LEONARDO

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Pacific Rim New Media

SPECIAL ISSUE

Summit Compan

Pacific Rim New Media Summit Companion
Leonardo Special Issue

Pacific Rim New Media Summit
7–8 August 2006, San Jose, California
<http://isea2006.sjsu.edu/prnms>
A pre-symposium event to ISEA2006, San Jose, California, 7–13 August 2006

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Rachael Rakena, Fez Fa'anana and Brian Fuata, *Pacific Washup*, video still from single-channel digital video with sound, 6-min loop, 2003–2004. (© Rachael Rakena, Fez Fa'anana and Brian Fuata) Cover design by Zoey Rosaline. (© R. Zoey Setiawan) See p. 301.

Editorial by Greg Niemeyer

Disentangling the Seams

© Visualware Inc.

The world must seem flat in the minds of the software designers who created the above visualizing tool (visualroute.com) to show connections between hosts and clients in on-line interactions. A connection from Berkeley, California, to the Chinese Ministry of Commerce in China falls off the edge of the map (far left) and emerges again, in "Asteroids" fashion, on the far right side. The technical challenges of adjusting the map to show a continuous connection across the Pacific are minimal. The cultural bias of seeing the world from a Eurocentric viewpoint seems far more difficult to overcome.

The world seems flat, economically, as some people realize the potential of global economic competition, increasingly to the advantage of their home countries.

The world seems flat, metaphorically, in the workings of the Internet, as its diverse protocols remove geographic limitations from the communications among more and more people who are lucky enough to be on-line, the digital "We."

However, we often cannot remove cultural limitations from our minds, even as we are engaged in transcontinental interactions. What we say about our interactions often does not reflect what we do. Mutual trade and mutual cultural cross-pollination are standard practice in our daily lives, yet culturally we still contend with the edge of the map cutting through the Pacific Ocean. This edge causes our widespread blindness to both the benefits and the challenges of Pacific Rim cross-cultural relations.

In my imagination, the Atlantic cross-cultural challenge is resolved, because one side of the Atlantic is called the "New World," and the other is called the "Old World." Although this colonialist view of matters is naive and by no means harmless, it at least allows for the drawing of continuous lines from one side to the other.

The Pacific, in contrast, cannot be resolved into a continuous space using colonialist strategies. All sides are "old worlds." Our imagination of time itself struggles to continue across the International Date Line. The deepest trench on the face of the Earth runs neatly through the Pacific Ocean, yet the water surface above is smooth. A part of that surface, the North-Pacific subtropical gyre, according to Charles Moore [1], is covered with an estimated 3 million tons of plastic bags. Among all political sides, the balances of power are increasingly unclear. There are more people on both the Western and the Southern sides than on the Northeastern side of the Pacific.

Perhaps there are no sides at all to the Pacific. The Pacific presents us with the much harder task of imagining a world full of other people, without opportunities to colonize them, and without fear of being colonized by them. A world, not flat, full of opportunities to learn, to play and to construct connections that all "connectees" are proud of, a world that builds on mutual understanding of the other.

Our special issue of *Leonardo* points toward the potential crossing over the edge of the map without the brutality of colonization, points toward strategies of doing so in the very structure of its themes, points toward the production of alternatives to colonial thought by typically risk-tolerant artists and points toward the challenges of reaching higher ground on the shores of civilized exchange.

GREG NIEMEYER
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Reference

1. <http://www.mindfully.org/Plastic/Ocean/Moore-Trashed-PacificNov03.htm>.

Surfing the outernet

Where net art presented the medium of the Internet, locative art brings to the fore the media of mobile and wireless systems. Drew Hemment unfolds a taxonomy of locative-art approaches to the gap between the perfect grid and the reality of the mapped world.

full article on page 348

(Photo © Eiko Grimberg)

Cyber-mythologies and portraits of dispossession

Rachel O'Reilly examines how Asian and Pacific understandings of place in recent work by Vernon Ah Kee, Lisa Reihana and Qiu Zhijie expand the frames of contemporary locative art.

full article on page 334

sayfella
learnfella
standfella
be

wisefella
knowfella
actfella
see

(© Vernon Ah Kee. Courtesy the artist and Bellas Milani Gallery, Brisbane, Australia.)

Cartographies of the future

Annie Lambla discusses the San Francisco Exploratorium's Invisible Dynamics project, which considers the museum's relocation from a perspective integrating art, science and geographic context.

full article on page 383
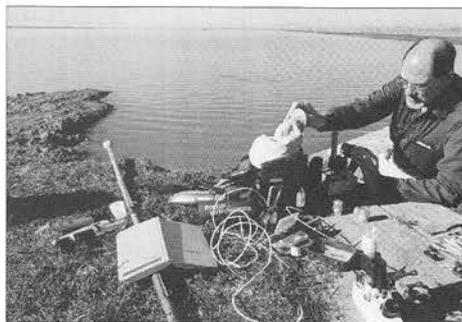
(Photo © Susan Schwartzenberg)

Culture, uncontained

Commerce, communication and technology intertwine in the works of the Pacific Rim New Media Summit exhibition Container Culture. Artists from Mumbai to Vancouver use the medium and metaphor of shipping containers to explore regional and global complexities.

full article on page 290

(© Rachael Rakena, Fez Fa'anana and Brian Fuata)

ISEA

ISEA Congratulates Leonardo

On behalf of the Inter-Society for the Electronic Arts (ISEA), we congratulate Leonardo on the publication of this special August 2006 issue. The **Pacific Rim New Media Summit (PRNMS) Companion** serves as an important landmark within the taxonomy of interdisciplinary discourse. In its promotion of cultural diversity, this issue highlights an important feature of ISEA's mandate. ISEA is an international nonprofit organization that fosters interdisciplinary discourse among culturally diverse organizations and individuals working with art, science and emerging technologies. The series of symposia known as the International Symposium on Electronic Art was founded in 1988 to maintain an international network of organizations and individuals active in the electronic arts. This network has taken the shape of an association, founded in 1990 in The Netherlands, called the Inter-Society for the Electronic Arts (ISEA).

One of ISEA's primary goals is to promote these activities and to diversify our network through co-sponsorship of events for the global electronic arts community. ISEA's Board and membership have always been international, bringing together individuals and organizations from around the world. The nomadic ISEA symposia---a unique feature of our organization---expose participants to new concepts, groundbreaking artwork and emerging technologies in far-flung regions.

We are focused on diversity and discovery, and are proud to have published in our newsletters and proceedings valuable reports on electronic arts from around the world. TISEA in 1992 (Australia) was our first symposium in the Pacific Rim, followed a decade later by ISEA2002 in Japan. These events have initiated new developments and contributed to the further growth of electronic arts in the region. This Leonardo special issue will advance this tradition about the Pacific Rim and beyond.

ISEA is proud of its long-standing relationship with Leonardo. Leonardo has promoted ISEA in previous publications, and has featured in its pages some of ISEA's best symposium papers. We are delighted that Leonardo has undertaken this special issue to coincide with ISEA2006. As we share many of the same goals and passions, ISEA and Leonardo have this past year formalized our relationship to better serve the electronic arts community.

This interdisciplinary **Pacific Rim New Media Summit (PRNMS) Companion** reflects several of the interests we have in common concerning education, diversity and cutting-edge art. We sincerely welcome this initiative and invite the Leonardo readers to join us in our symposium and our mission.

Nina Czegledy, *Chair*
ISEA BOARD of DIRECTORS

The Pacific Rim New Media Summit
http://isea2006.sjsu.edu/prnms

The political and economic space of the Pacific Rim represents a dynamic context for innovation and creativity. Experimentation in art, science, architecture, engineering, design, literature, theater and music is engendering new forms of cultural production and experience unique to the region. The complex relations and diversity of Pacific Rim nations are exemplified throughout the hybridized communities that make up Silicon Valley.

As the 10th-largest city in the United States, San Jose, California, is an important portal on the eastern edge of the Pacific region, which shares deep historical and cultural connections that range from Latin America and the South Pacific to Southeast Asia and Asia. ZeroOne San Jose: An International Festival of Art on the Edge (7–13 August 2006) highlights the Pacific Rim as a central theme by presenting the most significant achievements in art, theory and research from throughout the region.

The Inter-Society for the Electronic Arts (ISEA) is an international nonprofit organization fostering interdisciplinary academic discourse and exchange among culturally diverse organizations and individuals working with art, science and emerging technologies. The ISEA Symposium is an international conference on electronic art that is held every 2 years in different locations around the world and attracts attendees from over 50 countries. The Thirteenth International Symposium of Electronic Art (ISEA2006) is being held in San Jose, California, in conjunction with the inaugural biennial ZeroOne San Jose: A Global Festival of Art on the Edge.

As part of ISEA2006, the CADRE Laboratory for New Media at San Jose State University will host a 2-day pre-symposium entitled the Pacific Rim New Media Summit (7–8 August 2006), co-sponsored by Leonardo. The Summit is intended to explore and build interpretive bridges between institutional, corporate, social and cultural enterprises with an emphasis on the emergence of new media arts programs in seven areas represented by working groups: Distributed Curatorial; Education; Place, Ground and Practice; Urbanity and Locative Media; Latin America/Pacific-Asia New Media Initiatives; Piracy and the Pacific; and the Invisible Dynamics of the Pacific Rim and the Bay Area.

The Pacific Rim theme will be accentuated each evening of the Summit, with a reception for Summit attendees on Monday, 7 August, including a premier of Ryoji Ikeda's *C43*, and on Tuesday, 8 August, with Akira Hasegawa's immersive projection on the new San Jose City Hall rotunda. Tuesday evening is also the gala opening for ISEA2006/ZeroOne San Jose, including exhibitions and public artworks featured in venues throughout the city. The Pacific Rim theme then continues within the Symposium and Festival, with presentations of juried papers, an invited keynote presentation and exhibitions by artists selected through the ISEA2006 Calls for Participation process.

From the outset we thought of the Summit as a mechanism to encourage and facilitate international cooperation with an eye to sustainable relationships. Understandably this approach is not without difficulties and, as desired, it has been an emergent process rather than directorial. We view the Summit as a point along a trajectory of building interpretive bridges that broaden all of our capacities for creative and intellectual exchange. By focusing the Summit on sustainable outcomes, it is our objective to facilitate cooperative agendas that enable creative production, research and cultural/political practices that challenge current models of cooperation. The Summit is not an attempt to simply become comfortable with

one another or to suggest that collaboration is not without controversy, dissent and disagreement. The Summit is about the collisions of ideology and manifesto. It is about trying to work through the problematics of diversity and difference.

On the pragmatic side, what is expected is that each working group will have a creative or research project or a program initiative to share. The working groups have been asked to identify, shape and pursue a common cause within each group. Documentation of the "outcomes" will serve as the basis for the Summit proceedings.

JOEL SLAYTON
Chair, ISEA2006 Symposium/ZeroOne San Jose and Pacific Rim New Media Summit
Director, CADRE Laboratory for New Media, San Jose State University

PACIFIC RIM NEW MEDIA SUMMIT WORKING GROUPS

- *Distributed Curatorial*
- *Education*
- *Place, Ground and Practice*
- *Urbanity and Locative Media*
- *Latin America/Pacific-Asia New Media Initiatives*
- *Piracy and the Pacific*
- *The Invisible Dynamics of the Pacific Rim and the Bay Area*

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Network Theory: Art, Science and Technology in Cultural Context

The Pacific Rim New Media Summit would seem to be an anachronism, at a time when theorists of an interconnected planet promise new kinds of community based on affinity and mutual interest rather than the geographical accident of one's birthplace or current residence.

Yet when the initial planning for the 2006 International Symposium of Electronic Art (ISEA2006) began, there was a very rapid consensus to highlight the connections of San Jose, California, with the Pacific Rim. There is sound historical and sociological rationale for this focus. The population of California is rich with immigrant communities from Central and South America and the countries of the Asia-Pacific region. Thus an articulation of local-global analysis lays one ground for such a discussion.

Yet there are strong internal contradictions to such a focus. Although diaspora communities maintain strong connections within family and culture for generations, it is less obvious how to contextualize the juxtaposition of communities based on geography or ethnicity. An art-science researcher or technological artist in Peru may have far more to discuss with a colleague in the Basque region of Spain than with a colleague in South Korea.

Networks are not neutral carriers of connection; there are strong asymmetries in directionality and modulation of sense and meaning [1]. Network theory is useful in helping us to understand the consequences of protocols, standards and graph theory on how networks develop and what behaviors are encouraged or discouraged [2,3]. Clichés about "six degrees of separation" hide unsettling patterns that are emerging in our globalized culture. One can meaningfully talk about "electronic monasteries," walled digital communities that promote internal connectivity and discourage most attempts at external permeability.

When Leonardo was founded 40 years ago in Paris, it was under the shadow of C.P. Snow's framing of the "two cultures" debate. Intellectual communities in the sciences and humanities had few mechanisms for sustained interdisciplinary dialogue and research. Political thinkers were dangerously untrained in scientific and technical topics at a time when governments increasingly were intervening in a world where science and technology were important drivers of social and economic change. Although scientists were developing international networks and organizations, this was not always the case in the art world. Leonardo as an organization has as its premise the opening of new international connectivity between the often-segregated intellectual communities of artists, scientists and engineers.

Looking back on the discourse of the 1950s and 1960s, one is struck by a naïve optimism that literacy, science and technology training would lay the conditions necessary for a sustainable peace and worldwide economic development.

A sanguine analysis of the last 50 years would lead one reluctantly to conclude that "techno-science" does not, by itself, have built into it the mechanisms for creating a more just, saner world. Roy Ascott has recently encapsulated this with the aphorism "Ask not what science can do for the arts, ask what the arts can do for the sciences" [4]. We need to look at the "directionality" of the art-science dialogue: Is it too asymmetrical? If so, what new connections and methods do we need to encourage? For what ends?

Network theory and sociological analysis also indicate that there are issues of "scale" in networks. One cannot have a meaningful relationship with 10,000 people. A good number is

perhaps 300. A look at the e-mail addresses in one's e-mail directory can in itself be revealing. Has the new connectivity opened up new relationships that are creative and productive, or has existing connectivity been reinforced and new ideas still at six degrees of separation? How do we "design" our close connections to favor the kinds of outcomes we are seeking?

Leonardo/ISAST agreed to co-sponsor the Pacific Rim New Media Summit as part of its "Global Crossings" initiative [5], to seek out new connections that not only promote art/science dialogue but also seed new connections across cultural communities. The YASMIN initiative [6] has been helping build new art-science connections around the Mediterranean Rim and region, just as this Pacific Rim Summit seeks to do so in a different local geographical contexts. The objective is simple: to build new connections that encourage our networks to look both outward and inward, to "lower the thresholds" so that new ideas and good ideas, wherever they occur, can be discussed. The art-science-technology dialogue must be properly grounded and better informed by the cultures in which it takes place.

Over the past 40 years, Leonardo projects and publications have documented the work of some 4,000 artists and researchers. The majority of these authors are from North America and Western Europe. Yet as we look at the thriving art-science-technology field, we see exciting new work being developed from Bangalore to Beijing, from Beirut to Lima. The Pacific Rim New Media Summit is one step, one effort, to try to open up our professional networks to new work and new ideas wherever they are taking place. In this process new kinds of cultural and intellectual communities will emerge, and the future directions of science and technology will be altered to help create a more just and saner world.

ROGER F. MALINA
Summit Co-Chair
Executive Editor, Leonardo
Chair, Leonardo/ISAST

References and Notes

1. Although scientific knowledge is "universally applicable," its cultural context is not neutral. Kazhila Chinsembu in a recent editorial emphasizes that science and technology cannot be viewed the same way in science-producing as in science-consuming cultures. Provocatively he asks whether Africa should reject science it does not own: <http://www.scidev.net/Opinions/index.cfm?fuseaction=readOpinions&itemid=474&language=1>.

2. Alex Galloway, *Protocol: How Control Exists after Decentralization* (Cambridge, MA: MIT Press, 2004). Galloway argues that the technical protocols that underlie the Internet set in motion control mechanisms that radically constrain what kinds of behaviors are possible as well as the new power relationships that emerge from such protocols. Far from being neutral, technical standards and protocols embody certain ideological frameworks.

3. Albert-Laszlo Barabasi, *Linked: The New Science of Networks* (Cambridge, MA: Perseus Books, 2002). Barabasi reveals how the topology of networks and local rules for network growth can lead to possible future network properties and the encouragement or discouragement of certain kinds of behaviors.

4. Roy Ascott, comment on the YASMIN discussion list, <http://www.media.uoa.gr/yasmin/>.

5. <http://mitpress2.mit.edu/e-journals/Leonardo/isast/spec.projects/globalcrossings.html>.

6. The YASMIN network is a network of artists and researchers around the Middle East, North Africa and Southern Europe. However, participants from all locations may participate in discussions of relevance to people living around the Mediterranean Rim: <http://www.media.uoa.gr/yasmin/>.

Leonardo/ISAST wishes to thank the following sponsors and supporters of this special issue of *Leonardo*

ZeroOne is a public benefit organization based in Silicon Valley that provides for the collaboration of art and technology. ISEA is the distinguished Inter-Society for the Electronic Arts and hosts a biennial symposium on electronic art. The 13th Annual ISEA2006 Symposium will be held in conjunction with ZeroOne's inaugural ZeroOne San Jose: A Global Festival of Art on the Edge. By creating venues where artists and technologists can interact, ZeroOne has coalesced a community that is keenly interested in how new media enables artists to experiment with technology for expression while at the same time providing technologists a unique perspective of what is artistically possible with the tools of technology. Through its public programs, the organization also generates provocative dialog and emotive experiences to engage and educate the community at large. Founded in 2000 by Andy Cunningham, chairman of the board of trustees, and Beau Takahara, Founding Director, ZeroOne strives to inspire possibility through the intersection of art and technology.

The CADRE Laboratory for New Media is an interdisciplinary academic and research program dedicated to the experimental use of information technology and art. A theoretical and critical orientation provides a conceptual context in which artistic activities are defined. Faculty and students have participated in the evolution of media technology for over 20 years. Distinguished faculties representing interdisciplinary interest have created a unique academic environment dedicated to envisioning the cultural frontier and implementing theoretical strategies that will lead there. The CADRE Laboratory for New Media is located in the School of Art and Design at San Jose State University, the oldest public institution of higher education in California. The city of San Jose is in the heart of Silicon Valley and reflects the entrepreneurial spirit of the region.

san francisco art institute

Founded in 1871, **SFAI** has consistently offered one of the most open, innovative, and interdisciplinary environments in higher education. Faculty and students work together as practitioners, experimenting and investigating all aspects of contemporary art and culture. Launching in Fall 2006, the new School for Interdisciplinary Studies and the School for Studio Practice mark SFAI's generative role in curricular and public initiatives that redefine artistic practice, whether in the studio, across disciplines, or in communities. For more information visit www.sfai.edu or call 1.800.345.SFAI.

ABOUT CONTAINER CULTURE

Container Culture is an exhibition developed by the Curatorial Working Group of the Pacific Rim New Media Summit. Each curator has selected one or more emerging regional artists to present at ZeroOne San Jose/ISEA2006, using a shipping container not only as its means of transportation but also as the "white cube" for the works' exhibition.

One of the most significant examples of cross-cultural encounters in contemporary art is the traveling exhibition. The traveling art exhibition has often served to operationalize and exemplify the cross-cultural encounters and exchanges that are deemed necessary and natural in the globalized art world. However, a range of social, political, economic and art-historical differences generally complicate the globally themed traveling exhibition. The artists in traveling exhibitions are rarely able to adequately respond to each new context through their works, which is what these exhibitions are meant to initiate. The traveling exhibition thus converts each new cultural context into, essentially, an empty container for the artworks, allowing the artists little ability to respond to the exhibition site as physical location.

Container Culture is an exhibition of artworks traveling in standardized containers from different port cities that rim the Pacific Ocean to San Jose, California, to be presented alongside each other; almost like a conference of containers. In an ironic reversal of the tendency of conventional traveling exhibitions to convert every new space into an empty container, this exhibition invites curators and artists from each of these diverse port cities to convert a container into a culturally specific space. The exhibition conceptually draws on and will explore some of the following notions:

- Ports are liminal nodes that traditionally—and still today—negotiate

Article Frontispiece. Xing Danwen, image A11 from the series disCONNEXION, Chromogenic color print, 2002–2003. Huge piles of discarded electronic components bear witness to major environmental problems and social inequalities in remote corners of China. (© Xing Danwen) (China container)
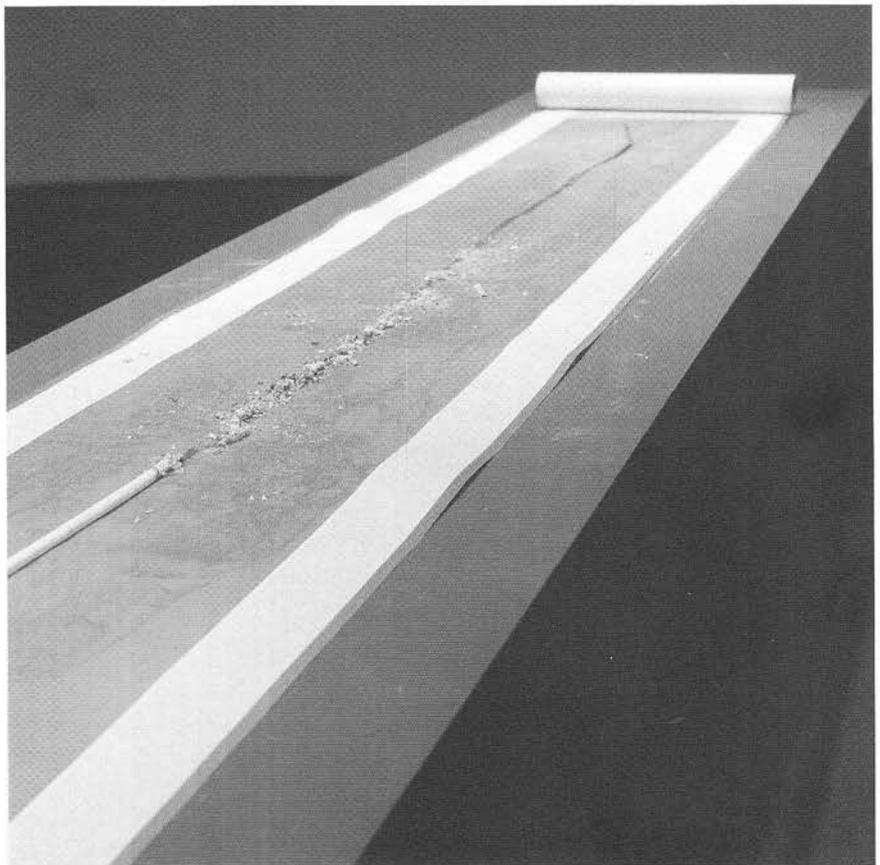
Fig. 1. Xu Bing, *Spring Festival along the River*, from the *Tobacco Project*, 2000–2004. A cigarette more than 10 meters long burns across a reproduction of the scroll *Spring Festival along the River* (by Song Dynasty artist Zhang Ziduan), leaving a trail of ash on its surface. (© Xu Bing) (China container)

the relations between countries. Ports invoke a whole set of related concepts: commerce, exchange values, customs procedures, border anxieties, legal trade vs. illegal traffic, etc.

- Containers are spaces that mimic the white cube as an empty container, even while potentially enabling the subversion of the white cube's immobility by their portability; of its transcendence by their quotidian-ness; of its neutrality by their border crossings.
- Transportation of artworks traveling in space and time between countries enables culturally specific elements of one place to migrate to another. Related concepts of location, speed, logistics, proximity and distance can also be explored.
- Networks: Transporting shipping containers from one port city to

another maps a network of economic relationships. By specifically curating new media installations, Container Culture investigates the effect of virtual networks to create real cultural connections.

STEVE DIETZ
AND GUNALAN NADARAJAN
Container Culture
Working Group Co-Chairs

© *Steve Dietz and Gunalan Nadarajan*

THE CHINA CONTAINER

Artists: Xu Bing, Hu Jie Ming, Xing Danwen, Huang Shi, Jin Jiangbo

Curator: Zhang Ga.
E-mail: <gazhang@nyit.edu>.

The shipping container is a space that travels. Neither an empty space nor a neutral white cube, the container car-

ries within it commodities of livelihood as well as emotional residues. The container bears useful items that sustain life and waste that must be discarded, to be relocated far from where it was produced and even turned to profit. Legality is often an ambiguous notion on the open sea; justice becomes an equivocal contingency of the perilous waters. Traversing territories of the haves and the have-nots, the container moves the world in directions most evident in its economic aspects. The container records history; its trajectory reveals the global tides of political intricacies, economic speculations, human mishaps and a collective unconsciousness.

This shipment from China apparently contains no goods, at least not as commonly understood; rather, it holds a body of art objects with no particular use value. It tries, however, through its voyage to San Jose, to unveil the various sentiments that a shipping container might invoke as an epiphany of the global phenomenon of container culture.

Zhong Chen (Prophecy) faithfully presents a set of original accounting paperwork, bank records, receipts and other historical artifacts that document the business transactions of the British American Tobacco Company in China during its formative years, plus records of artist **Xu Bing**'s personal financial transactions with the Duke Foundation during the creation of the artist's *Tobacco Project* in 2000. Understated, almost detached from the common denominator of art objects, Xu Bing's deadpan scrutiny of the generations-old financial paperwork reflects on China's modern and contemporary experience as a marketplace as well as its interaction with the global economy, implicitly invoking multiple interpretations.

disCONNEXION uncovers, through **Xing Danwen**'s unforgiving eye, a story underneath mountains of electronic garbage. Xing traveled many times to southern China to photograph a population of over 100,000 living on the fringe of life, recycling thousands of tons of electronic waste dumped in China by the West. Under the dense webs of wires and machine debris, one attends to the groaning of a people left crushed by the unstoppable global economic engine.

Hu Jie Ming's seemingly benign and poetic interactive installation *Altitude Zero* contemplates the growing tension between dominant cultural forms and others, marginal and fragmented, often disparaged and in danger of extinction.

The desire for hope and connection, however, and therefore for understanding and reconciliation, is not just the stuff of ancient romance. Shanghai-based artist **Jin Jiangbo** builds a well to the other side of the world (Color Plate A) to link people through smiles and laughter—a handshake across the ocean, a peace sign transmitted through an electronic pulse that speaks the language all cultures understand.

Finally, we have **Huang Shi**'s reinvention of the lost legacy of medieval sailors who communicated by means of drifting bottles. For the artist, this intimate, crude mode of communication is of particular metaphorical importance in a world increasingly permeated by technologically aided synthetic forms of transmission. His nostalgic, simple wish may help us to reappraise the long-forgotten Marxist idea of alienation.

Zhong Chen (Prophecy) by Xu Bing

Zhong Chen is one component of the site-specific work *Tobacco Project* (Fig. 1). This part of the installation consists of a display pedestal encased with original accounting paperwork, bank records (Fig. 2), receipts and other historical artifacts that document the business transactions of the British American Tobacco Company in China in its formative days. The display also contains the artist's records of personal financial transactions with the Duke Founda-

Fig. 2. Xu Bing, *Zhong Chen* (Prophecy), 2002. Documents showing the British American Tobacco Company's profit margin in China. (© Xu Bing) (China container)
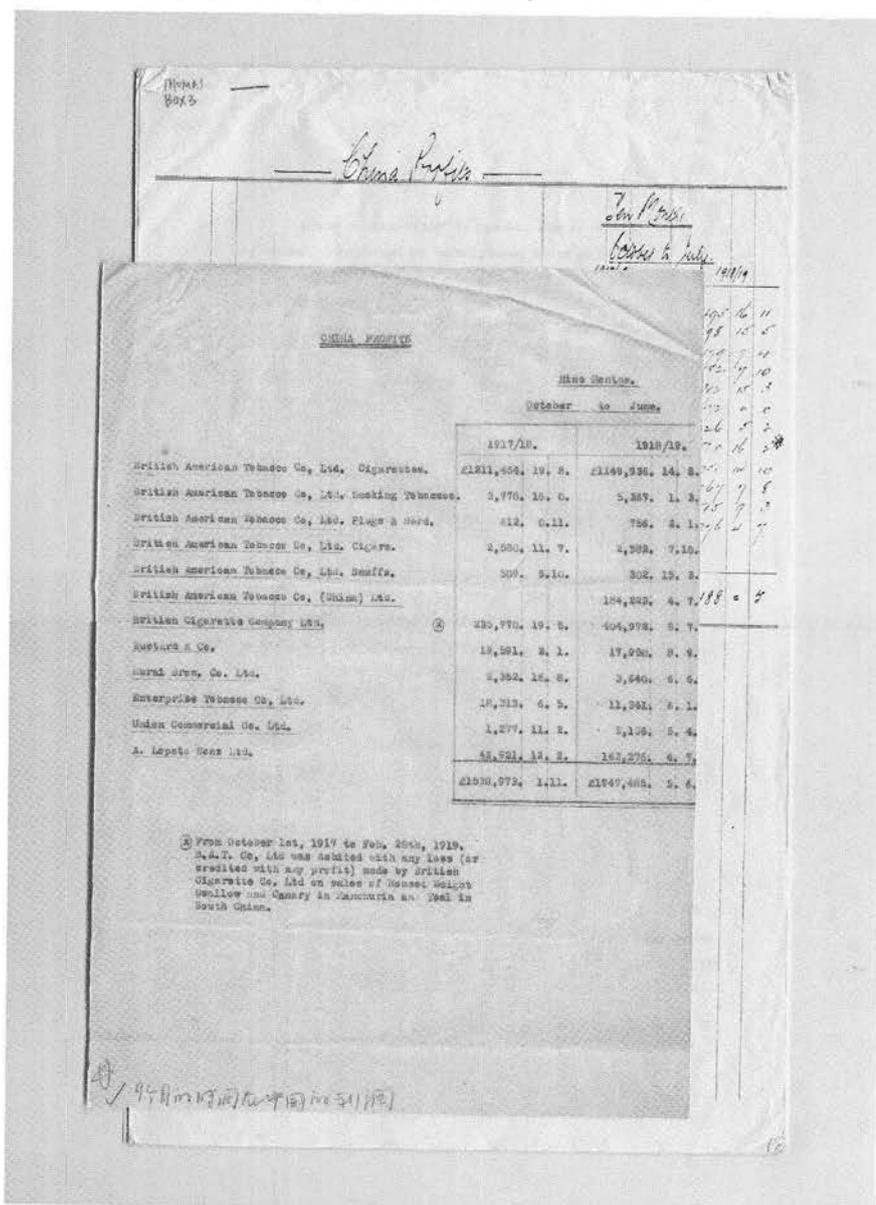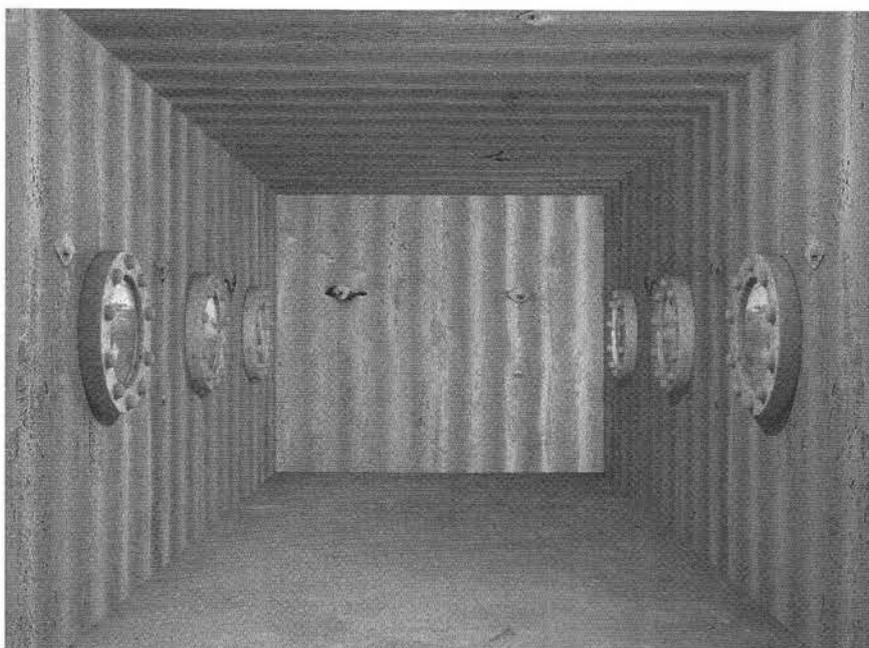
Fig. 3. Hu Jie Ming, *Altitude Zero*, interactive installation, 6 computers and 6 LCD monitors, sensors, small speakers and 6 sets of old cabin window frames, 2006. Six cabin window–encased monitors are mounted on each side of the container. (© Hu Jie Ming) (China container)

tion during the creation of the *Tobacco Project* in 2000. The project traces the trajectory of the multinational tobacco company's expansion into the world's most populous country and urges us to reflect on China's modern and contemporary experience as a marketplace, as well as her interaction with global economy, implicitly invoking its multiple interpretations. Xu Bing's *Zhong Chen* realizes its experimental quality by engaging art in a new kind of dialogue with commercial culture and international relations. The work is neither a representation of observed reality nor an installation of ready-made materials. Rather, it remains in close contact with reality while transforming reality. It would be futile to ask whether it is a "work of art" because Xu Bing did not make it as such and because its meaning can only be grasped when it is approached as part of a broad, complex social and political process.

disCONNEXION by Xing Danwen

Xing Danwen seeks to sketch a visual representation of modernity in the 21st century. She carefully chooses direct and intimate moments to portray the objects that she finds. Since summer 2002, she has traveled several times to South China's Guangdong Province, one of the most developed areas in the country. Along the coast, more than 100,000 people from Guangdong and migrant workers from Western China

make their living by recycling piles of computer and electronic trash, operating in rough environmental and social conditions. This huge amount of e-trash is shipped from industrialized countries—Japan, South Korea and especially the United States—and dumped here.

We are in an information and communication era, and we rely extensively on high-tech facilities for our modern life. These machines become deeply rooted in our daily activities, replacing the old ways of doing things. Millions of newly purchased products follow on millions of trashed ones. Confronting the vast piles of dead and deconstructed machines and the overwhelming number of cords, wires, chips and parts (Article Frontispiece) with clear indications of the company logos, model numbers and even individual employees deeply shocked Xing Danwen.

Modernization and globalization shape urban development. China has experienced and witnessed the changes that have taken place under the influence of Western modernity. These changes have contributed to a strong and powerful push for development in China, but at the same time they have led to major environmental problems and social inequality in remote corners of China.

Xing Danwen has lived in New York and travels forth and back between

China and the West. This has made her more aware of the conflicts between modernity and tradition, dream and reality. These have become important themes in her work and a personal concern.

This body of work, titled *disCONNEXION*, has more than 40 images. Each individual image has no subtitle but is identified with numbers. The photographs are Chromogenic color prints.

Altitude Zero by Hu Jie Ming

This project contemplates current global cultural conditions. The interaction between dominant cultural forms and marginal cultures precipitates the emergence of fragmented pockets of variant cultural forms. Often disparaged and in danger of extinction, these edgy cultures are finding their ways of manifestation and representation.

The installation is composed of six monitors camouflaged as cabin windows (Fig. 3). The video images show materials such as abandoned objects and pollution adrift in ocean waters (Color Plate B), symbolizing detachment and alienation from mainstream cultural domains. The objects drift between sea bottom and sea level, creating a sense of movement and instability. The drifting materials remind us of the remnants of different cultures and times. Sometimes they clash against the windows; at other times they float away. Video images are activated according to audience presence and movement via sensors.

Drift Bottles by Huang Shi

In the Middle Ages, bottles set adrift were one of the few means for sailors to communicate with others on the open seas. Messages sealed in the bottles often carried important information or heartfelt blessings. It would be a great surprise for a medieval sailor to find such a bottle from some unknown location. Mysterious, incidental and expectant, the drift bottle can be seen as a symbol of maritime cross-cultural exchange.

Today, cell phones, the Internet and television are rapidly changing our ways of communicating. Anyone can easily connect with others simply by punching buttons. High technology is a double-edged sword, not only facilitating our daily communication but also eliminating the joy of intimacy and surprise once enjoyed by many.

The installation *Drift Bottles* is an attempt to reconstruct a different mode of communication and to revive one of
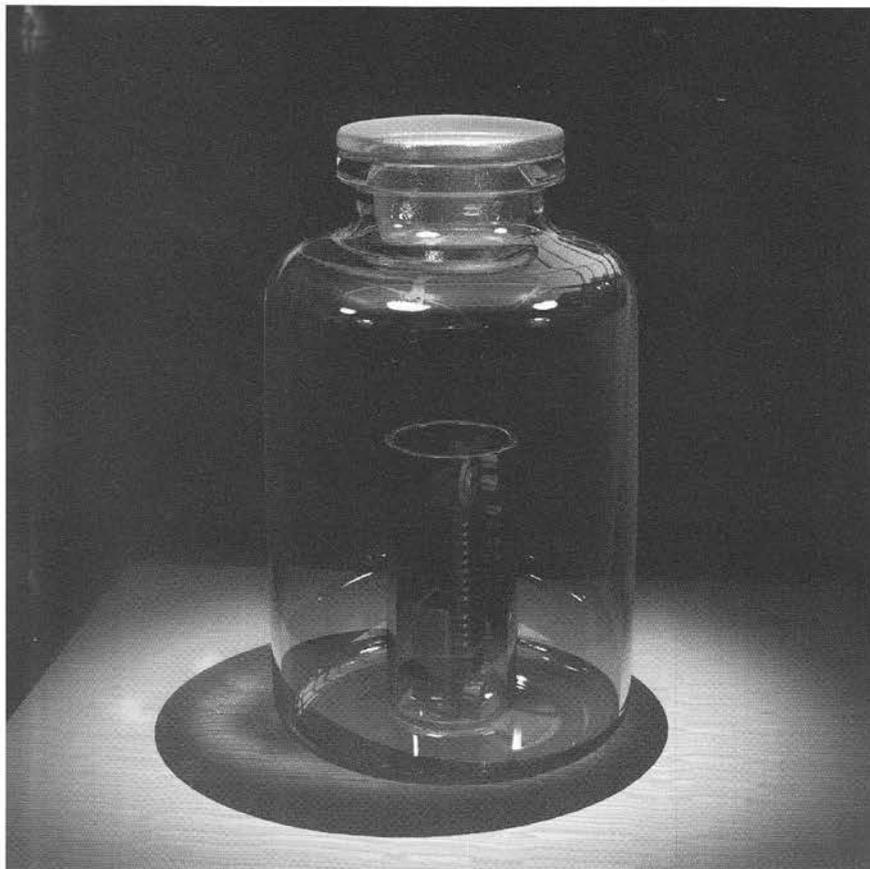
Fig. 4. Huang Shi, *Drift Bottles*, interactive installation, 5 glass bottles, MP3 player/recorders, speakers and microphones, processors, batteries, 2006. (© Huang Shi) (China container)

humanity's ancient interactive customs (Fig. 4). It symbolizes a hope for outreach and a gesture for understatement via intimate means of interaction in an increasingly alienated society driven by technology.

When opening the bottle cap, participant A is asked to speak some words into the empty bottle. The next bottle opener, participant B, will hear A's words as recorded by the bottle. He or she will be asked to leave yet another message to the next participant after a beep. Once heard, the words in the bottle are deleted irrevocably.

In addition to bottles used for recording/playback, the installation also consists of other bottles that will contain messages from various parts of the world. These messages are only readable and cannot be rewritten. Thus, the bottles are also metaphorically embodied as a voice container and culture carrier.

ZHANG GA
Curator

Xu Bing *was born in Chongqing, China, in 1955 and grew up in Beijing. In 1975 he was relocated to the countryside for two years during the Cultural Revolution. In*

1977 he enrolled in the Central Academy of Fine Art in Beijing, where he studied printmaking. He received an MFA from the Central Academy in 1987. In 1990 he moved to the United States and now makes his home in Brooklyn, New York. His work has been shown internationally I many exhibitions, include the 45th Venice Biennial; The Museum of Modern Art, New York; Museum Ludwig, Cologne, Germany; the Reina Sofia Museum (Museo Nacional Centro de Arte Reina Sofia), Madrid; V&A, London; Kiasma Museum of Contemporary Art, Helsinki; the Sydney Biennial; and many others. Xu Bing's work has also appeared in high-school and college textbooks around the world, including Abram's Art Past, Art Present, and Gardner's Art through the Ages. In July of 1999, Xu Bing was awarded the MacArthur Award for Genius by the John D. and Catherine T. MacArthur Foundation in recognition of his "originality, creativity, self-direction, and capacity to contribute importantly to society, particularly in printmaking and calligraphy." In September 2003, Xu Bing was awarded the Fukuoka Asian Culture Prize for his work in Asian art and culture. In 2004, Xu Bing was awarded the first Wales International Visual Art Prize, Artes Mundi, one of the largest international prizes in the world. That year, he also became a Coca-Cola Fellow of the American Academy in Berlin.

Xing Danwen *is active in today's contemporary Chinese art scene, as well as one of the earliest artists using photography as an art form in the early 1990s in China. She has exhibited widely in galleries, museums, biennales and triennials around the world, including the International Center of Photography, the Whitney Museum of American Art in New York; Centre Pompidou, Arles International Photo Festival 2003 in France; the Yokohama Triennial 2001 in Japan; the Sydney Biennale 2004; Multimedia Art Asia Pacific 2004; and the Guangzhou Triennial 2002 and the Millennium Art Museum in China. Her work is widely collected by museums, institutes and private collectors. Her artistic practice is both rich and varied, and her subjects are extensive: the body, memories, sex, cultural status, globalization, consumption and desire—are all her concerns and personal interests. She projects her artistic approach and critical view onto the circumstances of the era she lives in. The issues of reality and fiction, fact and illusion often play an important role in her works. She was born in 1967 in Xiian, studied at the Central Academy of Fine Arts in Beijing and received her MFA at the School of Visual Arts in New York. She lives and works in Beijing.*

Hu Jie Ming *lives and works in Shanghai, China. He makes media artworks and has exhibited internationally, including in 010101: Art in Technological Times (San Francisco Museum of Modern Art, 2001); Live in Time (Nationalgalerie Im Hamburger Bahnhof Museum Fur Gegenwart—Berlin 2001); the first Guangzhou Triennial, Reinterpretation: A Decade of Experimental Chinese Art 1990–2000 (Guangdong Art Museum, Guangzhou 2002); Between Past and Future: New Photography and Video from China (International Center of Photography, New York, 2004); and the 5th Shanghai Biennial, Techniques of the Visible (Shanghai Art Museum Shanghai 2004). His interactive works have been shown in Connected to You in Bizart Shanghai in 2003 and Hu Jie Ming Interactive Art, in MAAC HHKK Brussels in 2004. He was also included in the Second Beijing International New Media Art Exhibition at China Millennium Museum and <Zooming into Focus>, a Chinese contemporary photo and video exhibition at China National Art Museum.*

Huang Shi, *born in 1979 in northwest China, is a Ph.D. candidate in the Department of Information Art and Design, Academy of Art and Design of Tsinghua University. His interests lie in science and multimedia design. His work City Music was included in the 2nd Beijing international new-media arts exhibition in 2005.*

Jin Jiangbo *graduated from the Department of Traditional Chinese Painting of the Academy of Fine Arts at Shanghai University in 1998. He pursued advanced study in management of multimedia procedure*

and multimedia design in Japan in 2002. He received a master's degree in digital art from the Academy of Fine Arts in 2002 and is now working at Shanghai University. His 2005 exhibitions and art activities included participation in Art Rising, An Exhibition of Contemporary Art, Toronto International Art Fair, Canada; City_net Asia 2005, An Exhibition of Contemporary Art, Seoul Museum of Art, South Korea; To Each His Own, An Exhibition of Contemporary Art, Zero Field Experimental Artcenter, Dashanzi art district, Beijing, China; Mahjong Contemporary Chinese Art from the Sigg Collection, Museum of Fine Arts Berne, Switzerland; and Electroscape-International New Media Art Exhibition, Shanghai Zendai Museum of Modern Art, 2005.

Zhang Ga is a media artist, curator and co-director of agent.netart. He has exhibited internationally—including the Ars Electronica Center (Austria), Adelaide Art Festival (Australia), Dutch Electronic Art Festival, Whitney Museum of American Art, Singapore Art Museum and Nabi Art Center in Seoul (South Korea) among others—curated exhibitions, organized conferences and digital salons, written and lectured on new media art practice and criticism, and served on juries for media art grants. He is co-artistic director of the Millennium Dialogue: Beijing International New Media Arts Exhibition and Symposium. He is on the board of the curatorial committee of the 13th Inter-Society for the Electronic Arts Symposium (ISEA2006).

Zhang Ga has taught at the MFA Design and Technology Program at Parsons School of Design, School of Visual Arts and Pratt Institute. In 2005, he joined the New York Institute of Technology as associate professor of communication arts. He is also a guest professor of Information Art at the Academy of Art and Design and visiting fellow of Art and Science Research Center at Tsinghua University, China.

THE HONG KONG CONTAINER

Artist: Annie On Ni Wan <slimboyfatboyslim@slimboyfatboyslim. org>; Web <http://www.slimboyfatboy slim.org>

Curator: Ellen Pau.
E-mail: <ellenpau@hkstar.com>.

Phenakistoscape

Phenakistoscape is a kinetic interface of locative telematic experiments within the larger context of an investigation into the metaphysics of moving image projection and the contemporary culture of on-line cooperative distribution. In this work, a mechanical algorithmic approach to video projection within physical space creates a dynamic and unexpected labyrinth as a reconstructed architecture of time and space, unfolding an entirely distinct scheme for experiencing the profound poetry encoded in cinematic space.

In the vertical city, we live amid neon and streetlights. A shipping container would be a large-size living space for one person living in Hong Kong. Our horizontal line of sight is limited, but only the sky limits our vertical line of sight. If the dimension of space and time will be different in flat land, the perception of moving images from vertical land is an imaginative space that can be both nauseating and nostalgic.

In *Phenakistoscape* I adopted the idea of intertextuality in movies, creating a montage with "running" scenes and camera movements, either pans, tilts, zooms or tracking shots with narrative development. The movies consist of short sequences produced by the community. Each movie clip is edited and stored in a database. How they are sequenced in real time depends on a fluid algorithm that analyzes the camera movement in the clip.

