



**SIGGRAPH2005**



**electronic art and animation catalog**

A Computer Graphics Annual Conference Series, 2005  
A Publication of ACM SIGGRAPH



# **electronic art and animation catalog**

## **art gallery**

Linda Lauro-Lazin

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## **computer animation festival**

Samuel Lord Black

**page 195**

Computer Graphics Annual Conference Series, 2005

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# art gallery : **threading time**

CHAIR  
**Linda Lauro-Lazin**  
Pratt Institute



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# siggraph 2005 art gallery : threading time

The overarching goal of the 2005 Art Gallery is to show artwork that maps data or traces threads in time and space. This year, the art gallery will show digital artwork from the cerebral to the visceral, work that challenges the audience's perceptions of time and place. Each piece is inherently digital: it cannot exist without computer graphics. The artists examine the passage of time in their work: some lingering, some looping, some humorous, some perennial

Six award-winning artists have graciously accepted my invitation to exhibit their works in the SIGGRAPH 2005 Art Gallery: Camille Utterback, Shelley Eshkar and Paul Kaiser, Perry Hoberman, Jim Campbell, and John Gerrard. Each of these esteemed artists expresses threading time in a unique way. They are among the most innovative contemporary artists using digital media today.

Artwork in the SIGGRAPH 2005 Art Gallery is organized by content rather than by media, to emphasize meaning. Here the technology is in the service of the art. Themes include: mapping, dynamic landscape, moving gestures, portraiture, narrative, generative art, networked projects, artificial life, body and identity, media activism, surveillance, commercialization, and convergence. Six Art Papers are presented in the catalog. The Art Gallery features Artist Panels and Artists' Talks that frame contemporary digital art practices.

Threading Time was juried by a preeminent group of jurors, artists, curators, and computer graphics and arts professionals. From more than 1,100 submissions, the jury selected 52 artists whose works are both figurative and abstract. To provide a deeper window into the artists' work, more artwork by fewer artists was selected. Some of the work is code driven, and some is narrative; some is political and intellectual, while other work is personal and emotional. Some of the work maps aesthetic preferences, while other work creates aesthetic experiences interactively.

The jury considered work that:

- Addresses the theme and traces threads through time and space
- Is content driven
- Is visually compelling
- Uses the technology in the service of the art
- Demonstrates a clear reason for the use of digital media

2005 is a time for cooperation, community, and networking. In this spirit, The 2005 SIGGRAPH conference is rich with collaboration among its programs and beyond. Emerging Technologies and the Art Gallery are sharing overlapping space to show six interactive art installations. These two programs are also demonstrating the very nature of collaboration by presenting compelling distributed performances and art panels on the Access Grid. The Art Gallery is collaborating with the Computer Animation Festival to present, for the first time in SIGGRAPH history, a mini-show of storyboard and concept art. Art animations, juried through the Computer Animation Festival, are shown in an intimate screening room in the Art Gallery. Some of the Art Gallery artists are participating in Sketches and the Web Program.

We have reached a true paradigm shift in art making. Digital technologies are ubiquitous, and artists are using them in exciting ways to express time-honored as well as new ideas. And these ideas are evolving with the technology. The SIGGRAPH 2005 Art Gallery: Threading Time showcases these artworks.



**Linda Lauro-Lazin**  
ART GALLERY CHAIR  
SIGGRAPH 2005

# Threading Time Machines

by Dominique Nahas

Threading Time, the title of the SIGGRAPH 2005 Art Gallery, invokes a vision in which the essence of lived reality, time, is measured and used through instrumentalization technology. The very subject of much of the technologically-based new media arts is time itself, its uncovering, its displacement, its loss, and its reiteration. The urgency for visual artists to explore the experience of time is pervasive. Indeed, what could be more contemporary than an exploration of the lived moment as a network of relations and responses that too often go unnoticed? The construction and imaging of visual languages through which time is not only expressed but enunciated and parsed by visual poets, have always and will always fascinate audiences. This instrumentalization is evoked and invoked through our language and the way we move, and through the very social relations between people. SIGGRAPH is both an actor in this play and an instigator; it serves as a barometer (giving us a sense of the pressures we face) and a thermometer, indicating the temperature of the body social and political.

The artists who have been invited to participate in Threading Time are offering us their speculations on the pleasures and fault lines of our post-information age. As artists are prone to do, they have offered us alternative visions and possibilities for us to see the present for what it is through the lens of imaginary futures which are always being projected outward by technology. Advanced visual artists in the SIGGRAPH fold, in many cases, allow us to infer how the market's tendency to create imaginary futures allows us to misunderstand the present. In some fashion, the best of these artworks point out in an understated way that the techno-freak's fetishizing of the machine becomes a diversionary tactic, an acceptable way of hiding (behind) capitalism's flaws. But this is only partly true, for the picture is a complex and often contradictory one. For on a certain level, the technological imperative fosters communication and alternative ways of distributing (that is, decentralizing) power networks through the development of a high-tech gift economy. On another level, techno-determinism has many handlers eager to concentrate power and limit the equitable distribution of resources through intense privatization. The result is multi-layered, certainly.

