the screen, and toward each other. They touch fingertip-to-fingertip, gently caressing and holding each other's hands.

It takes a moment for the viewer to realize that it is the images that touch, not the hands. Despite the fact that the dancers' material bodies do not come into contact, the images act as if they do. They hover in the weightless televisual ether, yet they do not overlap, overcome, or occlude each other. To do this, the performers used the feedback monitor to carefully and precisely control the images. All of their physical movements were at the service of the screen image, not what was within their physical surroundings. The dancers transformed their material, tactile bodies into exclusively visible bodies in order to exist on the surface of the screen. They let go of their corporality to be together, not in space or time, but in the "image as place."

The final series of performances for *Satellite Arts,* which began on November 20, dramatized the process of breaking down the conventional split screen structure of teleconferencing and telecommunication, which kept distant bodies separate, in favor of "an immersive global real-time environment." [15] The dancers were now located on opposite coasts and were connected by a 'live' satellite uplink with a quarter-second delay. For the satellite performance, the dancers took their places in fields lined with feedback monitors, which would allow them to always remain in visual contact with the "image as place."

The performance began within a split screen video architecture. The far-flung dancers wave at their partners across the dark dividing line of the split screen.

Figure 7 *Satellite Arts 1977,* 1977, Kit Galloway and Sherrie Rabinowitz (Mobile Image). Video stills. Copyright Kit Galloway & Sherrie Rabinowitz. Reproduced with the permission of the Artists.
The Mobilus dancers demonstrate the spatial and phenomenological properties of the split screen image in the live satellite transmission on November 20, 1977.

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Figure 8 *Satellite Arts 1977,* 1977, Kit Galloway and Sherrie Rabinowitz (Mobile Image). Video stills. Copyright Kit Galloway & Sherrie Rabinowitz. Reproduced with the permission of the Artists. The Mobilus dancers demonstrate the spatial and phenomenological properties of the split screen image in the live satellite transmission on November 20, 1977.

Their gestures – waving, jumping, and shouting – all imply physical distance. The graphic bisection of the image maintains the feelings of detachment, distance and insurmountable boundaries despite the fact that the dancers appear on the same screen. They run their hands along the seam as if looking for a break in its structure where they might push through to the other side. [*fig.* 6] When the dancers reach out toward each other, they disappear into the gulf between the images.

The line divides the image and constrains the dancers, and in doing so it accurately diagrams the technological situation: two video feeds from opposite ends of the country occupy opposite ends of a television monitor.

Figure 9 *Satellite Arts 1977,* 1977, Kit Galloway and Sherrie Rabinowitz (Mobile Image). Video stills. Copyright Kit Galloway & Sherrie Rabinowitz. Reproduced with the permission of the Artists. The satellite's latency resulted in a quarter-second delay during the transmissions. The Mobilus dancers performed a "scored improvisation" to synchronize their movements in the composite image space.

Then, the architecture of the image shifts. The four performers are no longer just in the 'here' of California or the 'there' of Maryland; they are together in a contiguous composite image on the television monitor.

The dancers now stand in an open field lined with trees and shrubs. It is only when they try to respond to one another that their separate locations become evident. The "image as place" is temporally disjointed despite looking spatially coherent. Just as Galloway did in the July trials, the dancers begin moving in a regularized manner in attempt to sync up with their counterparts in a "scored improvisation." [16] The dancers hold their arms out from their bodies and begin to count off beats. They switch positions on each count, moving their arms as if they were the hands of a clock.

Figure 10-11 *Satellite Arts 1977,* 1977, Kit Galloway and Sherrie Rabinowitz (Mobile Image). Video stills. Copyright Kit Galloway & Sherrie Rabinowitz. Reproduced with the permission of the Artists.
The satellite's latency resulted in a quarter-second delay during the transmissions. The Mobilus dancers performed a "scored improvisation" to synchronize their movements in the composite image space.

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Figure 12-13 *Satellite Arts 1977,* 1977, Kit Galloway and Sherrie Rabinowitz (Mobile Image). Video stills. Copyright Kit Galloway & Sherrie Rabinowitz. Reproduced with the permission of the Artists.