The camera movements in the movie clips control a custom-made robotic video projector specially constructed for the project. The robotic projector will pan left when there is a pan to the right and tilt up when there is a downward shot. Apart from the pan and tilt action, the robotic projector will move around the container space, facilitating the zoom shots of the moving images. Ultrasonic sensors will be placed

Fig. 5. Annie On Ni Wan, the matrix of frames, from *Phenakistoscape*, a robotic installation with video projection, 3 × 1 × 1 ft, 2006. (© Annie On Ni Wan) (Hong Kong container)
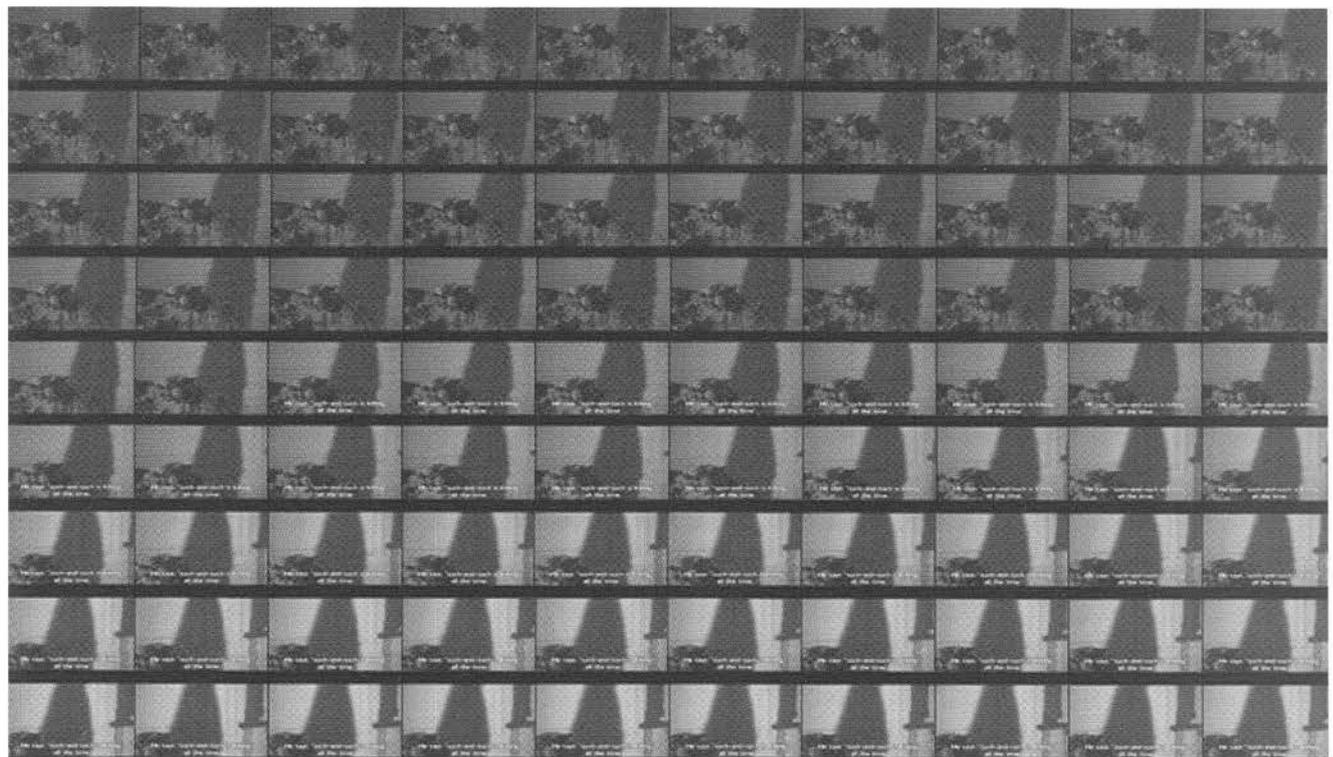
around the space, for the sensing of obstacles, including viewers.

In addition to the robotic projector, there is also a stationary video projection from the ceiling, which will project the same video content as the robotic projector but from another perspective: a matrix of images composed of individual frames of the video (Fig. 5).

ANNIE ON NI WAN
Container Artist

Editor's Note: For an updated text on this work, please visit: <http://01sj.org/content/blogcategory/115/140/>.

Annie On Ni Wan is an activist artist working in audiovisual art and research on interfaces for media art. She has received a Master of Science degree in Art and Technology at Innovative Design, Chalmers University of Technology in Sweden. Her recent works, including locative-media and interactive installations, have been shown in Mondal Museum, Sweden; Syndicate Potential, Strasbourg, France; at an interactive theater performance in Oslo, Norway; and in a locative-media project presentation in Berlin, Germany. She has received travel and project grants from various organizations in Hong Kong, Sweden and Norway, from the Nordic Fund and the EU Culture Fund. Her latest project, GeoLeds, has been presented and exhibited in the Art+Communication Festival 2004 in Riga, Latvia, Piksel 2004, FLOSS in Motion and BEK Bergen, Norway. Her kinetic art interface research paper, as well as part of her master's thesis "Positive/Negative Space," has been presented at the Multimedia Art Asia Pacific Conference 2004, Singapore. On Ni Wan is currently a Ph.D. candidate and teaching assistant at the Center for Digital Arts and Experimental Media (DXARTS), University of Washington, Seattle, with a full scholarship and a Top Scholar award.

Ellen Pau is a Hong Kong–based video artist. Her earlier works describe and interrogate cultural/sexual identity in postcolonial Hong Kong. Pau's works have been shown internationally at pop-music concerts, performances, conferences and festivals. She has been an artist-in-residence at Holland's Mu Art Foundation, the OK Centre in Linz, Austria, Spacex Gallery in the U.K., Griffith University in Australia, and Hong Kong University of Science & Technology.

Pau founded the media-arts group Videotage and has served as its director since 1986. She also founded the Microwave Media Art Festival in Hong Kong, presenting internationally renowned new-media artists and curators such as Jeffrey Shaw, Stelarc, Sommerer & Mignonneau, and Solange Farkas.

*She has been a media art curator since the early days of media art and has curated multimedia programs for Videotage, muse-*ums, galleries and festivals such as Transmediale (Berlin) since 1985. She has been appointed Museum Honorary Adviser and assessor for the Hong Kong Art Development Council. Pau also teaches media art and film in universities and institutions.*

THE SINGAPORE CONTAINER

Artists: Margaret Tan <tanmag@singnet.com.sf> and Shirley Soh <sskeim@singnet.com.sg>.

Curator: Gunalan Nadarajan, Associate Dean for Research and Graduate Studies, College of Arts and Architecture, Penn State University, 114 Arts Building, University Park, PA 16802-2900, U.S.A. E-mail: <gun1@psu.edu>.

The internationalization of trade is a complex phenomenon emerging at the intersection of several interrelated and often competing histories: of gifts and exchanges; of values, cultural and monetary; of national interests and international imperatives; of borders and transgressions; of conflicts and compromises; of embargoes, regulation and free movement. Ports have historically served as nodes of this tendency toward the internationalization of trade as well as of its frustration. The container revolutionized international trade in the mid-1950s when it began replacing the tedious, labor-intensive and delay- and damage-prone practices of conventional cargo handling. The fact that a single container could move between several modes of transport—between ships, planes and trucks—while safeguarding the integrity of what was being transported encouraged the neutralization of the specificities of what was being transported. The abstract and monochromatic color palette of these containers is not accidental insofar as it exemplifies its seeming indifference to port, mode of transport and cargo. Containerization seems to embody, or at least seeks to create a token deference to, the value-neutral exchange of goods that international trade ought to be. However, the container merely distorts the highly volatile cultural and political frictions that actually mediate international trade. *Sticking Point*, the work of Singaporean artists Margaret Tan and Shirley Soh, seeks to engage and problematize this seeming political neutrality of trade, especially of the rhetoric of free trade.

In their work, the artists contend with the recently completed free trade agreement (FTA) between Singapore and the U.S. While the principles of free trade and the agreement that instantiates it are seemingly laudable in their goals, the motivations behind and the effects of such trade are seldom so. A free-trade agreement (principally, an agreement to engage in an exchange of goods that is free of tariffs, quotas and preferences) is based on the market principles of comparative advantage where it is assumed that in a free-trade situation, sectors would specialize in areas in which they have a relative advantage over others. Free trade also assumes that all products are thought to be socioculturally and politically neutral insofar as only their economic values have any relevance in such exchange. The artists have chosen, interestingly, to work with chewing gum, a politically loaded product in Singapore, in order to reveal the sociopolitical complicities of free trade. As a result of the Singapore-U.S. FTA, the Singapore government's ban on the imports of chewing gum into the nation-state in the 1980s came under scrutiny. While the ban has had an undue effect on the international perception of civil liberties in Singapore (i.e. that it is a country that disallows its citizens the right to leisurely and harmlessly chew gum), the Singapore government has maintained it as a commitment to a clean city free from "unsightly gum spots." The FTA has forced a reconsideration and negotiation of the import of chewing gum into Singapore. Instead of taking up an entrenched position (of who is right and who is wrong), the artists have chosen to reveal the cultural and political sensitivities that are reflected in this issue through a video installation within a standard shipping container—the veritable symbol of international free trade.

GUNALAN NADARAJAN
Curator

Sticking Point

This work deals with the recent free trade agreement between Singapore and the U.S.A., which has been a source of tremendous optimism and grave concern among a variety of people, depending on which side of the free-trade issue one is on.

One of the elements that Singapore has had to give in on is that of the import of chewing gum. The FTA problematized the ban on the import of chewing gum imposed by the Singapore government in the late 1980s.

Given the fact that this has been one of the most conspicuous and controversial policies of the Singapore government, it is no surprise that this move has aroused several political sensitivities. It is fascinating how this ban on chewing gum has unfavorably positioned Singapore internationally. Today, Singapore still upholds the ban on the import of chewing gum but in a provision of the FTA has given in to the limited import of therapeutic chewing gum (e.g. nicotine gum).

In this work, we seek to problematize the notion of free trade by reflecting on the ways in which it brings deeper cultural and political differences to the forefront. Toward this end, our video installation is composed of interviews with Singaporeans who are asked to express their views about the FTA, free trade, U.S. imports and their cultural meanings (liberal values, consumer lifestyles, etc).

Placed on the floor of a 20-ft container shipped from Singapore to the U.S.A. is a blob of chewed-up gum approximately 10 ft in diameter. Embedded in it are two TV screens showing the interviews and a number of symbolic objects.

The installation will allow the audience to move around and look at the two TV screens, which are mounted horizontally, at a comfortable height, as well as at the other embedded objects.

The items in the heap, placed at different positions and angles, will consist of a variety of everyday objects caught in various degrees of contact with the chewing gum.

The interviews will be interspersed with video clips of 1980s coverage of the chewing gum ban in Singapore as well as other video snippets.

MARGARET TAN
AND SHIRLEY SOH
Container Artists

Margaret Tan is an artist based in Singapore who works with a wide range of media. Her works have been showcased both locally and internationally in exhibitions such as Nokia Singapore Art 2001, Singapore Art Museum; From My Fingers: Living in the Technological Age, Kaoshiung Museum of Fine Art, Taipei; and ISEA 2002 (Orai), Nagoya, Japan, among many others. Tan has been artist-in-residence with programs such as the Cyberarts and Cyberculture Initiative, University Scholars Programme, National University of Singapore and Artist-in-Labs Project (Swiss Centre for Electronics and Microtechnology, Alpnach), University of Applied Sciences and Arts Zurich, Switzerland.

Shirley Soh is currently an artist based in Singapore after previous careers in TV journalism and publishing. Trained in ceramics, she has also worked in other media, mainly installations, using living vegetation, soil and other materials. Her work deals with the conundrums of human subjectivity in culture-nature discourses. She has participated in several art exhibitions in Singapore, Malaysia and Switzerland, where she was an artist-in-residence through the Artists-in-Labs project.

Gunalan Nadarajan is an art theorist/curator from Singapore and is currently Associate Dean of Research and Graduate Studies, College of Arts and Architecture at Penn State University. His publications include a book, Ambulations (2000), and many catalogue essays and academic articles. He has curated exhibitions in several countries, including Ambulations (Singapore), 180KG (Yogyakarta, Indonesia), Negotiating Spaces (Auckland, New Zealand) and media_city 2002 (Seoul, South Korea). He was contributing curator for Documenta XI (Kassel, Germany) and served on the jury of several international exhibitions, including ISEA2004 (Helsinki/Talinn) and transmediale 05 (Berlin, Germany). He is also currently Artistic Co-Director of the Ogaki Biennale 2006. Nadarajan is on the Board of Directors of the Inter Society of Electronic Arts. He was recently elected a Fellow of the Royal Society of Arts. Nadarajan's research interests include art and biology, robotic arts, nanotechnology and toys.

THE VANCOUVER CONTAINER

Artists: Kate Armstrong, Bobbi Kozinuk, M. Simon Levin, Laurie Long, Leonard J. Paul, Manuel Piña and Jean Routhier

Curator: Alice Ming Wai Jim.
E-mail: <alice.jim@centrea.org>.

in[ ]ex

in[ ]ex is a distributed audio sculpture in which 10,000 wooden blocks embedded with radio tags are released into the city to engage the public as active agents. For the Container Culture exhibition, in[ ]ex explores the migration of capital, goods and people through the ports and public spaces of Vancouver, Canada, and San Jose, California. The tag in each block sends a signal that is picked up and mixed, forming an audio installation in the space of a shipping container. The piece is experienced in different ways by those who contribute dynamic data to the piece by carrying or interacting with the wooden object; by those who encounter the objects in the city, wherever they may have been taken, left or

placed; and by those visiting the environment of the shipping container, where an engine picks up dynamic data, remixes it, and outputs an audio stream. In this way, in[ ]ex: Vancouver and in[ ]ex: San Jose relay the diversity of urban expressions of both cities.

IN[ ]EX

The Vancouver data is collected from two main sites: Pigeon Park, historically known as Pioneer Place and located across from the former Electric Railway station in the Downtown Eastside, an area predominantly represented as Canada's poorest postal code; and the Great Northern Way, a cultural venue of the 2006 World Urban Forum. Both sites speak to the Terminal City's history as a major transportation hub. In San Jose, data is collected from the Plaza Cesar Chavez, the oldest continuously used public open space in this silicon cyberport city. Visitors to the in[ ]ex project experience a soundscape that maps the dynamism of different publics and to which they may have contributed their own data. This activity is ongoing throughout the duration of the exhibition.

The project will first be exhibited by Centre A in connection with the 2006 World Urban Forum in Vancouver in June 2002 and then in Cesar Chavez Square in San Jose as part of the Container Culture exhibition at ISEA2006 in August.

ALICE MING WAI JIM
Curator

Kate Armstrong focuses on the creation of experimental narrative forms, particularly works in which poetics are inserted within the functional framework of computer programs. She is a recipient of a 2004–2005 commission of New Radio and Performing Arts for Turbulence and is affiliated with bnode and the Locative Media Lab.

Bobbi Kozinuk uses radio, electronics, projections and performance to explore issues of gender, the environment and community involvement. He has taught over 150 people to build FM radio transmitters, empowering communities and individuals to access and work with electronic media, and helped numerous artists create installations and outdoor performances.

M. Simon Levin has been creating site-based systems that explore the aesthetics of engagement using a variety of designed forms and tools for the past 18 years. These relational

projects investigate the often-blurred boundaries between the private and the public, resulting in poetic interventions into space and place.

Laurie Long is an independent filmmaker and artist who has been involved over the past 15 years in productions ranging from guerrilla-style performance poetry videos and independently produced documentaries, to gallery video installations and television series. Her work has been broadcast, screened and exhibited internationally and extensively in Canada.

Leonard J. Paul has a 10-year history in making music and coding for videogames working for companies such as Electronic Arts, Radical Entertainment and Rockstar Vancouver. He is the composer for the film The Corporation, which has become the highest-grossing Canadian documentary in history.

Manuel Piña is interested in the relationships between power, utopias and history, and in the city as both site and embodiment of these relationships. His photographs and video pieces often depict urban spaces as a departure point for narratives concerning social issues. He currently lives and works in Vancouver and Havana.

Jean Routhier is an audio wrapper. His approach is similar to that of a store clerk,

bagging everything into its sonic essence. Interested in the gaps and gasps in sounds conducive to the transmission of stories he sometimes hears in the ether, he finds inspiration in everyday situations.

Alice Ming Wai Jim is an art historian, curator and critic. She has been Curator of the Vancouver International Centre for Contemporary Asian Art (Centre A) since 2003. She has curated numerous exhibitions at Centre A and with Videotage (Hong Kong), as well as other independent projects. She obtained her Ph.D. in contemporary Asian art from McGill University in 2004, one of the first such degrees awarded in Canada. Her research interests include media art, theories of representation and spatial culture. In 2001–2002, Jim was Research Fellow at the Centre of Asian Studies and the Centre for the Study of Globalization and Cultures at the University of Hong Kong. Her writings on contemporary Asian art and diasporic art have been widely published. She teaches as sessional faculty in the Critical and Cultural Studies Department at Emily Carr Institute of Art + Design + Media and in the Critical and Curatorial Studies Program of the Department of Art History, Visual Art & Theory at the University of British Columbia. Jim is on the curatorial and programming committees of NFF05 (Vancouver), LITMUS (New Zealand) and ISEA2006 (San Jose).

THE MUMBAI CONTAINER

Artist: Shilpa Gupta. E-mail: <shilpagupta@hotmail.com>.

Curator: Johan Pijnappel. E-mail: <pijnappel@hotmail.com>.

War on Terror

In several of Shilpa Gupta's recent works, the artist herself pops up as the protagonist on web sites and videos dressed up in clothes made out of military camouflage fabric. This style has become popular first in the West, since the onset of the "War on Terror" campaign, and more recently spilling east onto the streets outside her home in Mumbai. In shops just two blocks from where Gupta lives, camouflage gear is plentifully available. Gupta presents this under the slogan "Camouflage makes you feel Cool and Terror is quite Cool." This military masquerade occurs as well in her first interactive video installation, Untitled (2004–2005), to be presented at the ZeroOne Biennial. The artist chose to cover the outside of the exhibition container in a manner complementing her style of clothing: with the battleship camouflage technique called "dazzle painting."

In the inside wall projection, seven clones of Gupta appear lined up, each in a different masquerade version (Fig. 6 and Color Plate C).

She eloquently describes the works as follows.

> Click with the mouse on the figures and they move, they copy, they imitate. Click one, click two, choose a leader, become a leader and the rest follow. If they stop, click them up and they join. Exercise 1-2-3-4. One Bend, Two Bend, Three Bend, Stay. Look Straight – Don't See – STAY. I have a bag, I have a phone, my neighbour has a phone, my phone, I don't have a phone, I don't have a shopping bag, but I need to JOG for it. Jog Jog Jog Stay on the Spot. Jog Jog Stay Stay
>
> March Free Speech Free Press Free Market March Market Market March Free Speech No Speech No Press Market Market Market march March
>
> Dumb-ed in a capitalist society, we enjoy being programmed. We find instant satiation and loss of memory in turning ourselves into puppets. We allow media, electronic extensions of ourselves now in the hands of a corporate often with state support nexus to think for us and amputate individual reasoning (McLuhan). Mental and physical activity slips from the mechanical to the mindless deteriorating into fear, chaos and violence against an enemy does not exist in a world where global consent is hijacked to fight a war in search of weapons which were never there. Everybody Bend; Dont Talk, Dont See, Dont Hear. Gandhi said so.

Fig. 6. Shilpa Gupta, Untitled, interactive video projection, 8 m wide, 2004–2005. (© Shilpa Gupta. Photo © Hyung Min Moon.) (Mumbai container)
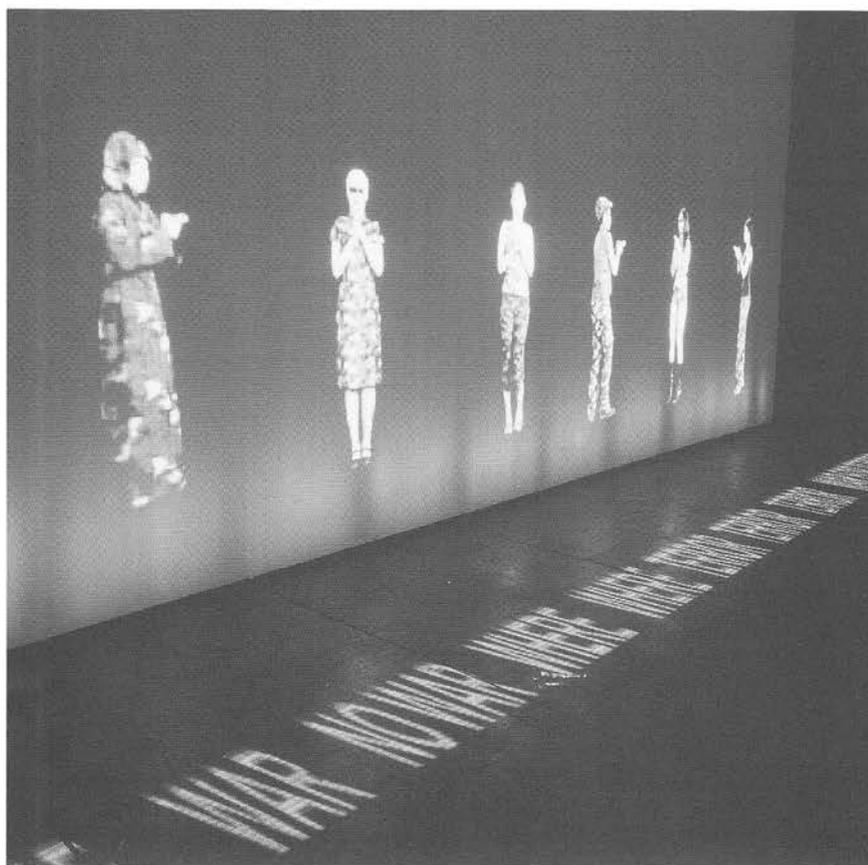
For Shilpa Gupta the project recalls a psychological technique in which a combination of healthy physical exercises can help in a slow and intense indoctrination of the mind by intense state military drills, local right-wing Hindu RSS cadre exercises or new-age courses to make one fighting fit.

The interactive loop keeps slipping into mindless violence that is no longer just a fashion but becomes internalized, morphing the emptied vulnerable self into a vessel for the projection of violence toward the state. Or as Shilpa Gupta, quoting Arundhati Roy, puts it, "'You could say terrorism is the privatization of war. Terrorists are the free marketers of war. They are people who don't believe that the state has a monopoly on the legitimate use of violence.'"

JOHAN PIJNAPPEL
Curator

Shilpa Gupta was born in Mumbai, Maharashtra. She studied sculpture at the Sir J.J. School of Fine Arts, Mumbai. While still a student, she started public participation projects with local communities that used printed matter, telephone messages and shop interiors in a manner that recalled shopping mall events. In these, she cynically targeted the commercialization that was on a huge upswing in India's rapidly globalizing economy.

In 2000 Gupta initiated Aarpaar, a public art exchange project between India and Pakistan. She gained international attention with installations including Your Kidney Supermarket (2002) and Blessed Canvases (2002) and web sites such as Diamonds and You (2000), sentimentexpress.com (2001), and blessed-bandwith. net (2003), which was commissioned by the Tate Modern. Like her other works, these focused on the issue of global inequality. Although she often exhibits abroad, she has also created a number of new local projects and workshops in which she engages with a larger public. In 2003 she started the Video Art Road Show, which included several presentations in Mumbai and New Delhi in shopping malls and markets in the suburbs, and has shown her installations and video in street shops. Over the years, Gupta has been honored with several awards, such as the Sanskriti Award in India and the Transmediale (2004) in Berlin. Her projects in 2006 are for the Havana, Sydney and Liverpool Biennials as well as for a solo show at the Bose Pacia Gallery in New York. Shilpa Gupta lives and works in Mumbai.

Johan Pijnappel is an art historian/curator born in 1958 in Gendt, the Netherlands. In the late 1980s he was part of the artists' collective that realized the second Art of Peace Biennial under the name Art Meets Science

and Spirituality in a Changing Economy at the Stedelijk Museum in Amsterdam in 1990. In the early 1990s he wrote and edited a series of publications, such as Fluxus—Yesterday and Today, World Wide Video, Art & Technology and Marina Abramovic—Cleaning the Body, for Academy Editions in London. In the second half of the 1990s he worked as co-curator of the World Wide Video Festival in Amsterdam. His interest in Asian video art resulted in his serving a curatorial residency in 1999–2000 at the Fukuoka Asian Art Museum. Since he began living in India in 2000, his devotion to the video art of this country has resulted in a number of exhibitions and articles. His first book on the subject appeared in 2002. Most of his international curatorial projects since 2000 have aimed at creating dialogues within Asia. His latest exhibitions were Indian Video Art: History in Motion, Fukuoka Asian Art Museum (2004); CC: Crossing Currents—Video Art and Cultural Identity, Lalit Kala Akademi, New Delhi (2004); the Third Seoul International Media Art Biennale, Seoul Modern Art Museum (2004–2005) and Tiger Lives: Asian Electronic Rituals for the 21st Century, Asia Society New York (2006). A Ph.D. candidate at Rijks University, Leiden, he is presently working on his thesis, "Memory: Record/Erase—Imaging Truth and Desire in Indian Video Art."

THE SEOUL CONTAINER

Artists: Taeyoon Choi <tchoi8@kaist.ac.kr>, <www.tyshow.net>; Love Virus (Kim Joon <bbadajoon@hanmail.net>, <http://kimjoon. simspace.com>; and Jang Woosuk <jangwoosuk@empal.com>, <http://paper.cyworld.com/love>)

Curator: Soh Yeong Roh, Art Center Nabi, 4f. SK Bldg. 99 seorin-dong, Jongro-gu, Seoul 110-110, Korea. E-mail: <director@nabi.or.kr>.

Container_Seoul: SS4-2

The container, previously viewed as a vehicle for dissemination of commercial products in the chain of production and consumption in the industrial era, is transformed into a platform for sharing and integration of the cultural information and urban experience of differing geographies. As a transitory docking station, *Container_Seoul: SS4-2* connects people from different backgrounds through works that are rooted in Korean media culture. These works highlight the relational aspect of new information technology, in that the art becomes a catalyst for creating new relations among people.

As one of the most fast-tracked

megacities in the globe, Seoul has its own unique urban environment— a constant shifting of spaces through urban development, on- and off-line collective movement and instant rapport among people enhanced and emboldened by new-media technologies. At the center of these experiences is the person as a focal point of diverse human relations. This person, or, shall we say, the end-user, is no longer a solitary individual in the Western traditional sense; rather, she is viewed as an inter-subject, or "in-between-peopleness" in old Chinese. *Container_Seoul: SS4-2* stresses physical and emotional contact among people as the instigator of intersubjectivity. The artists create situations where such relations, induced by contacts and interpersonal exchange, engender some collective resonance among the participants.

One of the contemporary urban conditions is the emerging nomadism through the interplay of mobility, information networks and the human body. Sound emanating from street vendors and flashing lights from LEDs, for example, has changed the urban environment, while some "temporary private zones" have been established by the ever-increasing use of mobile phones and wireless networks. **Taeyoon Choi**'s *Movable Types and Instant Spaces* (Fig. 7) starts as research into nomadic architectures of Korea and progresses into architectural installations and workshops, and finally, a performative parade engaging the public in the city of San Jose, California. Performers and the public wear a sculptural construction that resembles movable type architectures while trespassing the boundaries of public and private experiences. They wander around the city of San Jose and eventually find a temporary settlement in that structure. Each suite makes computer-generated and sampled sounds from the original locations of movable-type architecture in Korea. The *Movable Types and Instant Spaces* project is based on research into nomadic structures in urban spaces— temporary architectures, such as vendors, tents and advertisements that are manifestations of human perception of local space.

The other component of *Container_ Seoul: SS4-2* is *Delivery*, by **Love Virus**, an ongoing art project by 21 participating artists who created ad hoc networks of people based on empathy and affinities in Korea. The challenge for Love Virus in San Jose would be to create a rapport that could sustain meaningful connec-
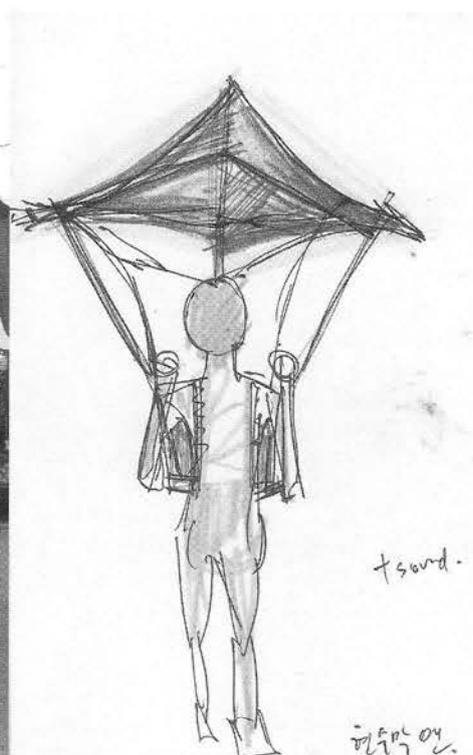
Fig. 7. Team Jangseung | Taeyoon Choi, Tellef Tellefson, Cheon pyo Lee, *Movable Types and Instant Spaces, Blue tent wearer*, architecture, wearable device, 2006. (Photo © Taeyoon Choi) (Seoul container)

tions across differing cultures and backgrounds. Among the Love Virus artists, Kim Joon and Jang Woosuk hail from Korea and deliver the "Love Newspaper" and "Iron Box" to the audiences (Fig. 8). Iron Box, referring to a box for the special delivery of food in

Korea, will be used as a miniature of a container containing various cultural items, including the artists' works. When people call a certain number, the Box will be delivered as the medium or creative artistic instrument for free and imaginative human communica-

tion and interaction. Also, the audiences will be invited to leave their love stories in San Jose on- and off-line with different perspectives and distinctive flare. The stories will be published as the *Love Newspaper*, with a "Love Map," and delivered to their homes.

Fig. 8. Love Virus's Kim Joon and Jang Woosuk, *Delivery*, media box, newspaper, 2006. (© Jang Woosuk. Photo © Dooeun Choi.) (Seoul container)

These projects will reclaim the natural human spirit of San Jose by recovering and celebrating the individual as a unique storyteller and creator. The artists here are thus exploring the overlapping area between *representation* and *practice*, à la De Certeau. The aestheticism lies in engaging the public so as to create new relations among art, everyday life, artists and their audience.

SOH YEONG ROH
Curator

Taeyoon Choi creates performance and media projects using the human body in relation to moving image, site and time. He presented a series of controversial happenings about culture and violence in both public and gallery settings in collaboration with Jangseung, an artist group formed in Chicago. Collaborators include Cheon Pyo Lee, a multimedia artist, who is interested in the notion of space working toward interactive sound installation and performance. Tellef Tellefson is a new-media artist and designer. He has participated in Burning Man numerous times with different methods of living and playing including a Viking ship, which he built on an old truck. Tellefson will be in charge of constructing the float and architectures in Movable Types *and* Instant Spaces. *Lee and Tellefson live and work in Chicago and Santa Barbara in the U.S.A. Choi's recent experimentations with locative media and wearable computer components deal with issues of locality and objects of desire. He has developed an urban game project using the camera phone,* Shoot Me If You Can, *and a psychogeographic experiment,* Sell Your Morning Walk. *His most recent performance,* Object of Desire, *was about camera-phone users as everyday tourists and their desire to photograph using wearable computer components with multiple web cams triggered by a heartbeat. Human perception of space, cognitive mapping and glocal issues are inspiration for his locative media projects. He currently lives and works in Seoul, Korea.*

The on-line project Love Virus *is one of the "paper-zines" of the blog-inspired, popular mini-homepage service in Korea called Cyworld. Love Virus was started in August 2004 with eight artists from various artistic disciplines, such as photography, moving image, interactive art, performance and even painting. Love Virus is run not only as a popular art-blog site but also as an organization for young artists and their fans to meet through various fun-filled off-line events. The first off-line event, Pochangmacha, was held in a tent bar in Seoul in December 2004; the second event, called GoGo virus, was organized in August 2005 with the transformation of a basement parking lot into a social playground. Their focus is to create unique human relations through media and art. Among 21 artists partici-*

pating in Love Virus, Kim Joon *and* Jang Woosuk *will perform the art project* Delivery. *Kim Joon has had many solo exhibitions in Korea, and has won several art prizes. His most recent solo exhibition was* Tattoo You *(2005), which commented on underground tattoo and luxury brands as social conflict. Jang Woosuk is a performative artist who has held solo exhibitions, including* I Don't Know Anything Except Love, *which brought a mix-and-match of urban locality and love into focus. He also became a love messenger between participants in his "love me sweet" bus project, an artistic tour event for singles.*

Soh Yeong Roh's interest has remained in the intersection of art, science/technology and culture ever since her involvement as the chief of the planning team of Art and Technology Exhibition at the 1993 Dae Jeon World Expo. Schooled in diverse disciplines such as engineering, economics, education and environmental sciences, she does not limit her artistic scope to the traditional art-historical field. Her main concern is the overarching dynamic of art, human creativity and technology, that is, our material condition. Roh founded the Art Center Nabi in 2000, transforming a contemporary art center into a new-media art center, where art, technology, humanities and industry came together to create new art and cultural artifacts. As the main center for new-media arts in Korea, Art Center Nabi promotes creative talents from diverse backgrounds, turning ideas into practices. Apart from directing Nabi, she gives lectures around the world and is currently a professor at Chingwha University in China. Although not an academic, she is deeply interested in current intellectual issues and thus has founded Nabi Press, which publishes books and magazines related to new-media arts and culture. She is also a member of the board of the Korean Association of Private Museums.

THE NEW ZEALAND CONTAINER

Artists: Rachael Rakena <R.Rakena@massey.ac.nz> with Fez Fa'anana and Brian Fuatu

Curator: Deborah Lawler-Dormer, Executive Director, Moving Image Centre Charitable Trust, Galatos Bar & Venue, 17 Galatos St., Newton, Auckland, PO Box 168030 Newton, Auckland, New Zealand 1032. E-mail: <deborah@mic.org.nz>. Web: <www.galatos.co.nz>; <www.mic.org.nz>.

Containers within Containers: Carriers of Bodies and Histories, Knowledge and Culture

New Zealand/Aotearoa is an Oceanic/Pacific country settled by Eastern Poly-

nesians 700–1,000 years ago. Innovative voyagers, Maori migrated in *waka* (canoes). Contemporary Maori *iwi* (tribes) trace their genealogy back to the waka from which iwi were named. They pass knowledge and genealogy through traditions of oratory (*whaikorero*) and art practices including *waiata* (song), *whare whakairo* (carved meetinghouse), *tukutuku* (woven wall panels in the meetinghouse) and the building of waka. Also passed on is the innovative spirit of their ancestors.

Rachael Rakena is a Maori artist of Ngai Tahu tribal descent. She uses digital technologies in installations that voyage far from the materiality of traditional Maori arts while resonating with Maori values of innovation in this new century.

Like the voyaging, navigating and genealogy-sustaining practices of her forbears, Rakena's digital technologies establish concepts of "continuum, immersion, movement, space" as being particularly relevant to cultural processes of "connecting and belonging." The artist has devised the term *Toi Rerehiko* for digital art. She says,

> The word *rerehiko* plays on *rorohiko*, the Maori word for computer, which translated literally means "electric brain." The word *rerehiko* has recently been used to mean "electronic." *Toi rere hiko* could be used to describe moving image arts or at least art that employs movement with electricity and flashes of light. That which flies, settling momentarily, but leaving no object.

For the past 11 years, Rachael Rakena has been part of KTW, an urban tribal group from Dunedin (*Te Whanau o Kai Tahu ki Araiteuru*). The KTW collective maintains regular physical and virtual gatherings and networks and often operates collaboratively. In 2002, Rakena invited KTW to collaborate with her in *Rerehiko* as artists, authors and performers.

Rerehiko (Color Plate D No. 1) displays complex references to community debate through e-mail and contemporary *kapa haka* (traditional Maori performing dance). The work expresses the group's identity in a fluid cyberspace where relationships are virtual rather than geophysical and where contemporary technologies can nurture communities that continue to be imbued with cosmological and genealogical narratives. The narrative and communication medium of sea/water is a metaphor both for

Space in Sydney, 2003. The three collaborating artists had never met before, though all were of Polynesian heritage with links to the Pacific Islands and New Zealand. Equally significant were our "uncommonalities"—the geographic and cultural positions we inhabit as indigenous people of the Pacific, as migrants or non-migrants.

Concurrent with this residency, Australia was dealing with immigration issues. Boat people landing on beaches in Australia had been sent away unprocessed as refugees, contrary to international law. An overnight change to Australia's international border legislation, giving the government protection from responsibility for these displaced people, was being heavily debated by the Australian public.

There are 26,000 Maori and 43,000 Pacific Islanders living in Sydney. Cultural alienation, dislocation and displacement experienced by immigrants are themes of this work, alongside their vision of a brighter future, their courage in migrating, and the survival of their cultures and communities.

RACHAEL RAKENA
Container Artist

Rachael Rakena *studied at Otago Polytechnic School of Art in Dunedin. She lives and works in Palmerston North, where she also lectures in Maori visual arts at Massey University. Her work has been included in numerous major group exhibitions, including at the Adam Art Gallery (Wellington, 2005–2006), the Perth Institute of Contemporary Arts (2006), Ivan Dougherty Gallery (Sydney, 2005), Frankfurter Welle (Frankfurt, 2004) and the Adelaide Arts Festival (2004). In 2006 her work will be shown in exhibitions in Cambridge, U.K.; Wellington and Christchurch, New Zealand; Melbourne and Sydney, Australia; Warsaw, Poland; and Vilnius, Lithuania. Rakena uses a diversity of approaches from digital stills and video to installation and performance in order to explore ideas about iwi (clan-based) identity, and the subject's dis/embodiment in both digital and water spaces. Many of her works are collaborative and have included such performers as opera soprano Deborah Wai Kapohe, Maori musical-instrument expert Richard Nunns and dancer/choreographers Louise Bryant and Merenia Gray.*

Fez Fa'anana *is a New Zealand–born, Brisbane-based dance artist of Samoan heritage. Until its recent demise he was a member of the dance ensemble Polytoxic, founded in 2000 by Fa'anana with Lisa Fa'alafi. Polytoxic created diverse performance works drawing from Polynesian, contemporary and street dance styles and physical theater. All three members are professional dance artists who have performed in numerous contexts including independent dance and theater seasons, children's performances, gallery openings, fashion launches, festivals and commercial film. Most recently Polytoxic toured for the Queensland Art Gallery's OzGold Exhibition. Fa'anana works collaboratively with visual and performance artist Luke Roberts, performing at the MCA for the 2002 Sydney Biennale and at the Luke Roberts Studios, as well as performing for companies including KITE Theatre and Abigails Entertainment.*

Brian Fuata *is a New Zealand–born, Sydney-based Samoan performer, writer and theater-maker. He was a performer and co-devisor of the Museum of Fetish-ized Identities (Performance Space, 2001), directed by the internationally recognized performance artists Guillermo Gomez-Peña and Juan Ybarra, as well as the New Museum of Fetish-ized Identities (Performance Space, 2003). He wrote and performed the solo work Fa'fafine, commissioned by Urban Theatre Projects at Performance Space for Pacific Wave 2001. He has created and performed short works in Unbecomings (2000 and 2001, co-produced by Performance Space, Sydney Gay and Lesbian Mardi Gras, and PACT Youth Theatre), which won the Mardi Gras Festival Award 2000, and Kiss My Fist (2002). Other credits include* Letters about Objects Explaining Everything *in Company B Belvoir's B Sharp program (2000) and PACT's* Replicant Hotel *(1999 and 2000, performer and co-devisor).*

Deborah Lawler-Dormer *is the executive director of the Moving Image Centre (New Zealand's only contemporary creative media arts center), a position she has held since 1995. The Moving Image Centre has recently relocated into a performing-arts venue and will be opening an additional exhibition and production venue in 2007. Lawler-Dormer has programmed, curated, staged and managed numerous film, video and digital media shows. She has traveled internationally to Europe, the U.S.A., the Middle East and Australia to stage projects involving digital and video art practice. She has held previous curatorial and technology specialist positions at City Gallery, Wellington, Te Papa Tongarewa and Auckland City Art Gallery. Lawler-Dormer is "sometimes" a video-installation artist and holds a First Class Honours Masters in art history from the University of Auckland.*

HowTo
the will to organize

hoping to not have bored you so far. willpower we have, we don't need to manifest it. more people are conscious, even without manifesto. we need to do and to tell people how to do. we need to focus on problems and document how to solve them. we don't need a manifesto. we need a howto. there we go with everyone building it up in his/her own language. there we can point out problems we all know about, there we can focus the ways out then, and i hope we won't be all staged on a hollywood movie at the end. ciao, jaromil (jaromil@dyne.org)
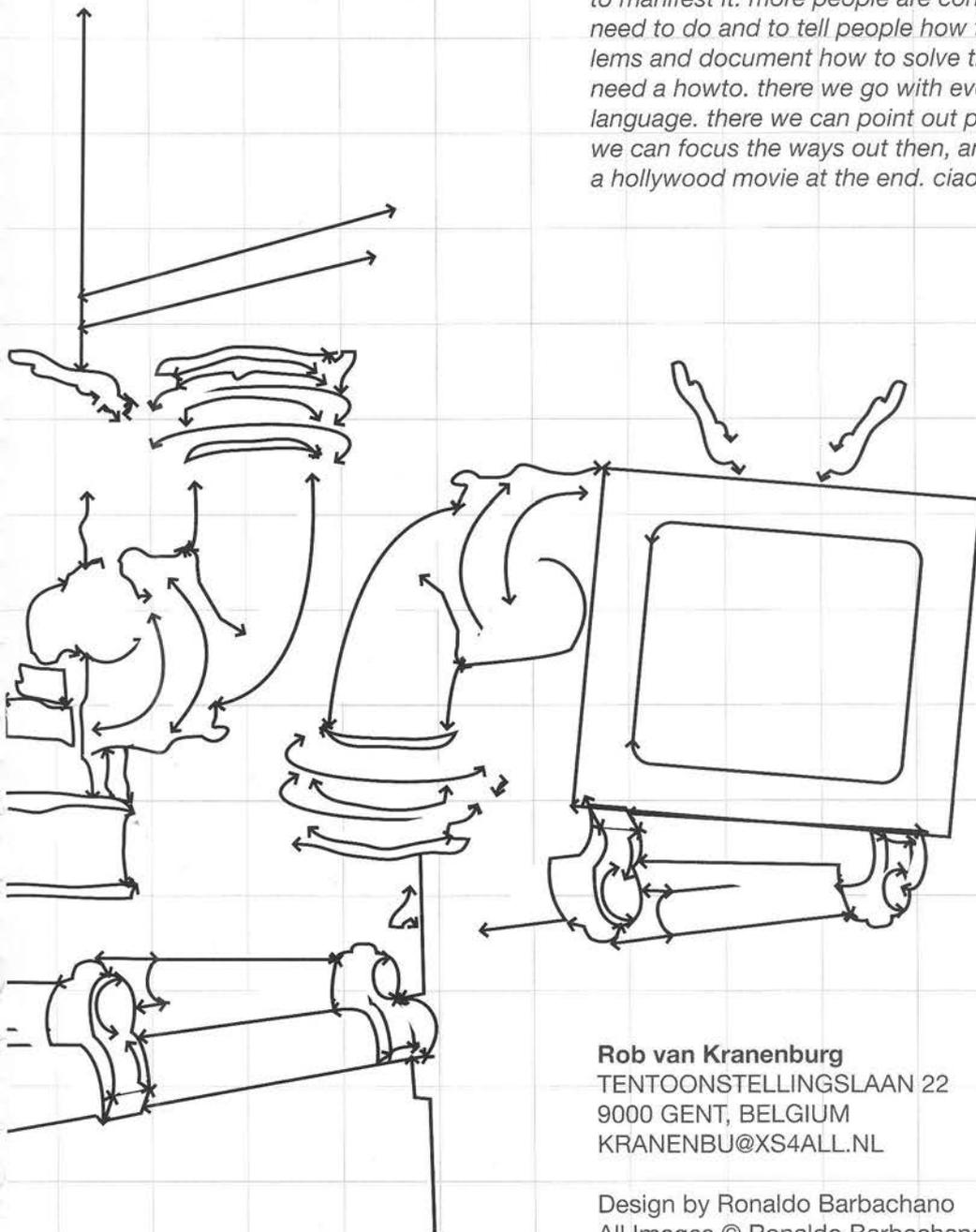
Rob van Kranenburg
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Design by Ronaldo Barbachano
All Images © Ronaldo Barbachano

GLOBAL CHALLENGES AND GOALS: A GLOCAL DESIGN TO EDUCATE FOR COMMONING

The coming decade worldwide will be determined by the strained relationship between formal and informal structures and environments. A design for commoning, for living together locally in a globally connected world, is the new challenge . On a political pedagogic level there is foremost the need to redefine the balance between security and insecurity. Feeling safe has to do with the ability to deal with un-safety and insecurity, to have a corporeal experience of agency. It has very little to do with being safe. For how long will it last? The education we aim for can be defined as creating and facilitating the intellectual, corporeal and socio-cultural temporary zones of potentialities within which insecurity is distributed on an equal level. Learning then is lifelong by default, an intricate multiple relationship that is about learning how to deal with insecurity and instability. This relationship forms the basis of all democratic action, as it creates trust on a convergence of levels we humans need in order to sustain the practice of everyday life and confrontations. Crudely naive and simplistically we start our discussions with the assumption that this notion of distributing insecurity has been employed inadvertently as a political principle in the Pacific Rim, in sharp contrast to the U.S. and Europe, where notions of security, control and safety as a default in business, health, etc. have led to a deep mistrust of risktaking and of employing distributed security as a political and pedagogic/didactic principle, leading only to more fear of public space and fellow citizens.

The Trust Paradox today states that citizens are not distributing themselves as data into the environment, which would open up a new territory of hybrid space for innovation, creative industries and socially and culturally constructive spinoffs of nano and biotech, as they are being reminded 24/7 that the environment is unsafe, unstable and untrustworthy. The result is bottom-up online and sensor-based innovation (wikipedia, commons-based peer production, thinglink) that will create its own informal networks running parallel to top-down systems, such as nation states and the EU itself.

Our next assumption is that we find embodied the practices and processes of a new-found agency of citizens forging new balances between security/insecurity in Asia in new media centres. We then posit that it is vital for the project of commoning that we find ways of documenting what is going on, harvest a concept-scenario-prototype format from the ways of working found in the private-public hybrid new media centres. For that we need to find common ground, identify common trends and decide on urgencies.

QUESTIONS

Developing a practice of authorship: IP, originality and authorship, who claims what when? and what should the education process focus on: individual gain or communal authorship?

At the Contested Commons Conference (Sarai/CSDS, Delhi, January 2005) an impressive number of voices argued to go beyond Creative (some rights reserved) Commons, as this way of operating leaves intact the fundamental notions of individual ownership and individual rights to specific ideas a person might conjure up.
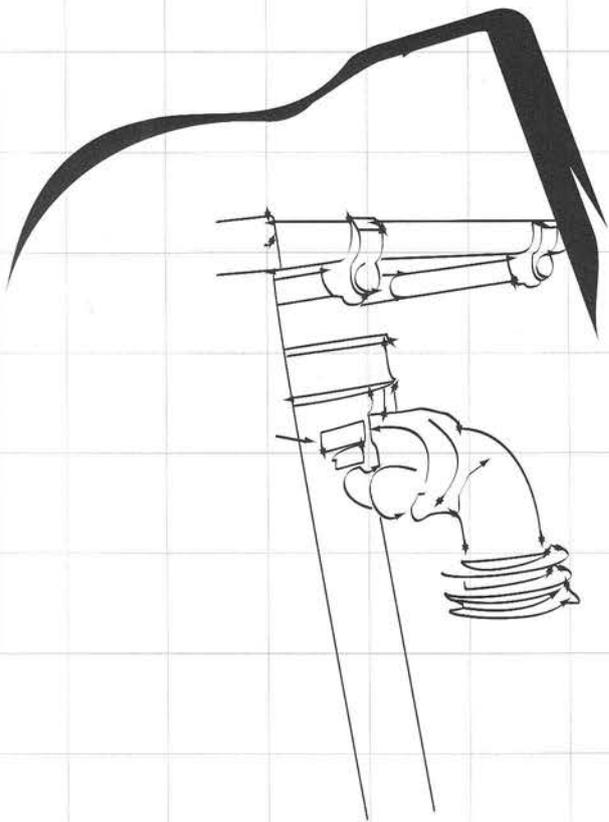
Apart from the fact that the notion of "originality" is a specific historic constellation — for in a networked world, all nodes draw upon the same published data — this idea of being "the first" in or with something is a specific Western historic sociocultural constellation, as if this is of any matter in our over-mediatized globally networked environment.

DEBATE

Instead of regressing back into an untenable situation that cripples creativity and the kind of link management that is required for a creative cultural sustainable economy, we would do well to take a leap forward away from licenses and individual property rights to new forms of scripting solidarity between producers and consumers, citizens and policy, money and power, teachers and students.