One of the inevitabilities of a cyber world (and several of the artists in this year's Art Gallery refer to these symptoms) has been described by sociologist Jacques Ellul in his somewhat hyperbolic yet pungent 1954 study *The Technological Society*. He described the incursion of "psychological collectivization" which inculcates "the transformation of culture into luxury," which, he argues, involves coercive "adaptive harmonization" on the part of society's individual members, which in turn reinforces dissasociative disorders between people. That there are positive compensatory factors generated by technology to offset the negative ones at play here, I have no doubt. I believe, however, the prescient Ellul has his finger on the pulse of a major artery of today.

The mandate of SIGGRAPH since its inception in 1973 has been to generate and disseminate information on computer graphics and interactive techniques. It has promoted the cause of artists who use the computer as part of their creative process while promoting discussion about art in relation to technology. SIGGRAPH 2005 is perhaps the most incisive annual conference yet, as it offers a platform

for the discussion of technology proper and its celebration as a symbol of high creative achievement and progress. It also allows the conversation to turn to the potential side effects, the unanticipated scenarios leading to conflicting social practices, which invariably accompany evolutionary technological development.

While the actual art works in Threading Time vary widely in scope and dimension, several overall themes emerge. These include questioning aspects of consumption as well as production; references to social interactions within social space such as architecture and travel milieus; reflections on the condition of loss through speculations on the body's embodiment and disembodiment through technological matrices; wry commentaries on surplus information and surfeit exchanges; visionary explorations of space and time through gaming technologies; metaphysical ruminations through references to natural or biological patterns found in nature and in the body; invocation of architecture as a mutable and transitory space for the dwelling of time; aspects of personal and psychological identity; references to handcraft, rituals, and tradition using cybernetic interfaces; reevaluation and re-identification of literary traditions; the "aura" of the hand-made object, particularly the art book, through application of algorithmic procedures; and, finally, critiques on consumption and waste (mis)management.

As good artists are wont to do anywhere, but particularly in Threading Time, they suss out the ghosts in our 21st-century machines, looking at the symptoms of societal pathologies that they tease out for us to consider and reflect upon, not without humor. Peripherally, the shadow issues of technology and time, which refer in the broadest sense to expenditure and its control and management, are brought to bear by many of these artists' works in this finely tuned exhibition. One might speculate that these digital artisans can be considered in part if not in whole as pioneers of a social democracy fit for the 21st century. They project a future-present based on lives modeled upon skilled, creative, and autonomous (well, nearly autonomous) labor. Paradoxically, these elite members of the virtual class point to the libertarian and utopian possibilities of a the high-tech gift economy, which allows for expression through sharing web sites or within online conferences.

The audience for technologically based media arts has shifted from viewers to users. It stands to reason that if the audience has been transformed by technology, the way that artists see their role has also altered drastically. Unlike traditional media, these artists' works suggest it is not just a spectacle for passive consumption (although there is, to be sure, plenty of that to go around), it also lays the groundwork for shared participatory activity. The creation and proliferation of hypermedia networks, for example, allow a discussion of the darker sides of overt and covert technological determinism. Issues relating to the organization, distribution, and control of labor are key topics that will very much shape the social and political contours of the future. Such discussions are at the heart of the tensions produced by competing interests for the privatization (that is, control) of resources, and equity, and groups fighting for de-privatization of those same resources. SIGGRAPH 2005 is poised to advance the next critical stage of discussion regarding time and management of imaginary and not-so-imaginary future scenarios as part of its cultural work. Threading Time is an important contribution to our understanding of how we may relate differently and in different terms to the present and, therefore, to our futures as well.

Dominique Nahas is a critic and independent curator based in Manhattan. A member of the International Art Critics Association (AICA-USA), he writes for numerous publications including *Art in America* and *Art Asia Pacific*. He is currently Interim Director of the Hoffberger Graduate School at Maryland Institute College of Art and will serve as the 2005-6 MFA Critic-in-Residence at Montclair State University. Additionally, Mr. Nahas teaches critical theory on a regular basis at Pratt Institute in Brooklyn and is a member of the critique faculty at the New York Studio Program. The author of numerous artists monographs, his most recent book on Merle Temkin (Telos Press) appeared in June 2005.