Through these careful motions the dancers make a slow entry into the time and space of the composite image. They can coincide once they have cut their ties to the physical world and given themselves over to the physics of the screen. Afterwards, they are able to accurately navigate their "ambassadors," as Rabinowitz calls the screen avatars, through the weightless eather. [17] The sets of dancers cross paths and weave between one another; they lightly, immaterially touch as they turn circles around each other's images and create organized patterns of movement across time and space. [18]

THE CHIASMIC SCREEN

Sherrie Rabinowitz describes the experience of performing *Satellite Arts* as an electronic version of a traditional dance studio mirror:

> *It was a model, like the mirror in a dance rehearsal studio. You know, everyone's dancing, looking at themselves in the mirror, seeing a reflection, and from that they're able to develop a choreography, to get in sync... So this was the electronic version of that: the creation of a virtual space, in which full-bodied individuals could convene, an electronic image space – so the 'image' becomes 'place.'* [19]

Since the 1976 publication of Rosalind Krauss's seminal essay on video art, "Video: The Aesthetics of Narcissism," it has become commonplace to describe the video monitor as a mirror, and to understand the performing video artist as a new Narcissus, fascinated with her own image. "Mirror reflection," Krauss writes, "implies the vanquishing of separateness. Its inherent movement is toward fusion. The self and its reflected image are of course literally separate. But the agency of reflection is a mode of appropriation, of illusionistically erasing the difference between subject and object." [20] Rabinowitz's description of *Satellite Arts* as a studio mirror opens up to a different set of understandings about the power of video's mirroring functions than Krauss's account. *Satellite Arts* does complicate the categories of self and other. The effect, however, is not self-fascination or a "bracketing out of the object." Rather, *Satellite Arts* diagrams a phenomenological relationship between self and other that can only take place on and through the television screen.

In Rabinowitz's studio mirror metaphor, each dancer sees herself as part of a larger image via a mirrored wall. She takes in her image as part of a total visual field that includes her body, as well as those of the other dancers. This is not a situation in which one fixates on one's own reflection. The dancer, instead, uses the mirror to see herself in relationship to others, as part of a community of bodies occupying a space. This is only possible through the mediating and reflective function of the mirror, for one's own body is always excluded from the picture in direct vision. The same thing occurs with the mixed screen in *Satellite Arts*. The screen is, indeed, like the studio mirror in that it presents to the dancer an image of her own body situated in space among the other dancers. She uses reflection to understand herself as part of a total image. Rabinowitz's apt description of the screen as a studio mirror models a kind of looking that models the "intertwining" of subject and object that phenomenological philosopher Maurice Merleau-Ponty describes in his essay "The Intertwining – The Chiasm."

A chiasm is an anatomical term that describes the crossing of physical structures in the form of an "X," such as nerves or ligaments. Perhaps the most well known chiasmic structure is the crossing of the optic nerves at the base of the brain, which enables images from each eye to combine into a single image for binocular vision. Before even addressing Merleau-Ponty's specific conceptualization of the chiasm, the definition from optics strongly resonates with the structure of *Satellite Arts*: the two video feeds come together into a single continuous, coherent, composite image despite coming from separate sources. There are still deeper connections between the chiasm and the structure and effects of *Satellite Arts*. In his essay, Merleau-Ponty describes what he calls "a second and more profound" kind of narcissism, which is "not to see the outside, as others see it, the contour of a body one inhabits, but especially to be seen by the outside, to exist within it... so that the seer and the visible reciprocate one another and we no longer know which sees and which is seen." [21] The viewer sees herself as part of an image of the larger world. She is not separate from it (a subject looking upon a scene), nor is she fixated on her own singular image. She is "caught up in what [s]he sees." [22] She can see, but, more importantly, she recognizes herself as seen by others. To be a subject, according to Merleau-Ponty, one must necessarily be part of the world one looks at and touches; therefore one must also be an object in that world. "He who looks," the philosopher writes, "must not himself be foreign to the world that he looks at. As soon as I see, it is necessary that the vision (as is so well indicated by the double meaning of the word) be doubled with a complementary vision or with another vision: myself seen from without, such as another would see me, installed in the midst of the visible, occupied in considering it from a certain spot." [23] One has vision, and one is a vision. The movement from subject to object, seer to seen, toucher to touched, sentient body and body sensed are "the obverse and reverse of one sole circular course." [24]