DEVELOPING A PRACTICE OF ETHICS, USING VARELA'S NOTION OF ENACTION

In "Evolution, Alienation and Gossip, The role of mobile telecommunications in the 21st century" [1], Kate Fox claims that about two-thirds of our conversation time is entirely devoted to social topics: "discussions of personal relationships and experiences; who is doing what with whom; who is 'in' and who is 'out' and why; how to deal with difficult social situations; the behaviour and relationships of friends, family and celebrities; our own problems with lovers, family, friends, colleagues and neighbours; the minutiae of everyday social life — in a word, gossip." This underlines the importance of the notion of enaction that Varela outlines in his study *Ethical Know-How, Action, Wisdom and Cognition*: "Enaction as the ability to negotiate embodied, everyday living in a world that is inseparable from our sensory-motor capacities" [2].

For him this notion is the key to understand ethics in our everyday life. He wonders if the traditional way of setting up a cognitive set of ethical principles and axioms — you should do this, you should not do that — is actually indicative of the way people behave when confronted with difficult decisions. What do you do, he asks, when you enter your office and you see your colleague tied up in what appears to be embarrassing telephone conversation? Would you not be very quiet and try to sneak out of the room unnoticed? Was that not an ethical decision that you made? And were you not immediately convinced that is was an embarrassing situation? Varela then wonders if we posses a kind of ethical sense. A sense to negotiate encounters on a daily level.

As with a need for an everyday ethics that can reaffirm a communal integrity and sense of trust in leadership, we need a pragmatic philosophy that does not shun but foregrounds the absolutes and belief in religious essences: "Whether we are scientists or artists, politicians or publicans, the question of the 'potatoness of potatoes' or the 'wateriness of water' is there for all to inquire into. Those who know say we only have to open our eyes, look, keep looking, and see. With the dangers facing our world as it is today, that could make a real difference" [3].

DEVELOPING AN AGENCY IN TECHNÉ

Every new set of techniques brings forth its own literacy: The Aristotelian protests against introducing pencil writing may seem rather incredible now; at the time it meant nothing less than a radical change in the structures of power distribution. Overnight, a system of thought and set of grammar, an oral literacy dependent on a functionality of internal information visualization techniques and recall, was made redundant because the techniques could be externalised. Throughout Western civilization the history of memory externalisation runs parallel with the experienced disappearance of its

artificial, man-made character — an accidental disappearance, however much intrinsic to our experience, that up till now has not been deliberate. This is the fundamental change and the technology design challenge that we are facing in pervasive computing and the converging trend towards smart environments; the deliberate attempt of a technology to disappear as technology. In what respect will it alter our notion of the self as a more or less stable identity? Will it not provoke an identity building on the ability to change roles in communication environments? What kind of privacies lay hidden in our new connectivities? What will it do with our creative abilities as expert users to improve, challenge, build upon and advance a technology that is running in the background? Cultural issues have become deliverables on the programming/coding level. The EU working document of Working Party 29 "too wishes to provide guidance to manufacturers of the technology (RFID [radio-frequency identification] tags, readers and applications) as well as RFID standardization bodies on their responsibility towards designing privacy compliant technology in order to enable deployers of the technology to carry out their obligations under the data protection Directive." EU thinking on RFID is quite sophisticated around the subtlety of privacy thinking. The argument *we track things, and not people* is untenable, as data-mining is seen in logical conjunction with RFID. From this it becomes clear that there is no killer application of RFID, as RFID is itself the killer application of smart connectivity.

DEVELOPING A NEW AUTHORSHIP AS EDUCATORS AND THEORISTS: PLOT

Let us go back to consider "writing," to talk about meaning again. To the random function raised at an aesthetic level, let us oppose the strong notion of plot [4] as a production of meaning [5].

DEVELOPING CULTURAL EQUIVALENTS OF LAUNCH AND LEARN

Learn and launch is an implementation principle that characterizes disruptive technologies, such as RFID. Since it is not (yet) a "plug and play" technology, many companies have adopted a "launch and learn" approach to adopting the technology. Sean Campbell, IBM's RFID leader claims, "You should build through trials and controlled pilots. There is no substitute for hands-on learning, what [early RFID adopter] Gillette calls 'launch and learn.'" He stresses the key factor of involving a cross-section of employees for a successful implementation. "Everyone from the executives to the warehouse workers must know the project goals and how the system works," he said. Finally, he stressed the need to store and organize the reams of data that companies get from RFID systems [6]. BAA IT Director Rundle sums it up: "We are learning as we are going" [7]. What social practices are emerging from this expanding, disruptive device ecology? [8] Bryan Alexander asks: "Perhaps we are beginning to see the emergence of learning swarms. Are instructors ready to join in learning swarms on their specialties or to facilitate the ad hoc growth and flourishing of such learning swarms? Can we integrate these into our 'less swarmy' campus environment?"

DEVELOPING NEW FORMATS OF INTEGRITY

Academic research, formal academic education and general R&D are becoming increasingly irrelevant for actual practices of business, transactions, standardization, organising, learning, and producing formats that produce urgency, in short for the very practice of everyday living. For a viable dynamic commoning to flourish, open flows of data inform the possibilities of what might become information for some, plain data to
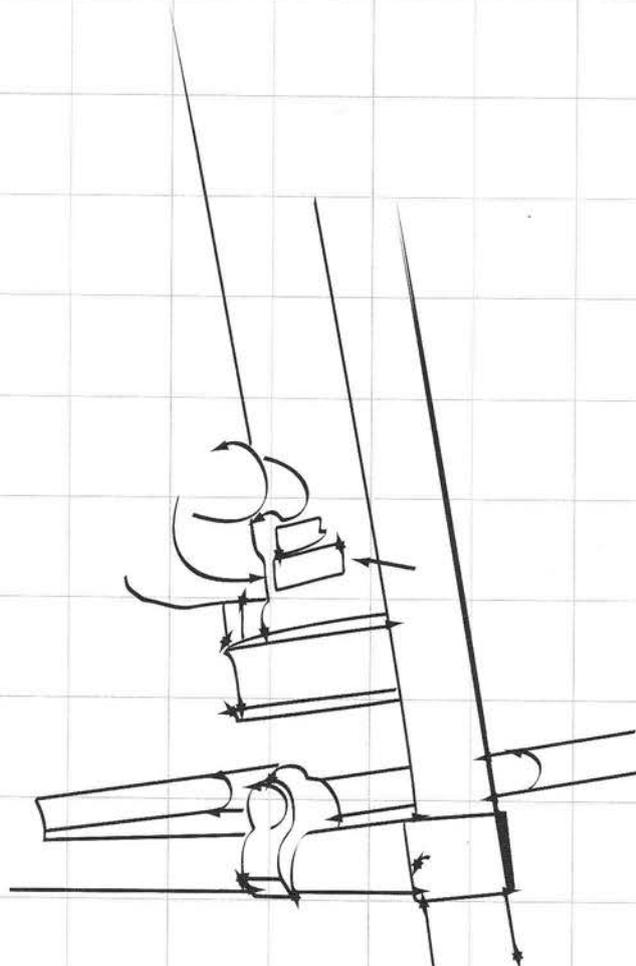
others and knowledge for communities. Rapid prototyping, practice-based Ph.D's, and "demo or die" can be seen not only as new ways of disseminating ideas, but as radical breaks with the academic positivistic tradition [9].

An experience is dramatic when it enquiries the quality of the presence, hence the actor's identity, there and then. Immersion is the opposite of feeling dull; it means concentration. I trust my digital guide if it can build up a deeper relation with the environment, with the work of art. But if it is designed to make me chat with some other guy in the room or even to end up dating with the one that has liked my same pieces, well, it is only a mere product, it turns myself in a consumer, and the museum into a supermarket. We do not need it [10].

REFERENCES AND NOTES

1. Evolution, Alienation and Gossip, The role of mobile telecommunications in the 21st century, by Kate Fox: <http://www.sirc.org/publik/gossip.shtml>.

2. Ethical Know-How, Action, Wisdom and Cognition, Francisco J. Varela, Stanford University Press, California, 1992; p. 17.

3. C.J.Moore, Take a closer look at the nature of things. International Herald Tribune, Saturday-Sunday, August 13-14, 2005.

4. Comment by Bruno Colet on this reading of plot:

I like a lot:
0.   the image of scrabble (in 4*);
0.   the word 'plot' (I use sometimes the idea of 'territory', more physical, ethnic, in reference to a talking on space notion of Australian aboriginals);
0.   'processes'. I so often used it and bring it facing so many people with fished eyes, dumbfounded.

So, I feel as a dancer more than ever.
Thank you very much.
BroC

5. "Short invective on theatre and virtuality: Five things I don't want to hear anymore," Antonio Pizzo [Intervento presentato a "Virtuality 2005," Torino, 6 Novembre 2005 / Speech presented at "Virtuality 2005," Turin, November 6, 2005].

6. "No Substitute for RFID 'Launch and Learn,'" by Colin C. Haley, June 14, 2005: <http://www.cioupdate.com/trends/article.php/3513001>.

7. "Airport operator tests RFID for mystery application," Steve Ranger, silicon.com April 29, 2005:< http://management.silicon.com/it-pro/0,39024675,39129978,00.htm>.

8. "Going Nomadic: Mobile Learning in Higher Education," Bryan Alexander. EDUCAUSE REVIEW | September/October 2004, Volume 39, 28–35: <http://www.educause.edu/pub/er/erm04/erm0451.asp?bhcp=1 >.

9. See also Van Kranenburg, Rob, "Towards Designerly Agency in a Ubi-comp World, in Tales of the Disappearing Computer, Kameas, A., Streitz, N. (eds), CTI Press, 2003, pp. 119-127.

10. See Pizzo [5].

Technology Issues and the New ICTs

Roberto Verzola

ABSTRACT

The author provides examples of low-cost information and communications technologies (ICTs) and suggests five major strategies for their low-cost deployment in developing countries: (1) appropriate technology, (2) free/open software, (3) compulsory licensing, (4) pay-per-use public stations and (5) community/public ownership of ICT infrastructure. Aside from the problems of affordability and universal access, the author identifies the Internet's built-in biases for (1) English, (2) subsidizing globalization, (3) automation and (4) the technofix, and explores the implications of these biases. The challenge is not only to design affordable and accessible technologies or to redesign technologies to be consistent with our deeply held values, but also to make ourselves less technology dependent.

As an engineer with a good knowledge of the information and communications technologies (ICTs) driving the phenomenal growth of the Internet, I have been part of the "missionary army" that in the late 1980s and early 1990s drew governments, businesses, nonprofit organizations and social movements toward increasing their use of ICTs for development work. I worked mostly with nonprofits and social movements. In 2000, after developing a more critical perspective about these new technologies, I dropped most of my Internet advocacy work and volunteered to help farmers' organizations look critically at technologies available to them.

For context, consider that a typical Filipino farmer might have some 0.5–2.0 hectares of land to farm, earning out of it a daily income of US $1–$5, in order to support a family that can include five or more members. Some might have more land, but many have less. A considerable number, who do not have access to land they can regularly work on, become farm workers, usually earning less than the rural minimum daily wage of around $3. Many farm families live their whole lives on the brink of bankruptcy. A failed harvest, an illness that requires hospitalization or other unforeseen problems can push such a family over the edge, into heavy debt and extreme poverty.

In such a situation, buying a computer and getting an Internet subscription are simply not options. Basic survival needs dictate most of the farmers' expenses. If they have money to spare, the education of their children is a family's next priority. Poor families will go through extreme sacrifices to get their children to finish high school and reach college if they can manage it.

LOW-COST ICTS FOR FARMERS

The most accessible ICT appliance for farmers is the transistor radio. This technology involves a one-time cost of $10–20 and a recurring cost of $1–2 every few months for batteries. Television is about five times more expensive than radio. Aside from these two relatively old technologies, farmers have embraced two others: the mobile phone and the video compact disc (VCD) player.

Out of a population of some 85 million, more than 5 million Filipinos work abroad. For them, communicating with the families they have left behind is very important, not only to maintain family cohesion but also to keep their own sanity. For decades, Filipinos had complained of the slow pace of installation by telephone companies of the outside plant infrastructure needed for landline communications. Hundreds of thousands, perhaps millions, of requests for telephone installation were unmet. When mobile phones were introduced, a huge demand for this communications tool emerged. As a result, the mobile phone is now the most common one-to-one communication tool in the Philippines. Today, around 33 million Filipinos have a mobile phone. Ownership is less frequent among farmers, but still significant. After all, they can always use their neighbors' mobile phones for urgent communications.

Filipinos love to sing. It was a Filipino inventor, Roberto del Rosario, who invented the karaoke. He called it a "sing-along system." It later became known as "minus-one." When the Japanese adopted the technology and popularized it worldwide, they in turn called it the karaoke. When VCD players were introduced, Filipinos found the perfect karaoke system. Chinese-made VCD players cost as little as $30, and a karaoke CD costs less than a dollar—quite affordable by Philippine standards. Even in the poorest village, one can now find a VCD player (or a more expensive DVD player) hooked to a television set among the better-off families.

Singing along with the karaoke is not only a family affair but also a social activity, often done not only on special occasions such as weddings, birthdays and baptisms, but on a regular basis. When the karaoke player is set up outside the house, it becomes an open invitation for neighbors to join in. The singing and chatting can last long past midnight.

In 2004, SRI Pilipinas, a consortium of nongovernmental organizations (NGOs) I coordinate, successfully piloted the use of these two systems, mobile phones and karaoke, in conjunction with more traditional methods of communications (radio, newspapers and the printed primer). The combination was used to popularize among rice farmers a new method called the System of Rice Intensification (SRI). This method involves simple changes in farming practices, such as transplanting younger seedlings, using one instead of several seedlings per hill, leaving wider distances between seedlings and drying the fields intermittently instead of continuous flooding. SRI has now been successfully tried in 23 countries, with increasing evidence that it can increase yields, wean farmers away from synthetic chemicals and reduce water and seed costs. We used traditional media such as radio, TV and print to create initial interest, making sure that a mobile phone number was always mentioned in the report. Within about 3 months, nearly 200 farmers or their urban relatives called our mobile phone (and less frequently our landline) to ask for more information. More than two-thirds sent in their mailing ad-

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dresses. This allowed us to mail them an SRI primer containing most of the information they needed to start an SRI trial. About half of these ordered the SRI training VCD.

Learning from this experience, I began in 2006 the development of a mobile phone–based system for the reporting of election returns using SMS (short message service) and text messages. Precinct returns will be reported from the field by volunteer election-watchers via SMS/text. These reports will be compiled in a national database, where they will remain disaggregated by precinct. Anyone can then download the entire database via the Internet or individual precinct reports through SMS/texting. The system will be used by the Network of Citizens for Honest Elections and Truthful Statistics (NoCHEATS) to conduct a parallel citizens' count in the next Philippine elections in May 2007. The system differs from other election-automation proposals in the way it makes the tabulation process more, instead of less, transparent by involving more, not fewer, citizens in guarding the integrity of precinct results. It does not replace people with machines. Instead, it draws more and better-tooled people into the electoral process.

Philippine elections, including the most recent one in 2004, have been marred by rampant cheating, in many cases reversing the true results of the polls. If this extremely low-cost approach proves itself, it may usher in a major revolution in Philippine politics.

Another low-cost possibility has emerged in recent years: low-power FM stations. The cost of an FM station that can cover a few villages or a small town has now gone below the cost of a laptop computer. This has made low-power FM affordable to local governments, parishes, local schools and NGOs. Personal FM receivers, on the other hand, are now being sold in the Philippines for less than $2—around a day's wage for a farm worker. Another exciting development is the announcement by Free Radio Berkeley of a low-power TV transmitter costing less than $2,000. This transmitter can be used by community groups to set up community television stations. The full use of these two technologies for low-cost public broadcasting is unfortunately hampered by the tangle of bureaucratic licensing requirements that prospective broadcasters must go through before such stations can be set up.

Building on the VCD/DVD player, it should be a simple matter to add the capability to browse HTML files on a disc. Such a CD player/browser would expand the possibilities for this information appliance immensely, far beyond karaoke, enjoying movies or watching training videos. If its CD drive could also make CD copies, then true sharing could happen, as farmers share their best CDs with each other.

A big portion of the population of the Philippines—and of the larger developing world—is poor and underprivileged. For the new ICTs to benefit these people, it is important to develop systems based on ICT infrastructures that are available and affordable to them. Unfortunately, many if not most ICT projects rely on expensive computers and Internet connections for implementation.

As the examples above show, it is possible with the appropriate strategies and approaches to extend the benefits of the new ICTs even to the poorest sections of society. Based on these and other experiences, I have proposed the following strategies for low-cost deployment of ICTs in developing countries [1]:

Use an appropriate (i.e. intermediate) technology, which may not be the latest or the most advanced, but still improves significantly on the current ways of doing things and is already so widely deployed that little additional infrastructure is needed to ensure universal access. Relying on the existing base of broadcast radio receivers is an excellent example. The use of cell phones and VCD players is another example. They all make available an existing infrastructure upon which affordable services for the poor can be built.

Use free/open source software (FOSS) such as Linux/GNU, OpenOffice, etc., to drastically reduce the cost of software and to invite deeper knowledge about the technology through the availability of the source code. The increasing use of FOSS in the Philippines and other developing countries is a good step in the right direction. FOSS frees us from the stranglehold of monopolistic commercial software and allows us to take full advantage of the unique nature of information, i.e. that its marginal cost of production (the cost of producing the next copy) is almost zero. Commercial software companies rely on near-zero marginal costs and high prices maintained through intellectual property rights (IPR) to keep their profit margins extraordinarily high. But the same near-zero marginal costs allow developing countries to distribute FOSS widely at practically no cost.

Where commercial software must be used, encourage the government to apply genuine compulsory licensing. Compulsory licensing is an internationally recognized mechanism that allows developing countries a more liberal access to IPR-protected material under terms set by the countries themselves instead of the IPR owners. Even developed countries have used compulsory licensing for pharmaceuticals and other products considered to be of national or strategic interest. The creative use of compulsory licensing enables countries to reduce the cost of access to new technologies and knowledge.

Deploy pay-per-use public access stations that do not require users to pay fixed monthly charges. The most common example of this approach is the public phone booth. A more recent example is the telecenter, more commonly known as the Internet cafe.

Explore community/public ownership mechanisms to minimize private rent-seeking. Private rent-seeking is a dominant feature of the new information economy, encouraged by the near-zero marginal cost of information. IPR holders are all rent-seekers. Most owners of information infrastructures and facilities, such as communications channels, local exchanges, Internet servers, broadcast stations, Internet cafes and even movie houses, are also rent-seekers. Rent-seeking also manifests itself in the control over IP addresses or domain names, or Internet standards and formats. The emerging class of rentiers may be called the landlords of cyberspace or cyberlords. Various mechanisms of public/community ownership of information infrastructure may minimize the negative impacts of private rent-seeking, which, some economists say, is a major source of economic inefficiency [2].

Through these and similar strategies for low-cost deployment, ICTs can be brought within closer reach of the poorest sections of society.

BUILT-IN BIASES WITHIN THE INTERNET

Beyond cost, however, a deeper issue has been raised about technologies, including new ICTs.

It was E.F. Schumacher, of *Small Is Beautiful* fame, who questioned the "assumption that you can have a technological transplant without getting at the same time an ideological transplant" [3]. This assumption, Schumacher says, is based on the idea that technology is ideologically neutral. Schumacher made his comment before the advent of the Internet. If we examine the Internet carefully, we find that it too contains ideological biases, deeply embedded within the technology itself. These include biases for the following:

English. The English language is so deeply embedded within the technology of computers and computer programming that true mastery of the technology requires facility with this language. Even Russian-, Spanish- or Chinese-language web sites are written in Hypertext Mark-Up Language (HTML), a language based on English words. English command words are also the basis of practically all programming languages used to write software. The languages of central processing units (CPUs)—the assembly languages specific to each CPU—are also based on English. At the innermost core of these silicon chips, the microcodes that tell the various processing units, registers and external memory what microoperations to perform are codes that are also based on English. Thus, to be a master of the technology, one must learn English. Can one learn the English tongue without acquiring the Anglo-Saxon taste? One cannot learn a language without absorbing some of the messages and the dominant culture that it carries. Thus, the built-in requirement to learn English for full mastery of the new ICTs tends to draw the user of the technology towards Anglo-Saxon culture. One consequence is the expansion of the market for that culture.

Subsidizing the global. The Internet forces local players to subsidize global players. To appreciate the nature and extent of this forced subsidy, compare the charges and actual costs of sending a large file to two different recipients—the first a local contact, subscribed to the same Internet service provider (ISP), and the other a distant contact on the other side of the globe, subscribed to an ISP in that country. Under most Internet charging schemes, whether the scheme charges per byte, per minute of use or a fixed monthly fee, the charge will be the same. Consider this carefully, however: a file sent locally uses fewer network resources than the same file sent to a distant ISP. The local file will simply be moved from the sender's to the receiver's mailbox, probably on the same hard disk, or to another hard disk of the same computer. The file sent distantly, however, will have to travel from the sender's mailbox through a number of hubs, routers and communications channels, possibly including microwave links, undersea cables or satellites, before reaching the distant receiver's mailbox. Because the two files will incur the same charge, however, local communications will, in effect, be charged much more per unit resource, compared with global communications. Local communications are thus forced to subsidize global communications. In effect, through this subsidy, the poor are forced to subsidize the rich. ISPs typically argue that accurate assignment of costs (assigning costs per hop, for instance) is too expensive. The technology itself makes fair assignment of costs expensive. Charging schemes that are easier to implement through this technology are also more inequitable. This bias in the Internet against the local in favor of the global is the opposite of the old telecommunications bias of making international calls subsidize local calls. As communications, computing, media and entertainment all converge on the Internet, this perverse subsidy for globalization will become more universal.

Automation. Because of the central role of computers and automation in the new ICTs, they carry even further forward the idea that people should be replaced by machines. The industrial economy replaces physical work with machines. The information economy replaces not only physical but also mental work with machines. Automation itself has become a paradigm, where "progress" means more automation. Workers, employees and even lower- and middle-level management are replaced with machines and computers. Though many concede that automation may abolish certain jobs, some argue that it may in turn create new ones. While the automation paradigm may create new jobs, most displaced workers will not be qualified for these new jobs. Furthermore, many of these new jobs will not last because they will also be targets of the same automation paradigm. This paradigm's ideal is fully automated operations, with a minimum of human participation. It is understandable that policy-makers in high-tech countries will adopt the automation paradigm in response to the high cost of labor. A technology with such a built-in bias is inappropriate for labor-rich, technology-poor countries, however, because it forces on them a paradigm that further shrinks the labor market and expands the high-tech market.

The technofix. The automation paradigm is a specific case of a more general attitude: that for any human problem a technology exists or can be developed to solve it. This is the *technofix*. Should worldwide hunger be solved with genetically modified foods or by eating less meat? Should election cheating be stopped by relying on computerized tallies or by punishing cheating severely? Should we respond to infertility with test-tube babies or adoption? Faced with social problems, technofix thinking prefers the technological solution to the social solution. The technological solution is often something for sale, while the social solution is usually something we simply need to do together. Human societies have evolved social solutions to most human problems. Unfortunately, these solutions are giving way, often under pressure, to expensive high-tech solutions sold by industrial and information economies. In effect, technofix thinking supports the market expansion of the economies that sell these technologies.

With a different design, technologies may be biased differently. Low-power broadcast stations, for instance, will not contain a built-in subsidy for global players. Because of their limited coverage, they will show an opposite bias in favor of the local language instead of English. For the same reason, the technology also forces low-power radio and TV to focus on local instead of national or global issues. Though the coverage of a low-power FM station may be limited, reception and therefore access is more universal, because a small FM receiver is so affordable. By adding "write" functions to a VCD/DVD player/browser, one reinforces the natural desire of users to share useful information with others. One can easily imagine enabling technologies that will make users also *creators* of content.

The challenge is not only to design technologies or to use existing ones in ways that cost less and are more accessible to the poor, but also to redesign technologies so that they reinforce the positive values required to make our societies more equitable and ecologically friendly.

The bigger challenge, however, is to change our own mind-sets so that we do not become dependent on technology fixes to solve our social problems.

References

1. Roberto Verzola, *Towards a Political Economy of Information* (Quezon City, The Philippines: Foundation for Nationalist Studies, 2004) pp. 219–233.

2. William J. Baumol and Alan S. Blinder, *Economics: Principles and Policy*, 7th Ed. (New York: Harcourt Brace, 1998) p. 341.

3. E.F. Schumacher, *Good Work* (New York: Harper and Row, 1979) p. 41.

Roberto Verzola completed a degree in electrical engineering at the University of the Philippines in 1982 and worked for several years in industry on office and automation projects. He has also been involved with social movements since 1971. Today, he spends most of his time as a resource person on sustainable technologies for farmers groups, rural development organizations and social movements. His book Towards a Political Economy of Information *was published in 2004.*

The Bandung Center for New Media Arts: Local Commitment and International Collaboration

Marie Le Sourd

ABSTRACT

The article focuses on the Bandung Center for New Media Arts (BCNMA), an autonomous cultural space set up in 2001 by three Indonesian artists and architects. The BCNMA aims to encourage a dialogue with circles outside the art world and to offer greater dynamic possibilities for experimental forms of expressions. The Indonesian sociopolitical context after 1998 has had a great influence on the nature, development and methodologies used by this center. The case study of the Third Asia-Europe Art Camp, coorganized in 2005 by the BCNMA and the Asia-Europe Foundation, also highlights how international projects are developed by the BCNMA while taking into consideration the local cultural networks and creative environment.

The Bandung Center for New Media Arts (BCNMA) [1] was founded in 2001 by the artists Gustaff H. Iskandar and R.E. Hartanto and the architect T. Ismail Reza in order to incorporate different spheres of daily life into the arts in Indonesia, to encourage a dialogue with circles outside the art world and to offer greater dynamic possibilities for experimental forms of expression.

As Iskandar points out, the creation of the BCNMA and its subsequent developments are intrinsically linked to the era in Indonesia following the end of Suharto's military regime (1966–1998):

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After 1998, we were very skeptical about all governmental and ministry-related institutions, as well as the existing cultural organizations and established artistic practices. This also goes for the old way of handling artistic activities, used to accumulate power in terms of authorship with a signature. It was art for art's sake. There's nothing wrong with that, but we felt that we needed an alternative approach.... This hierarchical structure does not fit in at all with contemporary cultural practices. Now we can communicate everywhere and with everyone. Anyone can be a center and relate with others. We have to distribute the power and the information and the rights of authorship, in order to liberate the discourse and allow power to circulate [2].

Focused on an art, science and technology crossover, the BCNMA strives to establish a cooperation between individuals and institutions from different fields in order to shape new ideas, stimulate discussion and experiment and work together

Fig. 1. Class of '95 Exhibition at Common Room, Bandung, Indonesia, 12 March 2005. (Photo courtesy Bandung Center for New Media Arts) Olive Tree, a local indie pop band, is performing at the opening night of Class of '95 Exhibition at Common Room.

Fig. 2. Towards the opening of the Third Asia-Europe Art Camp, 4–12 August 2005. (Photo by Rizki Resa Utama, courtesy of Bandung Center for New Media Arts.) Installation of the banner at Selasar Sunaryo Art Space.

in new constellations. According to Iskandar, the term "new media" is used very broadly in Indonesia and must always be understood in the proper context:

In the context of Indonesian art practices, one has to take into consideration how we have experienced the development of information technology, and how it changed our daily life. In Indonesia, for example, during the student movements, without the vital access to the Internet, mobile phones, fax machines, and other technologies, it would have been impossible to disseminate information and develop the network that supported the movements.... Their speed is amazing, and the connection almost frightening, because this represents another form of power and control. So the political and social aspects of such technologies are very strong; we cannot separate them from our daily life, no less than we can from contemporary art practices.

Efforts to reach a wide range of audiences and to cooperate with them began through a private initiative and structure. The BCNMA is located in the private home of one of its members (Reina Wulansari) in a quiet residential district of Bandung (a 2-hour drive from the capital, Jakarta). On the premises are a bookshop (the Tobucil Bookshop, open daily and supporting literacy movements since 2003), library, guestroom, computer workshop and studio space.

In August 2003, the BCNMA and Tobucil decided to share the interior garage —under the name the Common Room— for exhibitions, workshops, small-scale music concerts, public lectures, residential programs and other functions. The realized projects encompassed the visual arts, urban architecture, music, fashion, literature and urban culture. In March 2005, for example, Class of '95 (Fig. 1), an event showcasing indie-pop youth culture, which has developed steadily in Bandung since 1995, was organized here. Also during this period, a specific style has emerged through independent labels and bands linked to current trends in pop music, graphic arts and video clips. Presented in this framework were posters, photographic works, T-shirts and opening-night band concerts, which attracted crowds not only from Bandung but also from Yogyakarta, Bali and Jakarta.

In this particular sociopolitical context, negotiation is one of the key concepts for understanding the work carried out in the Common Room in order to involve as many groups of people as possible in the program, and, to a certain extent, to contribute to nurturing a sense of civil society. Iskandar emphasizes that the BCNMA and Tobucil never decide alone on the program's structure, but that the public should also participate and negotiate the proposals, together with all the partners, until they reach a consensus: "Because we receive no financial support, the proposed projects have to be inexpensive. Everything proposed has to be easy to implement, enjoyable, and allow for the public's participation."

The same applies to sustaining the space, which can only come about through a meaningful connection to the local scene. Without such alliances and partners, long-term endeavors would most likely be impossible. This is made clear in the Common Room's presentation flyers, in which appear the names of the respective partners, ranging from the art space Selasar Sunaryo to independent art groups such as Jendela Ide, Biosampler, VideoBabes and others.

Sustaining such a space also includes the financial dimension. As Iskandar explains:

The Common Room is largely self-funded through books sales and the profits made on its own projects. What helps us tremendously is having a good financial manager (Reina Wulansari). Currently, some of the projects receive funding from foreign institutions like HIVOS or ASEF—but this type of support is rather infrequent and only for particular projects. There are, of course, possibilities one could arrange through institutions, but this has to happen on the basis of an equal standing that allows us to hold to our own ideals and perspectives.

If collaboration with international organizations is limited to individual projects, the benefit gained in terms of local recognition and global networking has a long-term impact, as in the case of the Third Asia-Europe Art Camp (Fig. 2). From 4–8 August 2005, together with the Asia-Europe Foundation, the BCNMA hosted the Third Asia-Europe Art Camp, focused this time on new-media art practices and artists' initiatives, in which 20

art students and eight lecturers from Europe and Asia participated.

The yearly Art Camps, initiated by ASEF in 2003, include lectures, workshops, rounds of discussions and visits to cultural institutions. They were devised to offer the selected participants a platform for exchanging information and contextualizing contemporary art practices. Rather than focusing on an artistic product, the Art Camps focus more on the actual creative process, on acquiring knowledge of different cultures and on widening the intellectual horizons of the participants, while providing them with useful contacts and information for future collaborations and international exchange.

In 2005, in Bandung, the students participated in a long-term project entitled *36 Frames*, already initiated in 2004 by the BCNMA in Bandung and Helsinki, Finland. The idea involves people—the general public and/or students—using disposable cameras to take pictures related to a specific theme, in this case "Bandung: An Urban Space," and later arranging the resulting images on a large panel (Fig. 3). The organizers wanted, above all, to motivate the participants to work together and convey their own views of Bandung.

Although the participants recognized the significance of collaborating on a mutual project, some were disappointed by the limitations imposed by the medium and by the stipulations. As they indicated in feedback at the end, some of the students even felt that the examples of new-media practices in Indonesia encountered during lectures and cultural visits were far too limited to photography and video. Might this, however, not have to do with the development of new technologies and art in the special context of Indonesia? Furthermore, what about the underlying discourse being addressed here and the use of simple technologies as a counter-reaction to the seemingly homogeneous distribution of high technology throughout the entire world? At the 2004 Art Camp in Tokyo, which focused on art and new technology, the comments ran contrary to those expressed in Bandung: The focus on technology was considered too great and lacking sufficient reflection on technology's use for conveying a message and critical expressions. Different contexts, different expectations.

Despite the "normal" reactions of people beginning to discover more about the contexts and development of art practices by others, and despite their possibly unfulfilled expectations, all participants were extremely positive about the experiences they acquired at this edition of the Art Camp. They found it satisfying that all the workshops and programs were linked to activities of the BCNMA and its local network. It is very encouraging to see how lively the synergies and exchange remain months after the Third Asia-Europe Art Camp—something one notices when viewing the mailing list and the various proposals for new projects. Some of the participating art students and lecturers have since met in Istanbul, Singapore, Budapest, Kuala Lumpur and Copenhagen. Lotte Meijer of the Netherlands stated, "Suddenly I feel like I'm a part of some big, crazy international community."

For the BCNMA, the Art Camp proved

Fig. 3. 36 Frames Exhibition, Selasar Sunaryo Art Space, Bandung, Indonesia, 2005. (Photo by Rizki Resa Utama, courtesy Bandung Center for New Media Arts.) The exhibition was composed of 24 panels by the art students and their liaison officers in Bandung. The exhibition opened on 11 August 2005 at Selasar Sunaryo Art Space together with an exhibition by VideoBabes and a multimedia performance by Biosampler (Indonesia) and Heti Kohta (Finland).
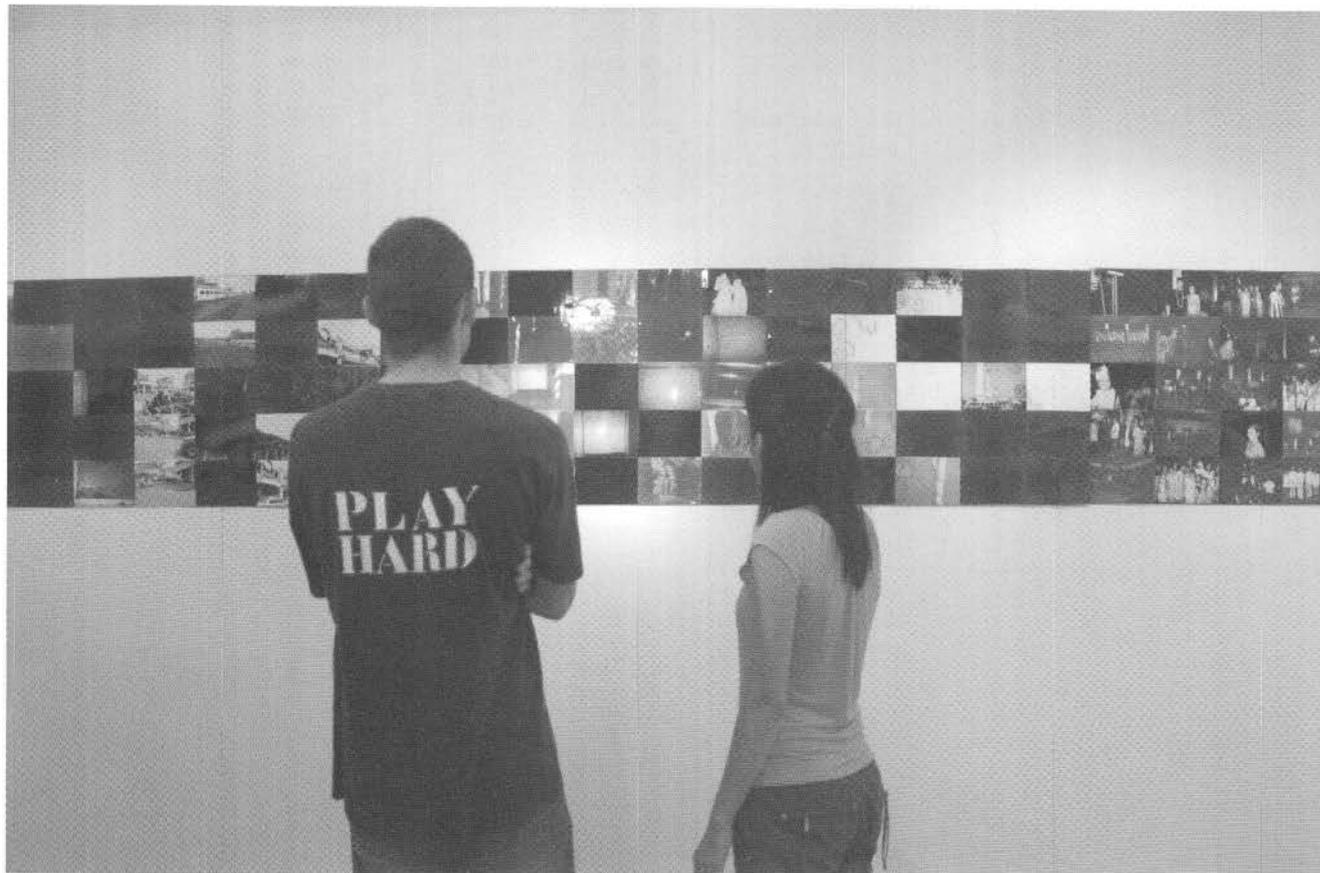
to be an excellent opportunity for strengthening its network and its recognition in the local scene, and for developing contacts on an international level for future projects. In his closing comments in the context of Indonesia's history, Iskandar summarized the Art Camp thusly:

> We have learned a lot through the lectures, and through the new contacts that we made. We gained a new confidence in ourselves by being able to work internationally. Most exciting is that this gives us a great deal of energy to continue with, because many of our friends were will-

ing to support the Art Camp locally.... Thanks to this experience, we now have a better position to negotiate from.... We also have to look to the future and eventually work with the government, as long as that can happen on an equal standing. We have to see this as a process. Every day we find ourselves in a continuous process of "becoming." In terms of our own nation, after sixty years of independence we are still in the process of becoming Indonesia.

References and Notes

1. The Bandung Center for New Media Arts is located at Jl. Kyai Gede Utama 8, Bandung 40132, Indonesia. Web site: http://commonroom.info/bcfnma/. E-mail: info@commonroom.info. Its founders are Gustaff H. Iskandar, R.E. Hartanto, T. Ismail Reza. Active members include Gustaff H. Iskandar, Director; R.E. Hartanto, Program Director; Reina Wulansari, Finance; and Tarlen Handayani, Tobucil/Public Relations.

2. All quotations are from the interview with Gustaff H. Iskandar, 8 August 2005, Bandung, Indonesia.

Marie Le Sourd is a cultural manager living and working in Singapore. Since September 1999, she has been a project manager in the Cultural Exchange Department of the Asia-Europe Foundation.

CALL FOR PAPERS

LMJ 17: My Favorite Things: The Joy of the Gizmo

If, as Marshall McLuhan so famously suggested, the medium is the message, then the gizmo must be the one-liner. From baroque violinists to laptoppers, sound artists have long fetishized the tools of their trade, the mere naming of which can provoke an instant reaction: Shout "LA-2A," "TR-808," "JTM45" or "Tube Screamer" in a room full of musicians, and you will notice the eyes brighten, the breath shorten and the anecdotes pour forth. But only to a point: Many a "secret weapon" is held close to the chest.

This is the chance to get that secret off your chest: LMJ 17 will address the significance of *physical objects* in music and sound art in a time of increasing emphasis on software and file exchange. We are soliciting papers (2,000–5,000 words) and briefer artists' statements (500–1,000 words) on the role of purchased or homemade instruments, effects boxes, pieces of studio gear, "bent" toys, self-built circuits, and so on, in your work as a composer, performer, artist, producer, recording engineer, etc. Wherever possible, please include photographs of your subjects (300 ppi TIFFs preferred).

DEADLINES

1 October 2006: Brief proposals sent to Nicolas Collins <ncollins@artic.edu>.

1 January 2007: Final texts and all materials to the LMJ Editorial Office.

Contact Nicolas Collins <ncollins@artic.edu> with any questions.
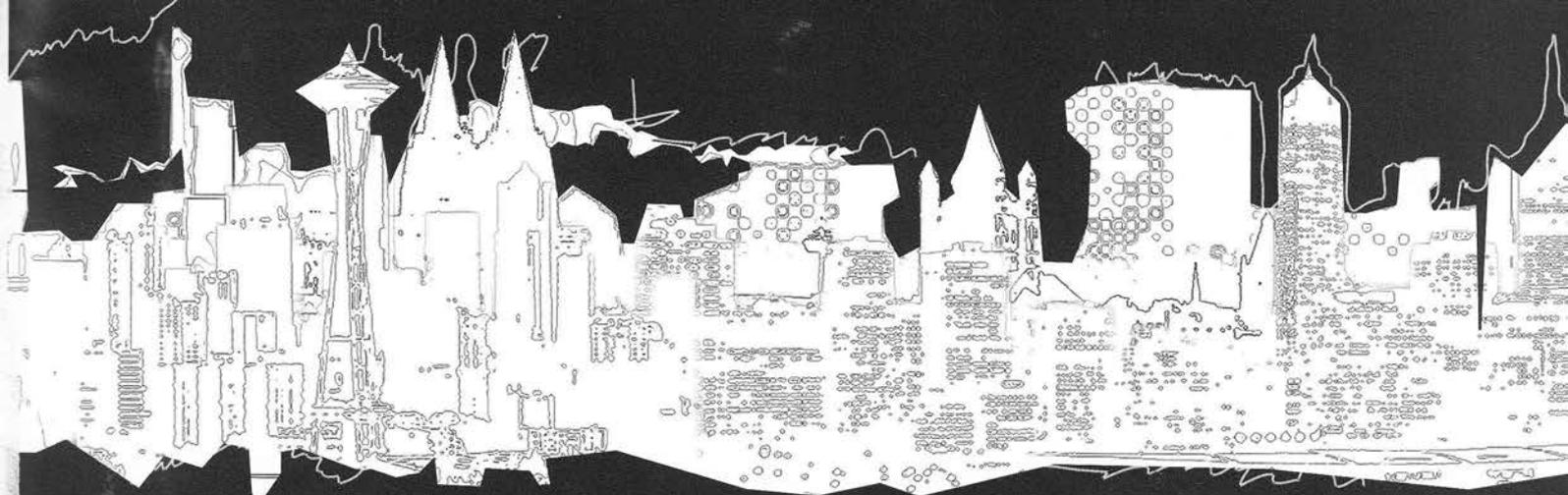
Notions on policy
in Eastern Asia-Europe media spaces

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Reflections on e-culture policy after the ASEF/Common Room 2005 Artscamp in Bandung

What can we learn?

One of the most intriguing aspects of Bauhaus is that the most successful unit — the unit coming "closest to Bauhaus intentions," as Gropius stated, the pottery workshop — was located 25 kilometers from Weimar, in Dornburg. It was hard to reach by train, and hard to reach by car. The workshop master, Max Krehan, owned the workshop, so there was a business interest from the start. The relationship with Marcks, the Master of Form, was not contaminated with formalized roundtable discussions, but was a productive two-way (abstract-concrete) interrelationship.

"More important still, in terms of what Gropius hoped for the entire Bauhaus, was the way in which the pottery workshop operated in close co-operation with the local community in which it found itself. It made pots for the community and the town of Dornburg leased the workshop a plot of land which the students used for vegetables and on which, it was hoped, they would build" [1].

So what can we learn from this? That we must not aim to define, alter or transform practices, processes, places or people. The aim should be to define a vision.

A vision that should be able to inspire and empower young people in their concrete experience of agency in this seemingly *undesignerly* new ambient world, towards a humanistic and optimistic positive attitude in the role, function and *leadership* of the creative individual in her [2] capability to make sense, to work within an *uncertain* framework of unforeseen consequences, unintended uses, and procedural breakdown.

What can we do?

So what does this mean for new media, emergent technologies and cultural policy departments and funding strategies?

In terms of new media and policy there is very little clear and good practice, and this is very logical, as the visual metaphors of digitisation for artistic purpose began only (with the exception of an IT/virtual reality driven trend) 13 years ago with the launching of the browser. Rasa Smite from RIXC [3] claims that the reason why she and other public domain driven artists in Latvia liked new media immediately was that there was no advantage for anyone in any country, as it was just as new for everybody. No one could claim a history that was uniquely theirs, every country had its own equally important story. Shuddhabrata Genupta from Sarai relates how Bulgaria for example developed the highest expediency in software viruses,
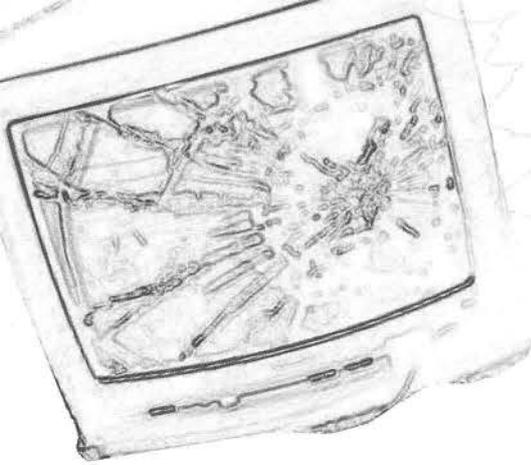
as it had been assigned software production from Comecon.

At the Asia-Europe Foundation (ASEF) Commonroom Bandung-organized and -produced Third Asia-Europe Art Camp, this very fundamental insight to the basic ingredients that make up new media was highlighted in the student presentations from a broad range of geographical locales, from Germany, Indonesia and Norway, to Estonia, Myanmar, Japan and France [4].

The diversity was shattering, yet it would be very hard to categorize presentations in terms of the level of conceptualisation, expertise or creativity.

All presentations are a necessary node in and on the modes of connectivity that make up what we call new media.

There are a few common threads, though. One is risk-taking. ASEF itself has taken a risk by focusing on emergent and not established practices, by showing a clear interest in hardwiring the future designers of our mediascapes through theoretical lectures, local assignments, a view of new media spaces in Bandung and interviews with the founders, and — last but not least, and most important — giving every participant a clear insight into her own daily praxis, ways of working, strategies of communication and the level of digital saturization.

This brings us to the second point. As Anabelle (Singapore) stated, the issue is about Space, yes, but perhaps more importantly about Pace. This is a term that describes the various ways in which the digital context that informs everyday practices is matched by a level

of conceptualisation that allows innovation.

The third common denominator lies in the basic irrelevance the participants assign to terminology. For them, being called or labeled an artist, designer, creator of original ideas is only relevant when it comes to issues of funding.

The fourth is the belief that it is extremely necessary to have both a physical place where people can meet as well as a space that might also be thought of as a method, a format, a way of looking at the world that you have in common with a few or a group of other people. This space can and should be supported by as much digital connectivity as possible (web, mail, gps, roaming).

What can we do from a cultural policy point of view?

I. Place

We do not fund beginning places

De Waag and V2 are our most successful Dutch labs. In less than 10 years they have grown into academic nodes on the SURFNET network, the Dutch academic network. This is unprecedented. Never before has a group of autonomous, critical individuals been able to get their ideas, narrative, theories and projects accepted as credible in terms of the existing academic discourse in such a short time span. How was this possible? Because of the liberal climate in the eighties and early nineties in the Netherlands that did allow for bottom-up creative initiatives. De Waag grew out of the non-profit Digital City, which was supposed to last for six weeks, the first Digital City in Amsterdam in 1993. Young idealists, hackers, hippies from hell, as they are called in Ine Poppes' documentary, provided free email and started the digital revolution with their internet provider xs4all. We are only 11 years later and the analogue world is becoming more hybrid as we speak, with digital connectivity. xs4all has become a part of corporate KPN. V2 was the name of a squat building in Den Bosch; the director Alex Adriaansens was there in 1981.

He is still director now in 2004. V2 participates in numerous European networks, is focusing on their own kind of R&D that is rapidly drawing attention from the regular and corporate research labs, and hosts its own V2 publishing and V2 Archive. The young people that started these digital connectivities in spaces and actual places were concerned for more than their own particular work, products or living; their concern was for the *public domain*: xs4all.

As in Bandung, Delhi, Amsterdam, Riga, Minsk, there was no government funding in the creation of the place. You deal with highly idealistic persons who care for public access and domains.

Labs that come from abroad unchanged go bust (Medialab Dublin). Labs that are dependent on one particular line of money can switch directions any time (merging of IVREA with Domus).

Strategy of the place: bypassing (see Bauhaus story).

Strategy of funders: co-fund the satellites (ITB-Common Room for example) and fund specific projects.

Question: When do you decide that the proposed alliances are going to do something no one else is going to do?