## Mapping Art's Escape from the Traps of Technology

by Jon Ippolito, Guggenheim Museum

The 2005 SIGGRAPH jury was more than a chance to survey the digital art scene with a roomful of passionate but collegial comrades. It was also an opportunity to reflect on the role, for better or worse, that technology is playing in the production and exhibition of digital artwork. More than any of my fellow jurors, I think I was particularly conscious of the stereotype that many artists, critics, and curators attach to exhibitions of art with a technological focus. According to this perception, the SIGGRAPH Art Gallery is less art exhibition than display showroom, where technicians show off the latest Maya or Illustrator special effect rather than pushing the boundaries of art.

As if to corroborate this prejudice, the jury saw literally hundreds of works that appeared to be inspired by some filter or toolbar icon from the latest release of a commercial graphics package. This preference for technology and technique over concept and creativity has led to a vast digital opus whose superficial dazzle is matched only by its aesthetic and political backwardness.

Yet the conservatism we see in juried art exhibitions may be attributed not just to the technology of production but also to the technology of presentation. In juried shows of any size, the quantity of submissions is difficult to handle except via a standardized review process that puts undue emphasis on individual images projected out of context on the wall. Focusing attention on such isolated "slides" enforces biases against any work created by an artist whose interest lies outside the now-weary exertions of the 20th century's picture plane. The process demands that artists who work outside the frame be twice as inventive as their peers; they must be creative with both the documentation and the work itself. For works that spilled outside the frame, the jury did its best to dig beyond the initial image; however, most of those artists hadn't supplied enough documentation to convey the work's intention and scope.

If the jury review process casts unconventional formats in the least favorable light, it can cast a misleadingly generous light on conventional formats. By erasing features like scale or texture, the projected or screen-based image, like the book illustration, encourages reviewers to presume these features are what is most appropriate for the imagery: thick impasto for a brushy composition, grandiose scale for a bold abstraction. (I know a graduate school that accepted an MFA applicant only to discover that each of the "vast" landscapes they saw in her slides turned out to be more postcard than panorama.)

In the case of the digital prints so prevalent in SIGGRAPH shows, the scale and texture seen in the projected image turn out to be especially illusory, since screen-based imagery has no inherent scale or texture, despite the fact that these aspects are critical to most art in the Euro-American tradition. The height of Velasquez' *Las Meninas* positions its viewer in the position of the reflected king and queen; the breadth of a Jackson Pollock immerses its viewer in its myriad skeins of dripped paint. Monet's *Nymphaeas* are painted with just the right-sized brush to create a hypnotic flip-flop between abstraction and representation. Yet when digital images become prints on a wall rather than pixels on a screen, their monotonously uniform glossy surfaces and preset sizes reflect the dictates of available printing technologies rather than marks or meaning conferred by their maker. The results can be disappointing, like an exhibition of Monet posters in place of paintings.

Bearing in mind the deceptive effect technology can have on production, selection, and exhibition of art, I tried to influence the jury to counter this technological "bait and switch." I had little patience for digital images that emulate atmospheric watercolors or brushy oil paintings, less because those are "outdated" styles than because using digital media to ape plastic media is the aesthetic equivalent of cubic zirconia. I often saw more integrity in digital photography and its manipulation, because photography is inherently devoid of surface (since Fox Talbot, anyway) and hence lends itself to screen-native manufacture and printing.