Even though the viewer is also a visible thing in Merleau-Ponty's conception of phenomenological experience, she cannot experience these two poles of being simultaneously. The roles are reversible, not simultaneous. The concurrent experience of both poles of existence is "always imminent and never realized in fact." [25] This might be the case for the physical body, but Galloway and Rabinowitz's *Satellite Arts* suggests how this phenomenological experience of being simultaneously both subject and object, seer and seen, toucher and touched can happen through and on the television screen. A dance studio mirror performs the function of showing the dancer how she appears to others, "installed in the midst of the visible." The image in the mirror, however, is still organized from her vantage point, displaying and adjusting the scene based on the shifting subjective position of her body. This is where the differences between the camera/screen set up in *Satellite Arts* and the dance studio mirror become significant. Each dancer in *Satellite Arts,* too, sees herself from the outside as part of a total visual field. Her vision, however, is routed through the camera and the screen. Therefore she sees herself from the camera's distinct vantage point, not from a subjective position relative to her body in real space. Displacing the subjective viewpoint from the body to the camera enables the dancer to see herself as others see her. She can experience her body as a visible object.

There are further differences between the studio mirror and the satellite-transmitted screen images that result in a significant phenomenological shift. Unlike the dancer in the studio, the participant in *Satellite Arts* does not share her physical space with all of the

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Satellite Arts stages a phenomenological encounter in the space of the screen by collapsing the clear distinctions between subject and object, here and there, and now and then, thereby forcing the performer to see and control her body as a object "installed in the midst of the visible," surrounded by other subjects-as-objects.

other bodies represented on the screen. If she turned away from the monitor, she would not find all of the other dancers, only those who were at the same geographic location. The screen portrays an alternative space parallel to, yet separate from, the physical world. It does not simply mediate; it is a visible but not "material" place. Consequently, to engage with the others, as explained above, the dancer must navigate her body via the screen, that is, to operate as a subject, she must view herself as an object.

The temporal difference between a mirror reflection and the screen image *Satellite Arts* further intensifies this effect. A mirror's image is always live. It reflects what is in front of it in exacting real-time, whereas a satellite image always registers the time that it has traveled in its latency period. Latency may seem to be a failure of the system to live up to its claim of real-time telecommunication, but *Satellite Arts* turns the delay into an advantage, for it forces the dancer to commute her understanding of her body and its movements to her sense of sight. She cannot simply act in real space and assume that her actions will coherently transfer to the screen, as they would in a mirror. The delay insures that the dancer abides by the rules of the screen and fully inhabits her avatar. To do so she must see and operate her body as if it were an object. This process causes the distinction between 'sight' and 'site' to collapse, as vision becomes the tactile means by which one touches other bodies and inhabits space. Galloway and Rabinowitz aimed to 'destroy' the split screen in *Satellite Arts*. [26] By crafting a mixed image space from multiple camera feeds, the artists used screen space to model an impossible and idealized phenomenological situation in which the binary differences that govern our typical experience of the world dissolve.

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THE IMMATERIAL WORLD

I have suggested that *Satellite Arts* stages a phenomenological encounter in the space of the screen by collapsing the clear distinctions between subject and object, here and there, and now and then, thereby forcing the performer to see and control her body as a object "installed in the midst of the visible," surrounded by other subjects-as-objects. *Satellite Arts,* consequently, confuses the difference between the real and the virtual as well.

The term "telepresence" is typically used to designate experiences enabled by live telecommunications technologies that allow users to execute actions in a real place via a screen interface. Ken Goldberg provides a helpful definition of the difference between virtual reality and "telepresence" in his article, "Virtual Reality in the Age of Telepresence." "Virtual Reality," he explains, " presents a simulacrum, a synthetic construction, in contrast, telepresence provides access to a remote physical environment. With telepresence what is being experienced is distal rather than simulacral." [27] The salient difference between virtual reality and telepresence, then, is that in telepresent experiences real places and real bodies are at stake. One's actions have effects, and, therefore, 'matter.' Virtual worlds present fictions; telepresence presents mediated realities.