In Holland: In the Ministry of Education, Cultuurnota, individuals took risks. They funded through the visual arts budget (film/video/painting) a number of places that all have delivered quite something else. Instead of Visual Art, de Waag is making socio-cultural applications (www.verhalentafel.org) that turn out to be very good for dementia. None of this was in the original research proposal. (This also shows that academic institutes need common rooms as much as they need them for asking questions that are not being deemed relevant within specific frameworks.) Because of this risktaking and trust in young idealistic professionals (who in new media could be making much more money working for regular companies) Holland now has an extremely rich and densely saturated network of new media institutions that themselves now are becoming experts in

fields that are economically viable: documentation, heritage, media formats, entertainment.

II. Triangle: arts, technology and business: creative industries

A clear difference between Europe and Asia is the lack of funding, even after the initial phase of a place. Places in Asia describe themselves as for-profit. In Europe it is the other way around. These two positions are coming closer though. De Waag has set up a business structure to sell de Verhalentafel to the U.S.

Policy focus in new media interfacing with Ministries of Economy, Education, Tourism: creative industries

New media is about the soft side of innovation [5] (ways of brainstorming, visualization techniques, mapping, designing trust for users in digital environments, didactic models).

Proposal: Meeting with Europe-Asia culture officials, companies (telecoms, media) that are very eager to work with new media artists and designers but need very good reason, arguments and a theoretical framework for doing so.

III. A possible focus for 2005-2010 projects: urban studies: living in the digital city

As the Sarai Reader list so poignantly shows, people are beginning to map, debate, discover ways of writing and ways of publicizing their everyday lives in cities. As much as counter-research, it is the emergence itself of a new kind of research that will have more repercussions for the academic research tradition than for the media places. Eventually it will become the default. As with new media itself, the use of blogs, email, email lists, websites, mobile phones plays out fundamental changes on the news information mediascapes all over the world. Upstreaming says that the first pictures about incidents are now blogged before they are published. All over the world, dominant paradigms of dispersing data and information will have to change or go bust.

From a policy point of view: Who would you rather help or fund? People who will show one-sided information? Or idealistic young professionals with a heart for the truth and the heart of the matter?

A focus on urban digital realities (cctv, microphones, RFID, active sensors) will hopefully (as has happened with de Waag) spawn off community-enhancing projects (see i3 website/Lime) instead of the use of digital technology for ubiquitous control.

Again, in this respect there is no Europe-Asia gap.

But the tables have turned. Here in Bandung you can say that Dutch Art Deco architecture mapped its way through an intuitive walking that has since embraced the map. This walking is now walked in our cities in Europe. Speaking only of Amsterdam, Rotterdam, Den Haag we encounter multiculturalism at home. Over half of the young population has Dutch nationality but is from foreign descent.

The mix, the multicultural, is the future, and our cities are very much in need of the Asian expertise in *not running-running them*.

References and Notes

1. Whitford, Frank, Bauhaus, Thames & Hudson, 1984, pp. 73-74.

2. The new creator is a she, it appears. At the Third Asia-Europe Art camp, the numbers were 1 to 3.

3. RIXC The Center for new media culture is an independent new media artists-run space in Riga with its experimental media laboratory, research programmes and public events space. It was founded in 2000 on a basis of E-LAB initiative (since 1996).

4. The Asia-Europe Foundation (ASEF), established in February 1997 by the members of Asia-Europe Meeting (ASEM), is the only permanent physical institution of ASEM. It is a not-for-profit foundation based in Singapore and seeks to promote better mutual understanding between the peoples of Asia and Europe through greater intellectual, cultural and people-to-people exchanges. Information on the Third Asia-Europe Art Camp: <http://www.commonroom.info/bcfnma/artcamp2005/about/>.

5. Very debatable but very helpful. The Dutch 2005 policy document on Economy and Culture uses these terms, hard and soft sides of innovation. New media is also very much about hardware. Culture is a to-be-hardcoded variable in a media-saturated environment, but this pace is for us, not for policymakers at this moment.
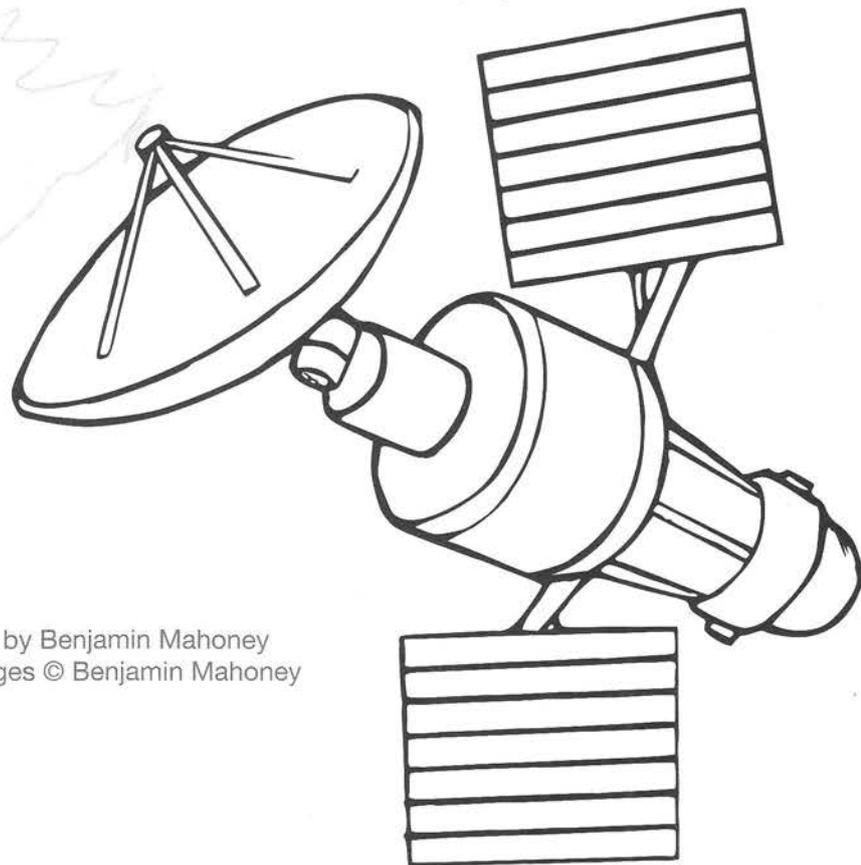
Design by Benjamin Mahoney
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PLACE, GROUND AND PRACTICE

Local Knowledge:
Place and New Media Practice

I grew up selling Local Knowledge, although I did not think much about it at the time. Local Knowledge was the brand name for the surfboards made by my stepfather's surf shop on Australia's Gold Coast.

Compared to most other European settlers who are not farmers, surfers have detailed relationships with physical places and locations. "Local knowledge" denotes insider information such as, for example, under what conditions a particular surf break might be good, or how to surf a particular wave most effectively. While some local knowledge can be shared, a certain amount is tacit and experiential and cannot be codified—remaining obstinately located around a particular environment and the people in it. Local Knowledge is reified in the doctrine of "localism," which claims special rights to the best waves for those who surf particular breaks regularly.

There is a class dimension at work in surfing's localism: Cosmopolitans who travel regularly see localism as small minded and against the spirit of surfing, while those who grow up around the best breaks (which tend not to be in major cities) rail against the magazines, surf reports and web cams that provide increasingly more information about particular surf locations, making them destinations for the "blow-ins" from somewhere else. It is true that even among the surfing community's "locals" there are occasional, romantic nods to the "connection with the land" of Aboriginal peoples. In non-urban areas, however, settler culture commonly views indigenous culture as something existing in the past, which has "been lost." To recognize indigenous culture as contemporary and viable would call one's own localness into question. Ironically, then, it is the urban cosmopolitans—unencumbered by non-negotiable attachments to a place—who are more open to the reality of ongoing indigenous relationships to and guardianship of the land.

Abie and Wok Wright were born and raised in Newcastle, Australia, which is my hometown. They also promote Local Knowledge—that is the name of the hip-hop group they formed with Joel Wenitong in 2002. However, the "localness" of their knowledge is somewhat different. Newcastle was named after the English coal town by a British lieutenant who discovered coal there while searching for escaped convicts in the early 19th century. The Wright brothers, however, describe themselves in interviews as being from Awabakal country, a broader group of nations/peoples centered for thousands of years around Awaba, also known as Lake Macquarie. While the rise of hip-hop is often characterized as a function of U.S. consumerism and inauthenticity, for Local Knowledge hip-hop values articulate their anti-colonial cultural politics: Keeping it real, name-checking your roots and representing for your community all come naturally in both hip-hop and indigenous struggles for self-determination.

My experience of these competing versions of Local Knowledge leads me to reflect on the incommensurability of indigenous and settler versions of knowledge of the land, and how these echo in the activities of indigenous new-media practitioners. There are at least three axes where this incommensurability is visible. These axes may also be described as aporia in

the deconstructive sense—contradictory impulses that are not necessarily resolvable, because they are constituted by the disjuncture between colonial and colonized cultures [1].

The first is the role of cartography and the map. The turning of land into data through surveying, mapping and renaming is the most basic function of the colonial process. In many colonial projects, the surveyor was hated and feared more than the soldier. The removal of surveying pegs, the refusal to be mapped, is an important thread in anti-colonial activity from Ireland to New Zealand. This places the role of new media and its data-centricity in question. As Solomon Benjamin's fascinating studies of land tenure in Bangalore have shown [2], the systematization of land information routinely results in a centralization of control and a loss of local self-determination. Land becomes appropriable at a distance. A common occurrence in settler encounters with indigenous culture is the discovery that the land is more full of story than we knew. The formation of objective, story-less data via, for example, GPS—even for the purposes of developing narrative media practices through "locative" works—is difficult to reconcile with the non-transferable yet profoundly social relationship with land that is characteristic of indigenous epistemology.

The second aporia is that of time. To claim affiliation to a space of land via a property right, or to activate the concept of sovereignty itself, is an act of history-making. As David Ellerman notes, however, this historical dimension is usually suppressed in Western economic and political theory: "Economics has focused on the transfers in the market and almost completely neglected the question of the initiation and termination of property in normal production and consumption" [3].

Part of the silence around the initiation of property is due to the fact that the actual, often grisly stories of property initiation raise questions about the legitimacy of that property. The reality of indigenous relationships to land, if connected to the history of property in specific locations, always brings up an uncomfortable anteriority for a culture that views property as transferable, as James Clifford notes:

> [The] historical, tangled sense of changing places doesn't capture the identity of ancestors with a mountain, for as long as anyone remembers and plausibly far beyond that. Old myths and genealogies change, connect, and reach out, but always in relation to this enduring spatial nexus.... Thus indigenous identities must always transcend colonial interruptions ... claiming: we were here before all that, we are still here, we will make a future here [4].

Homi Bhabha has referred to the colonial moment as generating a "time-lag" that destabilizes the ground from which a singular history or theory of place is possible. The perspective of the colonized puts both our contemporary theorization of property and our understanding of property in times past. As Gregor McLennan puts it, "We cannot readily reperiodise and re-name the object of enquiry to fit our revised inclinations" or suppositions in the new media environment [5]. The "new" remains unhelpfully bound to different, competing histories of the past.

The third axis relates to the concept and function of knowledge itself. Historical knowledge is constantly reinterpreted and re-located to become useful for the work of the present. In settler culture, knowledge is instrumental—it is useful because it can do things, here and now. In indigenous epistemologies, knowledge is commonly viewed as what the Maori call a *taonga tuku iho*, a gift from one's ancestors to the present. The ultimate social good is not the transfer of knowledge, as it is under modernist theories of information diffusion, nor is it the maximum extraction of capital value, as under capitalism. More important is who the knowledge is transferred to and whether their use of that knowledge will help maintain the entire knowledge system.

Poet and librarian Robert Sullivan notes that, when considering the digitization of cultural material, important questions for indigenous maintainers of knowledge are:

> How do we send a message that strengthens the holistic context of each cultural item and collection? How do we ensure that both indigenous and non-indigenous peoples receive the message? How do we digitize material taking into account its metaphysical as well as its digital life? [6]

Resolving these three conflicts would require "new media" in which the technologically augmented experience of location is inseparable from a philosophy of land and belonging.

These are distinctive and important questions for new media practice. I do not seek to romanticize the distinctions between indigenous and nonindigenous approaches to land and knowledge, or to suggest that indigenous knowledge systems can or should be adopted by nonindigenous cultures. For indigenous peoples, the recovery and maintenance of their cultural systems is quite simply a lot of extra work that they do as part of their survival. It is empirically the case, however, that the cultural meaning of place and location is more sophisticated in indigenous culture than in nonindigenous culture—indigenous practitioners are far more likely to be able to deploy a range of strategies for "reading the country" that emerge from a variety of worldviews, and to be able to critically reflect on the effects of these understandings [7]. Such systems make us aware that our vision for information technologies is limited by epistemological biases that we have developed experientially within colonial capitalism.

To understand some of these limitations, it is instructive to look at the way new-media theory is invested in settler culture and its relationships with land. In these relationships I mean more than the homologies Virginia Eubanks identified between the "mythographies" of new-media development and the frontier values of "Conquest, Flexibility, Democracy, and Individuality" in the white settlers of the Western United States, although those are important [8]. Instead I suggest that our very ways of thinking about new media are inevitably invested in colonial epistemology.

For example, Lev Manovich, in his classic book *The Language of New Media*, identifies four distinctive properties of digital media products:

- Discrete representation on different scales. Manovich imagines a fractal structure, where individual objects can be recombined at will into different contexts while retaining their individuality.
- Numeric representation. Media can be described formally (mathematically or numerically) and subject to algorithmic manipulations.
- Automation. Many media manipulations can occur automatically, and human intentionality can be removed from the creative process.
- Variability. New-media objects (such as web sites) are not something fixed once and for all but can exist in different (potentially infinite) versions [9].

Of course, these properties are clearly associated with the values of European modernism, but it is also interesting to consider the first two in relation to the development of "freehold title"—in which divisibility and aggregation are important components of property under the industrial system. However, these first three characteristics—valorized in Manovich's conception—are unhelpful under value systems where no person or media object is imaginable outside of specific social relationships, as these characteristics suppress the particularity of the subjective social context that produces them. As David Turnbull puts it, in a culture that prefers the abstract to the concrete (because the abstract is without annoying limitations to circulation), knowledge has to be presented as unbiased and undistorted, "without a place or knower" [10]. In a discussion of high-energy physics, Sharon Traweek describes this ideal as "an extreme culture of objectivity; a culture of no culture, which longs passionately for a world without loose ends, without temperament, gender, nationalism, or other sources of disorder—for a world outside human space and time" [11].

By contrast, the new-media artists and commentators who are producing the work I find most fascinating (such as those covered in the essays by Rachel O'Reilly and Candice Hopkins in this issue [12]) create new-media projects that are organized around experience-centered rather than system-centered claims to aesthetic value—they are not telling the story of an abstract "global" but are reflexively embedded in their own location and understanding. Works created by indigenous artists assert a different frame of reference for the role of the digital within their practice, highlighting the "alternative modernities" that have simultaneously existed outside European thinking, while forging political sensibilities in relation to colonization and racial prejudice.

Cheryl L'Hirondelle notes that "the current lack of attention being paid by programmers to Indigenous communities around the world represents a missed opportunity, because our languages are eloquent, concept and process-based, and fully capable of describing various

complicated technological dynamics" [13]. The aim of the PRNMS Working Group on Place, Ground, and Practice is to bring these worldviews—often relegated to the "cultural" as opposed to fully "contemporary"—into the mainstream of new-media practice. For me, these "cultural futures," as Eric Michaels terms them [14], open new directions for critical practice among indigenous and nonindigenous new-media practitioners alike. These directions are not founded on the basis of shared values (though these are always being sought), but on what is different and distinctive. They are about encountering stories on our travels that emerge from and remain tied to specific locations, stories that—although they travel far and wide—have a home.

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References and Notes

1. I use the term *aporia*, from a Greek word meaning "impasse," in the sense specifically associated with philosophical deconstruction, where an indeterminacy or gap is perceivable in the fault lines in a concept. For a definitive treatment of the aporetic effects of colonization in philosophy, literature and history, see G.C. Spivak, *A Critique of Postcolonial Reason: Toward a History of the Vanishing Present* (Cambridge, MA: Harvard Univ. Press).

2. See S. Benjamin: "Governance, Economic Settings and Poverty in Bangalore," *Environment and Urbanization* No. 12: 35–56 (2000), especially his recent work presented at the Incommunicado conference, Amsterdam, June 2005 and Contested Commons, Trespassing Publics, Delhi, January 2005.

3. D. Ellerman, "Introduction to Property Theory," Social Science Research Network, <http://ssrn.com/abstract=548142> (2004). Accessed 20 November 2004.

4. J. Clifford, "Indigenous Articulations," *The Contemporary Pacific*, Vol. 13, No. 2, 468–492 (2001) p. 482.

5. G. McLennan, "Sociology, Eurocentrism and Postcolonial Theory," *European Journal of Social Theory*, Vol. 6, No. 1 (2003) 69–86, p. 74.

6. R. Sullivan, "Indigenous Cultural and Intellectual Property Rights—A Digital Library Context," *D-Lib Magazine*, Vol. 8, No. 5 (May 2002) <http://www.dlib.org/dlib/may02/sullivan/05sullivan.html>. Accessed 15 April 2005.

7. For an excellent example of this encounter between different knowledge systems, see K. Benterrak, S. Muecke and P. Roe, *Reading the Country: An Introduction to Nomadology* (Fremantle Arts Centre Press, Fremantle, W.A., 1984)

8. V. Eubanks, "The Mythography of the 'New' Frontier," <http://web.mit.edu/mit/articles/index_eubanks.html>. Accessed 2 May 2002.

9. L. Manovich, *The Language of New Media* (Cambridge, MA: MIT Press, 2001).

10. D. Turnbull, *Masons, Tricksters and Cartographers: Comparative Studies in the Sociology of Scientific and Indigenous Knowledge* (Australia: Harwood Academic, 2000).

11. S. Traweek, *Beamtimes and Lifetimes: The World of High Energy Physics* (Cambridge, MA: Harvard Univ. Press, 1988) p. 162.

12. Rachel O'Reilly, "Compasses, Meetings and Maps: Three Recent Media Works," *Leonardo* **39**, No. 4 (2006); Candice Hopkins, "Making Things Our Own," *Leonardo* **39**, No. 4 (2006).

13. C. L'Hirondelle, "Sub-rosa", in *Horizon Zero* Issue 17, "Tell—Aboriginal Story in Digital Media," <http://www.horizonzero.ca/textsite/tell.php?is=17&file=0&tlang=0> (2004). Accessed 20 September 2005.

14. E. Michaels, *Bad Aboriginal Art: Tradition, Media and Technological Horizons* (Minneapolis, MN: University of Minnesota Press, 1994).

成都——蒙彼利埃 市民井中亲切问候

From Chengdu to Montpellier; from Montpellier, to Chengdu; an exchange of warm greetings

In Montpellier

In Chengdu
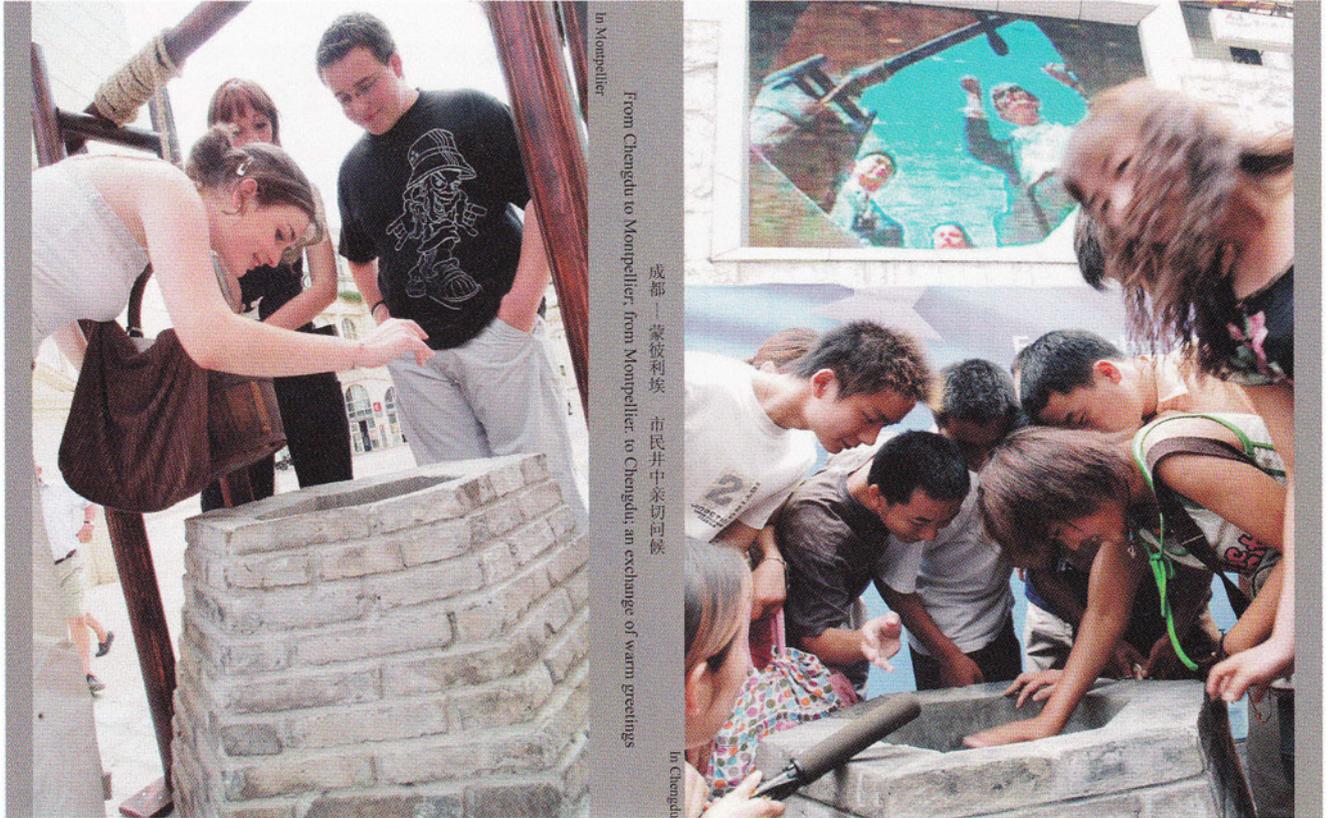
Jin Jiangbo, a well to the other side of the earth. (© Jin Jiangbo) (China container)

Hu Jie Ming, *Altitude Zero*, interactive installation, 6 computers and 6 LCD monitors, sensors, small speakers and 6 sets of old cabin window frames, 2006. (© Hu Jie Ming) (China container)
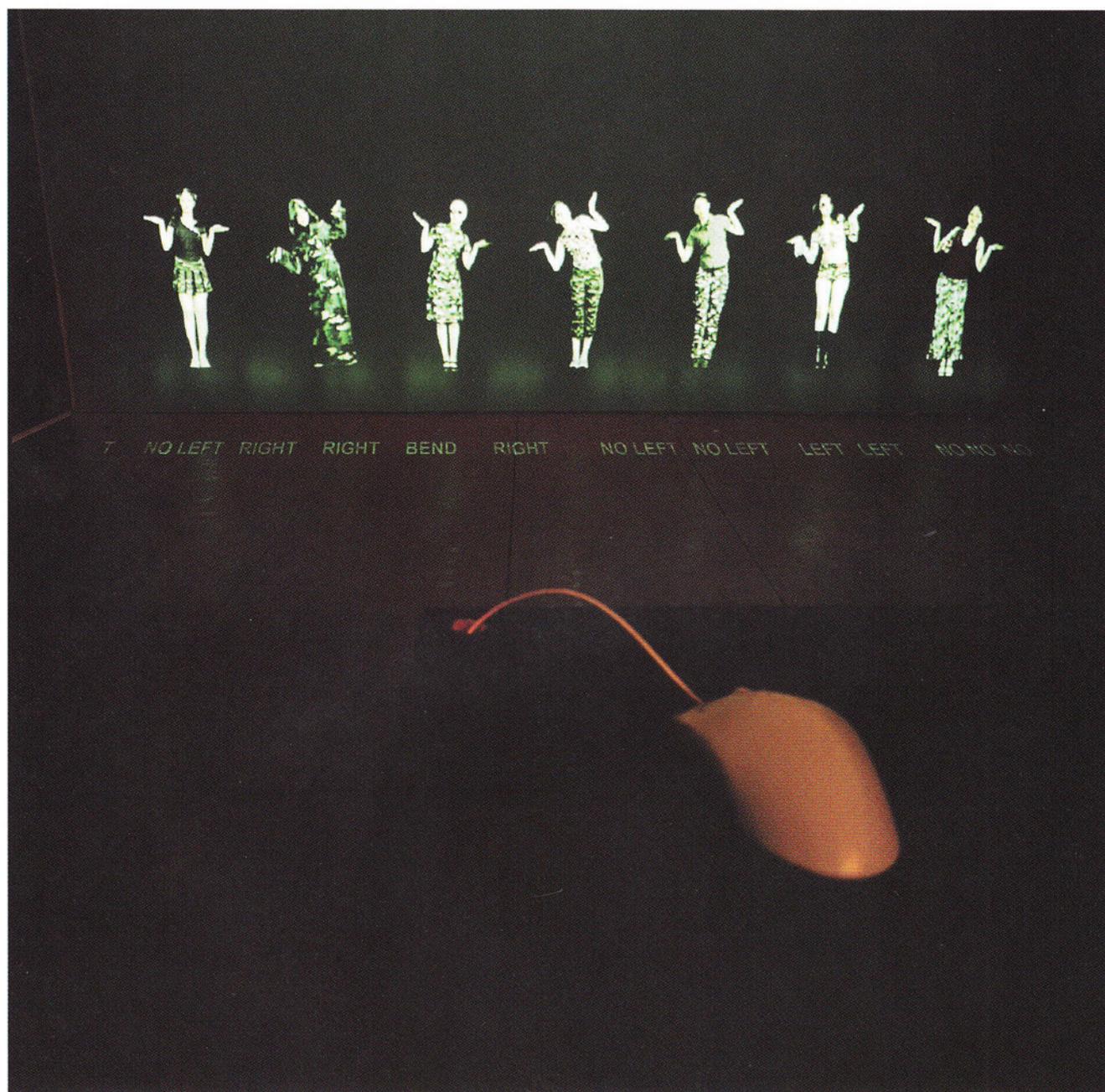
Shilpa Gupta, Untitled, interactive video projection, 8 m wide, 2004–2005. (© Shilpa Gupta. Photo © Hyung Min Moon.) (Mumbai container)

No. 1. Rachael Rakena, *Rerehiko,* video still from two-channel projected digital video installation with sound, 21-min loop, 2003. (© Rachael Rakena) (New Zealand container)

No. 2. Rachael Rakena, Fez Fa'anana and Brian Fuata, *Pacific Washup,* video still from single-channel digital video with sound, 6-min loop, 2003–2004. (© Rachael Rakena, Fez Fa'anana and Brian Fuata) (New Zealand container)

Masaki Fujihata, *Field_Work@Alsace*, interactive multimedia installation, dimensions variable, approx. 100 × 60 cm, 2003; from the artist's *Field-Works* series. (© Masaki Fujihata) (See article by Drew Hemment.)
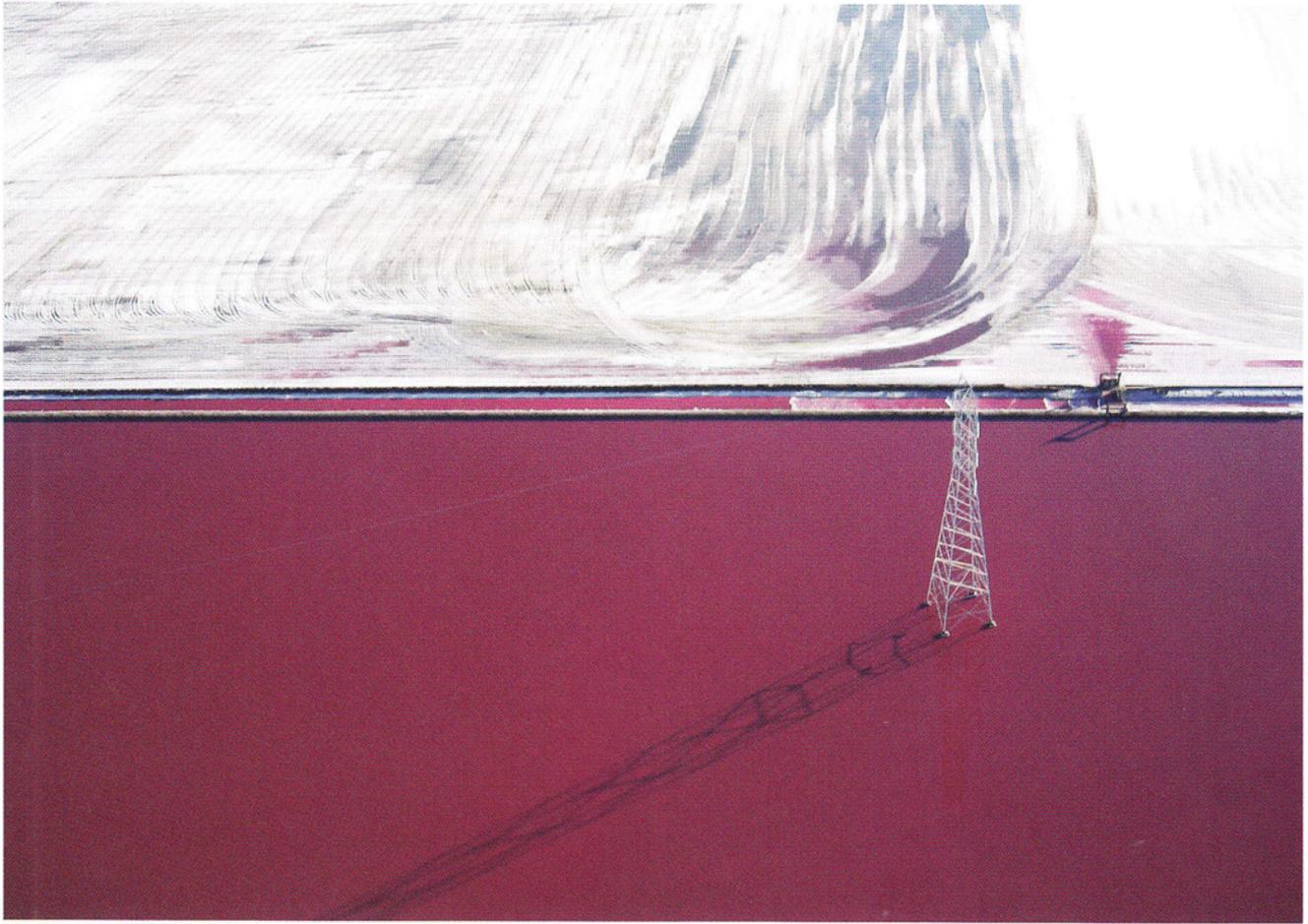
No. 1. Charles C. Benton, *Hidden Ecologies*, salt crystallizers, Cargill's Newark salt plant, 2005. (Photo © Charles C. Benton) (See article by Annie Lambla.)

sayfella
learnfella
standfella
be

wisefella
knowfella
actfella
see
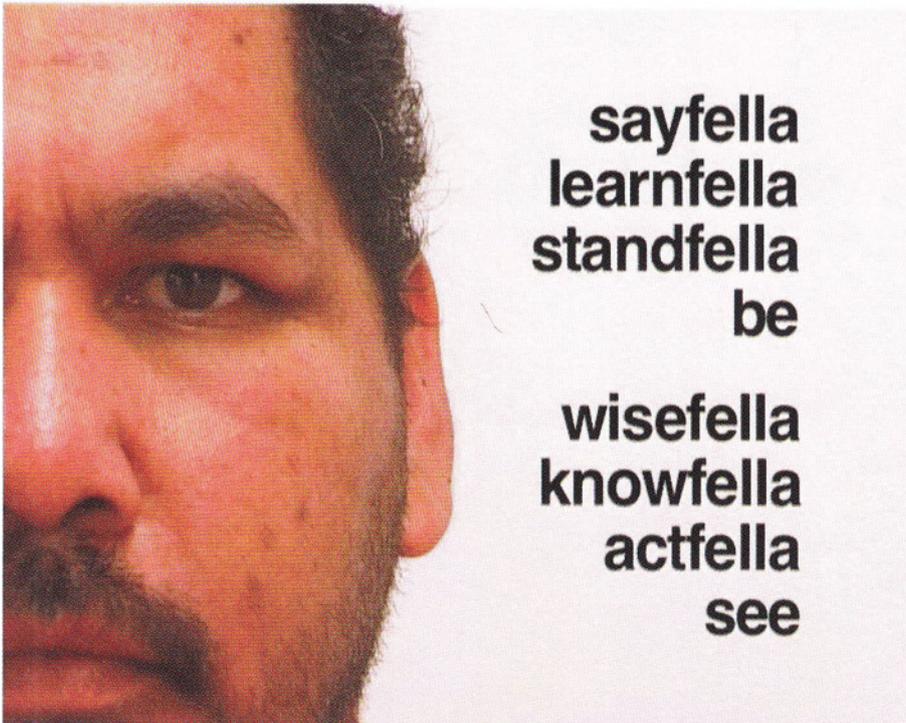
No. 2. Vernon Ah Kee, still from *Whitefellanormal*, DVD, 30 sec, 2004. (© Vernon Ah Kee. Courtesy the artist and Bellas Milani Gallery, Brisbane, Australia.) (See article by Rachel O'Reilly.)
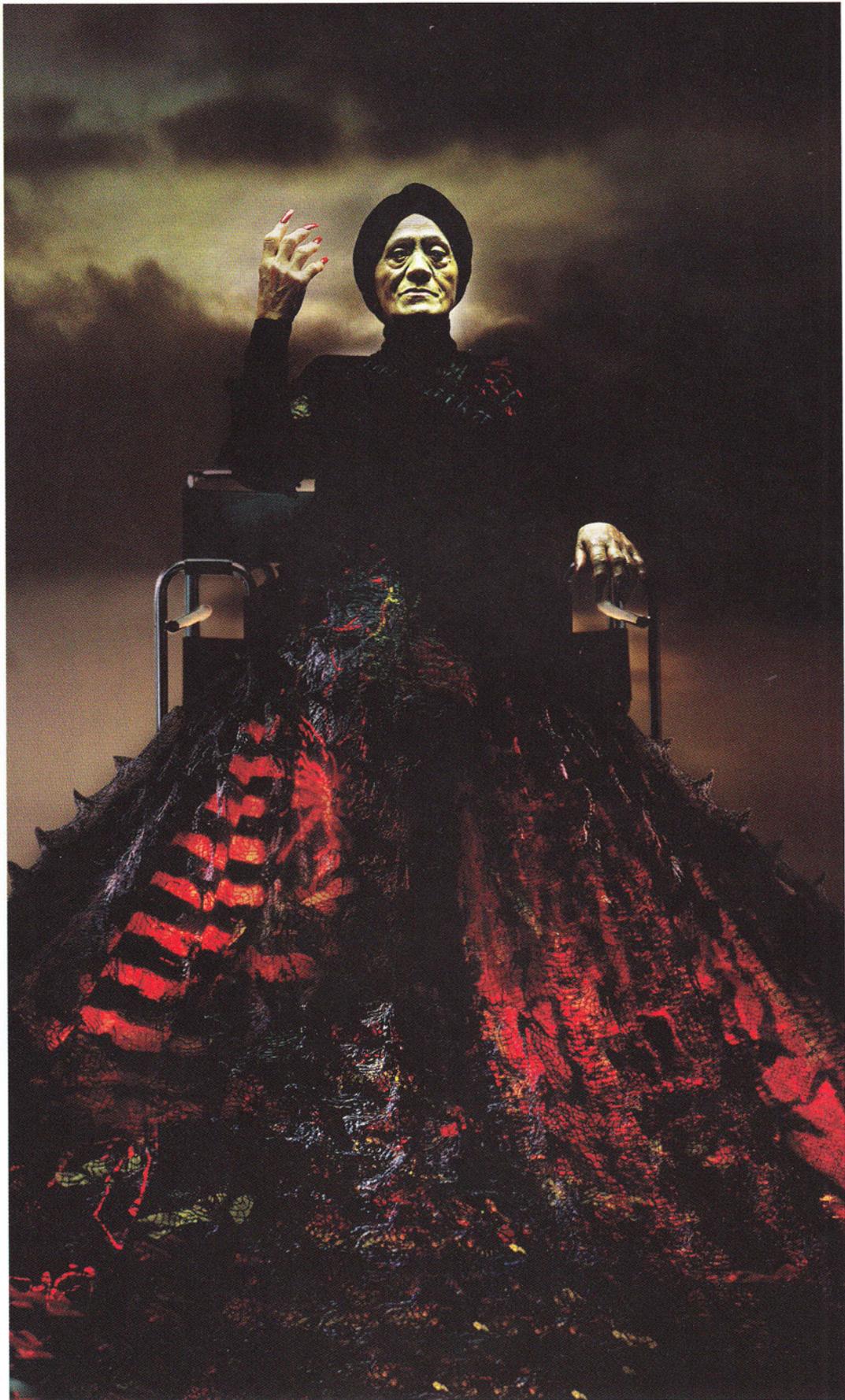
Lisa Reihana, Mahuika from *Digital Marae*, limited-edition color cibachrome photograph mounted on aluminum, 200 × 100 × 0.35 cm, 2001. (© Lisa Reihana. Collection Queensland Art Gallery.) (See article by Rachel O'Reilly.)
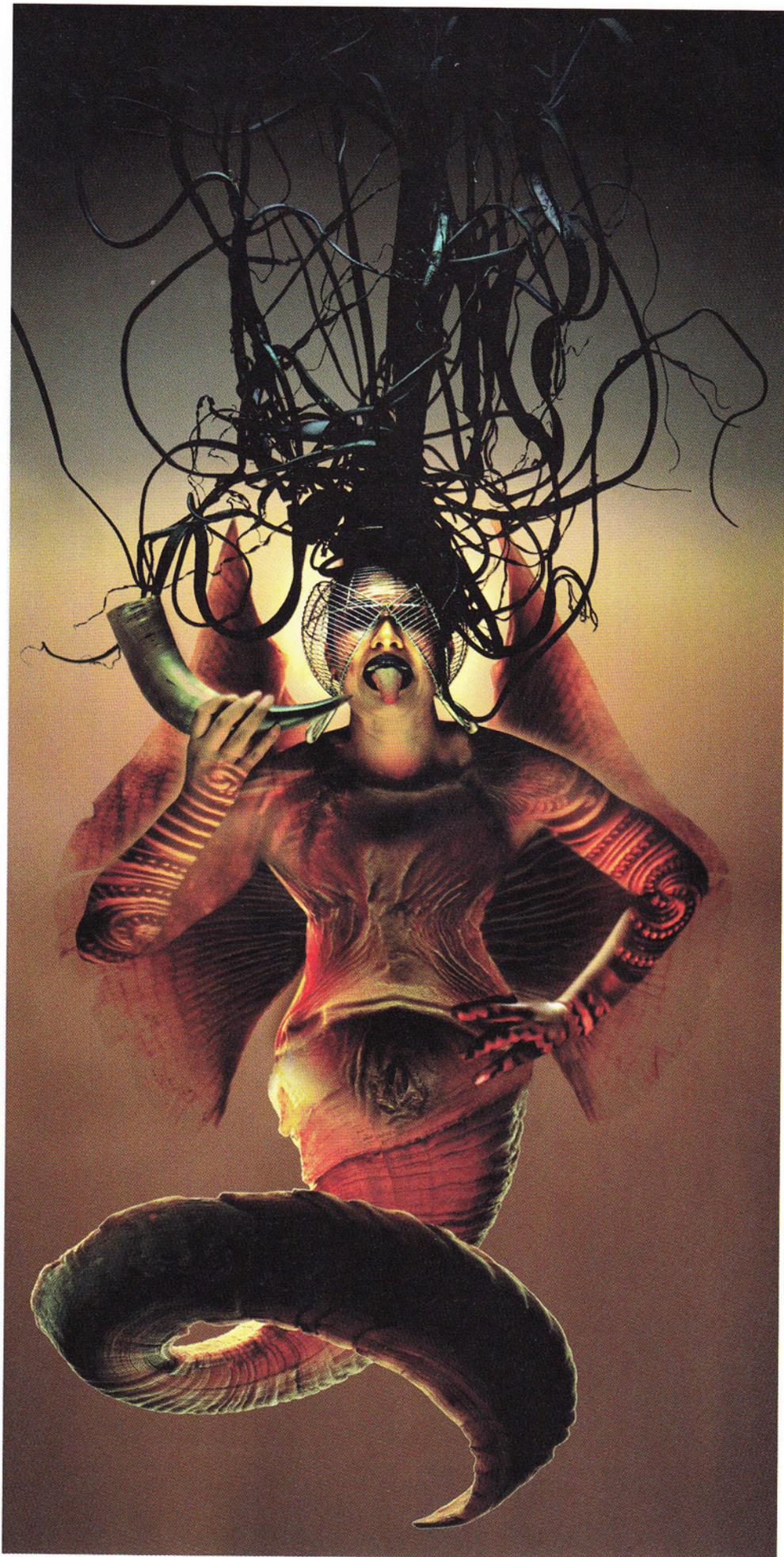
Compasses, Meetings and Maps: Three Recent Media Works

Rachel O'Reilly

ABSTRACT

The article explores possible cultural approaches to new-media art aesthetics and criticism through an in-depth appraisal of recent works by three contemporary practitioners from Asia and the Pacific: Lisa Reihana, Vernon Ah Kee and Qiu Zhijie. Particular attention is paid to the issues of place, location and cultural practice in their work, issues currently under-examined in new-media art discourse. The analysis pays close attention to the operationality of the works, the influence of pre-digital aesthetic histories and the richly locative and virtual schemas of indigenous epistemologies that serve to meaningfully expand Euro-American notions of locative media art.

The past decade has seen distinctive conceptual, material and political inquiries within the domain of indigenous and intercultural new-media arts in Australia and the Pacific [1]. Indigenous notions of place connect self and history to land, spirit to geography, and narratives to navigation in complex, highly diverse spatial practices that operate very differently from Cartesian representations and imaginings. While the relationship of new-media art practices, and indeed of individual artists, to cultural praxis is not straightforward, practitioners making and pursuing a field of inquiry that continues to draw its conceptual references, terminologies and histories of activity from European and American histories of art and technology have opened up important questions about the cultural assumptions of what new-media practice is. Qui Zhijie (China), Lisa Reihana (New Zealand) and Vernon Ah Kee (Australia) are useful points of reference when working to consider notions of place and virtuality as these are understood within contemporary new-media practice. In their videos and installations, these artists point to a complicated set of relationships between place and artistic expression within new-media arts—a field that has perhaps not yet fully accounted for cultured engagements with media technologies and place-informed histories of aesthetics in its focus upon the narrowly technological new.

DIFFERENCE NAVIGATORS

Chinese artist Qui Zhijie, a seasoned traveler, records in *Landscape* (1999) his experience of key city centers, public transport systems, restaurant interiors, marketplaces, parks and museum spaces with a portable camcorder. In the work's opening sequence, time-lapse photography of a public park in China is used to represent local meaning in fast-forward. People walk hurriedly past the camera as slight changes in the weather and the flow of traffic accumulate in the viewer's mind to indicate the nature of the everyday in that location. The way in which this fixed shot captures and compresses local inhabitants' movements and interactions over time suggests initially that the artist understands "place" as a function of dwelling [2]. Thereafter, however, a close-up image of the artist's face links disparate international scenes—many of which are instantly recognizable to the international traveler—into a continuous, revolving, clockwise pan of short takes. Within this representation of circumnavigation, the strongest site of familiar dwelling seems to exist in the relationship between the artist and his camera. The constant ground of the artist's self pragmatically displaces a need for lived place, and experience is "local" only upon his body, which navigates within a fragmented field of international visions and experiences. Discussing these video landscapes–cum–temporal self-portraits, Qiu Zhijie speaks of the importance of the compass to ancient Chinese culture, understood as divining navigation by bringing the heaven's magnetic forces into dialogue with the earth's plane. The artist's conceptualization of "landscapes," in which the body and technology figure prominently, highlights a number of key aesthetic, epistemological and representational concerns in seeing and reading place in networked culture.

Landscape, while questioning the mobility of identity within trans-local experiences and exchanges, points to the subtle conjoining of metaphor and math that is at the core of conceptual approaches to place in media arts discourse. *Landscape* locates an experience of global culture within a very specifically "Chinese" history of technology. Navigational practices are an interesting referent here, because their comparative study reveals great discrepancies in the actual tools, metaphysical assumptions and computational systems used by some of the most reputed navigators of land and ocean [3]. The lack of any foundational mathematic or trans-cultural principles of spatial practice through which the competency and accuracy of specific, highly functional and spiritually elaborate ways of seeing and reading place might be investigated [4] expands locative discourse in significant ways. Here we might alternatively appreciate "place" in sociological terms, as a culturally specific assemblage of local realities, and "spatial practices"—methods for knowing and practicing location—as variable concept-objects [5] subject to critical and comparative review. If Western maps are merely one means of experiencing the local, enabling mobility and constructing the global, we might read Qiu Zhijie's gesture as at least implicitly grounded in an appreciation of the existence of other possible matrices and contemporaneous interpretive practices. The artist's visualization of circumnavigation, beginning and ending through the self, also recognizes the embodied nature of belief invested in spatial practices in order for them

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Article Frontispiece. Lisa Reihana, Marakihau from *Digital Marae*, limited edition color cibachrome photograph mounted on aluminum, 200 × 100 × 0.35 cm, 2001. (© Lisa Reihana. Collection Queensland Art Gallery.)

Fig. 1. Lisa Reihana, Hinewai from *Digital Marae*, limited-edition color cibachrome photograph mounted on aluminum, 120 × 140 × 0.35 cm, 2001. (© Lisa Reihana. Collection Queensland Art Gallery.)

to be sense-making and truly operational. Here, Lisa Reihana's work is of great relevance.

CYBER-MYTHOLOGIES

Conjoining Maori and cyberculture mythology, Lisa Reihana constructs culturally salient, richly ordered interactive meeting places. Her installation *Digital Marae* (2001) suggests that the principles of virtual culture [6] extend usefully outside material relationships to networked machines. Visitors to the artist's reconception of a traditional *marae* (Maori meetinghouse) greet four life-sized portraits of lustrous, spectacular women reminiscent of otherworldly characters from fantasy fiction. These are ancestral figures in Maori mythology and would hang similarly in a very specific arrangement as *Pouwhenua* or *Pou Pou* (carved representations of the ancestors) within the rectangular architecture of the marae. Traditionally the carving of wooden

Pouwhenua was undertaken by men. Reihana has used contemporary color photographic techniques to render her Pou Pou as lush, impassioned female characters, both as a tribute to the importance of matriarchy in Maori culture and to the contemporary dynamism of Maori lore.

As reworked traditional stories, the figures outline a series of archetypal narratives concerned with risk and becoming, desire, greed and consequence. Mahuika, the anchor figure of the marae (Color Plate G), symbolizes tradition in Maori culture and is surrounded by smoke and hot lava. Living in the underworld, she was tricked by her grandson into passing on to him all the power that she possesses in her fingernails [7]. Hinewai, the youngest in the group (Fig. 1), represents familial ties. At daybreak, she beckons her sister Hinepukohurangi to leave the worldly realm of desire that she succumbs to nightly with the mortal male Uenuku. Hinepukohurangi (Fig. 2) has never been visualized in traditional carved form.

Her representation in photographed form as part of *Digital Marae* is an innovation that has been accepted by the artist's Maori community [8]. Kurangaituku appears in dual emotional states: saddened by the death of her exotic birds at the hands of Hatupatu, who covets her feather coat, and frustrated from a failed attempt to rip Hatupatu from his hiding place behind a rock face [9]. She warns of the spiritual imbalance that accompanies greed and retaliation. Marakihau (Article Frontispiece) is an ocean *taniwha*, an ancestor usually represented in the form of a "merman" who embodies the ocean's power. With a hollow tongue, Reihana's female Marakihau is able to suck whole people and boats from the waves. Together the ancestors take up the four walls of the gallery space and look down onto viewers—the inhabitants of Reihana's virtual marae—to create an aura of instruction and inspiration and a deeply physical sense of habitation within this ancestral experience and wisdom.