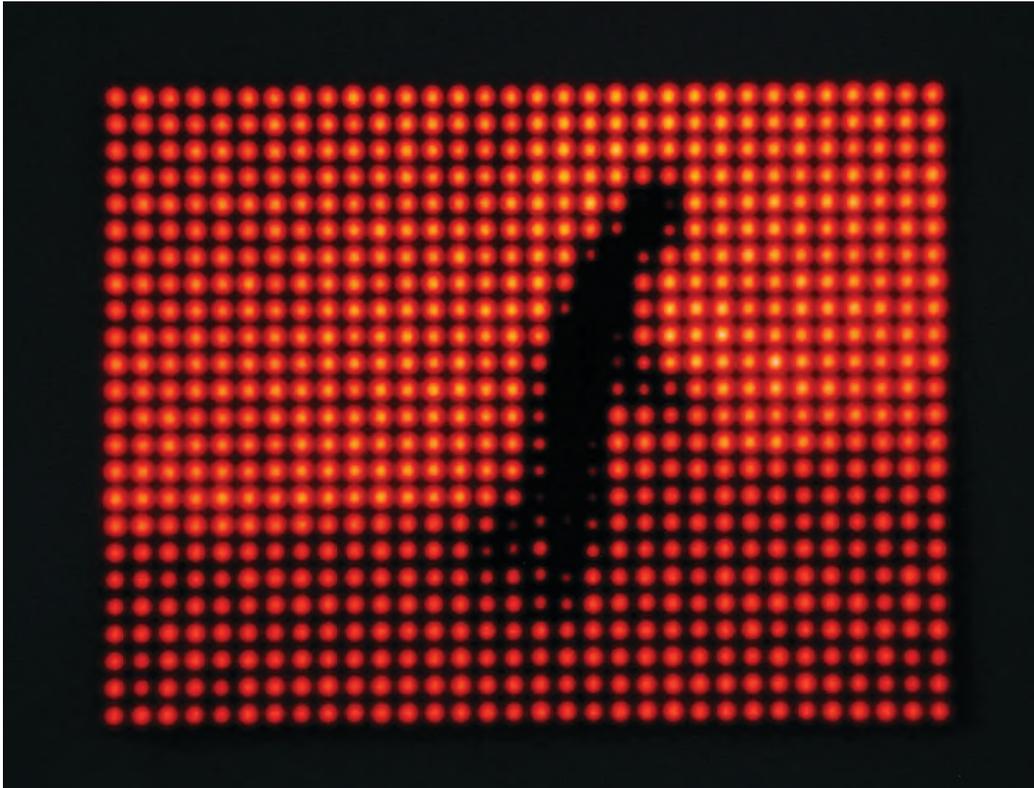
Medium aside, the exhibition's theme of mapping information in time and space didn't justify including technical exercises or polite abstractions. New media tend to enact rather than represent, so I argued for works that map events in the real world rather than simply connecting colored dots on an immaterial canvas: GPS data teleported from the street to the gallery wall; image colorization outsourced from China to the US; a private conversation spilling from a mobile phone into public space, made visible on a billboard; cash exchanged from the art world to Wal-Mart and back again. Today's global economy wouldn't exist without information transacted via digital media. I am delighted that some works in this SIGGRAPH Art Gallery break the stereotype by reflecting on the influence those processes increasingly have on all forms of digital production.

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## Jim Campbell



*Motion and Rest #5*  
Custom electronics  
29 inches x 22 inches

### ARTIST STATEMENT

The works in this series explore the relationship between information and meaning in the context of reduced or compressed levels of information. More specifically, the works ask the question: What is the smallest amount of information needed for a specific moving image to be rendered legible or comprehensible?

### TECHNICAL STATEMENT

These works incorporate custom electronics driving LEDs with 256 gray levels. FPGAs are used to control the image, and flash memories are used to store the image. Each work is created by taking a conventional NTSC video image and passing it through an extreme low-pass filter before the image is subsampled.



*Church on Fifth Avenue*  
Custom electronics  
31 inches x 23 inches x 7.5 inches

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## Jim Campbell



*Portrait Of A Portrait Of Claude Shannon*  
Custom electronics  
12 inches x 15 inches x 3 inches



*Portrait Of A Portrait Of Harry Nyquist*  
Custom electronics  
12 inches x 15 inches x 3 inches

Contact

**Paul Kaiser**

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## Shelley Eshkar and Paul Kaiser

### ARTIST STATEMENT

Arrival (2004) is a companion piece to an earlier public artwork by Shelley Eshkar and Paul Kaiser: Pedestrian (2001). As in the earlier work, Arrival is meticulously constructed from human actions recorded by advanced motion-capture technology, in which the movement but not the appearance of the actor is preserved. The movements are mapped onto synthetic 3D characters, which are then choreographed in an intricate 3D environment.

Where Pedestrian was a meditation on crowd movement in public spaces, Arrival reflects on the patterns of individuals moving in an ambiguous interior space that evokes an office, an apartment building, a mall, and an airport, and the synthetic worlds of video games. The piece presents viewers with not only a spatial, but also a temporal puzzle, for while half the figures move forward in time, the others move in reverse; and since the piece loops perfectly, it has no beginning or end.

The relationships between the figures and their actions are complex and hard to decode, as they carry and exchange briefcases, edit surveillance videotapes, draw maps, write texts, answer phone calls, steal and photocopy pages, burrow below, and clamber above.

The work demands close scrutiny of the kind one imagines a detective devoting to surveillance footage: playing, pausing, and rewinding. It forms a disturbing mirror to the networked surveillance systems that are forming not only at our borders, but also in our minds.

*Visuals*

**Shelley Eshkar and Paul Kaiser**

*Sound Design*

**Terry Pender**

*Movement Actor*

**Alexander Horwitz**



*Arrival*  
Multimedia installation  
Projection size: 12 feet by 8 feet or larger  
Duration: 05:27, forward/backward loops

Contact

**John Gerrard**  
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## John Gerrard

### ARTIST STATEMENT

John Gerrard's varied works investigate the emotional possibilities of digital technologies. He creates pieces that question our identities, our relationships with each other, and how we interact with our physical environment. His sculptures and images frequently focus on the new temporal and experiential possibilities of real-time 3D, gaming engines, and photo-type virtual objects that he characterises as sculptural photographs.