Most telepresence systems are, like conventional television, uni-directional – a remote user can look at and listen to a far off place, and, with the help of telerobots, physically manipulate people and things at the represented site. While there are physical effects to one's actions, there are few consequences for the user. [28] She can touch the site, but no one can reach back toward her. Virtual spaces, on the other hand, present non-existent worlds, but typically allow for interactivity between users. Their actions may not register physical effects, but they can communicate and come together within the fiction. The virtual might, at first, seem to be an area of freedom: the world presented is a fiction, and all actions within it are immaterial, and, therefore, one might assume they are also inconsequential. Galloway and Rabinowitz make it clear that this is not the case:

> *Our artwork is about social spaces that accommodate the physical reality and the virtual. A major theme is the mixing of the real and the virtual – those two things. You are more involved and invested in the presence of that image which is an extension of you… and that meant that people had to take responsibility for the event, for their image and who they were as they were presented by the lens and camera captured imagery.* [29]

By using indexical avatars in a simulacral space, the artists attach specific identities to the images on the screen. The avatars are not generic stand-ins for anonymous users; they are "ambassadors" for the individuals who control them. The performers are simultaneously real and virtual bodies; they are telepresent in a space that has "no geographical boundaries," and, therefore, they are responsible for their actions on both sides of the screen. [30] The satellite spectaculars of the 1960s created the fiction of a shared global 'now' to reinforce the divisive differences between the people and places represented. They separated here from there, but also stressed the differences between west and east, haves and have nots, us and them by giving the viewer an omnipotent, subjective view onto a world that did not include her as an object available for engagement or scrutiny. In the networks' hands, satellite transmissions re-inscribed the dominant power relations of the post-war era. When NASA afforded artists the opportunity to engage with this same technology, they challenged not only the conventional uses and structures of satellite-transmitted imagery, but also the politics and ethics of such uses. *Satellite Arts* undid these binaries without succumbing to narcissistic structures typical of video, which vanquish

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representations of others in favor of an overwhelming fascination with the self. Galloway and Rabinowitz reimagined the relationships one could have to oneself and to others by using a mediated image, and, consequently, they provoked the viewer to rethink how she is responsible for and relates to the images she sees on the television screen. They demonstrated how combining the here and now with the there and then might stage a chiasmic experience in video space. One cannot simultaneously experience being both subject and object in the physical, material world, but the "image as place" diagrams what this phenomenological experience might be like in the immaterial world. *Satellite Arts* created a new way of being in the world and a new world to be in. ■