In Maori epistemology, all living things are descended from the ancestors, which are embodied within particular mountains, rivers and lakes. Central to Maori community life, the traditional meeting place of the marae—both an area of sacred tribal ground and a physical architectural space—is a richly locative institution in that it is positioned in dialogue with this spatialized, spiritual order. The marae generates a strong sense of belonging for those affiliated with the meeting house. Assemblies literally take place within the body of the ancestors [10]. The *Wharenui* (literally translated as the big or main house) symbolizes the ancestors' body, the central roof beam its backbone, and the rafters its ribs. The back wall represents death and darkness, and the front doorway, usually facing east to greet the rising sun, represents life and creation [11]. The architectural framing of spiritual landscapes before and behind the marae presents concepts of enclosure and cultural openness in concrete form, which are experienced and performed with the body [12]. Public meetings, debates and ceremonies are given an ultimate expression in this context through complex cultural protocols and oral traditions. Here landscape, architecture and ancestral narratives engage the visitor relationally as a kind of calculus, structuring affective anchor points for Maori identity and for communicative practice.

The video component of *Digital Marae*, titled "Let There Be Light," an English translation of a Maori saying announcing life and knowledge, references this orienting function of the marae. The an-

cestral characters from the photographs appear "live," in physical form, enacting their stories for the viewer. Within the video are further references to locative or navigational principles in the form of signs: of the heavens above, the sea below and of east and west (Hinewai calling to her sister Hinepukohurangi, whose misty skirts cloak the land of Urewera country). "Let There Be Light" is shown on a monitor, where a window would be located in a Wharenui, providing light and a view into another cultural dimension existing outside the gallery context [13]. By re-creating this affective dynamic of the traditional marae in an installed and animated form, Reihana's marae is enabled to travel. The significance of this marae to its community is that it is no longer reliant on local ground for its power. The installation enables an embodied, immersive experience of lore and structured communal space for Maori far from home, while alluding to a translocal ethics of virtual culture.

PROBLEM PORTRAITS AND PLACES

Digital Marae's confident virtual thrust results from a playful relationship between place and ground that perhaps draws strength from a contemporary New Zealand sociopolitical reality, in which Maori relationships to land are recognized under the platform of biculturalism. Australian artist Vernon Ah Kee's work engages in different ways with the conceptual disjuncture that exists between indigenous and nonindigenous understandings of place within colonized territories. Investigating the complicity of photographic and cartographic media in reproducing racial and spatial narratives that normalize dispossession, Ah Kee uses new media to draw attention to the exclusive languages and utility of older media forms.

In *Whitefellanormal* (2004), Ah Kee's voice narrates a prose piece over a series of short video self-portraits shot against a stark white studio background (Fig. 3). The artist stares calmly into the camera's eye as different camera angles document his expressionless face. Transitions between color (Color Plate F No. 2) and black-and-white (Fig. 4) sequences invoke an interplay between past and present, between photographic documentation and embodied performance. While steadfastly refusing any visual references that might mark his work as "traditional," Ah Kee positions the work's relationship to place in other ways. Ah Kee narrates:

Fig. 2. Lisa Reihana, Hinepukohurangi from *Digital Marae*, limited edition color cibachrome photograph mounted on aluminum, 200 × 100 × 0.35 cm, 2001. (© Lisa Reihana. Collection Queensland Art Gallery.)

**thinkfella
wakefella
blackfella
me**

**poorfella
happyfella
couragefella
free**
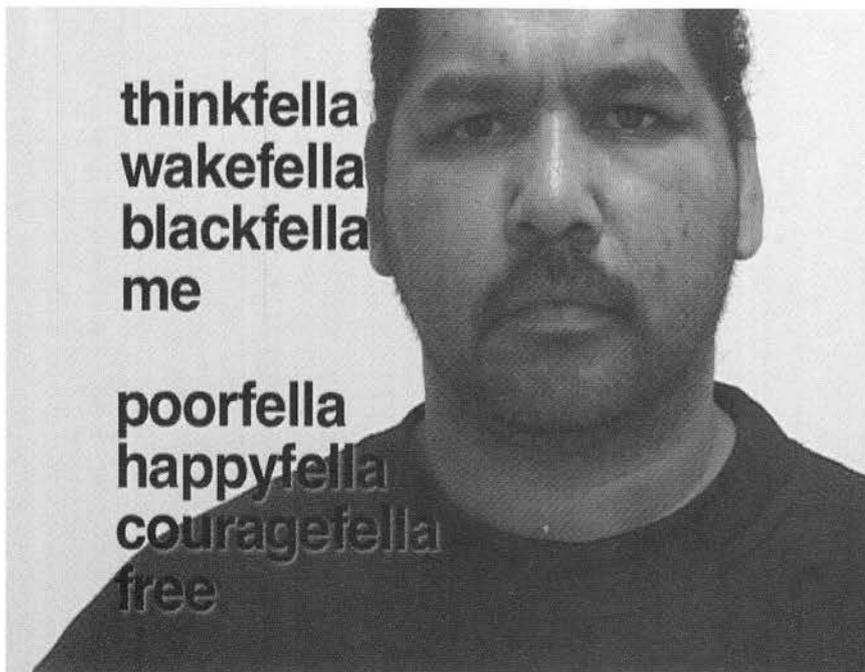
Fig. 3. Vernon Ah Kee, still from *Whitefellanormal*, DVD, 30 sec, 2004. (© Vernon Ah Kee. Courtesy the artist and Bellas Milani Gallery, Brisbane, Australia.)

If you wish to insert yourself into the black man's world

His history, in his colour, and at the level at which you currently perceive him

Then know that you will never be anything more than mediocre.

You will not be able to involve yourself in the decision-making processes of this land

and you will not have any constructive access to the social and political mechanisms of this land.

At times, this land will shake your understanding of the world

and confusion will eat away at your sense of humanity

but at least you will feel normal.

Fig. 4. Vernon Ah Kee, still from *Whitefellanormal*, DVD, 30 sec, 2004. (© Vernon Ah Kee. Courtesy the artist and Bellas Milani Gallery, Brisbane, Australia.)

**whitefella
housefella
strongfella
brick**
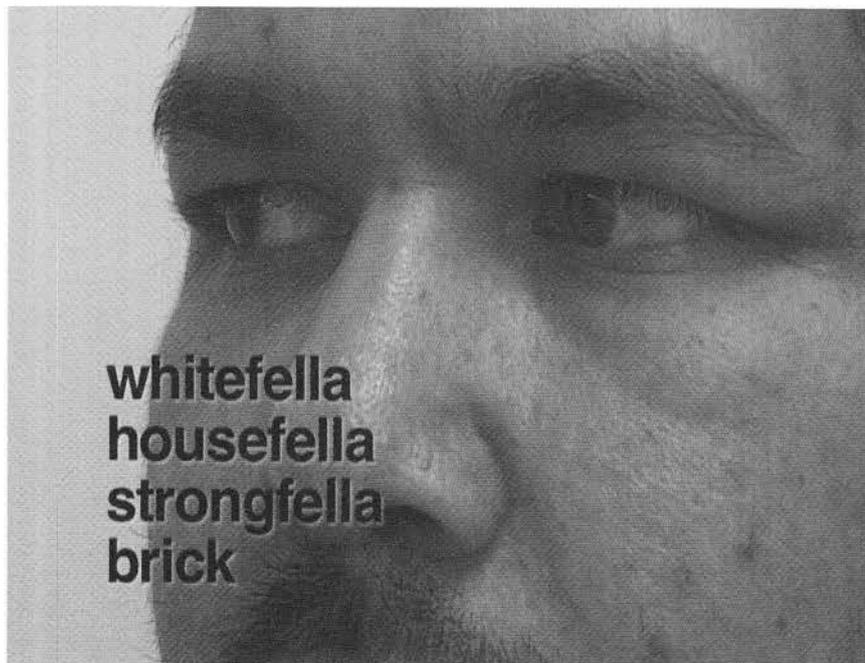
Dispossession forms the core of an emotional, social and political disenfranchisement that, for Ah Kee, creates structures of feeling and subjectivities that nonindigenous people cannot know intimately. The voiceover is spoken in a conversational tone, enabling an opportunity to "overhear" meaning, while a subtle sense of instruction has been imbued into the work in postproduction, where all pauses in the speech have been edited out.

Formally, *Whitefellanormal* isolates the problems of representation that connect portraits to maps. While the voiceover engages a blunt, ironic approach to the politics of place and belonging, the video self-portraits refer formally to an earlier series of the artist's drawing works that deconstructed the aesthetics of ethnographic portraiture. In *Fantasies of the Good* (2004) [14], Ah Kee drew intricate portraits from photographs of his relatives taken on Palm Island and discovered in the archive of anthropologist Norman Tindale. Tindale traveled to Palm Island in the 1920s, 1930s and 1960s as part of his project to map the boundaries of Australian indigenous tribal lands and language groups [15]. Finally published in 1974, his map was the first to present a continent-wide cartographic representation of indigenous nations and language groups to a white Australian public. In their contentious allocation of fixed territories to diverse tribal groups, the maps presented key evidence in countering the doctrine of terra nullius [16]. The photographs in Tindale's archive, however, betray the clinically distant gaze through which this project of turning grounded histories into mapped data was achieved. In these images, Ah Kee's relatives Mick Miller and George Sibley, relegated by force to the island—essentially a penal colony for Aboriginal and Islander peoples who most strongly resisted being forced onto Queensland reserves—were dressed smartly for their picture. Each held a catalogue card with only a number on it to represent and distinguish their selves from every other island-bound and numbered identity. Upon locating his relatives in the archive, Ah Kee requested copies of Tindale's photographs. He was given images devoid of place. Only the heads and shoulders of his relatives remained, neatly centered in the middle of the image [17], as if to overcompensate for their original exposure of Palm Island as an outpost of strategic dispossession.

In *Fantasies of the Good* (2004), Ah Kee drew these same portraits purposely off-center, as a protest against the ways in

which these delivered clippings, and the formal qualities of portraiture more generally, make their subjects look "all right" [18]. In *Whitefellanormal* Ah Kee takes the place of his relatives as the subject of the camera's gaze. In front of a white background, similarly removed from contextual references to place, the artist reenacts the moment of ethnographic documentation in his ancestors' mediated past. He stands calmly defiant, mouth closed, between the past and his assumedly white urban audience, reperforming a plight in images, but challenging the authority of portraiture in accurately capturing the past: His forehead, one side of his face or his shoulder is always outside the shot, defying full representation. Like Qui Zhijie and Lisa Reihana, Vernon Ah Kee uses new media with the body to question ways of seeing place, thus bringing broader cross-cultural epistemological issues in the treatment of place into material aesthetic form.

CONCLUSION

As ironic custodians, itinerant navigators and grounded, virtual selves, Vernon Ah Kee, Lisa Reihana and Qui Zhijie point to the importance of comparative literacies in expanding narrowly cultured ways of thinking about place and its articulation through the languages of new media. Importantly, place-informed genealogies of artistic production and cultural practice extend the histories of aesthetics in other media, such as carving, painting and photography, while the use of new technologies draws on the richly locative and virtual schemas of indigenous and non-Western epistemologies. Digital video and installation practices appear here as curiously virtual tools: able to deepen sensory contact with the local, with myth and with lived history; to mobilize conceptual concerns in other media; and to distribute self-determined and place-interested expression beyond the sites of their original or immediate meaning. These artists expand the discourse of new-media culture by locating the analog in the digital and the digital in the analog.

References and Notes

1. Examples of recent exhibitions and symposia featuring work by indigenous new-media artists and intercultural Asia Pacific curatorial initiatives include the ongoing Asia Pacific Triennial, Queensland Art Gallery, Brisbane (1993 to present); Techno Maori City Gallery: Wellington, Aotearoa/New Zealand, (2001); Cultural Futures: Place, Ground and Practice in Asia Pacific New Media Arts, Hoani Waititi, Tamaki Makaurau/Auckland (2005). A significant representation of Australian indigenous new-media art practitioners and artworks can be found at the website Blackout, http://www.fineartforum.org/Gallery/cybertribe/blackout/.

2. See Christopher Tilley, "Introduction," in *A Phenomenology of Landscape: Places, Paths and Monuments* (Oxford: Berg, 1994), pp. 3–16.

3. David Turnbull, *Maps Are Territories: Science Is an Atlas: A Portfolio of Exhibits* (Chicago: University of Chicago Press, 1993).

4. David Turnbull, *Masons, Tricksters and Cartographers: Comparative Studies in the Sociology of Scientific and Indigenous Knowledge* (The Netherlands: Harwood Academic Publishers, 2000) pp. 1–263.

5. Turnbull [4] p. 20.

6. Linda M. Harasim, "Networlds: Networks as Social Space," in *Global Networks: Computers and International Communication*, ed. Linda M. Harasim (Thousand Oaks, CA: Sage Publications, 1995) pp. 15–34.

7. Maud Page, "Digital Marae," Queensland Art Gallery Collection essay (unpublished) by Maud Page, Associate Curator, Contemporary Pacific Art (2002).

8. Lisa Reihana, e-mail to Maud Page, Queensland Art Gallery artist file, March 2002.

9. Page [7].

10. Page [7].

11. Maud Page, "Interdigitating Reihanamations: Lisa Reihana's Video Weavings," in *Art Asia Pacific*, No. 21, pp. 40–43 (1999).

12. Mike Linzey, "Some Binary Architecture: Sites for Possible Thought," in *Interstices: Journal of Architecture and Related Arts*, Issue 4, Christine MacCarthy, Sarah Treadwell, Mike Linzey, eds. (1998).

13. Lisa Reihana, e-mail to author, October 2005.

14. Vernon Ah Kee, Fantasies of the Good, exhibition, Bellas Milani Gallery, Brisbane, 24 November–18 December (2004).

15. Ah Kee's engagement with Tindale's photographs adapted from Timothy Morrell, "Mythunderstanding" (catalogue essay), for Fantasies of the Good, Contemporary Art Projects, South Australia, 2005.

16. Norman B. Tindale, 12 October 1900–19 November 1993, South Australian Museum online, http://www.samuseum.sa.gov.au/tindale/.

17. Morrell [15].

18. Morrell [15].

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Making Things Our Own: The Indigenous Aesthetic in Digital Storytelling

Candice Hopkins

They say that we are the carriers of history; the storytellers and artists must express their visions for the people to see . . . how will we create our history together, now, in this time and space?

—Marjorie Beaucage [1]

Cherokee writer Thomas King begins his book *The Truth about Stories: A Native Narrative* with these lines:

> There is a story I know. It's about the earth and how it floats in space on the back of a turtle. I've heard this story many times, and each time someone tells the story, it changes. Sometimes the change is simply in the voice of the storyteller. Sometimes the change is in the details. . . . But in all the tellings of all the tellers, the world never leaves the turtle's back. And the turtle never swims away [2].

While they might not appear so at first, these initial lines in a book about storytelling are calculated and revealing. It is fitting that King would begin his book with a creation story—a tale of beginning. It is also fitting that he would choose lines that at once define and expand upon what storytelling is in indigenous communities. Even the book's title, *The Truth about Stories*, points to one of the pivotal conceptions of oral and written literature: that stories—often regarded as fictitious and aligned with myths and legends—are viewed as "the simplest vehicles of truth" by their tellers [3].

In stating this, I am not arguing that the earth was formed on the back of a turtle. That would be too simple. Rather, I would like to put forward the notion that truth, like the stories told in indigenous communities, can have a more nuanced definition. One of the most succinct statements of this idea that I have read comes from Penny Petrone. "Myth," Petrone reminds us, has a very specific literary history. It is when this category is applied to the oral tradition of storytelling—which exists outside of this history—that a disjuncture occurs. Traditional narratives categorized as myth are not regarded as untrue by their native tellers. "All Indian traditions," Petrone writes, "are valid guides to reality" [4]. In other words, as filmmaker Trinh T. Minh-ha states, "Each society has its own politics of truth" [5]. What I propose is simple: that stories, specifically those originating in oral traditions, be understood, and defined, according to the ideologies from which they originate.

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TRADITION AND CHANGE

A re-reading of the first lines of King's book suggests that the very foundation of stories is built upon a series of contradictions. By their very nature, stories that are passed down orally over the course of innumerable generations are continually changing (King: "Each time someone tells the story, it changes. Sometimes the change is simply in the voice of the storyteller. Sometimes the change is in the details"), yet they remain the same ("But in all the tellings of all the tellers, the world never leaves the turtle's back. And the turtle never swims away"). These stories are always already individualized and communal, original and replicated, authored and authorless:

> In this chain and continuum, I am but one link. The story is me, neither me nor mine. It does not really belong to me, and while I feel greatly responsible for it, I also enjoy the irresponsibility of the pleasure obtained through the process of transferring. . . . No repetition can ever be identical, but my story carries with it their stories, their history, and our story repeats itself endlessly [6].

Reading across the contradictions in storytelling is generative, as it reveals a worldview: one in which truth is considered apart from fact, where originality exists within the copy, where change is an inherent part of tradition.

This last point—the idea that change is inherent to tradition—is contested. Tradition is often misinterpreted as something static or conventional. Cherokee artist and activist Jimmie Durham (someone whose own identity as a Native person has been challenged) characterizes this well, writing:

> There is a nefarious tendency to consider material manifestations as traditions. If we accept such absurd criteria, then horses among the Plains Indians and Indian beadwork must be seen as untraditional. Traditions exist and are guarded by Indian communities. One of the most important of these is dynamism. Constant change—adaptability, the inclusion of new ways and new materials—is a tradition that our artists have particularly celebrated and have used to move and strengthen our societies [7].

Durham notes that, in the 18th and 19th centuries,

> every object, every material brought in from Europe was taken and transformed with great energy. A rifle in the hands of a soldier was not the same as a rifle that had undergone Duchampian changes in the hands of a defender, which often included changes in the form by the employment of feathers, leather, and beadwork [8].

ABSTRACT

This essay makes use of the characteristics of oral storytelling to define indigenous perspectives on narrative and to provide a framework in which to interpret video and new media art created by Zacharias Kunuk, Nation to Nation's Cyberpowwow project and Paula Giese's Native American Indian Resources.

Stories straddle past and present, as each enactment is original but also layered with voices of the past. "The story is me, neither me nor mine," writes Trinh. "It does not really belong to me, and while I feel greatly responsible for it, I also enjoy the irresponsibility of the pleasure obtained through the process of transferring." In art, since the dawn of mechanical reproduction, the copy is understood as subversive: Its very presence (particularly if there is potential for infinite replication) challenges the authority of the original. Replication in storytelling, by contrast, is positive and necessary. It is through change that stories and, in turn, traditions are kept alive and remain relevant. In the practice of storytelling there is no desire for originality, as stories that are told and retold over time are not individual but communal: they are made by, and belong to, many.

Storytellers in indigenous communities are continually embracing new materials and technologies, including video and digital media. I would suggest that this shift does not threaten storytelling traditions in these communities but is merely a continuation of what aboriginal people have been doing from time immemorial: making things our own.

IN SEARCH OF AN INDIGENOUS AESTHETIC

In 1980, in a story that has since become almost iconic, Zacharias Kunuk—an Inuit carver, and at the time a producer for the Inuit Broadcasting Corporation—brought the first Sony Portapak to the Arctic [9]. Kunuk saw something different in video: He later stated that he was initially drawn to the medium because of the similarities that it shared with Inuit oral traditions. From the beginning, Kunuk, his longtime collaborator Norman Cohn and his colleagues at Isuma Productions [10] recognized the potential of this medium for the telling of stories—stories that offered an alternative not only to the non-Inuit television programming that had begun to infiltrate their communities in the early 1980s but also to the way in which the Inuit had been portrayed in film and television for nearly half a century [11].

Consider *Nanook of the North*, for example. A chronicle of Inuit life in the 1920s, the film, directed by Robert Flaherty, is considered the first feature-length documentary. The film's main character is Nanook the Bear, and it follows him and his family as they hunt for walrus, seal and fish; build igloos; and

barter with non-Natives at local trading posts. Aside from its moments of blatant racism (this was the 1920s), the film has drawn criticism for the artistic license Flaherty exercised during its making, including the building of an oversized igloo, with windows for interior scenes (actual igloos were too small and dark), and the staging of certain events, particularly hunting scenes, that in the end appeared more spectacular than real life. The film has also drawn criticism for portraying Inuit as primitive in the face of new technologies. In one instance, Nanook the Bear is seen encountering a record player. He bites the record with his teeth to get a sense of the material. While this scene further establishes the divide between primitive and developed cultures, it is interesting to note that Flaherty turned to the same Inuit to repair his film equipment when it broke down (which was frequent, owing to the extreme weather conditions). The criticisms of *Nanook of the North* are understandable when documentary is understood as based on or re-creating an actual event, although admittedly the genre was only beginning to be defined when Flaherty made this film. It is the very idea that documentaries authentically portray another culture that is challenged by Kunuk's videos.

Kunuk was not alone in seeing this potential. Since the late 1960s (and largely because of the availability of the Sony Portapak), activists, community and cultural groups, documentarians, those involved in guerrilla television and others have used video to give voice to the underrepresented and to challenge (with varying degrees of success) the authority of broadcast television. Instant playback and freedom from cumbersome electronic editing equipment, as well as the immediacy, spontaneity and relative affordability of the medium, all contributed to video's allure. Artists were also seduced: Video opened up a largely unexplored artistic terrain—one that in its very materiality, its impermanence and reproducibility, challenged the unique and precious nature of the art object and, in turn, the authority of the art institution [12].

The fact that Kunuk was one of the first Inuit to experiment with portable video is not what makes his story relevant—what he did with it is. In an essay entitled "Indigenous Experimentalism," Hopi filmmaker and videographer Victor Masayesva discusses the value of what he calls "the indigenous aesthetic" [13]. Careful to avoid the generalization that all Native

film and video producers are "knowledgeable about and committed to working from within the structures and conventions of traditional expression, including the use of the mother tongue as the narrative voice," Masayesva writes that it is the accumulative experience (all the experiences, traditional or not, that inform our lives as native people today) that "refines and defines the indigenous aesthetic"—an aesthetic that, I would suggest, influences the work of Kunuk and countless other indigenous artists.

In producing work out of his experience as an indigenous person, Kunuk creates videos that defy simple categorization. Kunuk's works do not aim to document, but instead creatively depict Inuit life through a combination of improvisation, drama, storytelling, *ajajas* (traditional songs) and reenactments—in much the same way in which Inuit life has been represented and experienced within Inuit communities since time immemorial. This logic, which could be considered an "indigenous aesthetic," upholds the importance of community, acknowledges how much the past continues within the present (in Inuit culture the past and the future can coexist; children, for example, are commonly given names of the recently deceased and through this naming are seen to take on their identity) and recognizes the vital role of oral tradition in defining the work of Isuma Productions.

Kunuk's videos are made first of all for an Inuit audience, and nearly the entire community is engaged in their making. With this audience in mind, the videos incorporate many long shots, with an emphasis on action rather than dialogue. The videos are, in a way, a direct reaction to the criticism of non–Inuit-produced television programs put forth by an Inuit elder who pointed out that the Inuit are never seen to *do* anything on television from the South; they only talk. Because of the very fact that they are *not* documentaries, Kunuk's videos offer a more authentic and nuanced representation of Inuit life.

NARRATIVES IN CYBERSPACE

What Kunuk and his community have achieved is no simple task. Masayesva rightly states that "the tribal person today—who uses new technologies—must have quantitatively more knowledge than the traditionalist and be more facile than the colonizers in order to be understood in the world community." The success of experimental films and videos, he adds,

can be ascribed to the "degree to which they subvert the colonizer's indoctrination and champion indigenous expression in the political landscape" [14].

This gauge is not to be limited to films and videos but is applicable to all technologies, from the aforementioned "Duchampian" rifles in the hands of the Plains Indians to new media and storytelling in the digital age.

In her 1996 essay "Aboriginal Narratives in Cyberspace," filmmaker Loretta Todd put forward a number of considerations regarding the relationship of native people to cyberspace. Several of them concern the need to subvert what Masayesva terms "the colonizer's indoctrination" [15]. At the time in which she wrote, before aboriginal people had begun making serious use of digital technology, the possibilities and dangers of this new space were still very much imagined. Todd saw a number of problems with severing the relationship between the body and the physical world. From an aboriginal perspective (if such a common perspective can be argued to exist), Todd asserts that there is no disconnection from the material world: All relationships—mind and body, human and nature, hunter and prey—are interconnected and symbiotic. Cyberspace, she argues, is driven by a much different ideology: Born out of the climate of late capitalism, the need for cyberspace stems from a fear of the body, an aversion to nature, and a desire for salvation and transcendence of the earthly plane. With this in mind, Todd's central question was whether native worldviews could find a place in cyberspace [16].

Writing nearly 10 years later, I would say that they have indeed found a place. Cyberspace has been occupied, transformed, appropriated and reinvented by native people in ways similar to how we have always approached real space. Like video, digital technologies have become a medium for speaking and telling our stories. The Internet, for example, was recognized almost immediately for its ability to bring people together and communicate across large geographical divides. One of the first practitioners to make use of these abilities was Paula Giese, who started creating web sites for native audiences in 1993. Her most ambitious project, Native American Indian Resources [17], is not merely a resource but an extensive map of Native American life. The site contains everything from traditional stories and ideologies to information on the plight of Leonard Peltier. From the beginning, Giese saw the Internet for what it was—one of the most advanced information storage and retrieval systems available. Although not maintained after Giese's death in 1997, Native American Art Resources at its peak of activity contained links to over 300 other web sites that, taken together, tell a story of contemporary Native America.

Nearly every site created by native artists reflects back to real people—to communities, to traditions and to stories. For example, Nation to Nation's project Cyberpowwow [18] was created as a means to gather virtually—a place within which participants can take on new identities, view artworks, read critical writings and meet and speak with people from around the world. What makes the project successful is not the virtual gathering, but the physical gathering of people at different real-world sites during the two days when the "powwow" takes place. Throughout all such gatherings in which I have participated there have been constant reminders of real places, of lived experiences. One of the first questions I am always asked upon logging on—even though I am represented by an avatar in cyberspace—is where I am located and where I am from. In the end, Cyberpowwow is not an experience of shedding identity but an exercise in reaffirming it.

In a history of native Internet use, Masayesva recounted,

> the earliest use of computer technology by indigenous people was by Yupik Eskimos in the polar north, selling their arts and crafts on the internet.
> We take it for granted today that the modern technology has prompted a virtual community of the World Wide Web, but the radical position would be to acknowledge that northern people, in their vast landscapes, were among the first to experiment with these web links, creating virtual communities through communication technologies as a means for physical and cultural survival [19].

Operating through networks and across great geographical divides is a concept and an action that has always existed in aboriginal communities—enacted through such things as storytelling, the moccasin telegraph and ancient trade routes. It is this unique sensibility performed since time immemorial in these alternative spaces that informs an understanding of tradition, which, in this context, becomes fluid and dynamic.

Which brings us back to where we started:

> There is a story I know. It's about the earth and how it floats in space on the back of a turtle. I've heard this story many times, and each time someone tells the story, it changes. Sometimes the change is simply in the voice of the storyteller. Sometimes the change is in the details.... But in all the tellings of all the tellers, the world never leaves the turtle's back. And the turtle never swims away [20].

APPENDIX: ESSENTIAL LINKS

Nation to Nation and Paula Giese's sites are just two of a host that subvert Western indoctrination and champion indigenous expression in the political landscape. The following storytelling projects prove that the issue is not "what ideology will have agency in cyberspace," as Todd wrote, but, How we can subvert that ideology from the inside and make it our own?

Cheryl L'Hirondelle, <http://www.ndnnrkey.net>

Cybertribe, <http://www.fineartforum.org/Gallery/cybertribe/exhibitions.htm>

Edward Poitras, <http://www.neutralground.sk.ca/artistprojects/in-x-isle/index.html>

Jimmie Durham, <http://uinic.de/alex/en/durham/sie-sind-hier.html>

KC Adams, <http://www.kcadams.net>

Lisa Reihana, <http://www.lisareihana.com>

Mike Macdonald, <http://www.snacc.mb.ca/projects/butterfly_garden/>

Omushkegowak Oral History Project, <http://www.ourvoices.ca/>

Ahasiw Maskegon Iskwew, <http://www.snacc.mb.ca/projects/spiderlanguage/>

Melanie Printup Hope, <http://www.albany.net/~printup/>

References and Notes

1. Marjorie Beaucage, *Aboriginal Voices: Entitlement through Storytelling*, in Janine Marchessault (ed.), *Mirror Machine: Video and Identity*, Toronto: YYZ Books, 1995, 216.

2. Thomas King, *The Truth about Stories: A Native Narrative* (Toronto: House of Anansi Press, 2003) p. 1.

3. Trinh T. Minh-ha, *Native Woman Other: Writing Postcoloniality and Feminism*, Indiana University Press, 1989, 120—122.

4. Penny Petrone, *Native Literature in Canada: From the Oral Tradition to the Present*, Ontario: Oxford University Press, 1990, 12.

5. Trinh T. Minh-ha [3] p. 120.

6. Trinh T. Minh-ha [3] p. 122.

7. Jimmie Durham, *A Certain Lack of Coherence: Writings on Art and Cultural Politics*, London: Kala Press, 1993, 108.

8. Durham [7] p. 108.

9. The Sony Portapak, initially marketed in 1968, was the first truly portable half-inch video recording device.

10. Isuma Productions, www.isuma.ca.

11. I write about video not to create a linear historical trajectory from oral tradition to the digital present, but because it is one of the first instances in Canada where storytelling was equated with a medium outside of oral and written traditions. See Beaucage [1].

12. One of the most comprehensive and engaging

resources on the history of video art is Doug Hall and Sally Jo Fifer's edited volume *Illuminating Video: An Essential Guide to Video Art* (New York: Aperture in association with the Bay Area Video Coalition, 1991).

13. Victor Masayesva, *Indigenous Experimentalism*, in Jenny Lion (ed.), *Magnetic North*, Minneapolis: University of Minnesota Press, Walker Art Center, and Video Pool, 2000, 226–239.

14. Masayesva [13] p. 231.

15. Loretta Todd, *Aboriginal Narratives in Cyberspace*, in Mary Ann Moser and Douglas Macleod, eds., *Immersed in Technology: Art and Virtual Environments*, New York: MIT Press, 1996, 179-194.

16. Todd [15] pp. 179–181.

17. Native American Indian Resources, www.kstrom.net/isk/.

18. Cyberpowwwow, www.cyberpowwow.net.

19. Masayesva [13] p. 233.

20. See King [2].

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Locative-Media Artists in the Contested-Aware City

Anthony Townsend

ABSTRACT

The adoption of mobile devices as the computers of the 21st century marks a shift away from the fixed terminals that dominated the first 50 years of computing. Associated with this shift will be a new emphasis on context-aware computing. This article examines design approaches to context-aware computing and argues that the evolution of this technology will be characterized by an interplay between top-down systems for command and control and bottom-up systems for collective action. This process will lead to the emergence of "contested-aware cities," in which power struggles are waged in public spaces with the assistance of context-aware systems.

SPACE, PLACE AND DIGITAL NETWORKS

As the world's cities were wired in the 1990s, multimedia enthusiasts were quick to realize the possibilities of connecting desktops together. With the Web came a mechanism for rapidly sharing information through documents and streaming media. Playful experiments in shifting time and space, such as web cams, highlighted the possibility of reshaping urban life and the structure of the city. The culmination of this wave of explorations can be seen in the Paris-based Pleix collective's film *Netlag*, which created a mosaic map of the earth from a year's worth of web-cam footage in over 1,600 cities.

However, after a decade of experiments in tele-mediation on the Web, trend-watchers are highly aware of the limits of this displaced interaction. As William Mitchell has written, "The trial separation of bits and atoms is over" [1]. While the desktop Web has certainly affected such basic urban activities as banking and bookselling, it has failed to deliver on its promise of transforming the basic spatial constraints of our social, political and economic lives. While Amazon.com changed the geography of bookselling forever, thousands of other business models that tried to rewrite the urban landscape utterly failed. Despite the power of digital networks, so much of our lives is still negotiated from the meter or so of intimate and personal space that separates faces.

In the last year or so, however, it has become clear that the dominant computing and communications platform of the 21st century (at least for end users) is going to be the mobile phone or some close relative of that century-old form. By 2005, there were some 2 billion mobile phones in the world, making it by far the world's most diffused computational platform. There are now more mobile phones on Earth than televisions. Soon the mobile phone will overtake the wristwatch as the most commonly "worn" personal technology. Despite superficial debates about changing social etiquette, mobile phones (unlike personal computers) have been seamlessly woven into our lives, finding roles across all the spaces for work, home and play that we inhabit on a daily basis. More importantly, the sociological literature on mobile-phone use reveals deep emotional involvement with these devices and a reliance on them for social and economic survival that is rarely seen with desktop PCs.

CONTEXT AWARENESS

The widespread adoption of mobile devices as a basic platform for digital computing and communications in the 21st century has set the stage for the next generation of applications that will transform our experience of space and place to a far greater degree, perhaps even more than the most optimistic early Web enthusiasts could have dreamed.

Over the last year, together with my Institute for the Future colleagues Kathi Vian and Michael Liebhold, I have studied the evolution of a new wave of information technologies. These new technologies are characterized by their ability to gather information about their surroundings by sensing the physical world, understanding these data, identifying patterns and acting or reacting. Our forecast for the next decade is that this context-aware computing will emerge as the third great wave of modern digital technology. Context-aware computing will revolutionize the way we work, live and play, just as the PC revolution and the Internet did in earlier waves.

For a computer to achieve an awareness of some element of its context—be it location, temperature, the emotional state of the user or some other phenomenon—three tasks need to be accomplished. First, a sensor needs to measure and record the item of interest. This can occur through embedded sensor networks, through passive sensing of beacon signals or through the use of tags such as barcodes or RFID chips. Next, the system needs some mechanism to process these measurements and make sense out of them. This requires a vocabulary and models for comparing, categorizing and understanding what the sensed data means. Finally, the system needs to communicate what it has understood about the system's current context, either to the user or to another context-aware system.

The sheer difficulty of these tasks has led to a wide variety of approaches to context-aware computing today. These approaches run along a broad spectrum highlighting fundamental differences in design philosophies. At one end, the spectrum is dominated by top-down designs, which use relatively simple sensing mechanisms, highly formalized vocabularies for describing and organizing sensed data, and closed channels for communicating context. At the other end are bottom-up frameworks for creating awareness, which typically utilize more sophisticated sensing mechanisms, very informal data vocabularies and open systems for exchanging context.

A typical example of a top-down context-aware system today is the automated highway toll-collection system. For example, in California the FasTrak system uses an RFID tag—a simple context-sensing mechanism to identify cars passing

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through the toll plaza. A highly formalized vocabulary is used to encode that data, link it to a customer record in a centralized database and eventually to talk to the billing system run by the driver's credit-card company. Finally, it is a strictly controlled and closed system for communicating context. Numerous precautions and credential-checks control access to various parts of the system. These systems are aware, but only barely. In general, top-down systems do not need much intelligence because they only sense a few task-focused pieces of information in tightly controlled environments. Top-down systems essentially provide simple awareness for command and control.

On the other hand, the typical bottom-up system is built to derive context from smarter, more open and informal processes. At this end of the spectrum, we start stepping over the boundary between today's reality and what is likely to happen in the near future. One of the more exciting foundations of this new future can be found in web-based content tagging systems like del.icio.us (for web pages) and Flickr (for photos). These are tools that allow individuals and groups to dynamically create context using very informal and open vocabularies, by uploading content and describing it with contextual tags. These systems offer us the first hints of how context will be created in the future. Information scientist Paul Dourish has argued that context arises from a conversation and is constantly redefined. Context is processed on the fly, not determined a priori [2]. Tagging systems allow categories for information to be created collectively on the fly; as social software expert Clay Shirky has argued, "The only group that can categorize everything is everybody" [3]. This bottom-up approach to making sense of contextual data stands in stark contrast to top-down systems such as geospatial data standards or the Dewey Decimal System.

COMPETING VISIONS OF THE AWARE CITY

By putting a computer in every pocket, the rapid rise of the mobile phone has created a new platform for context-aware computing. Location awareness has quickly emerged as the most interesting and technically feasible form of context sensing to be implemented on this new platform.

As industry embarks on creating the tools and services that will enable location awareness, there are few clear and compelling visions of how these technologies will transform or fit into our existing urban cultures. For the most part, what few visions do emanate from corporate research labs are usually hopelessly unrealistic engineering fantasies of top-down "pervasive," "ubiquitous" or "continuous" computing.

These visions have many shortcomings. First, the idea that computing is an activity that should be conducted everywhere ignores the historical lessons of architectural and urban design—namely, that good buildings and cities succeed by intricately structuring relationships between people, resources and infrastructure. They also fail to describe scenarios in which location-aware technologies will add meaning and understanding to human life.

The shortcomings of these visions have not yet posed any significant barrier to deployment, however. Throughout the world, one can find top-down, context-aware systems rapidly being designed and deployed in public spaces. Particularly in Japan and South Korea, so-called ubiquitous cities are being developed through partnerships between government, technology and communications firms, and real estate developers. In these cities, a cloud of sensors and aware systems will surround inhabitants and intervene to increase convenience, personalization and efficiency. In the United States, context awareness is expected to be a major enabler of a vision of a safe and healthy future society. In Europe, visual surveillance is rapidly becoming a universal presence, although increasingly it is computers doing the watching instead of human operators.

The rapid deployment of top-down context-aware systems and the lack of holistic, sustainable, human-centered visions for aware cities has created an enormous intellectual vacuum. Into this breach have stepped artists who are co-opting this new "locative media" to highlight the flaws of these visions but also to raise fundamental questions about the nature of public space and surveillance. These artists are pioneering a backlash against the command-and-control motivations of the designers and financiers of top-down context-aware systems. While powerful interests are likely to use context awareness to tighten control and increase influence over individuals, at the same time people are going to be more empowered to work around those systems using their own aware devices.

This process is leading to the emergence of what I am calling "contested-aware cities": places where context-aware technology is at the center of a game of detection and counter-detection, action and avoidance. The battles will determine the balance between convenience and privacy, security and anonymity, and predictability and chance. Context-aware technologies are bringing conflicts over privacy to the forefront in our everyday networked lives. Ironically, however, context-aware technology will also be used by individuals and small groups to react. Top-down forms of context awareness will invade people's privacy, but bottom-up forms may provide a way to avoid them. In fact, just as happened with peer-to-peer networks over the last 5 years, a significant amount of the innovation we will see from the bottom up will be the result of people trying to avoid what is coming from the top down. Recent research, such as the MIT Media Lab's Reality Mining project, illustrates just how ominous this future might be. In that project, aware mobile devices used to sense location and social context are combined to create remarkably effective predictions of what a person will do next [4].

BOTTOM-UP LOCATIVE MEDIA

Put simply, artists are playing an unprecedented role in interpreting context-aware technologies and identifying and investigating the potential conflicts. At the core of this process is the idea that bottom-up approaches to creating contextual sensing and sense-making systems are superior on a variety of levels—ideologically, socially and economically. In a sense, one of the main tenets of the locative media movement seems to be that location-aware computing should illustrate the complexity and richness of culturally constructed space. This is in stark contrast to the top-down forms, which largely seek to circumvent such "obstacles." Whereas top-down visions of contextual computing often seek to guide the user, bottom-up versions seek to enable creativity, allow transparency and help new groups to form.

One particularly interesting set of locative-media experiments has sprung up around the idea of tagging places. In the contemporary web sense of the word, tagging is the process of labeling digital objects with keywords from informal vocabularies. Del.icio.us is a popular site for the aggregation of collections of tagged URLs, while Flickr allows communities to do the same with digital photos. Tagging is a key part of enabling bottom-up context awareness because it allows individuals and groups to describe context using

ad hoc vocabularies that are never formally stated. The meaning of these "folksonomies" emerges from use. Found City, a project developed by John Geraci at New York University's Interactive Telecommunications Program and Christina Ray of Glowlab, allows users to tag locations with photographs and keywords. Dodgeball, a popular mobile social network application, recently started offering the ability to tag nightlife venues with similarly open and amorphous vocabularies. The implication of these tagging systems is that they offer powerful ways to let groups write alternative classifications of places and objects in the urban environment. They also provide open, extensible vocabularies that can be utilized by other context-aware applications. For example, as data accumulates in these systems, we can conceive of second-generation bottom-up applications that mine these databases, pulling relevant URLs from del.icio.us, photographs from Flickr and geocoded tags from Found City.

Another example of bottom-up locative media comes from London. Unlike in the U.S.A., where the government provides free basic GIS data about the road network, in the U.K. there is far less access to this basic infrastructure for location awareness. Therefore, the Open Street Map project is using the GPS track logs of amateur surveyors moving about the city to create a free set of digital street maps. This data then becomes another enabling tool for more bottom-up context-aware experiments. Open Street Maps exemplifies how the best locative-media projects provide resources and foundations for the next cycle of innovation.

Such projects are even more bottom-up because they do not rely on GPS to add location. Ironically, we can trace the start of the locative-media movement in digital art to another date with great bottom-up significance: 1 May 2000. This was the date that U.S. President Clinton announced the removal of Selective Availability in the Global Positioning System. By no longer introducing deliberate errors into the public data signal, the U.S. military effectively, and for free, launched the era of location awareness around the world.

Another project that uses bottom-up mechanisms to challenge top-down visions of context-awareness is Eric Paulos and Elizabeth Goodman's *Familiar Strangers* project at Intel's Berkeley Research Lab [5]. Paulos and Goodman were inspired by the work of psychol-

ogist Stanley Milgram, who wrote in the 1960s about people one sees every day on streets and train platforms. While initially we think of these people as strangers, as one sees them repeatedly they become familiar. Paulos and Goodman illustrated this idea through a mobile-phone application called Jabberwocky. This application scans one's surroundings for the unique ID codes broadcast by all Bluetooth devices. Assuming that each Bluetooth device is a person's phone, it keeps a running log for months and even years of all the people/phones that it has seen. At any moment, the user can look at this display and see if he or she is close to any "familiar strangers." Through a very passive and open sensing mechanism, we see the emergence of a new kind of collective awareness of a previously misunderstood or overlooked aspect of urban life. While not politically subversive, Jabberwocky challenges fundamental assumptions about the sociability of urban place.

CONSEQUENCES

By engaging these technologies and their social and spatial implications, artists are shaping the evolution of a space-changing technology far earlier than they ever have in the past. The telephone, the automobile, television and other technologies that rewrote spatial relationships in the 20th century were never co-opted by artists and hackers in the way that locative media currently are.

However, it needs to be understood that the current excitement over locative media is but the first round of a series of creative bursts that will probably last for half of this century or even longer. For the questions being raised by context-aware systems are about more than just location, how we experience space and the meaning of place. Underlying these investigations are serious challenges to our currently held beliefs about the fundamental nature of how we experience the world. The artists of today are grappling with location awareness in the way that much of 20th-century art did with our visual perception of the world. The artists of tomorrow with have to explore the meaning of perception in a world in which we will have outsourced many of our perceptive tasks to machines, to extend and augment our abilities.

The urban implications of these approaches to context awareness are only just becoming clear. The physical fabric

of cities itself is a hybrid infrastructure of top-down and bottom-up structures for sensing, sense-making and context communication. However, the economics of digital networks, and the proliferation of the mobile phone as a cheap, universal platform for context-aware computing, suggests that we may be entering an age in which bottom-up structures begin to play a much greater role. As Howard Rheingold has argued, such "smart mobs" will begin to play a greater role as these technologies allow them to overcome problems of coordination and collective action.

For the sheer variety of ways in which context-aware technologies will play out in the next 10 to 20 years, the Pacific Rim will be the place to watch. The geeks of the San Francisco Bay Area see a new savior in the utopian visions of a bottom-up Internet enabled by tagging and blogging. Australia will likely adopt a European model for information privacy and is home to a strong grassroots community networking movement that will energize bottom-up innovation. Japan and Korea will continue to epitomize what might be called the "Confucian approach" to context awareness—industry-led product innovations designed to improve order, security and existing social hierarchies. My attention, however, is fixed on 8 August 2008, the Beijing Olympic games, for the Chinese government is preparing to showcase a massive demonstration of top-down ubiquitous and context-aware computing. How the rest of the world perceives it may very well shape our own context-aware destiny. Will there be a bottom-up response?

References

1. W.J. Mitchell. 2003. ME++: *The Cyborg Self and the Networked City.* (MIT Press: Cambridge, Massachusetts).

2. P. Dourish. 2004. "What We Talk about When We Talk about Context." *Personal and Ubiquitous Computing*, 8(1):19–30, http://www.ics.uci.edu/~jpd/publications/2004/PUC2004-context.pdf.

3. C. Shirky. 2005. "Ontology Is Overrated: Categories, Links and Tags," http://www.shirky.com/writings/ontology_overrated.html.

4. N. Eagle. 2005. "Machine Perception and Learning of Complex Social Systems," Ph.D. Thesis, Program in Media Arts and Sciences, Massachusetts Institute of Technology, June, http://reality.media.mit.edu/pdfs/thesis.pdf.

5. E. Paulos and E. Goodman. 2004. "The Familiar Strange: Anxiety, Comfort and Play in Public Places." *ACM SIGCHI Proceedings*, http://berkeley.intel-research.net/paulos/pubs/papers/Familiar%20Stranger%20(CHI%202004).pdf.

Locative Arts

Drew Hemment

The artist: the first person to set out a boundary stone, or to make a mark

—Gilles Deleuze and Felix Guattari [1]

When the oceans became navigable following the deployment of the chronometer as an onboard location device, our view of the earth and our relationship to it changed, as did the forms of representation used to express or explore that relationship. The first photographs from the Apollo space missions changed once more the view of the earth and yielded one of the most iconic and ubiquitous images ever produced. Today it is digital and satellite mapping technologies that have caught the attention of a new generation of artists and do-it-yourself (DIY) technologists, who are exploring the use of portable, networked, location-aware computing devices for user-led mapping, social networking and artistic interventions in which the fabric of the urban environment and the contours of the earth become a "canvas" [2].

All art engages in location to some degree, even if just in the way that it responds to the space created by gallery and frame, or the way that the found object is marked by the absence of the location from which it was drawn. If a precursor to locative media were to be identified within the art world, it might be the work of Richard Long, who creates his art by walking through a landscape, annotating the physical environment he encounters with stones or other ambient materials, and documenting this augmented space, creating photographs that provide an esoteric other to the objectifying gaze of cartography or satellite photography.

If net art is the art of the Internet, then locative art is the art of mobile and wireless systems [3]. The emergence of locative media signals a convergence of geographical and data space that comes about as soon as computing becomes mobile or ambient, reversing the trend toward the view of digital content as placeless, only encountered in the amorphous and other space of the Internet [4]. The exploratory movements of locative art are located between the art of communications and networking and the arts of landscape, walking and the environment. Artists are responding to the technical possibilities of electronic mapping and positioning technologies and location-aware, networked media by asking what can be ex-

perienced now that could not be experienced before, in some cases creating more or less conventional screen-based visualizations using location data, in others mapping new horizons for creative content and the art object and a new understanding of the relation between physical and digital.

Locative art and locative media are less focused on *positioning* than on the preconditions of moving or being able to move. This paper is likewise concerned with the preconditions for a locative art rather than with a set of current projects or artifacts. It is specifically concerned with the period between 2003 and 2004 [5]. At that time locative media was in an embryonic state, everything still up for grabs; a zone of consistency was yet to emerge. While artists such as Masaki Fujihata (Japan), Teri Rueb (U.S.A.), Stefan Schemat (Germany) and Iain Mott (Australia) had for many years been producing work we may term *locative art*, in this period locative media and locative art were simultaneously opening up new ways of engaging in the world and mapping their own domain. This resonates with Deleuze and Guattari's sense of territory, in which there is a blurring of the distinction between real estate and intellectual property, between the mapping of physical space and the production of an artistic or cultural milieu: the territory is constituted by the signature or expressive mark, both in the sense that birds use song to map their domain and that the artist creates a new way of seeing and occupying the world.