These works hinge on a number of key possibilities. Foremost among these are the new temporal and experiential parameters surrounding self-generating artworks containing virtual objects to which instructions in the form of code can be sent. The artist is interested in the possibility that these pieces need never end nor ever be the same. This interest in new temporal possibilities surfaces in works such as Saddening Portrait (Florian), in which a young man saddens in real time as he completes an action in 100 years time. This piece specifically sets out to exist outside of the parameters of most of our life spans. In removing the ability of the audience to possess the work completely, the artist attempts to create an echo of a tragic loss in his own life.

Watchful Portrait (Caroline), the work presented at SIGGRAPH 2005, exists as a benign digital sentry that tracks the position of the sun at all times. In this relationship to the sun, which is the source of energy for our existence, the piece attempts to contextualise the human presence on earth in a broad manner: we are but a tiny part of the universal picture, both physically and in time.

### TECHNICAL STATEMENT

To facilitate the new experiential and temporal aspects of these works, the artist is developing custom "sealed system" devices containing a PC and screen in Corian plastic frames. It is important that these devices be seamlessly installed with a particular emphasis on the domestic sphere. This strategy opens new possibilities for digital artworks to exist outside the institutional and academic environments in which they have been developed.

### COLLABORATORS

**Robert Praxmarer**  
**Werner Poetzelberger**  
**Roland Haring**  
**Erwin Reitboeck**  
**Christoph Schulz and Stefan Feldler**  
**Jakob Edlbacher**  
Produced in collaboration with the Siemens Artist in Residence Programme at Ars Electronica Futurelab, Austria.



*Watchful Portrait (Caroline)*

Variable sizes, projection piece

Medium: 2 PCs, 2 LCD screens, custom Corian plastic frame and support, 2 turn sensors, custom electronics

## Perry Hoberman

### Contact

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### ARTIST STATEMENT

Each time we begin to install a new piece of software, a familiar window pops up. It contains an interminable text, densely packed with legalese and jargon. Its meaning is arcane, very nearly unintelligible, but that doesn't matter; few of us will ever actually read one of these texts. The End User License Agreement, or EULA, functions as a kind of ritual; ostensibly we are being given a choice to "Accept" or "Decline," but in fact we have no choice at all. We've already purchased the software, and our only choice is to submit to whatever regime is contained in the EULA, or forego installing our already-paid-for software and come to terms with the fact that we've wasted our hard-earned cash.

In the arena of intellectual property, the EULA makes sure that we all know who holds the whip hand: any rights we thought we might have had melt away under its relentless bombast. EULAs often contain proscriptions against criticizing, customizing, or even removing the software once installed; they give vendors free reign to alter and reconfigure your computer; and they demand acquiescence to any and all possible future addendums and changes. EULAs are at heart megalomaniac, corrupt, and drunk with their own power. But the bad faith in which I click "Accept," agreeing to things I would never otherwise agree to, has no bearing under the law. In fact, EULAs serve their multiple masters well; the vendor retains all rights, but the end user avoids any inconvenience that the act of giving up these rights might otherwise entail. Just one click, and it's over.

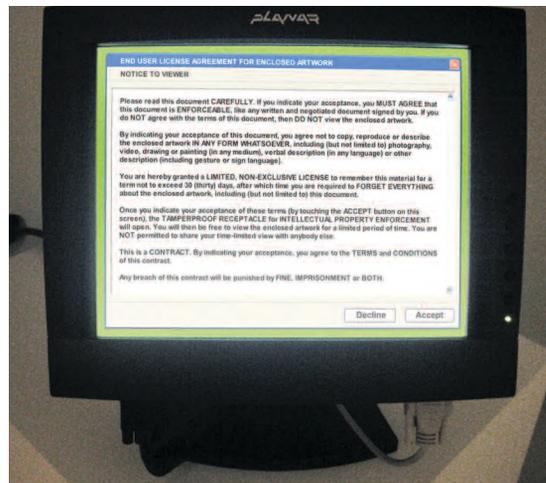
Not a bad racket. But why should software vendors have all the fun? The concept of enforced preemptive agreement can easily be extended to other realms of cultural production. We no longer need to take chances with unconstrained aesthetic experience. Art Under Contract is the first artwork that requires its viewers to accept a stringent EULA before they can view the work. This EULA, while more succinct than most, is no less reasonable a document. And, although it is difficult to quantify aesthetic experience, this EULA proves that it is indeed possible.