ACKNOWLEDGEMENTS

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1. Steven Durland, "Defining the Image as Place: A Conversation with Kit Galloway, Sherrie Rabinowitz & Gene Youngblood," in *High Performance* 37 (1987): 54.
2. Other satellite artworks of the 1970s and 1980s did use the technology to create bi-directional "videophones," including Liza Bear and Keith Sonnier's *Send/Receive Satellite Network* (1977), Galloway and Rabinowitz's own *Hole in Space* (1980), as well as Nam June Paik's *Picture Phone Performance* (1979). Other satellite projects such as Paik's *Good Morning Mr. Orwell* (1984) and *Wrap Around the World* (1988), and Jaime Davidovich's *Artist & Television* (1982) used satellites to connect groups of participants (primarily world-famous musicians and artists) through live broadcast television events.
3. Kit Galloway, e-mail message to the author, March 15, 2013.
4. Lisa Parks, *Cultures in Orbit: Satellites and the Televisual* (Durham and London: Duke University Press, 2005), 21.
5. Ibid., 23.
6. Ibid., 43.
7. Ibid.
8. Between July and November of 1977, the first three satellite-based artworks "launched": Nam June Paik, Joseph Beuys, and Douglas Davis participated in Documenta 6's live satellite telecast on June 24; tests for Galloway and Rabinowitz's *Satellite Arts* began in July of 1977, and concluded in three live transmissions on November 20, 21, and 22; and Liza Bear and Keith Sonnier created *The Send/Receive Satellite Network* on September 10 and 11. Galloway and Rabinowitz were the first to use a bi-directional satellite link and the first to experiment with the distinct formal properties of satellite telecommunication.
9. Galloway and Rabinowitz staged another bi-directional satellite performance, *Hole in Space*, in 1980, and planned other yet to be realized satellite works.
10. Technical difficulties on the final two days of the performance prevented the artists from completing the work as planned. See note 19 for further details.
11. Annmarie Chandler, "Animating the Social: Mobile Image/Kit Galloway and Sherrie Rabinowitz," in *At a Distance: Precursors to Art and Activism on the Internet* (Cambridge, MA: The MIT Press, 2005), 161.
12. Ibid., 158
13. Steven Durland, "Defining the Image as Place: A Conversation with Kit Galloway, Sherrie Rabinowitz & Gene Youngblood," in *High Performance* 37 (1987): 56.
14. Galloway and Rabinowitz pursued a large-scale study of interaction in mixed image space in their closed-circuit video project, *Art-Com* '82.
15. Annmarie Chandler, "Animating the Social: Mobile Image/Kit Galloway and Sherrie Rabinowitz," in *At a Distance: Precursors to Art and Activism on the Internet* (Cambridge, MA: The MIT Press, 2005), 159.
16. Kit Galloway, e-mail message to the author, February 19, 2013.
17. Steven Durland, "Defining the Image as Place: A Conversation with Kit Galloway, Sherrie Rabinowitz & Gene Youngblood," in *High Performance* 37 (1987): 56.
18. The dance described above was only intended as rehearsal so that the dancers might get their "sea legs" for the following two days of satellite time. Kit Galloway writes, "It was fortunate that we turned on the video recorders because in actuality we were just doing walk through." The next two days did not go as planned: a fire knocked out the uplink from Goddard the second day; and a severed power cable prevented transmissions on the third. On both days the artists were able to conduct experiments from one site. They inserted the dancers into broadcast television programming, showing the Mobilus members weaving among football players and dancing across commercial advertisements. On the final day, they bounced video and audio signals off the CTS satellite to create a feedback dance with the delayed images. Storyboard illustrations for *Satellite Arts* provide a glimpse of the intended scale and scope of the work if completed. Kit Galloway, e-mail to the author, February 16, 2013.
19. Waag Society, "Kit Galloway & Sherrie Rabinowitz: Teleconference Lecture," November 12, 2003, http://connectmedia.waag.org/media/sentientcreatures/gallaway.mov. (accessed February 10, 2013).
20. Rosalind Krauss, "Video: The Aesthetics of Narcissism," *October* 1 (Spring 1976): 56–57.
21. Maurice Merleau-Ponty, "The Intertwining- The Chiasm," in *The Visible and Invisible*, trans. Alphonso Lingis (Evanston: Northwestern University Press, 1968), 139.
22. Ibid.
23. Ibid., 134.
24. Ibid., 137.
25. Ibid., 147.
26. Kit Galloway, e-mail to the author, February 16, 2013.
27. Ken Goldberg, "Virtual Reality in the Age of Telepresence," *Convergence* 4 (March 1998): 33.
28. For extended discussions of the ontological, epistemological, and ethical implications of telepresence see: Hubert L. Dreyfus, "Telepistemology: Descartes's Last Stand," in *Robot in the Garden: Telerobotics and Telepistemology in the Age of the Internet*, ed. Ken Goldberg (Cambridge: The MIT Press, 2000), 48–63 and Kris Paulsen, "The Index and the Interface," *Representations* 122 (Spring, 2013): 83–109.
29. Annmarie Chandler, "Animating the Social: Mobile Image/Kit Galloway and Sherrie Rabinowitz," in *At a Distance: Precursors to Art and Activism on the Internet* (Cambridge, MA: The MIT Press, 2005), 162.
30. Steven Durland, "Defining the Image as Place: A Conversation with Kit Galloway, Sherrie Rabinowitz & Gene Youngblood," in *High Performance* 37 (1987): 55.