A TAXONOMY OF LOCATIVE ARTS

A focus on this period enables us to study the stem cells of locative media and locative arts and thus refuse a narrow understanding of locative media that has since emerged. A classification of locative art projects that is useful for initial orientation might include the categories mapping, geo-annotation and ambulant (walking or moving about).

Mapping

Digital mapping is at the core of many locative projects, and there is a vibrant area of locative media that defines itself primarily as a grassroots, open version of GIS (Geographic Information Systems).

Open and Wiki Maps. One approach that has become common is to generate line drawings from global positioning system (GPS) data generated by people moving through the physical environment. One such set of images was produced

ABSTRACT

The author discusses the field of locative arts, focusing on works and interests from 2003 to 2004. An overview is presented of the artistic project types found within this field, and the author considers in depth a number of issues such as how projects are shaped by their reliance on positioning technologies and the importance of the social within this area of practice.

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Article Frontispiece. Esther Polak, *Amsterdam Realtime* project, GPS visualization, 2003. (Photo © Esther Polak/WAAG Society)
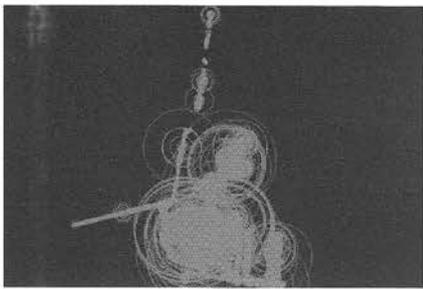
Fig. 1. RIXC, GPS visualization at Locative Media Workshop in Karosta, Latvia, 2003; screen grab from <http://locative.x-i.net/>. (© Raitis Smits)

at an influential workshop at Karosta in Latvia, hosted by the media art collective RIXC—an event that brought together many early practitioners and played an important role in the emergence of the field of locative media [6]. The basic cartographic technique of generated line drawings enables the creation of digital maps that are not dependent upon any previously existing data set, such as U.K. Ordinance Survey (OS) data. This makes possible user-generated, editable maps that work on the same "open" principles as those behind projects such as Wikipedia, where content is generated and maintained by the users. With such "wikimaps" it is not just individual landmarks that are created and maintained by users, but the features of the landscape and geographical information as well.

In *Amsterdam RealTime*, by Ester Polak (the Netherlands), an early, seminal locative-media piece, participants roamed the streets of Amsterdam equipped with networked GPS devices, and traces of their movements were relayed to a projection screen in an exhibition space (Article Frontispiece). At the outset the screen is blank, but as the journeys are recorded, individual meanderings fuse into a composite representation of how people occupy and use the city—density and concentration are recorded in the luminescence of overlapping lines; spaces unvisited remain dark. While, as Eric Kluitenberg pointed out during the ISEA2004 conference, such composite images generated through successive superimpositions are statistical in nature, the project offers an evocative visual portrait of the life of the city and a grassroots, collaborative mapping of how urban space is used that offers an alternative to the top-down perspective of conventional cartography.

Figurative, Expressive, Performative. *GPS Drawing*, by Jeremy Wood (U.K.), uses this same technique to create not re-alistic representations of a town or terrain but outline images of animals, symbols and words, shifting the focus from realism or documentation to figurative drawing. One example is what Wood describes as "the world's biggest IF," stretching from the south coast of England to East Anglia—an outline drawing of the word *IF* created by positional data generated during a journey across the country and then superimposed over a satellite photograph of the U.K.

The Karosta images illustrate a visual aesthetic common to many such GPS projects, where expression emerges between the cartographic contours in the intricate abstract shapes produced through this mapping technique. Some involve a secondary mapping of error, plotting the accuracy of each GPS reading as the diameter of a circle, generating aleatory tracings that expose the limit of the technical system (Fig. 1) [7]. Artists have explored this aesthetic in a variety of ways, such as the use of rope and string in the *Distance Made Good* gallery-based installations by Jen Hamilton and Jen Southern (Canada/U.K.).

In projects where mapping and tracking techniques are applied in an art context, the participants tend to have a different relationship to the data or artifacts produced than would otherwise be the case, and this often takes on a performative aspect. A number of locative art projects involve performance or performers, such as *Myriorama*, by AmbientTV.NET (U.K.), and *Choreography of Everyday Movement*, by Teri Rueb (U.S.A.). Many more feature some element of performance by non-performers, whether this be the filmmaker Pete Gomes drawing in chalk outside the ICA in London or the participants in Fujihata's *Field-Works* pirouetting playfully while making impromptu sketches. What is of note here is the way in which awareness that movement is being recorded or mapped,

Fig. 2. InterUrban, Untitled (Jeff and visitor downtown LA), 2003. (Photo © L. Naomi Spellmann)

even if this be abstracted to just a line or dot, affects the way people act and move in the present.

Social, Semantic. Much current interest is concerned with the interface between locative media and social software, the semantic web or web 2.0. Such maps can be combined with calendar tools or with social software so that users are "able to find things—events/pictures/anything—'near' to them, where 'near' can mean close in geographical location, in 'person space,' or in 'interest space'" [8]. Metaphors such as "a programmable and machine-readable world," "people search engines," "social interfaces to places," "city as canvas or medium" and "person as cursor in the city" abound. There is a strong current of social projects within locative media, and a DIY technology culture has grown around it as part of a wider space that includes copyleft, open source, free networking, etc. In an arts context, mobile social networking and social network analysis have been explored in the work *Trace Encounters*. Infrared pins given to the audience at Ars Electronica 2004 detected and recorded any other pin that passed within range. The connections between pins, and—by implication—people, were visualized in the gallery to display "cliques" and shared patterns of movement (of a similar kind to those explored in the *Familiar Strangers* project).

Geo-Annotation

"Geo-annotation" is a central concept within locative media and is here understood as making data geographically specific or placing a digital object *in* space. Geo-annotation involves authoring media in an environment and accessing it at that same location. Media contents—digital photos, for example—are assigned spatial coordinates, recording the place at which they were taken as metadata (data about data), in the same way that time and date are stored. These photos may be accessed by an enabled device, configured to select digital objects whose spatial attributes correspond with the device's current location. While the "true" location of the content is a database, by making it possible to access that content in a particular position—and *only* in that position—its place migrates into the physical environment. Whether the user is authoring or only accessing content, the metaphor remains: The person becomes a kind of "cursor" navigating digital media located in the world.

Located Media. Geo-annotation has generated widespread interest for use in

everything from museum or city guides to utility-company field operations. Here it is used as a means of documentation and of augmenting the environment with additional information that elaborates or explains something already present. It is another means of delivering information, a new way of experiencing otherwise conventional media content in the environment.

Graffiti, Narrative, Gaming. Geograffiti (Canada/U.K.) and GeoNotes (Sweden) seek not to document or interpret the environment, but instead to embellish it with digital graffiti or virtual tagging as expressive mark. The same basic principle is at play in *InterUrban* (U.S.A.), but in this case, multiple, interconnected digital contents create an ambient narrative, experienced via movement through an urban space and encounters with narrative elements designed to make sense in any sequence (Fig. 2). Likewise *Uncle Roy All Around You*, by Blast Theory and the Mixed Reality Lab (U.K.), combines ambient narrative with pervasive game play.

Social Authoring. In a number of projects the focus is on opening up a social space by enabling people to produce their own content within such an environment. *(area)code* (U.K.) and *[murmur]* (Canada) enable people to author and access stories, poems or anecdotes about a particular place via a mobile phone using SMS (short-message service) or voice mail, respectively, not by using digital positioning technology but simply by advertising an access number on posters located in designated sites. *Yellow Arrow* (U.S.A.) adopts a similar low-tech approach, but in this case uses stickers so that participants, rather than the project creators, can choose where the digital object is placed as well as its content, enabling it to work on a much larger scale without ties to any one particular site. *Urban Tapestries* (U.K.) and *Mobile Bristol* (U.K.) are more complex locative authoring platforms. They have been the focus of social experimentation that explores how multiple layers or threads of meaning may be woven or inserted within the environment in a form of collaborative authoring characterized by multiplication, as well as localization, of perspective. In these kinds of projects it starts to become possible for users to engage with the database rather than just with individual contents.

Ambulant

Many locative projects dispense with screen-based representation or gallery presentation as the primary site of the work and instead involve walking and moving about. Where the focus is on mediated experience specific to a certain location or locations, this category is likely to be a natural companion or correlate of geo-annotation projects, rather than an option exclusive of them.

Interpretive, Explanatory. Some projects involve a journey that is informative, responding to and illustrating features of the natural or human-made environment. Here the media is *about* that place, describing or elaborating it. The simplest cases involve following a path, such as in a heritage trail, where the user is guided in their journey by, say, an audio monologue. Otherwise, a project may enable users to find their own path through a set of predetermined possibilities, moving through an area that has been mapped out and encountering interactive media that correspond to certain locations or objects.