The artwork itself is contained within a secure metal box mounted on the wall next to the EULA. Once a viewer has indicated acceptance of the EULA by pressing the "Accept" button on the provided touch screen, a small automated viewing aperture opens, allowing the artwork to be seen by a single, contractually bound viewer. An ultrasound sensor ensures that, if the contractually bound viewer leaves before time is up, the aperture will snap shut, preventing any contract-free aesthetic experience.

The artwork itself cannot even be described without breaking the terms of the EULA, incidentally restoring an element of mystery to the art experience. We look forward to the day when all experience is subject to convenient, instantaneous agreements that preemptively clear up any and all ambiguities in our daily lives. Art Under Contract is a first small step toward this world.



*Art Under Contract (End User License Agreement)*  
 Approximately 6 feet x 3 feet x 6 feet  
 Steel box, servo motors, touch screen, LCD screen,  
 computer software and hardware, ultrasound sensor



*Art Under Contract (End User License Agreement)*  
 Detail

## Perry Hoberman

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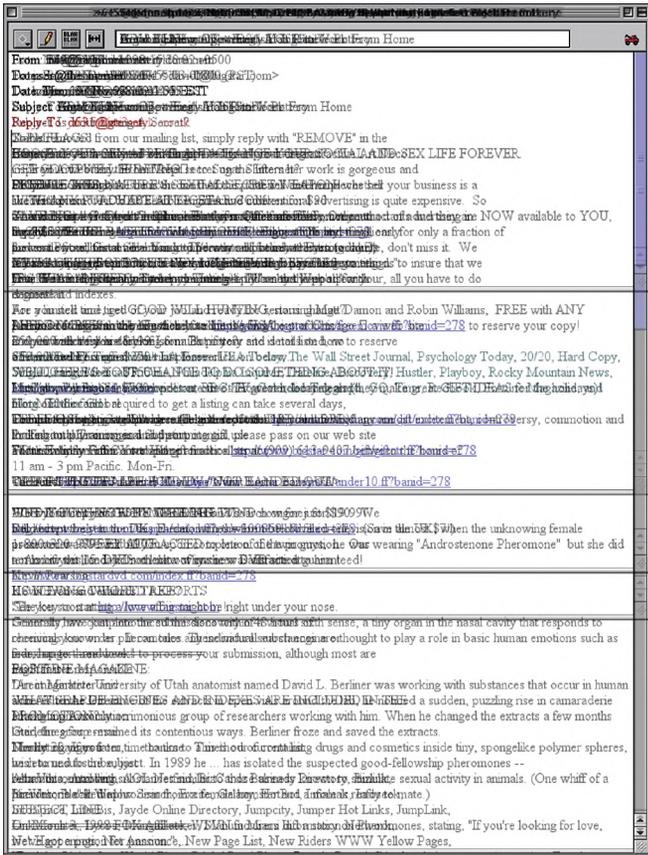
### ARTIST STATEMENT

The series *My Life in Spam* consists of various attempts to creatively visualize the ever-increasing onslaught of unsolicited email messages commonly known as spam. Since I began archiving my own spam in 1998, I have amassed a collection of more than 50,000 useless, often offensive messages. The rate of spam has been increasing at a faster rate than computer processing power (defined by Moore's Law as doubling every 18 months), at least tripling (on average) each year. I now receive more spam in a hour than I received in a month in 1998, and at the current rate of increase, I expect to be receiving about a thousand a day by the end of 2006.

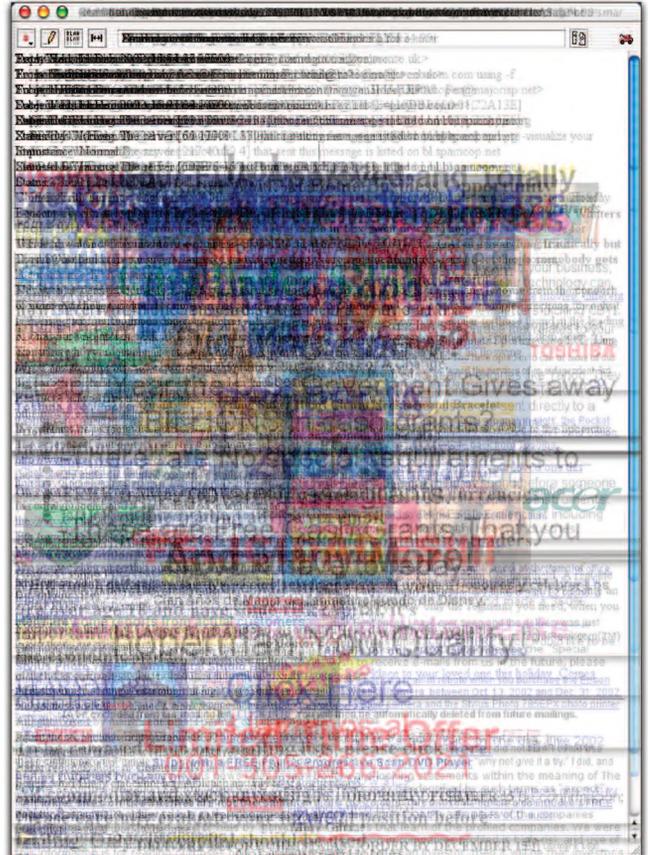
While each individual spam message is essentially anonymous and impersonal, the aggregate functions as some kind of degraded, degenerate depiction of me, and thus these works are some species of self-portrait: the artist as a sex-obsessed, Viagra-craving, mortgage-hungry cretin who can't spell.