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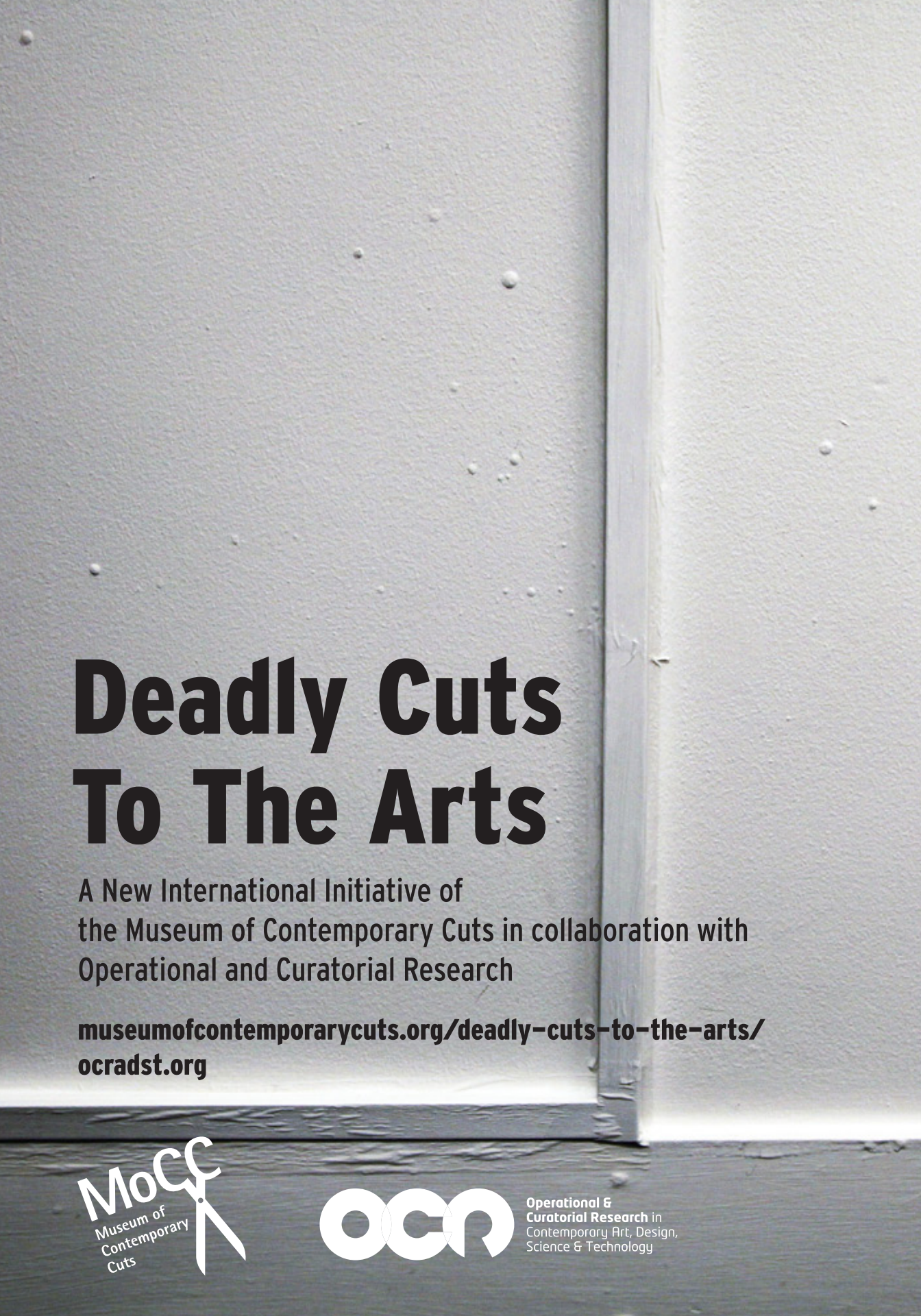

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