Expressive, Generative. Here the journey is creative and expressive. Audio or video walks, of the kind Janet Cardiff has been creating since the early 1990s, entail a more esoteric encounter with media objects and environment. An ambulant action that engages in computation is *.walk*, by Wilfried Houjebek (the Netherlands), which uses simple commands (in an analogue of computer code) to prompt a series of movements by participants, who follow algorithmic patterns around the city and who alter those algorithms and paths by exchanging numerical data with the other participants they encounter. *.walk* is generative in the sense that the consistent application of a simple algorithm continually shuffles the movements of participants with open and unpredictable results. In creating an intimate and direct relationship between bodies and code, it also shifts the focus from mapping or visualization to performativity—enabling normally hidden operations to be not only brought into view but also performed:

```
// Classic.walk
Repeat
{
1 st street left
2 nd street right
2 nd street left
}
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Social, Relational. *Radio Ballet* (Germany) and *Park Bench TV* (U.K.) involve interventions in which participants are invited to use public space in a non-obvious way, one involving a flash mob–cum–ballet in a train station (Fig. 3); the other, community wireless and media at a park bench. They each exploit the discontinuity between urban space and the invisible layer of media floating above it to juxtapose incongruous actions or behavior. The intersection of the digital and the geographic brings into proximity different kinds of incommensurable space. The engineering challenge of vertical handover, moving seamlessly between wireless networks of varying resolution and latency, finds an analogue in negotiating seams between overlapping and discontinuous social milieu. This affords an opportunity to intervene and to play. Instead of interpreting or embellishing a location, projects such as *Radio Ballet* and *Park Bench TV* present something that is more relational, attempting not to resolve the discontinuities but to hold them open, enabling us to stand momentarily outside the everyday. Here locative art is not to do with simple representation, nor placement of digital objects nor simply moving about. It is instead an intervention that is simultaneously spatial and social.

DECONSTRUCTING THE GRID: DIS-LOCATIVE ARTS

Locative art's focus on networking, authoring and accessing creative content within the environment offers the chance to take art out of the galleries and off the screen. This hope needs to be tempered by an awareness that, in place of the richness of embodied experience of the world, many projects offer the challenge of roaming the environment while squinting at a tiny screen and clunky menu, separated from the world by a barrier of bad usability. What is more, some locative projects may be "of the world" but are not "in the world": their final form is on-line or gallery based, rather than experienced via mobile devices or "old media" such as stickers.

In an important sense, this is a false distinction, however. First, even if the final form is screen-based, the process through which the work is produced is commonly located within the rural or urban environment, typically in the form of workshops involving a small number of practitioners. More importantly, to the extent that the focus is on the dynamic relation between data space (or database) and world, it is incidental where the final representation is sited.

The nature of this relationship between database and world is of greater consequence than simply the question of whether the project is sited "in the

world," on-line or in a museum or gallery. One issue that quickly becomes apparent is the reliance in locative arts on the clinical precision of digital tracking and the emphasis on point-to-point correspondence [9]. Projects that draw not only on cartographic tools but also on metaphors of mapping tend to aim for a one-to-one correspondence between world and image, between the movements of participants and their screen-based representation. Likewise many geo-annotation projects seek a determinate placing or fixing of position, wherein location is unambiguously designated or assigned. In most cases ambiguity—or disruption of mechanical precision—arises only in the negotiation of land features and the resolution or granularity of technical hardware.

Furthermore, locative media often assumes a reductive understanding of spatiality. It encounters the fabric of space-time via an abstract coordinate system, betraying its indebtedness to cartography and GIS, in which location is reduced to a set of geographic coordinates or a wireless cell. In this respect the parallel between locative art and the work of Richard Long gains further resonance with the intervention of Bill Drummond, in which he drew x/y coordinates on one of Long's photographs before cutting out the pieces one by one. These pieces are now circulating in the hands of a thousand new collectors. Locative media's understanding of location often seems to share more in common with that of Drummond than of Long, its transcendent frame of reference and Cartesian space much like the grid marked by

Drummond on Long's photograph [10]. Locative art's condition of possibility is a prior abstraction, and as a consequence its emphasis on location is accompanied by a distancing from embodiment, physicality and context, which—within such a reductive understanding of spatiality—become a mere residue of the coordinate system.

One project that moves us toward an engagement in the perspectival and embodied is also in many ways the direct precursor to locative art. From its initiation in 1992, through its many contemporary iterations, Masaki Fujihata's *Field-Works* (Color Plate E) shows how nuance and hidden depth can emerge through the creative use of a technology designed to impose a rigid cartographic grid upon the world, going beyond simple documentation to open a rich space of contextual and aesthetic meaning. Through a juxtaposition of location data captured by GPS and moving images captured by video, it aims to articulate local narratives, while also excavating a sense of parallelism in the universe on a human scale. *Field-Works* stretches and pulls at the coordinate system, in the same way that dancers play with shifting the body's center of gravity to create a kind of distortion in the fabric of space-time. This is firstly achieved simply by introducing multiple viewpoints, and secondly by using a camera-mounted gyroscope to translate even the intimate movements of the physical gaze as a part of the resulting work, the video frame—viewed moving along a GPS trace—shaking and turning to correspond to unsteady motion of the camera during filming. In earlier ver-

sions of the project, a subversion of the Cartesian grid was effected by representing the physical terrain as a function of the speed at which it is encountered; in one iteration the shape of Mount Fuji became distorted, the same slope shown to be longer when going up than when going down.

In *Choreography of Everyday Movement*, Teri Rueb (U.S.A.) works with classically trained dancers to explore the poetics of the urban body, as well as the distance between the world and its representation. It too incorporates GPS traces in the final gallery-based representation, but here they are inscribed in sheets of Perspex, which are then layered to create a kind of Rorschach image. The longitude/latitude coordinates are deliberately removed—"The performer is only visible as an ant-like dot crawling across the screen. Movement and physical presence are reduced to the most basic abstraction" [11]. Here we are reminded of Lev Manovich's identification of radar as that which epitomizes the use of linear perspective to map and identify objects and spaces: "Radar is the best example of the rationalization of sight in the twentieth century. . . . [A] radar operator sees a screen, a dark field with a few bright spots. Here the function of visual nominalism . . . is isolated and abstracted" [12]. Just as radar can be said to clarify and condense the function of modern visual surveillance technologies, so Rueb takes the real-time abstraction of movement to an extreme at which its limit is revealed, the cartographic function left bare. Choreography illustrates how—as a database form—locative art brings the coordinate system itself into the frame as the material upon which it works.

Achieving a similar effect from a very different approach is *Location, Location, Location* (2004), by Pete Gomes (U.K.). This saw Gomes walking and drawing within a 1-km-square area in London, taking GPS readings and annotating the urban environment in chalk. In some cases Gomes drew numerical readings of position or time at sites where he encountered objects or events; in other cases chalk lines following longitude or latitude were drawn on, and in some cases even through, buildings. This project, and related works by Gomes such as *SE8 v1.0* (2004), inscribes the cartographic grid on the city, making an idealized Cartesian space manifest. It does so, however, only to then reassert the transient, material and everyday. The drawings are temporary, quickly washed away by rain. In the impossibility of continuing a true

Fig. 3. LIGNA, *Radio Ballet Leipzig*, 2003. (Photo © Eiko Grimberg)

Fig. 4. Iain Mott, *Sound Mapping*, Linz, 1998. (Photo © Iain Mott)

grid line at street level, the project high-lights the opacity of bricks, mortar and lived space. Moreover, in the way it is experienced by an audience moving through the city, it foregrounds not the omnipresent perspective of satellites circling overhead but a partial and incomplete perspective at ground level, bringing cartography down to earth [13].

Other projects shift the focus away from positioning toward proximity and relationality. In *Hlemmur in C*, by Pall Thayer (Iceland), two taxis equipped with GPS and their base at the Hlemmur bus terminal in Reykjavik are each represented with a middle C note. While the sound attributed to the base remains constant, the pitch associated with the taxis varies according to their distance from the base, creating instability in the tone. This piece also involves a visual mapping component, but is most interesting in the way in which proximity is registered as dynamic tension in the sound, a strange and disconcerting auditory space.

Sound Mapping, by Iain Mott, is an installation in which participants realize a composition by wheeling four movement-sensitive suitcases within a public place (Fig. 4). Four of the cases contain odometers measuring wheel rotation in both directions as well as two gyroscopes measuring tilt and azimuth, and they are linked by data radio transmitters to a fifth case equipped with GPS. While much work with GPS is limited by its low resolution—the nuance of embodied experience exchanged for a blunt on/off switch every few meters—*Sound Mapping* produces music in response to nearby architectural features, subtle movements

and gestures, and the absolute and relative movements of the participants.

Biomapping, by Christian Nold (U.K.), measures galvanic skin response—using a customized device of the kind used in lie-detector tests, combined with GPS—to record anxiety and stress levels of participants as they move through the city. Here the body is brought into the equation only to be abstracted and left behind. Nold works with readings plotted onto a map in the same way other projects record a visual trace of movement, the composite images mirroring the way *Amsterdam RealTime* reveals the idiosyncrasy of how urban space is used. There is a reverse movement in the way that people respond to readings—their own or those of previous participants—this shaping their movement through the city. From the perspective of the user roaming the city, it prizes open a space between the physical environment, networks and the body and offers a different way of encountering the city, where the low-cost, DIY aesthetic of the *Biomapping* device becomes more significant than the accuracy of its representation of physiological data.

OTHER GEOMETRIES: RELATIONAL AND SOCIAL

One trajectory that may be discerned within locative arts—implicit in the taxonomy above—runs from realism and documentation (conventional maps, city guides) to expression (digital graffiti, ambient narrative) to the collaborative and social (collaborative maps, social authoring). In broad terms this mirrors a simi-

lar trajectory in locative media generally, identified by Ben Russell among others, from the spatial to the social [14]. And it may be situated alongside a broader blurring of the distinction between art and the social today, which marks a departure from conventional understandings of the place of the artist in Western culture and in particular the post-Enlightenment understanding of the artist as apart from society.

An emphasis on the social is likewise found in Nicolas Bourriaud's understanding of *relational art:* "an art taking as its theoretical horizon the realm of human interactions and its social context, rather than the assertion of an independent and private symbolic space" [15]. The kind of relationality involved in projects such as *Hlemmur in C* and *Body Mapping* is primarily geometric and spatial. Another kind of "relationality" arises through the overlapping of different kinds of mapping—geographical maps, social network maps, node maps, etc. Something a little closer to Bourriaud's understanding may be seen in locative-art projects that explicitly engage an audience in a social space or process. They tend to offer something different from the gallery-centric, white-cube sociality proposed by Bourriaud, for where relational-art projects tend to be staged and exceptional, locative arts are more often implicated in the everyday, even if only in their willingness to address non-art contexts.

Park Bench TV, by Gomes, involved a park bench with free Wi-Fi access, plus a chat forum and local TV channel to which anyone with a wireless-enabled laptop had access. The bench served as a physical metaphor for the wireless node and a focal point for local content, but it also brought users into physical proximity and—through the layering or coincidence of different types of location (inner-city park, bench, Internet chat room)—produced an uncertain and incongruous social space [16]. This project also prefigures a wider trend toward free networks becoming portals to a local environment or community—as championed by the collective île Sans Fil in Montreal, for example—rather than just access points to an undifferentiated bandwidth. In another project, *Life: A User's Manual*, Michelle Teran walks the streets equipped with a scanner and a monitor—in one iteration wheeling them along in a shopping cart—picking up feeds from closed-circuit TV cameras she passes, which are visible on her mobile screen. Her solitary intervention serves

as a metaphor for the alienation of the surveilled subject, but in intercepting the signal she also creates a counter-site and invites people in: audience, passersby and on occasion employees of the companies operating the cameras. *Radio Ballet*, described by the group as an "exercise in unnecessary loitering," involves a choreographed and orchestrated performance guided by audio broadcast over a free network. It creates a happening or event at variance with the everyday, functional use of space, and in so doing brings the social norms that govern our use of public space into view. These projects offer a view of locative art as something more than spatial representation. Indeed, they fall outside a narrow definition of locative art or locative media. And yet they illustrate how spaces that are both social and other can be opened at the interface of communication, location and the body.

Whereas "mixed reality" posits the virtual and physical as layered or intersecting, these projects suggest that something else can be produced in between. In locative-media projects we find a fold between virtual and physical, data space and geographical space. In some cases, such as Houjebek's generative walk or Gomes's park bench, these folds do not just mix realities but produce a reality of their own. They might in this sense be said to be counter-sites and—like Foucault's "heterotopias," or "other" places—to place all other sites into question [17]. This might be metaphoric as much as literal. We might, for example, ask how the intensity of luminescence in *Amsterdam RealTime* or the trace of embodiment in *Biomapping* might be said to constitute a heterotopic image, an image of an other place, rather than a representation of the real. Likewise, we might ask of geoannotation projects how they open an "other" space, which is not the same as providing more sophisticated interpretive tools.

The straightforward geo-annotation of space—placing data in geographical space—can be seen as an instance of what Deleuze and Guattari have termed *emplacement*, which they distinguish from *haecceities*, or "concrete individuations that have a status of their own and direct the metamorphosis of things and subjects" [18]. These have the kind of individuality we find in seasons or dates, as opposed to subjects or things, and "consist entirely of relations of movement and rest between molecules or particles, capacities to affect and be affected" [19]. When locative media hides behind the console of positioning systems, an ab-

stract mode of individuation results. For locative art to exceed the sterile precision of its own axiomatic system, it needs to act upon or through material bodies and substances, engage in the ambiguity, dirt, sweat and smells of the world, and acknowledge "the importance of rain, hail, wind, pestilential air, or air polluted by noxious particles, favourable conditions for these transports" [20]. Locative arts can then come to be seen not as distanced from the world but as offering a potential for transformation and engagement, opening up other places, their contents circulating through location-aware networks, producing a field of relations and affects.

References and Notes

1. Gilles Deleuze and Felix Guattari, *A Thousand Plateaus*, Brian Massumi, trans., Minneapolis (University of Minnesota Press, 1987) p. 316.

2. Chang and Goodman have argued that location can be viewed not as canvas but as *medium* ("Asphalt Games: Enacting Place through Locative Media," in D. Hemment [ed.], *Leonardo Electronic Almanac, Special Issue on Locative Media*, 2006).

3. "Locative art" is here understood as those areas of locative media that are predominantly arts-based. Much interesting work happens on the boundary, and this term is intended to contribute to discourse on locative media, not to set up any kind of opposition.

4. Location and context are central to the mobile and wireless experience. A wireless or mobile art might also be concerned with, say, the potential of interfaces unfettered by wires and cables for performance or interaction.

5. In particular between the influential Karosta workshop organized by RIXC in July 2003 and the Mobile Connections exhibition at Futuresonic in May 2004.

6. The term "locative media" was coined by Karlis Kalnins (Canada) in 2003.

7. Thanks to Ben Russell for his comments on the Karosta images.

8. PLAN workshop in October 2005, project documentation, http://www.open-plan.org.

9. The issue is not the accuracy or granularity of the technical system employed. Most tracking systems are anything but precise, as the Karosta images illustrate. Different systems have different granularity or resolution, ranging from sensor networks (high) to cell-based location data from mobile phones (low), and this will vary depending on the context: GPS, for example, is unreliable in built-up areas.

10. This view of an endless grid that extends across the Earth found iconic form in Superstudio's *Continuous Monument* project (1969). More recently, Andrew Wilson from Blink has argued, "Wirelessness is not a grid laid across the world. Wirelessness is clusters and gaps." Ultrasound conference, 2004, http://www.ultrasound.ws/archive/2004/index.html.

11. Teri Rueb, http://www.terirueb.net/.

12. Lev Manovich, "Modern Surveillance Machines: Perspective, Radar, 3-D Computer Graphics, and Computer Vision," in *CTRL [SPACE]: Rhetorics of Surveillance from Bentham to Big Brother* (ZKM, Karlsruhe/The MIT Press, Cambridge, Massachusetts, 2002) p. 386.

13. Pete Gomes, "Signage for Invisibility," in Marc Tuters and Rasa Smite, eds., *Acoustic Space: Trans Cultural Mapping* (Riga: The Center for New Media Cul-

ture RICX, 2004) pp. 175–177. Also available on-line, http://www.locative.net/tcmreader/index.php?loc arts;gomes.

14. Ben Russell (U.K.) is author of *Headmap Manifesto* (1999, http://www.headmap.org/headmap.pdf), and one of the founders of the Locative Media Lab (http://www.locative.net), which also included Marc Tuters (Canada) and others.

15. Nicolas Bourriaud, *Relational Aesthetics* (Paris: Les Presses du Reel, 2002).

16. A similar approach has been taken more recently by Anab Jain (India/U.K.)with her work *Yellow Chair* (2005), http://anab.in/yellowimages.html.

17. M. Foucault, Of Other Spaces. *Diacritics*, Spring 1986, pp. 22–27.

18. Gilles Deleuze and Felix Guattari, *A Thousand Plateaus*, Brian Massumi, trans. (Minneapolis: University of Minnesota Press, 1987) p. 261.

19. Ibid.

20. Ibid.

URLs

Field-Works, by Masaki Fujihata, http://www.field-works.net/.

Teri Rueb, http://www.terirueb.net.

Stefan Schemat, http://www.schemat.de/.

Sound Mapping by Iain Mott, http://www.reverberant.com/.

Amsterdam RealTime by Ester Polak, http://realtime.waag.org/.

Locative Media Workshop at Karosta, Latvia, http://locative.x-i.net/.

RIXC, http://rixc.lv/.

Distance Made Good by Jen Hamilton and Jen Southern, http://www.theportable.tv/dmg/.

GPS Drawing, http://www.gpsdrawing.com/.

Myriorama by AmbientTV.NET (UK), http://www.ambienttv.net/4/myriorama/.

Location, Location, Location (2004) by Pete Gomes, http://www.mutantfilm.com/wireless/. See also http://www.locative.net/tcmreader.

Trace Encounters by Bradford Paley, http://www.traceencounters.org/.

Familiar Strangers by Eric Paulos and Elizabeth Goodman, http://berkeley.intel-research.net/paulos/research/familiarstranger.

Geograffiti, http://www.gpster.net/geograffiti.html.

GeoNotes, http://geonotes.sics.se/.

InterUrban by Jeff Knowlton, Naomi Spellman and Jeremy Hight, http://interurban.34n118w.net/.

Blast Theory, http://www.blasttheory.co.uk/.

Mixed Reality Lab, http://www.mrl.nott.ac.uk/.

(area)code by Jen Southern and centrifugalforces, http://www.areacode.org.uk/.

[murmur], http://murmurtoronto.ca/.

Yellow Arrow, http://yellowarrow.org.

Urban Tapestries, http://urbantapestries.net/.

Mobile Bristol, http://www.mobilebristol.com.

.walk by Wilfried Houjebek, http://www.socialfiction.org/dotwalk/.

Radio Ballet by Radio Ligna, http://www.ok-centrum.at/english/ausstellungen/open_house/ligna.html.

Park Bench TV by Pete Gomes, http://www.mutant-film.com/parkbenchtv/.

Hlemmur in C by Pall Thayer, http://130.208.220.190/hlemmC/.

Biomapping by Christian Nold, http://www.biomapping.net.

ile Sans Fil (Wireless Island), http://www.ilesansfil.org.

Life: a User's Manual by Michelle Teran, http://www.ubermatic.org/life/.

Web sites accessed December 2005.

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Beyond Locative Media: Giving Shape to the Internet of Things

Marc Tuters and

Kazys Varnelis

ABSTRACT

Locative media has been attacked for being too eager to appeal to commercial interests as well as for its reliance on Cartesian mapping systems. If these critiques are well founded, however, they are also nostalgic, invoking a notion of art as autonomous from the circuits of mass communication technologies, which the authors argue no longer holds true. This essay begins with a survey of the development of locative media, how it has distanced itself from net art and how it has been critically received, before going on to address these critiques and ponder how the field might develop.

At the 2004 Transmediale media-arts festival in Berlin, a locative-media project titled *.walk* (dot-walk) received the prestigious festival's Software Award. Developed by Utrecht-based arts collective Social Fiction, *.walk* combined computer code and "psychogeographic" urban exploration [1]. Participants in *.walk* left the doors of the gallery to follow a randomly generated path through the city, thereby, according to Social Fiction, "calculating" the city as though it were a "peripatetic computer." The success of this simple project is representative of a larger event taking place in the media art world, in which, having left behind net art, locative media escaped the bounds of the screen to enter the city at large.

Locative media emerged over the last half decade as a response to the decorporealized, screen-based experience of net art, claiming the world beyond either gallery or computer screen as its territory. Initially coined as a title for a 2002 workshop hosted by RIXC, a Latvian electronic art and media center, the term derives from the "locative" noun case of the Latvian language, which indicates location and vaguely corresponds to the English prepositions "in," "on," "at" and "by." A report produced during the workshop outlined the scope of locative media:

> Inexpensive receivers for global positioning satellites have given amateurs the means to produce their own cartographic information with military precision. ... As opposed to the World Wide Web the focus here is spatially localized, and centred on the individual user; a collaborative cartography of space and mind, places and the connections between them [2].

In what is in many ways the ur-text on locative media, the 1999 "Headmap Manifesto," Ben Russell described an incipient "new world":

> location aware, networked mobile devices make possible invisible notes attached to spaces, places, people and things. ...
>
> computer games move outside and get subversive.
>
> Sex and even love are easier to find.
>
> Real space can be marked and demarcated invisibly.

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What was once the sole preserve of builders, architects and engineers falls into the hands of everyone: the ability to shape and organize the real world and the real space.

Real borders, boundaries and space become plastic and malleable, statehood becomes fragmented and global.

Geography gets interesting.

Cell phones become internet enabled and location aware, everything in the real world gets tracked, tagged, barcoded and mapped.

Overlaying everything is a whole new invisible layer of annotation. Textual, visual and audible information is available as you get close, as context dictates, or when you ask [3].

The related free networks movement is similarly interventionist. Here any distinction between artist and hacker disappears in an attempt to create wireless networks that would

Fig. 1. TROIKA, *London Open Season Logo*, 2004. (© NODE.London)
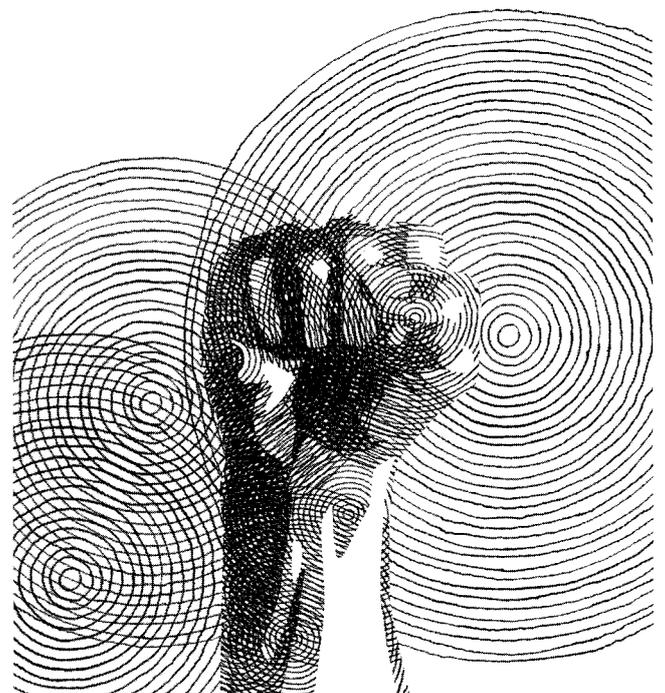
provide free connectivity while also eluding both government surveillance and commercial control on the Internet. Emerging out of a do-it-yourself punk culture, projects such as the London-based "Consume the Net" [4] sought to build a nation-wide peer-to-peer infrastructure of free wireless nodes throughout the United Kingdom. Similar grassroots projects helped catalyze communities of artists from Berlin to San Francisco. In suggesting that ubiquitous Internet access would change our relationship with place by overlaying a second virtual world over the physical one, the free wireless movement was a seminal source for locative media's ambitions. Moreover, in the United Kingdom, the government's ownership of virtually all geographic data encouraged participants in free wireless, who sought to make information freely accessible, to move into more mapping-based practices when these became available. It was in this context that much of the initial locative media work emerged. Since its inception, then, locative media's practitioners have claimed an avant-garde position, insisting not only that their work is capable of creating a paradigmatic shift in the art world, but also that it can reconfigure our everyday life as well by renewing our sense of place in the world (Fig. 1).

Locative media's recent rise to prominence came at an opportune moment, just as the net art movement showed signs of exhaustion. On 31 March 2004, in response to the disappearance of an "Internet Art" section from that year's Whitney Biennial, Ben Sisario, an art critic for the *New York Times,* declared that, having lost its initial novelty, the net art boom had come to an end. Net art would continue, he concluded, but its earlier sense of purpose or distinctiveness was gone [5]. In response to Sisario's article, net art practitioner Patrick Lichty observed, "this is not to say that net art is 'dead' per se, but at least in institutional discourse it has been chiseled into art history and so has been drained of its dynamism." Only if net art could "morph into hybrid forms" he suggested, could it still retain its oppositionality [6]. Over the last two years, a new set of practices that Turbulence.org director Jo-Anne Green refers to collectively as "Networked Performance" [7]—among which locative media is a key player—has come to displace the hegemony of net art within media art circles, with the term "locative media" now becoming common currency in art establishment venues such as *ArtForum* [8]. In December 2005, Rhizome.org editor and curator-at-large Marisa Olson proposed that the long-established "Net Art News" mailing list be renamed to "Media Art News" to encompass "software art, performance, sound art, data visualization, technology-enabled social sculpture, locative media, video, and the myriad other branches of new media practice" [9], while in 2006, locative media will be the topic of a special issue of *Leonardo Electronic Almanac.*

Where net art sought to maintain its autonomy in order to claim art status (Fig. 2), locative media has been far less interested in such claims. On the contrary, the fundamental manifestations of locative media—maps—and the typical site—the handheld PDA—are ubiquitous and easily understood [10]. In reaching beyond art, locative media has been welcomed with often remarkable claims, in particular by computer industry pundits suggesting that it will be "the Next Big Thing." Mike Liebhold of the Institute for the Future (IFF) understands "geohackers, locative media artists, and psychogeographers" as key players in constructing the "geospatial web," in which the Web becomes tagged with geospatial information, a development that he sees as having "enormous unharvested business opportunities" [11]. Even more emphatically, in another essay in this issue of *Leonardo,* Anthony Townsend, who works with Liebhold at the IFF and was formerly one of the most outspoken advocates of the free wireless movement, states: "[The IFF's] forecast for the next decade is that this context-aware computing will emerge as the third great wave of modern digital technology" [12].

Fig. 2. 0100101110101101.org, *Perpetual Self Dis/Infecting Machine,* **custom-made computer infected with the virus Biennale.py, 70 × 50 × 13 cm, 2001–2003. (© Eva and Franco Mattes [0100101110101101.org])**
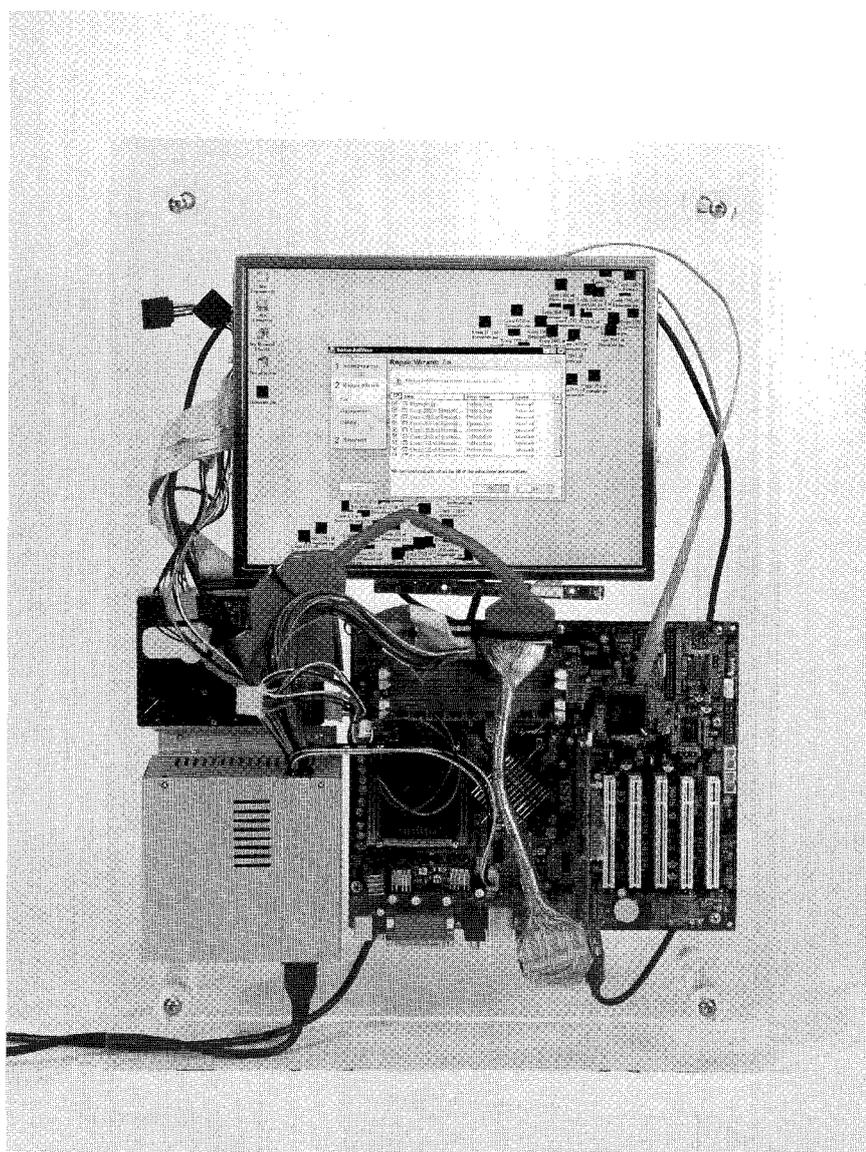
While it is important not to overstate locative media's influence in the geospatial web, the fact remains that the IFF and others look to locative-media artists as prime movers within this space.

Nor is this lost on locative-media practitioners. Net art often promoted its uselessness as a means of affirming its own autonomy as art, but the practitioners of locative media often seem less preoccupied with these concerns and indeed often embrace the possibility of commercial application [13]. If some net art projects, such as *Carnivore,* by Alex Galloway [14], claimed autonomy through oppositionality and resistance by developing a radical political stance against the libertarian-entrepreneurial "Californian Ideology" [15] that, spread eagerly by *Wired* magazine, so dominated the discourse on the Internet in the 1990s, it appears that for the moment a fair number of locative media producers seem content to collaborate with industry and government. Unlike net art, which largely sought to emphasize its autonomy from the dotcom boom, this new media art practice is often eager to blur distinctions between art and capital. It is no coincidence that one of the most important media-art blogs today goes by the name "We Make Money Not Art" [16].

Broadly speaking, locative-media projects can be categorized under one of two types of mapping, either annotative—virtually tagging the world—or phenomenological—tracing the action of the subject in the world. Roughly, these two types of locative media—annotative and tracing—correspond to two poles of late-20th-century art, critical art and phenomenology, perhaps otherwise figured as the twin Situationist practices of *détournement* and the *dérive.* Annotative projects, such as the *Urban Tapestries* project by Proboscis [17], generally seek to change the world by adding data to it, much as the practice of détournement did. For *Urban Tapestries,* during a series of trials in 2003 and 2004, participants used mobile phones and handheld PDAs to annotate areas of London, thereby embedding social knowledge in the landscape of the city for others to retrieve later. In their project *34n 118w,* Jeffrey Knowlton, Naomi Spellman and Jeremy Hight had users take Tablet PCs with global positioning system (GPS) devices and headphones to a vacant lot in downtown Los Angeles adjacent to an old railroad depot now used as an architecture school. As participants walked around the site, they would hear fictional statements purporting to recount the history of the place played back to them [18].
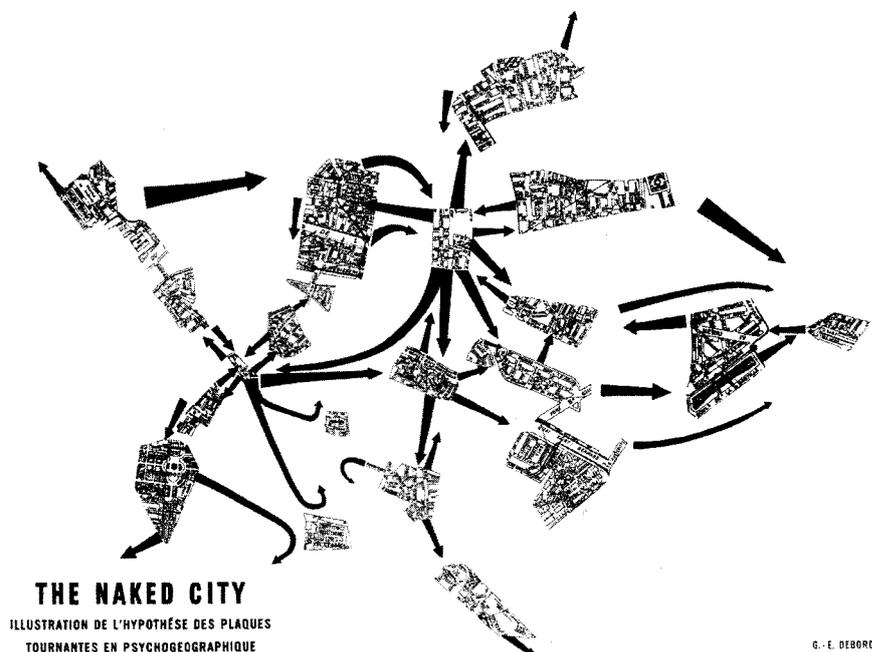
THE NAKED CITY
ILLUSTRATION DE L'HYPOTHÉSE DES PLAQUES
TOURNANTES EN PSYCHOGEOGRAPHIQUE
G.-E. DEBORD

Fig. 3. Guy Debord, *Naked City,* 1957. (copyleft)

The result, Hight claims, "creates a sense that every space is agitated (alive with unseen history, stories, layers)" [19]. Similarly, in adopting the mapping-while-wandering tactics of the dérive (Fig. 3), tracing-based locative media suggest that we can re-embody ourselves in the world, thereby escaping the prevailing sense that our experience of place is disappearing in late capitalist society. For an example of this type of work, we might look to Christian Nold's 2002 *Crowd Compiler* (Fig. 4). Here the artist generates time-lapse images of crowds in public space to understand the movement of all the individuals in one place over time simultaneously [20]. More typically, these projects resort to the map, using high technology to reproduce the famous diagram created for urban sociologist Paul-Henry Chombart de Lauwe to trace the daily movements of a young woman living in the 16th *arrondissement* of Paris over the course of one year, a map of great importance to the Situationists. Where annotative projects seek to demystify, tracing-based projects typically seek to use high technology to stimulate dying everyday practices such as walking or occupying public space. In this spirit, Jo Walsh and Schulyer Erle's *London Free Map* marks the paths of participants in the street through paths downloaded from GPS units, thereby locating participants in the world while also producing copyright-free maps of London [21]. *.walk,* which we cite above, is another such project, seeking to get people out of the gallery or conference room

and into the streets in order to create a "generative psychogeography" [22].

Social Fiction's invocation of "generative psychogeography" is no accident. Situationism is frequently claimed as a precursor to the locative media movement [23]. That said, it is worth observing that Situationism increasingly turned to code. Situationist leader Guy Debord steadily whittled away at art practices, finally leaving the movement as a series of programmatic texts that advocated intervening in the city with only minor modifications, such as adding light switches to street lights so that they could be turned on and off at will and allowing people to wander in subways after they were shut off at night or even abandoning that degree of interventionism and simply turning to a ceaseless repetition of the dérive [24]. Locative media, too, is virtually unthinkable except as a question of code. The *.walk* project represents this reliance on code, turning individuals into processors. Virtually all locative media projects rely on programs for their execution. The resulting product is generally either delivered live to a user in the field who then performs the piece or, alternatively, crystallized as an indexical trace of the event, later displayed at a gallery or on a web site. If the work itself resides in the pure code itself, however, what is the difference between locative media and software development?

This is a central question for locative media today, as it is for many contemporary artists who are using research and development, or at least research, as

Fig. 4. Christian Nold, *Crowd Compiler*, 2005. (© Christian Nold)

models. Raised on a steady diet of institutional critique, this generation sees art's purview as transdisciplinary and eagerly pursues projects that could be classified as research (Center for Land Use Interpretation [25] or Multiplicity [26]) or design and development (Andrea Zittel [27] or Jorge Pardo [28]). In the case of locative media, this means that artists adopt the model of research and development wholesale, looking for corporate sponsorship or even venture capital. For example, Proboscis, a group that positions itself as a publicly funded "creative studio and think tank for culture," received sponsorship from Orange, a 3G cellular network, as well as France Telecom R&D, and had proprietary geodata donated to it by the British government's Royal Ordnance Survey for the *Urban Tapestries* project [29]. Blast Theory, a locative media group composed of several London-based avant-garde theater artists, has gained renown for projects such as *Can You See Me Now* (2001), *Uncle Roy All Around You* (2003) (Fig. 5) and *I Like Frank* (2004), in which they used location-aware mobile mapping devices

to coordinate interactions of audience and performers in both real and virtual space. Their performances and installations have been supported through corporate sponsorship, public arts funding and a 6-year collaboration with the Mixed Reality Laboratory (MRL) at the University of Nottingham [30]. The group's web site claims, "Blast Theory has a history of working with corporate clients to deliver innovative marketing strategies," thereby creating

commercial projects that draw global audiences to compelling, high adrenaline interactive experiences. The team of artists and scientists has worked with blue chip clients in the television, apparel and telecoms sectors to launch products, build profile, inspire staff and engage customers [31].

Anthropologist Anne Galloway, who studied *Urban Tapestries* for her dissertation, has critiqued this model of hybrid arts/researcher and community organizing for not yet having developed a formal and structured mechanism for accountability, professionalism and ethics [32].

The reluctance of many locative-media

practitioners to position their work as political has led some theorists, such as Andreas Broeckmann (director of the Transmediale Festival), to accuse locative media of being the "avant-garde of the 'society of control'" [33], referring to Gilles Deleuze's description of the contemporary regime of power. Broeckmann suggests that, since locative media is fundamentally based on the appropriation of technologies of surveillance and control, its practitioners have a duty to address that fact in their work. Geert Lovink has claimed that the movement instead has turned the media-art conference circuit into a "shopping-driven locative spectacle" [34]. Media artist Coco Fusco also launched a headlong attack on new-media practices associated with networks and mapping, claiming, "It is as if more than four decades of postmodern critique of the Cartesian subject had suddenly evaporated." Fusco minced few words: "In the name of a politics of global connectedness, artists and activists too often substitute an abstract 'connectedness' for any real engagement with people in other places or even in their own locale."

Fig. 5. Blast Theory in collaboration with Mixed Reality Lab., Nottingham University, U.K., *Uncle Roy All Around You*, 2003. (© Blast Theory)

Instead, she suggested a return to the kind of art practices made famous at the 1993 Whitney Biennial:

> Socially conscious artists and activists, rather than embracing tactics that rely on dreams of omniscience, would do well to examine the history of globalism, networks, dissent and collective actions in order to understand that they are rooted in the geopolitical and cultural margins [35].

Artist-theorist Jordan Crandall similarly indicted the locative project for enslaving us to a new Cartesianism, condemning the "resurgence of temporal and locational specificity witnessed in new surveillance and location-aware navigational technologies" [36]. In "Drifting Through the Grid: Psychogeography and Imperial Infrastructure," Brian Holmes discusses locative media's recuperation of Situationism, stating,

> All too often in contemporary society, aesthetics is politics as décor... the aesthetic form of the dérive is everywhere. But so is the hyper-rationalist grid of Imperial infrastructure. And the questions of social subversion and psychic deconditioning are wide open, unanswered,

seemingly lost to our minds, in an era when civil society has been integrated to the military architecture of digital media [37].

According to Holmes, because the U.S. Army controls GPS satellites, in using them we allow ourselves to be targeted by a global military infrastructure and to be "interpellated into Imperial ideology" [38]. These critiques are well founded, but their antagonistic tenor often seems to be an inversion of the boosterist claims made in favor of locative media. There's something peculiar, even comical, in how the movement is "the Next Big Thing" to some and a capitalist apocalypse to others.

Perhaps this should not be so surprising. In "Postmodernism, Or the Logic of Late Capitalism," Fredric Jameson, writing of Vincent Van Gogh's painting of peasant shoes, notes how the work simultaneously represents the peasant's brutal world of labor and toil while creating a Utopian gesture, an "act of compensation" through the "glorious materialization of pure colour in oil paint." Jameson's position here, however,

is a redemptive re-reading of Herbert Marcuse's writings on the affirmative nature of art. What makes Jameson's observation important is a third, darker side, this "whole new Utopian realm of the senses" that becomes "part of some new division of labour in the body of capital, some new fragmentation of the emergent sensorium which replicates the specializations and divisions of capitalist life at the same time that it seeks in precisely such fragmentation a desperate Utopian compensation for them." The artist's role is only temporary, then, and already flawed from the start. Even if Jameson concludes that the process of absorption is inescapable, he also vehemently rejects any suggestion that we should abandon art. In the world of late capital, Jameson argues, the drive to envision Utopia is still important and, above all, the task of cognitive mapping of one's place in the postmodern hyperspace is crucial, a claim that locative media has certainly embraced [39]. Deleuze, too, agrees, writing expressly of the society of control: "There is no need to fear or hope, but only to look for new weapons" [40].

We suggest that locative media offers a conceptual framework by which to examine certain technological assemblages and their potential social impacts. Unlike net art, produced by a priestly technological class for an elite arts audience, locative media strives, at least rhetorically, to reach a mass audience by attempting to engage consumer technologies and redirect their power. Today, this is more important than ever. According to the International Telecommunication Union (ITU), we are entering into a society of ubiquitous networked objects. Soon, the ITU observes, objects will be the most prevalent users of the Internet, relentlessly communicating various kinds of data to each other like some flock of Hasbro "emo-tronic" Furby dolls [41]. What does this turn to what the ITU calls the "Internet of Things" mean? Bruno Latour suggests that things are a focus for our time, a focus that demands in particular the attention of the arts:

> "Things" are controversial assemblages of entangled issues, and not simply objects sitting apart from our political passions. The entanglements of things and politics engage activists, artists, politicians, and intellectuals. To assemble this parliament, rhetoric is not enough and nor is eloquence; it requires the use of all the technologies—especially information technology—and the possibility for the arts to re-present anew what are the common stakes [42].

We can get a sense of what Latour means by this by looking at *MILK* [43], a project by Ieva Auzina and Esther Polak exhibited by Latour in his Making Things Public exhibition at ZKM, which won the 2005 Golden Nica at Ars Electronica. Rather than applying locative media to a phenomenological re-grounding of the self, *MILK* instead uses GPS trace routes to map the path of milk from its origins in the udder of a cow in rural Latvia to a cheese vendor in the Netherlands. To be sure, this project is still more suggestive than fully realized: *MILK*'s artists are not terribly interested in Latour's reading and instead see their work more as a form of romantic landscape art. Nevertheless, *MILK* suggests a powerful vision of how locative technologies could allow one to more fully understand how products are commodified and distributed through the actions of global trade, thereby making visible the networked society. Here Fusco's anti-mapping diatribe runs aground, for when tied to a materialist vision, the recent turn to maps is among the strongest critiques of globalization available to us. Recognizing this, philosopher Alain Badiou referred to the maps of power drawn by artist Mark Lom-

bardi [44] as "the creation of a new possibility of art and a new vision of the world" [45].

In his book *Shaping Things,* Bruce Sterling suggests that we détourne the Internet of Things itself to become more fully aware of the ecological role of objects in the world [46]. Sterling coins the neologism "Spimes" to refer to future objects that could be aware of their context and transmit "cradle-to-grave" information about where they have been, where they are and where they are going. Cory Doctorow has called Spimes "the hactivist's ultimate tool—an evidentiary rallying point for making the negative outcomes of industrial practices visible and obvious so that we can redress them" [47]. Similarly, even if it is not so much locative as suggestive of such practices, Natalie Jeremijenko's *How Stuff Is Made* project is something of a response to Sterling and Latour's theories, comprising a visual encyclopedia of photoessays produced by engineering and design students that document how objects are manufactured and investigating both the labor conditions of that manufacture and its environmental impact [48].

By geotagging objects instead of people, and having these objects tell us their stories, we might finally realize a thought experiment expressed by Jean-Jacques Rousseau at the very dawn of industrialization. In *Émile,* his book on the ideal education of a child, Rousseau wrote of "a problem which another child would never heed [that] would torment Émile half a year." Émile and his instructor would go to an elegant dinner hosted by wealthy people where the two are dazzled by the many guests, servants, dishes, and elegant china. In Émile's ear the instructor whispers "How many hands do you suppose the things on this table passed through before they got here?" The virus, or the Trojan horse, is successfully implanted in the child's mind and the result is a crisis:

> In a moment the mists of excitement have rolled away. He is thinking, considering, calculating, and anxious. The child is philosophizing, while philosophers, excited by wine or perhaps by female society are babbling like children. If he asks questions I decline to answer and put him off to another day. He becomes impatient, he forgets to eat and drink, he longs to get away from table and talk as he pleases. What an object of curiosity, what a text for instruction. Nothing has so far succeeded in corrupting his healthy reason; what will he think of luxury when he finds that every quarter of the globe has been ransacked, that some 2,000,000 men have laboured for years, that many lives have perhaps been sacri-

ficed, and all to furnish him with fine clothes to be worn at midday and laid by in the wardrobe at night [49].

In other words, we suggest applying the strategies of locative media to create what Rousseau called for, an awareness of the genealogy of an object as it is embedded in the matrix of its production. This genealogical vision would embody the history that Walter Benjamin reminds us is always there, no matter how suppressed:

> The cultural heritage we survey has an origin that we cannot contemplate without horror: it owes its existence not merely to the effort of great geniuses who created it, but to the anonymous toil of their contemporaries. There is not a single artifact of culture that is not simultaneously an artifact of barbarism. And just as no artifact is free of barbarism, so too the process of its reception, by means of which it has been passed on from one recipient to the next, is equally fettered [50].

If Spimes and their kin make it possible for us to envision new forms of cognitive mapping, we need to guard against using that mapping to place only ourselves, thereby reducing objects to a subservient position in regard to humans. After all, the ITU's prediction of tens of billions of objects connected to the Internet leaves human users a distinct second. Here it may be worthwhile to revisit our standard theoretical frames for interpreting technological fetishism. If Marx considered the object the result of alienation of the product from its production and, by extension, its origins, Freud understood it as symbolic replacement for an irrecoverable object lost in a primordial trauma. For both Marx and Freud, the aliveness of objects is nothing more than an illusion, object fetishism merely a substitute to avoid. As Steven Shaviro notes, however, the fetish object is always more powerful than what it is thought to stand in for [51]. As an art practice, to date, locative media seems fundamentally tied to discourses of representation centered on a human subject, privileging the experience of the human in space (tracing) and time (annotative). To turn Fusco's argument on its head: in both locative media and much of the criticism launched against the movement, it is as if more than four decades of postmodern critique of the humanist subject had suddenly evaporated. Even *MILK*'s project is not about milk, but rather about the people involved in the production and distribution of milk as it transforms from Latvian biological fluid to Dutch product.

In contrast, Sterling provides us with a

darker, more idiosyncratic vision. Humans do not control Sterling's world of Spimes. On the contrary, it is an unruly object world in which people are, at best, "spime wranglers." At the dawn of the Internet of Things, we have to wonder if we are not entering a world in which the object becomes sentient, thereby finally liberating itself from human bondage. If, in the Enlightenment, we learned that nature—in its role as background to human activity—had been replaced by human second nature, then today we are perhaps at the threshold of a machinic third nature. It is the task of whatever remains of art after the locative turn to get involved in the messy business of this new world of objects, even if the Utopian and critical moments that can emerge as a result are only temporary and contingent.

References and Notes

1. Social Fiction, <http://socialfiction.org/dotwalk/>.

2. Marc Tuters, <http://locative.x-i.net/report.html>.

3. Ben Russell, "Headmap Manifesto," 1999, <www.headmap.org/book/get/headmap-manifesto.PDF>.

4. <www.consume.net/>.

5. Ben Sisario, "Internet Art Survives, But the Boom Is Over," *The New York Times*, 31 March 2004, Section G, p. 11.

6. Patrick Lichty, "On the Death of Net Art," <www.voyd.com/voyd/lichtydeathofnetart.pdf>.

7. Jo-Anne Green, "about networked_performance," <www.turbulence.org/blog/about.html>.

8. Tom Vanderbilt, "Circuit City," <www.coldbacon.com/art/artforum/circuitcity.htm>.

9. Marisa Olson, <http://rhizome.org/thread.rhiz?thread=19560&page=1#37163>.

10. Saul Albert, "Crossing the Line Between Mapping and Mapmaking," <http://uo.space.frot.org/?node=CrossingTheLineBetweenMappingAndMapMaking>.

11. Mike Liebhold, "The Geospatial Web: A Call to Action," <www.oreillynet.com/pub/a/network/2005/05/10/geospatialweb.html>.

12. Anthony Townsend, "Locative Media Artists in the Contested-Aware City," *Leonardo* 39, No. 4 (2006).

13. Marc Tuters, "Plan: On Locative Media's European Response" <www.mdcn.ca/tiki-print_blog_post.php?postId=5>.

14. Alex Galloway, <http://itserve.cc.ed.nyu.edu/RSG/carnivore/>.

15. Richard Barbrook and Andy Cameron, "Californian Ideology" (1995) <www.alamut.com/subj/ideologies/pessimism/califIdeo_I.html>.

16. Regine deBatty, <www.we-make-money-not-art.com/>.

17. Proboscis, Urban Tapestries <http://urbantapestries.net/>.

18. Jeff Knowlton, Naomi Spellman and Jeremy Hight, <http://34n118w.net/34N/>.

19. Jeremy Hight, "Narrative Archaeology," <www.xcp.bfn.org/hight.html>.

20. Christian Nold, <www.softhook.com/>.

21. Jo Walsh and Schuyler Erle, *London Free Map*, <http://uo.space.frot.org/freemap/>.

22. Social Fiction, "Generative Psychogeography," <http://socialfiction.org/psychogeography/>.

23. Brian Holmes, "Drifting through the Grid," *Springerin* (March 2004) <http://www.springerin.at/dyn/heft_text.php?textid=1523&lang=en> and Ewen Chardronnet, "History of Unitary Urbanism and Psychogeography at the Turn of the Sixties + Examples and Comments of Contemporary Psychogeography," <www.socialfiction.org/psychogeography/unitary_urbanism.html>.

24. Simon Sadler, *The Situationist City* (Cambridge, MA: MIT Press, 1998).

25. Center for Land Use Interpretation <www.clui.org/>.

26. Multiplicity, <www.multiplicity.it/>.

27. Andrea Zittel, <www.zittel.org/>.

28. Jorge Pardo, <www.jorgepardosculpture.com/>.

29. Albert [10].

30. Blast Theory, <www.blasttheory.co.uk/>.

31. Blast Theory, "Corporate," <www.blasttheory.co.uk/bt/corporate.html>.

32. Anne Galloway, in presentation at the Pervasive Locative Arts Network event (PLAN) at the ICA, 1 February 2004.

33. Andreas Broeckmann, "Exhibiting Locative Media: CRUMB Discussion Postings," Beryl Graham, ed., <www.metamute.com/look/article.tpl?IdLanguage=1&IdPublication=1&NrIssue=24&NrSection=5&NrArticle=1373&ALStart=30>.

34. Geert Lovink, "Critique of Panclism," <www.networkcultures.org/weblog/archives/2004/10/critique_of_pan_1.html>.

35. Coco Fusco, "Questioning the Frame," *In These Times* (16 December 2004) <www.inthesetimes.com/site/main/article/1750/>.

36. Jordan Crandall, "Operational Media," *Ctheory*, <www.ctheory.net/articles.aspx?id=441>.

37. Holmes [23].

38. Holmes [23].

39. All quotations in this paragraph are from Fredric Jameson, "Postmodernism, or the Cultural Logic of Late Capitalism," *New Left Review*, No. 146 (July/August 1984) pp. 53–92; Herbert Marcuse, "The Affirmative Character of Culture," *Negations: Essays in Critical Theory* (Boston: Beacon, 1968) pp. 88–133.

40. Gilles Deleuze, "Postscript on the Societies of Control," *October* 59 (Winter 1992) 4.

41. International Telecommunication Union, Report 2005: "Internet of Things," <www.itu.int/osg/spu/publications/internetofthings/>.

42. "ATC @ UCB: Bruno Latour Monday," <http://rhizome.org/thread.rhiz?thread=18896&page=1#36087>.

43. Ieva Auzina and Esther Polak, "The MILK Project," <www.milkproject.net/>.

44. Mark Lombardi, *Global Networks* (New York: Independent Curators, 2003).

45. Alain Badiou, "Fifteen Theses on Contemporary Art, An Excerpt," <www.lacan.com/frameXXIII7.htm>.

46. Bruce Sterling, *Shaping Things* (Cambridge, MA: MIT Press, 2005).

47. Cory Doctorow, <www.boingboing.net/2005/10/26/bruce_sterlings_desi.html>.

48. Natalie Jerimijenko, "How Stuff Is Made," <http://howstuffismade.org/>.

49. Jean-Jacques Rousseau, *Émile* (New York: Dutton, 1974) p. 127.

50. Walter Benjamin, "Theses on the Philosophy of History," *Illuminations: Essays and Reflections* (New York: Schocken, 1969) p. 256. Modified translation used from Geoffrey Waite, "Truckin' Under a Pink Sky, Seeing Red," in Robert Hobbs and Frederick Woodard, eds., *Human Rights/Human Wrongs* (Iowa City, IA: Museum of Art, University of Iowa, 1986) p. 72.

51. Steven Shaviro, *Doom Patrols. A Theoretical Fiction about Postmodernism* <www.dhalgren.com/Doom/ch02.html>.

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LATIN AMERICA/PACIFIC-ASIA NEW MEDIA INITIATIVES

Pacific Rim New Media Development: A Search for Terra Incognita

This sensibility for complexity is only possible to the extent that we can avoid naturalizing a single spatial form, a single topology.

—John Law [1]

REASONS

Why create a Latin America/Pacific-Asia New Media Initiatives Group? Why mix two different regions, each with a diverse range of cultures? Probably such questioning should begin with asking, Should we analyze Pacific Rim collaboration at all, other than in economic terms? Today, innovative developments and new networks are being arranged at many levels: local, national, regional and global. However, the phenomenon of globalization is emerging not only at those levels, and not only in economic terms; it also has profound consequences for the ways we deal with ourselves, with our individuality, at the micro-reality level: The culture surrounding us changes, and many of the main reasons for these changes are technological.

Countries in the Asian region have been developing new-media technology for the last 3 or 4 decades; thus, they have been exposed to it much more intensively than has Latin America. This, however, is only part of the story; the "techno-emergent" Western media habitat has changed many of the developing countries' local traditions, not in ethno-historicist or folk-loristic terms, but rather in conceptual ones. The idea of being different also gives a certain energy to this emerging new global commercial market. Now that technology is reaching ubiquity, we see how each country has a different approach toward it, which also means that the culturally defined concept of "underdevelopment" is shifting from neglect of world diversity into acceptance of new, creative ways of dealing with technology.

Technology does not come by itself; it brings with it a series of "socio-technical" processes that also imply social change; hence, it "becomes"; it is this "becoming" and the transformation of a socio-technical system that is most interesting. One of the most compelling reasons to juxtapose discussions about media art and creativity in such different regions, united (but also separated) by the Pacific Ocean, is that we are dealing with local micro-realities that generate a complex schema. This means that we cannot merely make a priori judgments. Interestingly, since some advances have been made first in one place and then in others, there are things that we can share and gain from these micro-realities, shifting from the commercialization (or trade) of goods toward the sharing of ideas. This is why we are searching for a *terra incognita*, a place unknown, invisible, yet possible. As in many "spaces" addressed in intellectual discussion, its order is not geographically clear. Rather, it is a complex topography, a network of relations and interests in which we all find nodes of action and thought.

A PROCESS (RATHER THAN A COMPLETE WORK)

Capturing new micro-realities will never be a complete or finished process. Nevertheless, a reinterpretation of new media should also deal with those social insights that arise from new

micro-realities. Artists have always presaged and questioned technology; questions of ethics can also arise that cause us to examine the sciences and the arts in social and philosophical terms, with a critical perspective and without touting technology as neutral but rather treating it as social.

In the same sense, there are other realms that must be addressed in relation to the use of new-media technologies toward understanding current social changes in different places and circumstances. The great challenge arises around knowledge, especially in relation to traditions, modern and past, as a realm of cultural heritage. We believe that technology can help to develop better ways of understanding and explaining cultural memories, but we have yet to find the commonalities in inspiring examples from different contexts.

With reflection we can analyze how localities in different moments assimilate new media. In that sense, while China is trying to embrace new media and catch up, as quickly as possible, with the global superpowers, institutions in Mexico are moving from an initial infrastructure-based objective toward a people-based path. Other nations, such as India, are struggling to tell new stories and make participants aware of the social context.

Interestingly, none of these subjects are at the center of contemporary discussion, because the center only looks for what is similar to its way of thinking, not what is different.

QUESTIONINGS (CRITICIZING TECHNOLOGY, MAKING IT MESSIER)

Usually, when we speak about networks, we deal with certain attributes intrinsic to them. For instance, nodes go toward hubs; there is always strategy and struggles with the center, which means also that nodes derive order from a center [2].

Today's technological panorama is no longer approached as a panacea, but rather on a critical basis. The main problems of the world are not going to be solved by technology, which means that we need to return to some basic facts. Technology seems to be playing a neutral game, although when we deal with technology, we are also dealing with people and points of view and therefore with different ideas.

There is a highly overblown discussion today on knowledge societies. There still exists a functionalist perspective on providing access to information technology for "underdeveloped countries," taking into account the examples of the development of several nations in Asia that changed from poor agriculture-based societies into rich and highly industrialized ones. This perspective is very questionable if we do not find a solution to the social problems that still exist—for example, the need for development of better educational systems; in that sense, "knowledge society" will remain more a coined term than a reality.

Yesterday an all-technology rationality prevailed; making things messier and incorporating the social means that we are making things more complex. We find this complexity more suitable for today's world order. Computers and rationality made us think in a linear way, with the assumption that everything could be performed perfectly by computers ("Taylorism"). Problems are social and people are complex and non-linear. Thinking in a non-linear way by considering examples of our micro-realities will also offer radical contrasts and hence unpredicted behaviors [3] that will influence our notion of reality.

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References

1. J. Law, *After ANT: Complexity, Naming and Topology in Actor Network Theory and After,* J. Law and J. Hassard, eds. (Oxford: Blackwell, 1999) p. 7.

2. Law, op. cit., p. 5.

3. J. Urry, *Global Complexity* (London: Polity Press, 2003) p. 40.

Creative Industries in Beijing: Initial Thoughts

Ned Rossiter

ABSTRACT

This article reports on current developments within "creative industries" in Beijing. The article discusses Dashanzi Art District and the Created in China Industrial Alliance in relation to such issues as labor, intellectual-property regimes, real-estate speculation, high-tech development zones, promotional cultures and the global variability of neoliberal capitalism. The article maintains that creative industries, as realizations of a policy concept undergoing international dissemination, are most accurately understood as cultural practices in trans-local settings that overlap with larger national and geopolitical forces.

During a teaching stint at Tsinghua University in May 2005, and then following the trans-Siberian conference organized by the journal *Ephemera* in September 2005, I began preliminary research on creative industries in Beijing. What follows is a brief report on my experiences, perceptions and meetings in Beijing. My intent is to discern the constellation of forces that might be taken into consideration in future analyses as the research project develops. I should also state that this brief overview of Beijing's creative industries is part of a collaborative project that undertakes a comparative study of international creative industries. In this research we seek to go beyond economistic interpretations of creative industries by focusing on inter-relations and geopolitical tensions between trans-local and global cultural flows as they are manifest in labor conditions, intellectual property rights (IPRs), social-technical networks and cultural practices.

From the start, there are many factors and variables that make it a questionable decision even to invoke the term "creative industries" in the Chinese context. The case of China is considerably different from that of Britain, where a creative industry policy was intended to rejuvenate cities with depressed post-industrial economies through new employment initiatives in the cultural sectors and urban renewal that marketed chic lifestyles enhanced by the makeover efforts of cultural workers. Putting aside the critiques that one may advance against creative industry policy in Britain and elsewhere, some basic differences can be delineated: Unlike in Britain, state funding does not exist in China for "creative entrepreneurs," artists, designers, intermediary agencies, etc. Moreover, the economic, social, cultural and historical dynamics of the two countries present a catalogue of differences that disaggregates, at best, any approximation of coherence within creative industries policy as it travels internationally. Common to creative economies across the world, however, is the constitutive role of real-estate speculation, about which I say more below.

Such complications are problematic in the translation of the creative industry concept. For the most part, there is little variation at a policy level as governments internationally incorporate the basic ingredients of creative industry rhetoric (clusters, mapping documents, value-chains, creative cities, co-productions, urban renewal, knowledge economies, self-entrepreneurs, etc.) into their portfolio of initiatives that seek to extract economic value from the production of cultural content and the provision of services. This would suggest that the policy concept of creative industries is divorced from the materialities that compose cultural economies as distinct formations in national and metropolitan settings.

By deploying the notion of materialities in such a way, I am differentiating between the empirical data enlisted in creative industries policy in the form of statistics on economic growth rates, for example, and an analysis of the political, economic and social network of relations that constitute creative industries as multi-dimensional formations. The former can be understood as a rhetorical procedure mobilized across institutions for political purposes (e.g. effecting policy change and enhancing career portfolios), while the latter consists of an anthropology of institutions and their organization of social relations. All too often creative industry policy corresponds to idealist forms of expression, to put it mildly. Its tendency toward speculation cleansed of inconsistencies and uncertainties, for example, tells us something about the genre of policy, but there is frequently little resemblance to the actual experiences and conditions of those working in the creative industries. While there are undoubtedly material effects wrought by structural processes whose action is shaped by policy directives, this does not mean that policy—as a genre and set of practices generated within the culture of institutions—holds any strong connection to or symmetry with the life-world of cultural economies.

Fig 1. 798 Space. (Photo © Ned Rossiter)

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In order to extend the scope of analysis, I propose here a transdisciplinary approach that elucidates the complex array of forces, relations and dynamics at work in international creative industries.

Even in an overview as cursory as the one set out here, however, it is clear that there is vibrant activity and energy across a range of cultural sectors in Beijing. One of the most notable examples is 798 Space, a cultural complex within the Dashanzi Art District situated on the outer limits of the city, not far from the airport expressway. Designed by Bauhaus architects from the German Democratic Republic in the 1950s as an electronics factory for the military (Fig. 1), 798 Space has emerged over the past few years as the scene of avant-garde, experimental work. Adjacent galleries, performance spaces, fashion and design outlets, bookshops, cafes, studios and artists' residencies provide the requisite signs of a cultural complex that is often compared to New York's SoHo in its heyday (Fig. 2).

While Dashanzi is very much a space under construction and inseparable both from its history as a military electronics factory and from contemporary art cultures peculiar to Beijing, it evokes nonetheless a strong sense of familiarity—it is hard not to associate Dashanzi with the phenomenon of high-cultural tourism and cultural precincts now common in many global cities. Such a perception is reinforced by the economic geography of the area: Real-estate speculation and expensive apartment development have exerted a shaping force in the past few years, with artists' rents escalating and plans by the government and the landowner Seven-Star Group to demolish the factory site and establish a high-tech development zone.

According to newspaper reports and the Wikipedia entry on Dashanzi, such a development would enable re-employment of some of the 10,000 laid-off workers for which Seven-Star Group is responsible. Should these plans go ahead, there may well be construction and basic servicing work available for some, but it is hard to envision the possibility of long-term employment for these workers, some of whom are still working in a few small factories that continue to operate on the site. The proposal for the high-tech zone is modeled on Beijing's so-called Silicon Valley in Zhongguancun, which is located near the prestigious Tsinghua and Peking universities. Tsinghua University in particular has strong research-and-development links with this high-tech investment zone and by comparison makes the privatization and R&D efforts by Australia's elite universities notably underwhelming at the levels of infrastructure and pace of development. Whether or not such developments in Beijing and other Chinese mega-cities can become profit-generating innovation machines is another matter. Perhaps, however, it is enough to be in the business of providing highly skilled services across a range of geo-economic scales rather than to expect content to be king. In any case, the business model for the bulk of new media content production in Western economies remains haphazard at best.

Over the past 5 years, Zhongguancun has been transformed from a modest residential area into a high-tech commercial zone (albeit one that also accommodates numerous stores selling pirated DVDs and cheap electronic and computer products), which has driven out many of the previous residents through the esca-

lation of property values and the demolition of homes. If a similar development were to occur in the Dashanzi district, its currently mixed demographic would inevitably be affected, making the prospect of re-employing factory workers even more unrealistic. The skills these workers would need for employment in a high-tech zone is another factor that makes re-employment on a substantial scale unlikely.

It would seem to me, however, that the prospect of Dashanzi as an art district is gaining greater purchase on decision-makers. The site has been host to numerous events associated with the 2003 and 2005 Beijing Biennales, and there is no sign that refurbishment of the old factory buildings has been put on hold, despite recent reports that landowners had put a freeze on new rents and limited renewal of rents until the end of 2005. Amid such uncertainties, one gets the strong impression that Dashanzi Art District will be around for a while yet. Part of its security rests in the fact that the 798 artists are enmeshed with an international contemporary art economy that ensures a degree of connection with international institutions, which is not the case for those undertaking traditional arts and crafts in smaller regional cities. In the meantime, surrounding real estate continues to enjoy a speculative economy, and high-profile companies such as Sony, Christian Dior, Omega and Toyota launch events in 798 Space—chosen as a venue for its industrial chic and upwardly mobile clientele and, it could be added, its correspondence with a sort of standardized global cosmopolitanism (Fig. 3).

An analysis going beyond the descriptions set out above would require scrutiny

Fig 2. Dashanzi Art District. (Photo © Ned Rossiter)

Fig 3. Dashanzi apartment development. (Photo © Ned Rossiter)
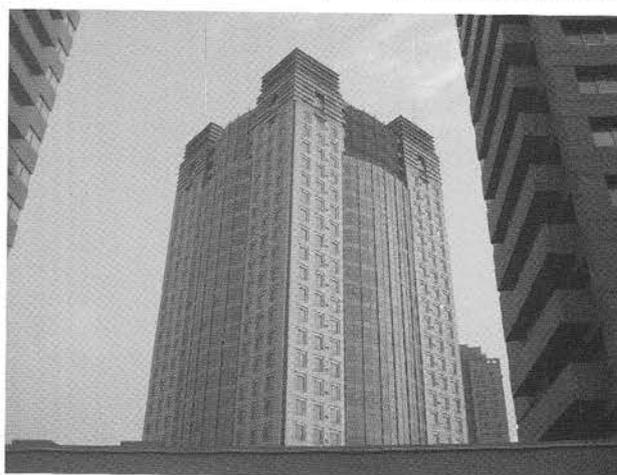
of the inter-relations between Seven-Star Group, property developers surrounding the Dashanzi Art District and government cultural development officials; of the political stakes of under- and re-employment of artists and factory workers; and of the role of artists' agencies or representatives in developing "promotional cultures" that take advantage of international events such as the 2008 Olympics. Such a study would amount to a political-economic anthropology of cultural *guanxi* (special relations or social connections/networks). The elaboration of such *guanxi* is not possible in the space provided here and will instead be a topic of research as this collaborative project develops over the coming months.

Further complications arise for comparative analyses because of the dominant association of creative industries with countries undergoing the passage into neoliberal capitalism over the past 15–30 years. The national experience of neoliberalism is not limited to the usual suspects of Western liberal democracies, however. As the role of non-governmental organizations (NGOs) in structural adjustment programs in African countries has demonstrated, neoliberalism—like capitalism—is not singular in any universal sense, but rather universal in its singular manifestations. Similar efforts at extra-national control by foreign capital, coupled with political pressure to instigate a "leapfrogging of modernity," could be seen more recently in Iraq. In theory, such mechanisms of leapfrogging aspire to directly shift developing economies into a neoliberal paradigm of privatization and outsourcing that bypasses the meddling influence of civil society and the state, to say nothing of the political traction wielded by the formation of citizen-subjects. Even the form of de facto structural adjustment that accompanies aid relief efforts for tsunami-affected countries could be added to a taxonomy of neoliberalism and the variegated modulations of global capital.

What, then, does all this mean for the creative industries model when it is located in countries pursuing authoritarian, state-controlled or socialist forms of capitalism? First, it shows that while there is a distinctive homogeneity in the way creative industries travel internationally as a policy discourse, the material, economic and cultural diversity of neoliberal capitalism—its amenability and capacities for adaptation to national and city-state modulations—enables creative industry–style developments to be translated in ways that seem improbable

if analysis focuses exclusively at the level of policy reproduction. Second, these considerations reinforce the need to understand the variable and uneven dynamics of global capitalism, whose indices include the movement of cultural commodities, labor and ideas. Here it is necessary to analyze the constitutive power of intra-regional, international macro-structural and trans-local micro-political forces. In other words, in order to make intelligible the patterns of global neoliberalism, one must attend critically to the peculiarities of sub-national scales (the micro dimension) and weigh these against international forces (the macro dimension). Only then does it become possible to assemble—in no more than a preliminary manner—the complex relations that compose the shifting cartographies and life-worlds of neoliberal capitalism.

One instantiation of such macro-micro inter-relations can be seen in China's accession to the World Trade Organization in 2001 and its subsequent need to comply in a more formal manner with IP regimes. This move signaled an incorporation of innovative economies into the predominantly manufacturing-based economy generally assumed to exist in China. This is where nonprofit organizations such as the Created in China Industrial Alliance (CCIA) take on important roles as cultural intermediaries. Toward the end of a wide-ranging and fascinating interview I conducted with Su Tong, the executive director of the Secretariat of CCIA, we hit upon a core definition of the organization: CCIA can best be understood as concept translators. This struck me as an incisive characterization of the complex environment and sophisticated set of principles that enables CCIA to operate across a range of scales, from high-level government-endorsed projects involving the promotion of Chinese culture during the Olympics to the publication of adaptations of fashion and computing magazines held under license by foreign companies.

An increasingly prominent creative industries critique emanating from Australia, Aotearoa/New Zealand, continental Europe and the United Kingdom holds that a privileging of creative production's potential economic value obtainable through IPRs overlooks such more fundamental factors as class tensions and the precarious condition of labor and life for those involved in production and service work in the creative industries. By contrast, CCIA considers

IPR compliance a key to securing a sustainable future in a global market for creative industries in China and does not consider creative industries exclusive to metropolitan centers and elite cultural sector interests. By way of example, Su Tong highlighted the importance of regional craftspeople skilled in traditional ceramics whose unique designs are illustrative of IP generation specific to regional cultural traditions that are developing entry points into international markets. Su Tong acknowledged the contradiction between IPR compliance as a condition set out by government and supranational trade agreements on one hand, and on the other the necessity for cultural production to retain a capacity to be shared and open in order to make possible the creation of new forms and ideas. Certainly such a tension is not peculiar to China, but can nonetheless be understood as symptomatic of China's current situation vis-à-vis international policy and economic fora, to say nothing of the difficult terrain for organizations such as CCIA, which need to negotiate such complexities delicately in order to retain a relative autonomy and multi-scale engagements with cultural, business and government actors.

This brief report can only provide the barest of detail on the creative industries in Beijing in recent times, and its level of analysis is akin to the gesture of a cultural tourist passing through. Even so, I hope to have conveyed some insight into a few of the prevailing trends and issues defining the cultural sector in Beijing. The research required to develop this project further is contingent on developing collaborative relations with a range of actors across the cultural, political and academic sectors.