The prints in *My Life in Spam* consist of superimposed images of every spam message that I have received over a given period of time. Depending on the dates and the length of time represented in each print (usually a day, week, or month), the images range from faint lines of partially legible text to intricate washes of intense color. If the volume of spam is low, the result is a kind of recombinant cutup of multiple sales pitches. As the rate of spam increases, the individual messages melt together into dense gradients of color. Thus, each print functions as a visualization, but also as an attempt to transform an utterly debased form of communication into something attractive, even beautiful.

Other works in the series include projections in which each message is projected for one thirtieth of a second (too fast to read but nonetheless more time than any of the messages deserve), audio works (in which multiple spams are simultaneously read aloud using text-to-speech software) and sculptures, in which the volume of the object reflects the total volume of spam received.



*My Life in Spam: One Week (November 1-30, 1998)*  
 26 inches x 32 inches  
 Digital Lightjet print



*My Life in Spam: One Day (December 11, 2002)*  
 26 inches x 32 inches  
 Digital Lightjet print

Contact

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## Camille Utterback

### ARTIST STATEMENT

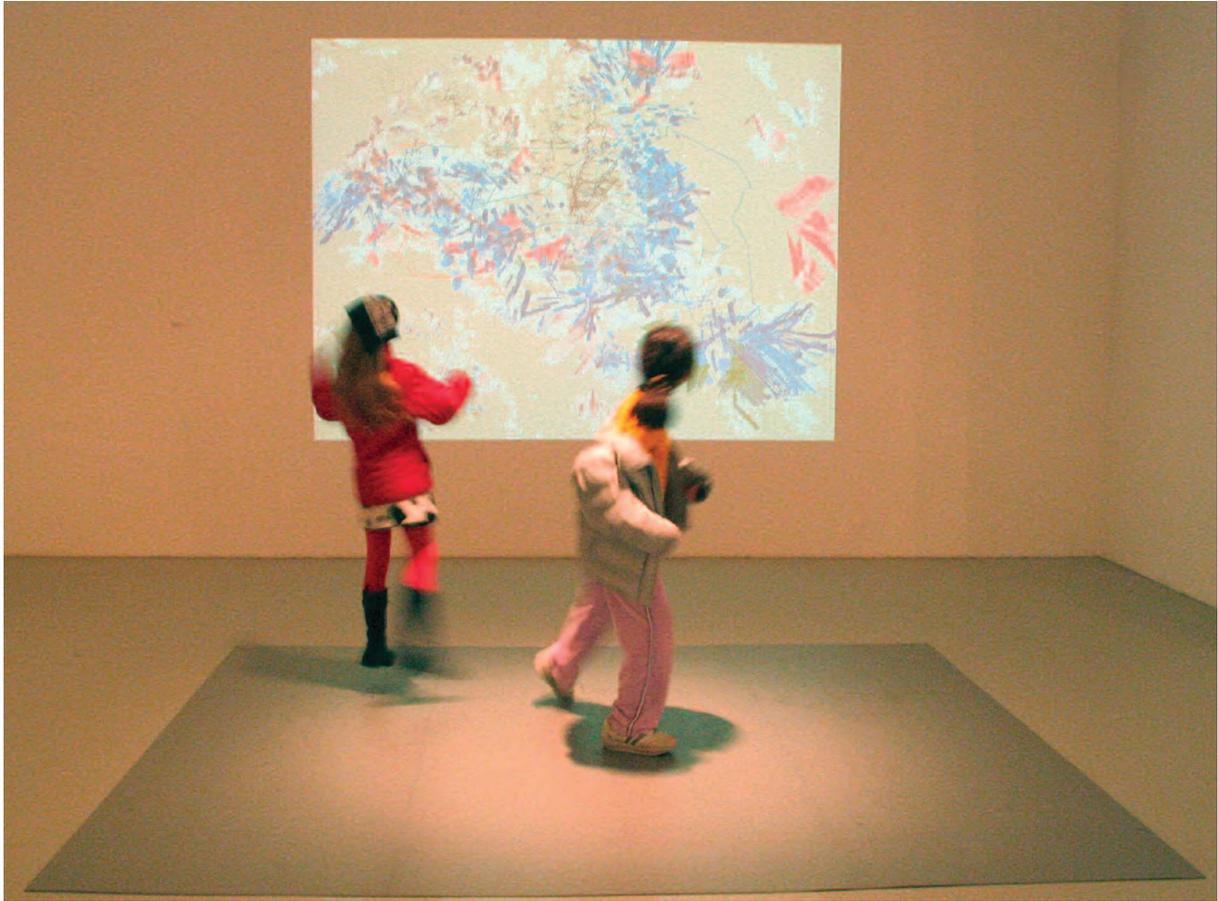
Untitled 5 is the fifth interactive installation in the External Measures Series, which Camille Utterback has been developing since 2001. The goal of these works is to create an aesthetic system that responds fluidly and intriguingly to physical movement in the exhibit space. The installations respond to their environment via input from an overhead video camera. Custom video tracking and drawing software output a changing wall projection in response to the activities in the space. The existence, positions, and behaviors of various parts of the projected image depend entirely on people's presence and movement in the exhibit area.