Bibliography

Berghuis, Thomas J. "Considering Huanjing: Positioning Experimental Art in China," *positions: east asia cultures critique*, **12**, No. 3, 711–731 (2004).

Created in China Industrial Alliance, <www.ccia.net.cn/>.

Hoogvelt, Ankie. *Globalization and the Postcolonial World: The New Political Economy of Development* (London: Palgrave, 2001).

Keane, Michael. "Brave New World: Understanding China's Creative Vision," *International Journal of Cultural Policy*, **10**, No. 3, 265–279 (2004).

Keane, Michael. "Once Were Peripheral: Creating Media Capacity in East Asia," *Media, Culture & Society* (forthcoming).

Neilson, Brett, and Rossiter, Ned, eds. "Multitudes, Creative Organisation and the Precarious Condition of New Media Labour," *Fibreculture Journal*, No. 5, Special Issue (2005), <http://journal.fibreculture.org/issue5/index.html>.

Space 798, <http://www.798space.com/>.

Wang, Hui. "The Year 1989 and the Historical Roots of Neoliberalism in China," *positions: east asia cultures critique*, 12, No. 1, 7–69 (2004).

Wang, Jing. "Culture as Leisure and Culture as Capital," *positions: east asia cultures critique*, 9, No. 1, 69–104 (2001).

Wang, Jing. "The Global Reach of a New Discourse: How Far Can 'Creative Industries' Travel?," *International Journal of Cultural Studies*, 7, No. 1, 9–19 (2004).

Wikipedia entry on Dashanzi Art District, <http://en.wikipedia.org/wiki/Dashanzi_Art_District>.

Zhiyuan, Cui. "Liberal Socialism and the Future of China: A Petty Bourgeoisie Manifesto," in Tian Yu Cao, ed., *The Chinese Model of Modern Development* (London and New York: Routledge, 2005) pp. 157–174.

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Art and New Technology in Mexico: The National Center for the Arts

Andrea Di Castro

ABSTRACT

The author chronicles the history of Mexico's Centro Nacional de las Artes (National Center for the Arts) in Mexico City, and in particular the Multimedia Center, a space dedicated to the creation and teaching of the arts and preservation of cultural heritage through the use of new technologies such as CD-ROMs, the Internet and teleconferencing, as well as exhibitions. After 10 years of operation, the Multimedia Center faces new types of challenges as the new technologies become successfully integrated into creative practice. In response to the changing environment, the center is moving toward collaborations with similar institutions internationally and toward new funding models.

At the end of the 1980s, the idea of creating a multimedia center was in the minds of several Mexican artists, since artistic expression through new technologies, although frequent, was possible only in rudimentary form and with much difficulty. During that time, access to the new technologies was not easy compared with the situation in many other countries, due to the greater costs in Mexico combined with the lower income of the population. For that reason, in order to remedy the situation for the new millennium, it was necessary to create a space specially designed for the arts and culture in Mexico.

The Multimedia Center was possible thanks to a very particular moment: the creation of the Centro Nacional de las Artes (NCA—the National Center for the Arts), which provided the necessary political and financial viability. The NCA was conceived as the axis of a profound restructuring process in arts education in Mexico, creating an environment especially designed for the training of Mexican artists in the 21st century and also for the promotion of the different expressions of Mexican and international art. The NCA is a vast academic complex built on a 31-acre site located in Mexico City. It serves as a venue for the professional schools of mu-

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Fig. 1. First experiment with teleconferencing, using the "Solidaridad" satellite, Multimedia Center, Mexico City, 1995. (Photo © Andrea Di Castro)

sic, visual arts, dance, theater and cinema, and includes research centers in these same disciplines as well as a national library for the arts and the Multimedia Center.

It is important to highlight, however, that the Multimedia Center is not a school with curricular activities. It was conceived in the tradition of the artist's studio, where the "master" plans the activities and the "apprentices" follow his/her direction.

A crucial point in the success of the project was the search for work-team members, devoted artists and technicians who were zealous in the pursuit of their own work, yet were facing a major challenge: self-training. At that time schools offering multimedia training were scarce and costly.

The main interlocutors and accomplices in the development of the Multimedia Center were the Banff Center for the Arts (Canada) and the McLuhan Program of the University of Toronto; with them we exchanged opinions and strategies, especially in the fields of interactive projects, 3D techniques and virtual reality. After 2 years of design and 18 months of construction and acquisition of equipment, the Center was opened in November 1994.

The Multimedia Center was conceived as a space dedicated to new technologies and art. It is equipped with the latest technologies and oriented to the creation, exploration and teaching of the arts and the preservation of the cultural heritage of Mexico through new media, such as CD-ROMs, the Internet, art exhibitions, teleconferencing (Fig. 1), workshops and seminars.

The community of users of the facilities of the Multimedia Center comprised all kinds of participants in the so-called cultural industries: filmmakers, visual artists, performing artists, journalists, writers, photographers, stage designers, graphic designers and others involved with the NCA.

In the beginning the Center had six areas (workshops) and a production department, where research was conducted on the theories and techniques of new technologies and the production of expressive works in these new media. Through their joint operation, they provide support and consultation services to the art schools and research units of the NCA.

The structure has since been slightly modified; for example, the electronic production department no longer exists, and there is a new area of specialization in theoretical studies in new media.

The workshops are:
- *Digital Graphics.* This area involves the creation of images directly in the computer as well as the digitization of analog print images.
- *Audio.* This workshop researches and taps the potential of new technologies in the creation and editing of music and sound, both analog and digitally created, and their integration with other media.
- *Moving Images.* Using non-linear editing and other digital techniques, this workshop deals with the production and manipulation of moving images using interactivity and the language of video.
- *Interactive Systems* is run by an interdisciplinary team, incorporating all new media, with special interest in the interface design of products such as displays and CD-ROMs.
- *Virtual Reality.* Simulation and modeling techniques are employed in the construction of virtual environments and objects, using a range of input and control devices, such as datagloves, helmets, 3D scanners and related technologies.
- *Robotics* is linked to the Interactive Systems workshop and the Virtual Reality and Audio areas.

Plus
- *The Electronic Publishing Department.* This production area takes care of the entire production of interactive projects intended for public use, including CD-ROMs, displays and Internet pages.

The Multimedia Center was designed with the following guidelines in mind, aimed at the education, promotion, research and exhibition of electronic art projects:
- *Support for multimedia projects:* Consulting and supporting individual and collective projects in accordance with the Guidelines for Participation.
- *Exhibits and events:* Stimulates and promotes experimentation with new technologies in the Gallery area. Open to all artists.
- *Curricular courses:* Offered to students of the National Center for the Arts, at a basic and advanced level, for the application of these technologies in their own disciplines.
- *Non-curricular courses:* For the creation and production of multimedia works. These courses allow artists to become familiar with new technologies or to update their knowledge of them.
- *Teleconferences:* From its foundation, one of the more popular activities at the Center has been distance learning, for sharing these technologies with other cultural and educational institutions. This will become a specially dedicated TV channel.

There have now been 10 years of training for the personnel that work in the Center, as well as for the artists supported in their projects; also 10 years of production of art events with new technologies, including the recent Transitio_mx, an electronic arts festival <http://transitio mx.cenart.gob.mx/index.html>.

After these 10 years, there are new challenges for the operation of the Multimedia Center. On one hand, changes in cultural policy in Mexico push centers of its kind to design financial strategies (for updating the technology: hardware, software and training) that integrate not only state funding but also contributions from private companies, especially those related to the new technologies.

On the other hand, the training and promotion process is no longer necessary, since the artistic community is increasingly conscious of the benefits of incorporating new technologies into creative practices. This will allow the Center to redirect its efforts toward more creative activities and collaborations with other similar institutions around the world, shifting its emphasis toward a dialogue space.

We can say, without a doubt, that the panorama of the national arts has changed thanks to the activities of the Multimedia Center during the last 10 years, which has reshaped not only traditional ways to create, communicate and produce art but also the total idea of culture and technology.

Crafting Change: Envisioning New-Media Arts as Critical Pedagogy

Geetha Narayanan

ABSTRACT

As India enters the sixth year of the new millennium, there seems to be ample evidence to validate the claim that it is new technologies and their infrastructures that have supported and enabled its current economic revolution. This revolution promises a new society based on knowledge and information. This emphasis poses tremendous challenges to educators and forces them to question the fundamental tenets on which they would develop pedagogies and create learning that is both sustainable and critical. The author argues that the process of creating new-media art can in itself be construed as critical pedagogic practice and that new-media artists have a role to play as public intellectuals.

Educational institutions do not exist in a vacuum; they must all work within a context that has cultural, economic and political orientations. The process of building and creating educational structures, policies and curricula in India today is challenged continuously by conditions that are both complex and conflicting. This paper outlines my personal journey as an educator struggling to find ways to develop new and multifarious literacies and a critical understanding of new media and technologies within the instruments and frameworks of public pedagogy.

India in 2006 lives in a permanent state of schizophrenia, split between its global and neoliberal identity on one hand and its historically constructed socialistic identity on the other. The first comprises globally connected, neoliberal Indians who believe in the deregulation and privatization of higher education. The second comprises civil-society organizations, social workers, activists and leftist political groups. They see education as a vehicle for social change and would like to see a continuance of its current noncommercial status within the framework of the Indian constitution. The first group is more powerful and therefore capable of exerting greater influence in changing policy. Consequently all of higher education in India, and art and design education in particular, has been under pressure to evolve to feed a post-Fordist, informational economy driven by the free market—be it in capital, products or services. The only role for arts education within this ideology is that of fostering and generating the "creative individual" capable of inventing, thinking and designing innovative products for new and emerging markets. Being competitive, understanding zero-sum games, undertaking relentless quests for efficiency and emphasizing the performative nature of work through rigorous testing and ranking are all criteria of excellence that have had a direct impact on higher education in India.

The alternative worldview emerges from an amalgam of groups, ideologies and traditions that historically have been unable to unite and work together for social transformation and change. Driven by the work of such reformers as Mahatma Gandhi, B.R. Ambedkar and others, these groups lobby for removing the historic inequalities and injustices created by a stratified society and strive to create opportunities through education for the marginalized, the minorities, the poor and the disabled. Working largely through state and civil-society organizations, this group has argued and fought for conditions within institutions to further these goals. Unfortunately, their work has been restricted to issues of access and admission into institutions of higher education, the assumption being that these opportunities will translate into employment and hence social transformation. For the most part, neither the content of the curriculum nor the process of learning at the tertiary level has been a focus of their attention, with the notable exception of protests over the rewriting of Indian history and the "saffronization" of the curriculum by Hindu fundamentalist thinkers.

Today, educators in India must address issues of pedagogy and content arising not only from these conditions of schizophrenia but also from the rapid proliferation of new information and communication technologies. The challenge for a critical educator is to introduce new literacies in a manner that empowers individuals (students, teachers and groups traditionally excluded from education) and that simultaneously creates platforms for the critique of existing power and knowledge structures. Advocacy for such initiatives comes internationally from critical theorists such as Henry Giroux (1992), who has urged university educators to take up roles as "critically engaged public intellectuals." Giroux contends that the university (and I include the arts academy here) is not just a place to accumulate disciplinary knowledge that can in turn be exchanged for decent employment and upward mobility. He calls upon educators to redefine the borders of knowledge-power outside of the limitations of academic specializations so as to broaden the relationship of the university with the culture of public life.

As an educator and someone who has had to craft pedagogies within Srishti, a small, private undergraduate college of art, design and technology located in southern India, it has been my vision to develop a language of education that would allow students to take from their learning a sense of history, of civic courage and of belonging to a wider democratic community. Visions must always be developed into strategies, so I set about envisioning ways in which a critical outlook could be developed within a community of students in globalized, neoliberal India—students who have been "indoctrinated into the religion of markets and the stockholder theory of value" (Lovink) and who describe themselves as the "bastard generation." At a time when multidisciplinary goodwill is at an all-time low, technology is no longer new and markets are volatile and unstable, there is a real need to reassess the role that arts and culture can play within today's networked society. With new technologies changing lives in India in a dramatic man-

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ner, the effort began within Srishti to develop critical pedagogical tools and processes through the productive use of new-media technologies. From 2002 to 2004, through international conferences (DYD02 [1]), workshops (Synchronisations [2]) and a new-media arts festival (FORCE [3]), and with the active participation and collaboration of institutions of higher education from both the developed and developing world, discussions began wherein leading artists, designers, social activists, technologists and cultural theorists started to outline the issues posed by the unchecked advance of globalization and neoliberalism; the rapid proliferation of new technologies; and continuing poverty and social injustice in the developing world. The discussions resulted in understanding that there was a real need to articulate a new pedagogy and institutional forms appropriate to producing new and imaginative forms of creative reflection and civic engagement, as reflected in this statement from Shekhar Krishnan in the TANA-BANA catalogue:

Two distinct but inter-related phenomena have been dramatically reshaping the environments of academic institutions in India over the past five years. The first phenomenon is the widespread dissemination of networked media and information technologies and the challenge this poses to large centralized structures such as academic institutions and state bureaucracies. The second phenomenon is the decline of the traditional arts, humanities and social sciences in the social prestige and market value they once commanded and the erosion of the principle of liberal education and citizenship they represented. Taken together these two technological and cultural shifts necessarily disrupt the institutional moorings of arts education creating new spaces inside and outside the academy for new pedagogic practices which the academies of the future must seize on (Krishnan).

Heightened understanding from discussions and seminars, however, does not necessarily provide solutions, and so in pursuit of these I began to review and study strategies of critical new-media culture in the post-speculative phase that followed dot-com mania. From this study I came to the conclusion that there is a new and emerging role for tactical media (Lovink and Schneider) within the art and design academies: that of fostering a critical pedagogic stance within the framework of the curriculum. It provides a method for creating "literacies of possibility." Tactical media represents a renaissance of media activism, blending old-school political work and artistic engagement with new technologies. It was the product of a time that saw the fall of the Berlin wall, a growing awareness of gender issues, the exponential growth of media industries and an increasing availability of do-it-yourself equipment— all of which created a new sense of self-awareness amongst activists, theorists, programmers, curators and artists. The tools of tactical media activism and through it the collaboration or participation of the institution in wider social movements allow for the pedagogical production of political and social resistance. The challenge, in Ashok Sukumaran's words, is "to resist the singular allure of the digital" and

the easy transformations of embodied processes into online networks or tribal games into cell phone widgets. It may be possible to imagine a truly composite practice, as a yet unmanned counter-position to the bio-info-nano position. This would involve an engagement with the "body" of India and South Asia, and the particular material conditions of a billion and more people.

Bangalore, which is today a soulless redeveloped city, provides a rich set of complex issues and real-world contexts for artists and students to engage. Critical issues, such as the persistent "eve-teasing" or street harassment of women; the daily lives of people within the complexity of the traditional vegetable, fruit and meat "market"; the displacement of the community in the small township of Devannahalli, making way for Bangalore's new international airport; and the ceaseless pollution of lakes and water-bodies within the urban area with chemical effluents and raw sewage provide artists and educators with powerful entry points for the creation of tactical media and the generation of critical discourse.

To ensure that these entry points worked pedagogically, certain structural changes were introduced into the Srishti calendar. A middle semester—unimaginatively titled the "interim semester"— has been interjected into the regular academic calendar of two semesters. During this semester all existing hierarchies (that of teacher and student, junior or senior) and classifications (specializations and disciplines) are abandoned and students and teachers collaborate with visiting independent new-media arts practitioners working toward the creation of collaborative artistic works. The artists have used a wide set of approaches, including participatory, community, locative and wireless-based media, and created a series of tactical-media interventions and installations. The new-media arts festival FORCE was the result of Srishti's second interim semester.

Building on the interest generated during the interim semester, a studio lab was constructed that allowed students to drop out of their discipline-based education for a short period and work on development of tactical media. Here again the studio space was that of visiting or resident artists who worked alongside students to generate new pieces of work.

One may ask, however, if this is all really new, and in truth it is not. Furthermore, while Giroux, Paolo Freire and other advocates of critical pedagogy argue for participation in social movements as a base for developing critical pedagogy, and while Geert Lovink and others argue for new-media–based activism to go beyond the classical NGO or left-oriented approaches for organizing resistance and creating social change, there has been little mention of the power of poetry, philosophy and mysticism as starting points for new-media–based activism.

At Srishti we discovered that the powerful ideas represented in the poetry and philosophy of the mystic poet Kabir provided a rich content base from which a proactive and sensitive form of new-media arts could evolve. In Linda Hess's account,

Kabir was a weaver, mystic and genius who lived in a pilgrimage town on the banks of the Ganga River in the fifteenth century. He was a genius who didn't know how to read or write and didn't care. He was a mystic who talked back to the authorities of Hinduism and Islam, the dominant religions of the time. He was fun: his satirical takes on pandits and mullahs, hypocrites and fools, make people smile across cultures today. He was dead serious: he challenged every person who cared to listen to penetrate the tangled layers of social, political, religious, and psychological confusion within themselves, to face death, get free from fear, discover the depths of their own nature, and find the point where their separate, clinging selves might dissolve in the presence of something much larger (Hess).

The oral traditions of Kabir mock the contemporary policy of patents and copyrights. A festival such as the annual Kabir Panth provides a space in which one can mock upper-caste Hinduism and yet mimic its methods. Once again using the pedagogic structure of a studio lab and working in partnership with an artist-in-residence project in Srishti built around the work of Kabir, students, artists, research scholars, musicians, filmmakers and new-media artists began to critique society using as their starting points the poetry, mysticism, music and

philosophy of Kabir. This resulted in forms of new-media art that were also critical commentaries on society and its culture. It provided ways to create "art after new media"—art based on content, context and culture.

To sum up: First, there is a place for new-media arts and tactical-media–based activism as tools for developing critical pedagogy within all educational institutions—not just institutions working in arts and culture. This place will always be a contested one, and as institutions reproduce selected values, there will always be discussions and debates on what or whose knowledge is of more worth. Second, I feel that art and design institutes can contribute to the development of new-media arts, which until now has been a grassroots-led activist movement. Third, it is my view that there has been a serious omission of culture within the discourse and practice of new-media arts, and this has resulted in its status as an exclusive, minority subculture.

New-media curators such as Steve Dietz or theorists such as Lovink have written and commented on the need for new-media arts to grow, evolve and change. It is my view that this evolution and development may not come solely from contemporary artistic practitioners of new media; it may not need the formal structure of a department within a university or arts academy. I think that the growth of new-media arts may come from its use as a tool for the development of a pedagogy that is more critical, more radical, more investigative and less certain of "certainties." It will come from young students as they mess with, conceptualize and articulate ideas using a variety of tactical, locative and other medias. All this in turn will make possible an unquiet pedagogy—one that uses new media to create capacities for social change.

Notes

1. DYD02—Development by Design: The Second International Conference on Open Collaborative Design for Sustainable Innovation was held in Bangalore, 1–2 December 2002. The conference was a collaboration between the ThinkCycle and Digital Nations projects of the Media Lab, MIT (U.S.A.) and Srishti School of Art, Design and Technology.

2. Synchronisations: An International Student Think Tank was held in Bangalore in March 2004. It was part of an international research initiative called the Future Academy. This research project was curated by Clementine Deliss and involved art and design institutions from West Africa, Europe and India. Srishti was a partner in the research and an organizer of the think tank.

3. FORCE: An International New Media Arts Festival brought over 15 new-media artists to work in Srishti to collaborate with the students and produce works of new-media arts. The festival concluded with a seminar on the role of new media within the curriculum.

Bibliography

Giroux, Henry A. (1992). *Border Crossings: Cultural Workers and the Politics of Education*, Routledge, London and New York.

Halsey, A.; Lauder, Hugh; Brown, Phillip; and Stuart Wells, Amy, eds. (1997). *Education: Culture Economy and Power*, OUP, U.K.

Hess, Linda (2005). "Kabir Meets Media," *Anahat Nad Catalog*, Srishti School of Art, Design and Technology, Bangalore.

Krishnan, Shekhar (2005). *New Media in Cities*, in Narayanan, Geetha, Varghese, A.V. and Vania, Rustam, eds. (2005). *TANA-BANA*, Srishti School of Art, Design and Technology, Bangalore.

Lunenfeld, Peter, ed. (2001). *The Digital Dialectic: New Essays on New Media*, MIT Press, Cambridge, MA and London, U.K.

Narayanan, Geetha (2005). *Synchronizations: A Future Academy India Report*, Srishti School of Art, Design and Technology.

Narayanan, Geetha; Varghese, A.V.; and Vania, Rustam, eds. (2005). *TANA-BANA*, Srishti School of Art, Design and Technology, Bangalore.

Narula, Monica; Sengupta, Shuddhabrata; Sundaram, Ravi et al. (2004). *Crisis Media: Sarai Reader 4*, CSDS, New Delhi.

Rosas, Ricardo (2004). *The Revenge of the Low-Tech Autolabs, Telecentros and Tactical Media in São Paulo* in Narula, Monica; Sengupta, Shuddhabrata; Sundaram, Ravi et al. (2004). *Crisis Media-Sarai Reader 4*, CSDS, New Delhi.

Stromquist, Nelly P. (2002). *Education in a Globalised World: The Connectivity of Economic Power, Technology and Knowledge*, Rowman and Littlefield, New York, Oxford, Lanham, Boulder.

Sukumaran, Ashok (2005). *The Third View*, in Narayanan, Geetha; Varghese, A.V.; and Vania, Rustam, eds. (2005). *TANA-BANA*, Srishti School of Art, Design and Technology, Bangalore.

Varma, Pavan (1998). *The Great Indian Middle Class*, Penguin Books, India.

Web Bibliography

Geert Lovink, http://darkmarkets.t0.or.at/materials.htm.

Steve Dietz, http://www.yproductions.com/writing/archives/000037.html;

http://www.yproductions.com/writing/archives/000691.html;

http://www.yproductions.com/writing/archives/000720.html.

Geetha Narayanan is an educator and curator from Bangalore, India. Narayanan has dedicated most of her life to the development of new models of learning and the development of new educational institutions. As the founder and director of Srishti School of Art, Design and Technology, Narayanan leads a team of innovative and dynamic art and design practitioners and educators. Narayanan is also the principal researcher and author of Project Vision. Her first curatorial venture was the exhibition TANA-BANA, which was shown at Ars Electronica 2005 as the campus exhibition of 2005.

Pirates of the Pacific Rim

Steve Cisler

ABSTRACT

The term *piracy* once referred simply to crimes at sea but now also refers to widespread crimes by which intellectual property is copied and sold or given away through electronic networks and in kiosks, shops and flea markets. Countries such as the U.S.A., whose origins were based on technology piracy, are now the most protective. Companies that were once sued for infringement are now suing others. Piracy is cited as a source of income for criminal and extreme political groups. Cultural appropriation of traditional herbs, songs and art is not easily combated. Fake drugs and airline parts create safety issues that are not encountered with pirated books or DVDs. Some scholars and legal experts have called for abandoning copyright or have proposed alternative schemes for intellectual property.

The word *pirate* has its English roots in the 14th century, when the Latin word *pirata* was used to describe the Vikings. Popular culture, including movies and theme parks, has glorified the pirates of the 18th century, the so-called Golden Age of piracy, especially the English pirates who attacked and plundered Spanish galleons. These pirates presented an asymmetric threat to the Spanish; although they were not numerous, the pirates used stealth and superior armaments to attack and plunder ships laden with spoils from the New World. Between missions they hid out in secluded Caribbean coves. These pirates have become part of popular culture, as have the characters portrayed by Errol Flynn, Robert Newton, Charles Laughton and, most recently, Johnny Depp: Captain Blood, Long John Silver, Captain Kidd and Captain Jack. Even as Disney Studios reaped profits from making a pirate into a hero in *Pirates of the Caribbean*, the parent company worried about the other kind of piracy: copies of CDs and DVDs churned out in various countries and sold all over the world shortly after the movie's first release in theaters.

Although there has been an increase in maritime piracy in the past few years in Asian shipping areas and near the failed state of Somalia, this paper discusses only the forms of intellectual property (IP) piracy that have become a dominant issue in the world of international trade relations. Over the years, accusations of IP piracy have increased because of changes in laws and increased enforcement. Today thousands of consumers, large companies such as Google, terrorists, organized crime and small entrepreneurs have been accused of acts of piracy, or at least copyright infringement.

As Doron Ben-Atar points out, the abstract notion of intellectual property emerged in Europe during the late medieval period and early Renaissance, as artisan guilds protected their members' power by restricting access to knowledge of technical processes and operations of machines [1]. Pamela Long explains that Venice passed the first patent law in 1447, recognizing that "craft knowledge and inventions constituted property" and that "men of ingenuity"—especially glassmakers—were assets to Venice [2].

By 1688 the term *pirate* had also come to mean someone who appropriated intellectual property, including music, written works or an invention. Such people were known as "Land-Pirates." While the term *pirate* is usually pejorative, this paper employs it as a placeholder term for a deeply intertwined constellation of concepts and practices. This usage reflects the attitude of the parties coining a term or phrase: think of the connotations of "knock-off," "counterfeit," "softlifting," "fair use," "bootleg," "industrial espionage," "Darknet," "warez," "cultural appropriation," "file sharing," "imitative production," "information commons," "bio-piracy," and "copyleft."

Piracy takes place in every country, at every level, with the involvement of consumers, designers, manufacturers, salespeople and governments, even as legislators and trade representatives beef up laws and law enforcement organizations conduct raids and seek to curtail such activity, which is estimated to be 5–7% of total world trade [3]. In addition, there are a massive number of files being shared, not sold, by Internet users. Asa Hutchinson of the U.S. Department of Homeland Security estimates that 2.6 billion songs are traded over file-sharing networks each month [4]. As bandwidth increases, ever-larger media files are being shared and Darknet [5] activities surge. While there has been a great deal of media coverage of electronic piracy, which has been occurring since the days of electronic bulletin board systems in the 1980s, almost anything of fame or value has been copied or appropriated. Apart from books, CDs and movies, consider these items: watches, apparel, sparkling wine, computer chips, fire extinguishers, guns, golf clubs, cell phones, radios, prescription drugs, sunglasses, handbags, soaps, snowboards, water pumps, cigarettes, perfumes, art and antiques, indigenous art and crafts, identification cards, camping gear, automobile and aircraft parts and the Chinese product seized more by U.S. Customs than any other: batteries. Even shoe polish has been counterfeited, and in June 2004 the Counterfeiting Intelligence Bureau seized 12 tons of it in Kigali, Rwanda.

THE UNITED STATES AND PIRACY: A SHORT HISTORY

The United States is the site of both the duplication and sale of many counterfeit and pirated materials and of the sharing of copyrighted materials without a profit motive via the Internet. In addition, electronic auction networks such as eBay include independent sellers trafficking in counterfeit items such as Tiffany jewelry, Calloway golf clubs and Burton snowboards [6]. U.S. industry and government are the driving forces for the strengthening of laws protecting media content, physical products and other intellectual property from reverse engineering and copying. However, history reveals that the U.S.A. openly advocated intellectual piracy and had permissive laws on these issues well into the late 19th century. Ben-Atar's detailed work *Trade Secrets: Intellectual Piracy and the*

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Origins of American Industrial Power states, "Technology piracy was often undertaken not only with the full knowledge, but often with the aggressive encouragement of officials of the federal and state governments" [7]. Furthermore,

> by the time the revolution started, improving the level of American technology through illegal appropriation of England's protected industrial technology became a prominent feature of the struggle for political and economic independence.... Like modern developing nations, early in its history the United States violated intellectual property laws of rivals in order to catch up technologically [8].

In the 18th century England had criminalized the diffusion of technology. Were Benjamin Franklin, on the other hand, alive in the 21st century he would, no doubt, support Richard Stallman and Lawrence Lessig, current advocates of intellectual property regimes very different from the current one.

> Franklin did not succumb to the nationalist view of knowledge and never became a technology protectionist. He supported the view that science and technology were constructed in the universalist tradition as the shared property of mankind.... Franklin invented a much more efficient wood-burning stove and did patent it but declined to capitalize on the invention. "We should be glad of an Opportunity to serve others by any Invention of ours, and this we should do freely and generously" [9].

Alexander Hamilton, George Washington's Secretary of the Treasury, advocated plundering European technology and the encouragement of immigration of skilled workers along with the infusion of the technology they used. A neighbor of Washington's, Thomas Atwood Digges, worked in Ireland and England as a technology pirate, encouraging artisans and inventors to emigrate and take their technology with them to America. In 1793 the Patent Act prohibited foreigners from protecting their intellectual property in the U.S.A., and Americans could not receive patents for introducing new technology from Europe. This favored operators and entrepreneurs rather than inventors. In the few cases that did come to trial, juries sided with the pirates and against the outsiders because "diffusion of innovation throughout the community promoted the common good" [10]. This attitude changed in the second half of the 19th century as countries began regulating IP, although the U.S. copyright law of 1831 permitted international literary piracy. Charles Dickens and other authors wrote in protest to Congress, but the U.S.A. did not sign onto the international copyright regime until 1890. However, once technology began flowing out of the U.S., the country began its push to strengthen international IP laws, a policy that continues to the present and is as much a part of U.S. foreign policy as the war on terrorism.

In the 20th century there were internal IP battles as important as those being waged in 2005. They have been characterized as contests between "competing disseminators," in which incumbent copyright holders challenged more technologically advanced rivals. In the early 1900s sheet-music publishers sued the manufacturers of record players. Later, songwriters took on the new radio industry. While cable television is dominant now, it began as a community antenna service for rural areas with poor reception. In the 1960s network broadcasters accused the nascent cable industry of being "signal pirates" because they relayed the weak broadcast signals to their subscribers. The next major battle was between Disney and Sony, which began marketing the video recorder (which was invented by Ampex, an American company) in 1975 for a mere $2,295. Within a year Universal Studios and Disney filed complaints over copyright infringement, and the ever-colorful Jack Valenti, CEO of the Motion Picture Association of America, stated in Congressional testimony about the threat of Sony's infernal device,

> Nothing of value is free. It is very easy, Mr. Chairman, to convince the people that it is in their best interest to give away somebody else's property for nothing, but even the most guileless among us know that this is a cave of illusion where commonsense is lured and then quietly strangled [11].

He concluded, "I say to you that the VCR is to the American film producer and the American public as the Boston strangler is to the woman home alone" [12].

After the Supreme Court ruled in favor of Sony, the VCR proved to be not only a very profitable invention but also a benefit to the movie industry and provided a major source of revenue through sales and rentals of videotapes. A new development in the 1990s with growth of the Internet outside of research and academic sites was legislation aimed at end users, not just companies or rival technologies. While Internet service providers (ISPs) had the resources to lobby Congress, which provided them with a "safe harbor" and limited their liability in copyright infringement, noncommercial end users became the focus of regulation.

Timothy Wu sees this technology development as the result of a "team effort" of "passive, enabling technologists paired with infringing users" who are exploiting the drastic reduction in prices for recorders, computers, burners and bandwidth to acquire and disseminate content [13]. Legislators have listened to the copyright holders and have passed a slew of new laws since 1992: the No Electronic Theft Act, an anti-bootlegging law (17 U.S.C. section 1101), the anti-circumvention portions of the Digital Millennium Copyright Act, and section 1008 of the Audio Digital Home Recording Act. Extending the laws to include noncommercial infringement was a major shift, and in September 2003 the Recording Industry Association of America (RIAA) filed suit against 261 individuals for downloading music. The first criminal they nabbed was a 12-year-old girl living in public housing in New York. As of 2005 more than 5,700 suits had been filed [14].

I remember giving an introductory lecture and demonstration on electronic publishing to members of the World Intellectual Property Organization (WIPO) visiting Silicon Valley in 1994. An early program called Fetch, which was being used to retrieve out-of-copyright electronic texts (Poe, Conrad) in HyperCard format, evoked gasps at its ease and speed, and when I referred to a teenager whose bedroom-based file server for such files was connected to what was for the time a fast integrated services digital network (ISDN) line, the copyright lawyers reacted as if this youth had an antitank weapon pointed out his bedroom window toward the nearby freeway. Clearly, all they considered was the potential for infringement, not legitimate uses of the technology.

Piracy has been analyzed from historical perspectives, in the context of national goals and policies, from the ethical perspectives of different categories of consumers, by Marxist theoreticians and in terms of the production capacity of the industries that produce both legitimate and counterfeit products. U.S. Congressional hearings have invited testimony from experts who have tried to quantify the economic impact of the activities being scrutinized. These experts are usually representatives of industry and law enforcement or affiliated consultants. The numbers are usually single-source estimates and are always staggering. They include statistics on optical disc production, downloads of files, peer-to-peer network activity, decline in sales of authentic items, attendance at media outlets and

job loss and reduced tax revenues due to IP crimes. In one of his many testimonies Valenti claimed that copyright industries account for 5% of the U.S. GDP and earn more internationally than agriculture, aircraft or automobile exports [15]. Theoreticians such as Maurizio Lazzarato see piracy as a form of protest against capitalism and its commodification of knowledge, which, in his view, reduces access to knowledge [16].

PIRACY, TERRORISM, ORGANIZED CRIME AND SECURITY

Piracy is lucrative for several reasons. Much of the public does not consider it to be a crime; the price (or lack of cost) of pirated items is usually very attractive, even if the quality may vary greatly from that of the original (especially in the case of fake drugs). Most people have little sympathy for the perceived losses of large corporations due to IP crimes, especially if their profits are soaring. Senator Joe Biden's remarks during a hearing on IP theft are typical:

> It does not compute to people when we say we have lost 175,000 jobs. It doesn't compute to people when all these folks show up at the Emmys and the Oscars with gowns that cost more than what people make in a year—I am not criticizing it—to say these poor artists are losing their income.
>
> It does not compute when Microsoft's profits continue to increase, which they should, at significant numbers, and people say, "Oy veh! Microsoft, poor Microsoft. . . . All I am doing is keeping Gates from having fifty zillion dollars. He'll only have forty zillion dollars" [17].

Returns on investments in piracy are high; penalties are rare and often not a factor to most pirates.

> One estimate is that the profits from counterfeiting are similar to drugs trafficking; there is a return of €10 euros for each €1 invested. Other estimates are that counterfeiting is more profitable than drug trafficking, one kilo of pirated CDs is worth more than one kilo of cannabis resin. The kilo of CDs is worth €3000 and the kilo of cannabis resin is valued at €1000. The same source states that a computer game costs €0.20 to produce and sells at €45 while cannabis costs €1.52 a gram and sells at €12.8 [18].

Politicians and trade organizations have begun to emphasize the links between pirate and counterfeit products and organized crime. Since 2001 there has been a focus on sources of money for terrorist activity, especially that of Al Qaeda. In addition to the diminished personal fortune of Osama bin Laden,

sales of honey and tanzanite, and remittances from donors, Interpol claims that Al Qaeda receives substantial income from the sale of pirated software and DVDs. In his 2003 testimony Ronald Noble, Secretary General of Interpol, itemized activity by Chechens, the IRA of Northern Ireland, Al Qaeda, the FARC of Colombia, Hezbollah and Hamas in the tri-border area of Argentina, Paraguay and Brazil. This free-trade zone is one of several in Latin America where counterfeit and smuggled products of all types are readily available. Others include the Colon Free Trade Zone in Panama; Maicao, Colombia, a notorious smuggling port where tobacco companies have managed to evade local taxes; and Iquique, Chile. The FBI estimates that American businesses suffer losses of $200–$250 billion a year from counterfeiting [19].

Investment by pirates in equipment to duplicate and distribute counterfeit media products can be substantial and innovative. In 1999 Macao marine police working with Hong Kong customs captured unmanned submarines that were being towed behind boats. Using air as ballast, the pirates could raise or lower the vessels and even anchor them hidden under water and leave the area if pursued, then return to the site by using a GPS tracking system to locate the subs. Officials seized almost 250,000 optical discs stored in these vessels [20]. The duplicating labs using such supplies range from a few CD or DVD burners to much larger and more sophisticated factories. Many counterfeit items are made in factories producing authentic branded products. After the first (legal) production quota is filled, the factory produces more for its own distribution channels.

PIRACY AND SAFETY ISSUES

Anti-counterfeiting organizations contend that fake products such as aircraft and automobile parts, foods and drugs result in illness, accidents and death. Consider the following:

Pirated software or movies may be more flawed than the authentic released version. DVDs of a Spanish-subtitled *Passion of the Christ* were found in 2004 selling for $1 dollar each on the subways of Mexico City. Every few minutes throughout the feature, however, a notice to the members of the Academy of Motion Picture Arts and Sciences voting on Oscar nominations would be displayed. In the early 1990s in Hong Kong some of the operating system software for pirated versions of Windows was in beta form, as were the help manuals.

More serious problems arise with counterfeit drugs and aircraft parts. Numerous accidents have been attributed to fake parts in both military and civilian aircraft and weapons systems. Far more widespread is the problem of drugs with no active ingredient or with ingredients that are harmful. Nobody really knows the global extent of the problem, but in countries such as Nigeria and Cambodia, the majority of drugs sold are fake. The incidents of injury and death are gruesome and include deaths from Viagra from Colombia containing floor wax, boric acid and yellow highway paint; and the deaths of 89 children in Haiti in 1999 after taking cough syrup made with antifreeze. In Burma, Laos, Cambodia and Vietnam, 38% of artesunate tablets were found to be fake [21] (artesunate, derived from a Chinese plant called sweet wormwood, is the only malaria drug effective against resistant strains found predominantly in Southeast Asia). Such problems are not confined to the developing world, however. In 2003, 20 million counterfeit doses of the cholesterol-lowering drug Lipitor were pulled from U.S. shelves.

Security technology designed to foil physical piracy includes an array of holograms, microthreads, taggants, RFID chips, guilloches, traitor-tracers and optically variable devices [22].

CULTURAL APPROPRIATION

Counterfeiters have also been found to manufacture craft items in Asia and sell them as American Indian in origin. In February 2004, Armando Quiroz, co-owner of an arts and crafts gallery on the Laguna Pueblo in New Mexico, presented "Navajo" rugs made in India and jewelry from Korea, saying that they could be sold at a much lower price than the authentic works he carried.

Activists and indigenous groups have accused pharmaceutical companies of bio-piracy [23]. *Banisteriopsis caapi*, better known as ayahuasca or *yage*, is a vine grown in the Andean Amazon. It has been used by indigenous healers for generations. In 1986 Loren Miller, an American, obtained a patent on an alleged variety of yage. The Center for International Environmental Law showed the U.S. Patent Office numerous examples of "prior art," and in 1999 the patent was rejected. After further arguments, however, it was reinstated [24]. The defense of the rights of diffused groups historically outside the Western legal structure has proved to be an ongoing challenge, even when pharmaceutical companies, gov-

ernments and local communities share common goals in exploiting a traditional medicinal plant. These contests are very different from record companies taking teenagers and their parents to court, American trade representatives threatening penalties against countries with rampant piracy, the Disney Company battling Sony, movie studios suing file-sharing web sites, or publishers and authors taking on Google for infringement.

THE FUTURE

With more Internet users having access to faster networks, the availability of pirated works will increase. New technologies such as the 300-GB DVD expected to appear at the end of 2006 will be exploited by legitimate and pirate distributors alike. Turnaround times for manufacturing firms to copy a consumer item will decrease, as industrial designs, much like designer fashions, have a notoriously short shelf life. Factories making knockoffs have integrated their own product flows from gathering information on the originals to delivering the finished products. Anticorporate sentiments will give rise to other IP schemes, especially in countries already known for infringement, such as Brazil, India and China. These are places where free/*libre* open source software (FLOSS) thrives. The battle for more effective technological protection will fuel research and development by universities and high-tech firms, and many of these will be broken by social networks of programmers. The University of California at Los Angeles has developed a DVD player with an RFID chip embedded to prevent it from playing pirated DVDs. Nathan Myrhvold's Intellectual Ventures seeks to provide money for innovative technologies, collect patents to them and rigorously protect those patents with a SWAT team of lawyers. In spite of industry education campaigns, most of the public will not consider piracy a real crime, and even if they do, they may not realize they are taking part when they buy a "Gucci" handbag for $20, watch a movie or swallow a fake Viagra. Public institutions such as libraries that have served as places to share knowledge through lending and by providing technology to copy print materials will be pressured to curtail wholesale and rapid copying of their materials. Libraries, however, are also trying to have their voices heard in forums like the WIPO, long dominated by copyright holders, to plead for the inclusion of clear and enduring fair-use guidelines for knowledge in its traditional and evolving formats. The Alternative Law Forum in India has been a longstanding source of new thinking about intellectual property regimes and the crises facing developing countries and innovators and artists in India [25]. Joost Smiers, professor of political science of the arts in the Netherlands, has recently proposed that artists would benefit by abandoning copyright, as doing so would undermine the unhealthy dominance of a relatively few culture-industry players [26].

References and Notes

1. Doron S. Ben-Atar, *Trade Secrets: Intellectual Piracy and the Origins of American Industrial Power* (New Haven, CT: Yale Univ. Press, 2004) p. 1.

2. Pamela O. Long, *Openness, Secrecy, Authorship: Technical Arts and the Culture of Knowledge from Antiquity to the Renaissance.* (Baltimore, MD: Johns Hopkins Univ. Press, 2001) p. 95.

3. 1998 estimate by the International Chamber of Commerce. In "Intellectual Property Crimes: Are Proceeds from Counterfeited Goods Funding Terrorism?" Committee on International Relations House of Representatives. One Hundred Eighth Congress First Session. 16 July 2003.

4. [3].

5. Peter Biddle et al. "The Darknet and the Future of Content Distribution," <http://crypto.stanford.edu/DRM2002/darknet5.doc>. The Darknet is an application and protocol layer using the Internet for sharing of digital content, much of it copyrighted.

6. International Anti-Counterfeiting Directory 2005, p. 19.

7. [6] p. xvii.

8. [6] p. 214.

9. [6] p. 49.

10. [6] p. 193.

11. 1982 VCR hearings in Congress, cited in Timothy Wu, "Copyright's Communications Policy," *Michigan Law Review* 103, i2 (November 2004)

12. Wu [11].

13. Wu [11].

14. Johnny L. Roberts, "Out of Tune," *Newsweek,* 22 September 2003.

15. Evaluating International Intellectual Property Piracy. Hearing Before the Committee on Foreign Relations, United States Senate, One Hundred Eighth Congress, Second Session, 9 June 2004.

16. Maurizio Lazzarato, "New Forms of Production and Circulation of Knowledge," in Josephine Bosma et al., eds., *Readme! Filtered by Nettime. ASCII Culture and the Revenge of Knowledge* (New York: Autonomedia, 1999).

17. Ronald Noble testimony in [15].

18. "Examining the Theft of American Intellectual Property at Home and Abroad." Hearing Before the Committee on Foreign Relations. United States Senate, One Hundred Seventh Congress. Second Session. 12 February 2002. On closer analysis, it is unlikely that a counterfeit computer game will sell for €45.

19. Cited by Noble in [3].

20. See [3] p. 89.

21. Lew Kontnik, "Counterfeits: The Cost of Combat," *Pharmaceutical Executive,* 1 November 2003.

22. See [5].

23. See especially the publications of Rural Advancement Foundation International (RAFI). RAFI Communique (December 1996). Available at <http://www.rafi.ca/communique/19965.html>.

24. Integrating Intellectual Property Rights and Development Policy. Report of the Commission on Intellectual Property Rights, London, September 2002. Commission on Intellectual Property Rights. p. 77.

25. Alternative Law Forum and Sarai, "Contested Commons; Trespassing Publics. A Conference on Inequalities, Conflicts, and Intellectual Property." 6–8 January 2005.

26. Joost Smiers. "Abandoning Copyright: A Blessing for Artists, Art, and Society," *de Volkskrant,* November 26, 2005. http://www.culturelink.org/news/members/2005/members2005-011.html.

Steve Cisler, a librarian by training, only began using computers in middle age, at a public computer lab in his branch library in the San Francisco area in 1984. In 1985 he joined The WELL and ran a forum on information and libraries for many years. In 1988 at Apple, he started a grant program called Apple Library of Tomorrow. He supported the first copyright-free on-line book about the Internet (the Electronic Frontier Foundation's Big Dummies Guide to the Internet). *He worked on deregulation of the radio frequencies and standards that became known as 802.11 or Wi-Fi. Over the past 7 years he has consulted in Latin America, Thailand, Jordan and Uganda on short-term projects involving telecenters, school computer labs and indigenous groups.*

INVISIBLE DYNAMICS

Common Systems: The Invisible Dynamics of the Pacific Rim and the Bay Area

San Francisco's Exploratorium and the San Francisco Art Institute are pleased to participate in the ISEA 2006 Pacific Rim New Media Summit through the presentation of some preliminary findings of its Invisible Dynamics research project in a panel format. The partners hope to make contact with individuals or organizations from around the Pacific Rim who may have related projects or research who would be interested in discussing possible points in common.

Invisible Dynamics is an interdisciplinary project that invites art/science research teams to explore the systems and behaviors, both urban and natural, that give the San Francisco Bay Area its definitive character. The project engages the domains of art, design, cultural geography, cartography, information design, sociology, archaeology, hydrology, ecology, marine sciences and history. It originated from the Exploratorium's anticipated move to a new location. By equipping artist research teams with new-media tools and giving them the charge to help define and describe a new neighborhood and community, this program evolved as our target location continued to change. The project also brought about the realization that the contemporary world is an expanding information system whose tools allow us to explore our lives at a level of detail and at scales that we could never easily achieve before—therefore prompting our focus to shift from a local field investigation to a global perspective. The project looks at the ways in which the San Francisco Bay region is a microcosm of the Pacific Rim.

Invisible Dynamics is an experimental project whose aim, among other things, is to take the Exploratorium pedagogy of research and experimentation outside the walls of the museum and into the city and beyond. It views urban public spaces as interactive classrooms or galleries where artists interrogate the contiguities of bay waters and shorelines, industrial zones and neighborhood streets. As a series of field-based investigations, each project asks a set of unique questions. The aesthetic aim of the project as a whole is to layer the constant and ephemeral, the unseen and idiosyncratic—the multiple phenomena that are interlaced in our experience of place. The goals and aims of the project are closely aligned with partner San Francisco Art Institute's Centers for Art+Science and Public Practice. The following are examples of current constituent projects within Invisible Dynamics.

Hidden Ecologies is a field experiment by architect Chris Benton, microbiologist Wayne Lanier and independent curator Marina McDougall. Fusing views assembled through aerial kite photography with on-site micro-cinematography, *Hidden Ecologies* maps transitional salt-marsh geographies of the San Francisco Bay. Equipped with a mobile field laboratory of notebooks, field microscopes, GPS devices and an array of photographic equipment, the team works in the field to record aspects of the local environment that lie beyond everyday perception—local landscape features, the invisible composition of micro-communities, or forgotten cultural histories. Field research is joined with archival materials and cultural commentary on a web site that is designed as a living organism, inviting annotations from within as well as outside the team.

Cabspotting is an on-line system to anonymously track and record the movements of Yellow Cab vehicles throughout the greater Bay Area and creatively explore the recorded data. Designed by artist Scott Snibbe and programmed by Stamen Design, *Cabspotting* has two

major components: a *Cab Path Tracker* and multiple *Cab Projects*. By eliminating the urban street grid or base map, the *Cab Path Tracker* shows the current and historical paths of cab rides around the Bay Area, which oftentimes suggests organic systems of use patterns. The *Cab Projects* is a platform that invites investigations by artists to explore the cab path database, individual cab rides, or other artistic, cultural, political and social issues surrounding the rides.

Trace, by Ali Sant and Ryan Shaw, examines the layering of physical space with the on and off zones of the wireless or Hertzian network. Borrowing from the conventions of cartography, *Trace* produces a series of maps on a WiFi-enabled PDA. Each map corresponds to a different state of a transforming network—locations within and outside of range, locked and unlocked zones, default and unique named networks. Users become investigators exploring and enabling state changes in the network zones. The project seeks to blend the corporeal experience of the city with the invisible qualities of the network, poetically placing the individual as a coordinate between the two. *Trace* also records the comments of users at a time when wireless networks are reshaping perceptions of the urban landscape.

Move Here utilizes the open resources of the Web to build a database of historic and contemporary film clips originally designed as strategies for luring people to the West Coast and San Francisco. Multidisciplinary artist Ricardo Rivera has assembled a wide and eclectic array of clips promoting the people, weather and landscapes, as well as the promise of work, wealth, status and nature one might encounter in the Bay Area. Designed as a databank of desire and opportunity, each film is projected anamorphically (or obliquely), requiring viewers to shift position/status in order to be enticed by its message. The project exists as a web site where viewers must manipulate a 3D projection, as well as a physical version in which a person must adapt his or her physical position to read the film. *Move Here* alludes to the perception of (social) space by requiring viewers to "change position" in order to match their desires with those of others.

When the Exploratorium and the San Francisco Art Institute try to imagine what it will be like here in the future, many of the clues seem to come from farther west. Our future, intertwined relationships with the communities and cultures of the Pacific Rim will define our way of life for many years to come. We posit that it is instructive to look at and try to understand some of the dynamics of the Bay region as a step toward understanding the complexities of the systems that define the Pacific Rim. Given the scale of this investigation weighed against our limited means, the investigations we are conducting can only begin to create a skeleton of understanding. As our research expands and as we engage new individual and institutional partners from the region, we plan to continue developing a clearer and more comprehensive picture of the hidden systems that define how we live and work in the context of the San Francisco Bay and the Pacific Rim: the interrelationships of commerce, culture, climate, art, demographics, tectonics, science, transportation, basic infrastructure, communication, economy, education and many other things.

We are interested in sharing experiences about related projects around the Pacific Rim. We look forward to hearing from people or institutions that are developing similar viewpoints, and, in particular, we hope to meet like-minded people at the ISEA Conference.

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The Exploratorium's Invisible Dynamics Project: Environmental Research as Artistic Process

Annie Lambla

ABSTRACT

The Exploratorium's Invisible Dynamics project seeks to manifest the inevitable and reciprocal relationship between art and science that is at the heart of the museum's mission. An attempt to visualize invisible, often cartographic, systems in the San Francisco Bay Area, it places various elements of Bay Area life in a context that can then proportionally be used to relate San Francisco to the greater Pacific Rim in a similar scalar relationship. The paper analyzes one part in particular of the Invisible Dynamics project—*Hidden Ecologies*, a photographic, cartographic collaboration between a micro-biologist and an architect. The flexibility between artistic and scientific processes is expressed by those involved in *Hidden Ecologies* as well as the "artists" of the other three projects that make up Invisible Dynamics.

Based at the Exploratorium museum in San Francisco, Invisible Dynamics is an art-and-science research project that calls for artists and scientists to collect and present data and information gathered from a variety of systems in the San Francisco Bay Area. Directed by Exploratorium senior artists Peter Richards and Susan Schwartzenberg, the project embraces the interrelationships of "invisible dynamics" such as commerce, culture, climate, art, demographics, tectonics, science, transportation, basic infrastructure, communication, economy and education.

Invisible Dynamics originated in the Exploratorium's plans to move from its home of 37 years in the historic and bucolic setting of the 1915 Palace of Fine Arts to a site more centrally located near the San Francisco downtown business district and its working waterfront. The project was originally conceived as a means of exploring the potentials of the museum's new neighborhood, but as diverse artists and scientists became involved in the project, its purview, both physically and intellectually, grew proportionately. The field of investigation expanded beyond the immediate neighborhood to include the city of San Francisco, the greater Bay Region and the Pacific Rim.

THE EXPLORATORIUM: A VISION OF THE COMMUNITY AS LABORATORY

Since its founding in 1969, the Exploratorium has advanced artists as equals of scientists in their contributions to knowledge and understanding of the world. This is not a new idea, but, as Peter Richards points out, it is also not one that many similar institutions have been eager to embrace. The foundation of the Exploratorium's involvement with art and artists has been its artist-in-residence program, established in 1974 by Richards. Initially oriented toward artists making permanent works for the museum's exhibit collection, today the museum's residency program also includes residencies dedicated to pure research, project incubation residencies, and community- and field-based residencies, like those being carried out through Invisible Dynamics.

Invisible Dynamics is based in the Exploratorium's Learning Studio, a multi-disciplinary laboratory serving as an intellectual crossroads for artists, scientists, educators and designers. The Studio offers a workshop and collaborative environment for visiting artists and scholars and a forum for wider community engagement. Invisible Dynamics has effectively been an extension of the Learning Studio into the community, developing new technologies and creative tools, as well as initiating relationships that other artists and educators will be able to build upon with researchers, community organizations and government agencies.

The Learning Studio serves as a prime example of how the resolution of the dichotomy between art and science and the values of Invisible Dynamics relate to the research process. It reflects the premium placed on seeing the process at work, on seeing the stages of thought and creation, on inspiring creation based on both scientific and artistic questions and inspirations, and on the idea that what comes out of all this exploration is not what is important. Susan Schwartzenberg expressed the value of the Learning Studio, a value that is obviously important to all of the projects in Invisible Dynamics, when she said that people should use the Studio "as a workshop, a resource."

AN ETHNOGRAPHIC VIEW OF THE PROJECT

As a museum-studies anthropology student from Ohio and North Carolina, I came to the Invisible Dynamics project as an outsider to the Bay Area and the Exploratorium. I spent 2

Fig. 1. *Hidden Ecologies*, Wayne Lanier in his field lab exploring communities of bacteria in the wetlands and salt flats surrounding the San Francisco Bay, 2005. (Photo © Susan Schwartzenberg)

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months during the summer of 2005, as Richards wrote, "trying to understand how artists collect data, how they organize it, and how they make their research available to others." Much of the information about the research processes of the artists and scientists in Invisible Dynamics in this report comes from relaxed interviews I conducted with the project personnel, based on a set of basic questions. The direct quotes below come from these interviews unless otherwise noted. In conjunction with these interviews, I participated with the artists in their projects as much as possible, including excursions into the field with Wayne Lanier and sitting in on meetings with Richards and Schwartzenberg to understand the process from all points of view. Some of the interview questions were aimed at getting a description of each project and understanding how each is a part of Invisible Dynamics; other questions encouraged the artists and scientists to explore the artist-scientist dualities and similarities embraced at the Exploratorium and to examine more closely the research processes as exemplary of those differences and correspondences. I wanted to understand patterns of research and to explore the role of investigatory processes in the work of the artists and scientists involved in Invisible Dynamics.

AN OVERVIEW OF THE ARTISTS' PROJECTS

There are four projects that make up the current phase of Invisible Dynamics. *Hidden Ecologies* is a collaboration between architect and photographer Cris Benton, microbiologist Wayne Lanier, and curator and filmmaker Marina McDougall. It is a "cartographic experiment" using photographs taken by Benton with a camera attached to a kite and photographs of microorganisms taken by Lanier through a field microscope. The goal is to "record aspects of our immediate environment that normally lie beyond our usual perception."

Scott Snibbe, a media artist, working in collaboration with the San Francisco–based firm of Stamen Design, is tracing the paths of Yellow Cabs through the San Francisco Bay Area. Their project, *Cabspotting*, is web-based and consists of mapping programs and multidisciplinary projects done by artists and scientists worldwide.

Ricardo Rivera's project, *Move Here*, was in an early stage of development in the summer of 2005. Rivera uses found clips of vintage and contemporary promotional films to build a shifting image of place, desire and identity.

Ali Sant's project, *Trace*, uses wireless technology to identify and map the areas of wireless Internet availability in urban areas.

HIDDEN ECOLOGIES: EXAMINING METHODS, IDEAS, OUTCOMES

I sought to explore the ideas, methodologies and field-work experiences of one project in particular, *Hidden Ecologies*, in order to demonstrate how the teams of artists, scientists and designers involved in Invisible Dynamics have carried out their research.

In this project, Lanier uses a field microscope to explore communities of bacteria in the wetlands and salt flats surrounding the San Francisco Bay (Fig. 1). He has fitted his microscope with an apparatus that allows him to attach a camera to the eyepiece and thus to photograph his findings; eventually he posts them on-line on the *Hidden Ecologies* blog [1].

Lanier emphasizes that amateur astronomy grew quickly and contributed to professional astronomy when quality equipment was made available to the public at an affordable price. The underlying idea is that available technology drives the scientific knowledge we can access. But there is an equally important concept of the citizen as an active participant in and contributor to scientific understanding. Much as the telescope has made astronomy a viable household hobby, Lanier hopes that widespread availability of field microscopes will make microbiology a popular hobby as well. By getting the general public interested and involved in microbiology, the field can advance very quickly. Lanier wants to organize more hikes and field lessons, taking people to places of microbiological importance. His goal is to teach, to inspire curiosity about the world and to capture the imagination of engaged minds.

In a design meeting, Lanier described a triangular model that illustrates how he approaches his work. On each vertex of a triangle is a concept or an element of the data that comes out of a day in the field: artistic values, scientific values, and "treasure hunt." According to Lanier, all three elements are necessary to have a complete and successful piece of work. Some aesthetic awareness is needed for this project, manifested through Lanier's beautiful photos and videos. Some scientific awareness is important, evidenced by his knowledge of what he sees in his samples, his search for biological communities and his aspirations of compiling his findings in a sort of DNA data bank for microorganisms. And the final element, the "treasure hunt" aspect, involves some sense of intrigue and enthusiasm that propels curiosity and moves the project forward.

Lanier is primarily a scientist, and he uses a scientific process to gather and interpret data. When he is in the field, his goal is to inspire a reaction beyond just a "that's pretty" in his students. He begins by looking for common characteristics in an area visually; he then compares the characteristics of samples in those areas on a microscopic level. As he explained in the field, "If you see dinoflagellates in more than one community that has some similar characteristics, it shows that it's a similar community," a similar system. It is, however, what happens after he returns from the field that makes Lanier and his work uniquely inspiring as a contribution to *Hidden Ecologies*. He said, "Once I got that camera, it's not just me looking at things, it's me taking pictures and showing them to people." His web site collects "microphotos" from all over the world.

As Lanier explores terrain literally from ground level, Cris Benton is photographing the land from the sky (Color Plate F No. 1) [2]. Benton, a professor of architecture at the University of California at Berkeley, is a kite photographer in his free time. In the course of photographing landscapes throughout the Bay Area, Benton has also been capturing the sites that Lanier is exploring by foot below. Juxtaposed, Benton's and Lanier's images create two simultaneous perspectives, macroscopic and microscopic. As Benton sees it, there is an "overarching cartographic sense to Invisible Dynamics," and the *Hidden Ecologies* team is adding its own layers to the multidisciplinary map of the Bay Area. These layers are "flows," forces that would go unseen were it not for the Exploratorium project. Invisible Dynamics is going beyond the expectations of the viewer and trying to show and get people to see things that are really there. Benton uses photography to show these multiple layers because photography allows one to "show a simultaneous landscape from a point of view we can't usually see and experience."

As an architect, Benton often uses both artistic and scientific processes. He sees architecture as primarily quantitative, and as an architect he is very aware of and familiar with the rigors of research. Architects practice the perfect combination

of art and science, according to Benton, because they find solutions to problems of design and construction by gathering data and by "making creative leaps." He sees the Invisible Dynamics project, however, as more of an art project and consequently much more "unfettered" than pure science because it uses the artistic process. "Science can also be creative, but it is underpinned by method."

Compared with a traditional art project, Benton feels his work on *Hidden Ecologies* has proven to be a richer process with more levels of complexity. He says, "When I first started this work, I looked for things that were compositionally interesting." Such visual coherence might drive work for an art gallery, but for Invisible Dynamics, his motivations are more complex. His research process is a "form of interrogating the landscape." For example, he is interested in boat landings as culturally significant geographic locales. "I look at old maps and current satellite images," Benton stated, "form a hypothesis about where the landing was, go out and photograph the site, then look for telling details in the images I get back." The process is very similar to that of Lanier, who also studies maps to look for visual clues about the location of certain things before going out into the field.

Marina McDougall is the third member of the *Hidden Ecologies* project. As an independent curator, she plays a critical and interpretive role in translating Benton and Lanier's work for public presentations. Admitting in an e-mail interview that her role in the project is "a bit fuzzy," she identifies herself as a producer who will "bring out the lyrical aspects of Wayne and Chris's work." Having worked with the Exploratorium before, she is aware of the importance placed on the coexistence of art and science, and she insists that artists are "not just object-makers, they're thinkers." Like a number of others involved with Invisible Dynamics, Marina identifies the search for empirical evidence to answer questions as the difference between an artist and a scientist. Paralleling the wishes of Lanier and Benton, she hopes to infect their audience with a curiosity, to "retool them and show them new ways of perceiving their surroundings."

FRAMEWORK FOR FUTURE INVESTIGATIONS: THE ROLE OF ARTIST AS RESEARCHER IN THE MUSEUM

Among the interesting questions raised by Invisible Dynamics is a comparative analysis of research methods and processes used by the artists and the scientists. Scott Snibbe, Ricardo Rivera and Ali Sant consider themselves primarily artists, if not strictly artists. Lanier and Benton, however, identify with what they called a scientific or quantitative process equally if not more than with an artistic or aesthetic process. The methods of these two groups are similar: both collect materials, form a hypothesis, gather data and then evaluate and manipulate that data before presenting it to the public.

For Rivera, Snibbe and Sant, however, the processes and destinations for their projects are less clear. Rivera, identifying himself strictly as an artist, collects data in the form of videos and images and then manipulates and forms that data into a cohesive product before presenting it to the public and allowing their involvement. Snibbe and Sant, like Rivera, identify themselves primarily as artists, but both recognize elements of scientific curiosity and method in their work. Their projects are focused not on the data itself but on creating a platform for data that will be provided by a third party. In Snibbe's case, this is the Yellow Cab GPS data. Sant, in an even more agnostic project, has created a technological system that will not even provide participants with data. Both Sant and Snibbe, therefore, realize the possibilities that raw data provides for the participants. Not surprisingly, however, there is no consensus among these Invisible Dynamics participants on what the "scientific process" or the "artistic process" is, besides a vague suggestion that scientists are more focused on gathering knowledge, whereas artists are explorers of feelings or information.

While the end goal of Invisible Dynamics is far from defined, an interesting dichotomy has emerged regarding research acting as both the subject and the object in many of these projects. If the relationship between art and science is by no means a new subject, neither is the concept of research as both subject and object. Everyone involved in Invisible Dynamics has surprisingly clear and varied ways of defining the terms *artist* and *scientist*, while always recognizing the subjectivity of their definitions. In addition, while everyone was quick to agree that artists and scientists often share methods and processes, it was only the self-identified scientists who had similarly patterned processes. The three artists, on the other hand, had much more flexible, but also less structured, patterns of work. Despite these differences, the importance of shared values across disciplinary boundaries, and a common desire to communicate the processes and real experiences of research as well as the findings of research, unite these thinkers and these projects with the core mission of the Exploratorium.

References

1. <http://arch.ced.berkeley.edu/kap2/php/Hidden_Ecologies/>

2. <http://arch.ced.berkeley.edu/kap2/php/Hidden_Ecologies/?cat=2>