Untitled 5 creates imagery that is painterly, organic, and evocative while still being completely algorithmic. To create this work, Utterback first develops sets of animated marks whose parameters and behaviors are controlled by people's movements. Then, out of a working "palette" of these animated marks, she composes an overall composition. The composition balances responses whose logic is immediately clear with responses that feel connected to viewer's movements, but whose logic remains complex and mysterious.

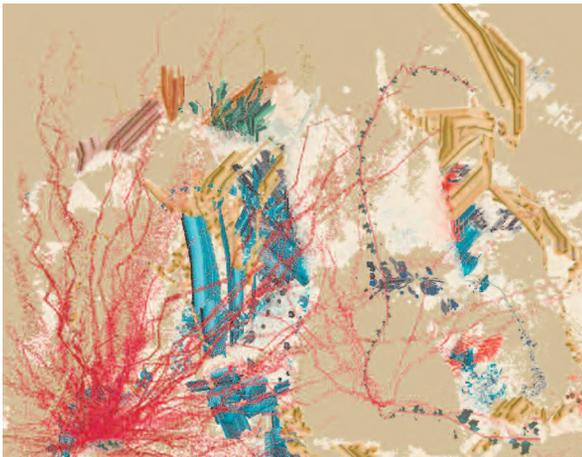
Integral to the piece are the animated marks' cumulative interaction with each other over time. As a person moves through the space, a network of gray lines flickers around the person's body and immediately indicates his or her presence. A colored line maps the person's

trajectory across the projection screen, creating a temporal history of the movement. When a person leaves the installation, the trajectory line is transformed by an overlay of tiny organic marks. These marks can now be pushed from their location by other people's movement in the space. Displaced trajectory marks attempt to return to their original location, creating smears and streaks of color as they move. The resulting painterly swaths of color occur at the intersections between current and previous motion in the space, elegantly connecting different moments of time. Untitled 5 reacts to stillness as well as motion, creating delicate sprays of dots where someone has stood still. While people's presence generates marks, it also slowly erases earlier marks.

While the specific rules of the system are never explicitly revealed to participants, the internal structure and composition of the piece can be discovered through a process of kinesthetic exploration. Engaging with this work creates a visceral sense of unfolding or revelation, but also a feeling of immediacy and loss. The experience of this work is the experience of embodied existence itself: a continual flow of unique and fleeting moments. The effect is at once sensual and contemplative.



*Untitled 5 (External Measures Series)*, 2004  
Interactive installation  
Custom software, video camera, computer, projector  
Minimum 7 feet x 10 feet screen,  
7 feet x 10 feet interaction area



*Untitled 5 (External Measures Series)*, 2004  
Screen detail



*Untitled 5 (External Measures Series)*, 2004  
Screen detail

Contact

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## Hitoshi Akayama

### ARTIST STATEMENT

This CG animation work presents the enjoyable rhythms of rolling dice. Many movement patterns of rolling dice were captured, and then surprising movements were selected.

The work consists of one continuous take, one scene rolling into the next as interesting movements are expressed in the chain reaction of the rolling dice.

Maya was used for the production. We wrote a software tool with the Mel script language, which can control dice in arbitrary directions and speeds. As the dice landed and collided with each other, localization and time data were collected by Maya and exported to the MAX/MSP sound software to generate the audio track and synchronized it with the movement of the dice. These data were also used to create melody.

Director

**Hitoshi Akayama**

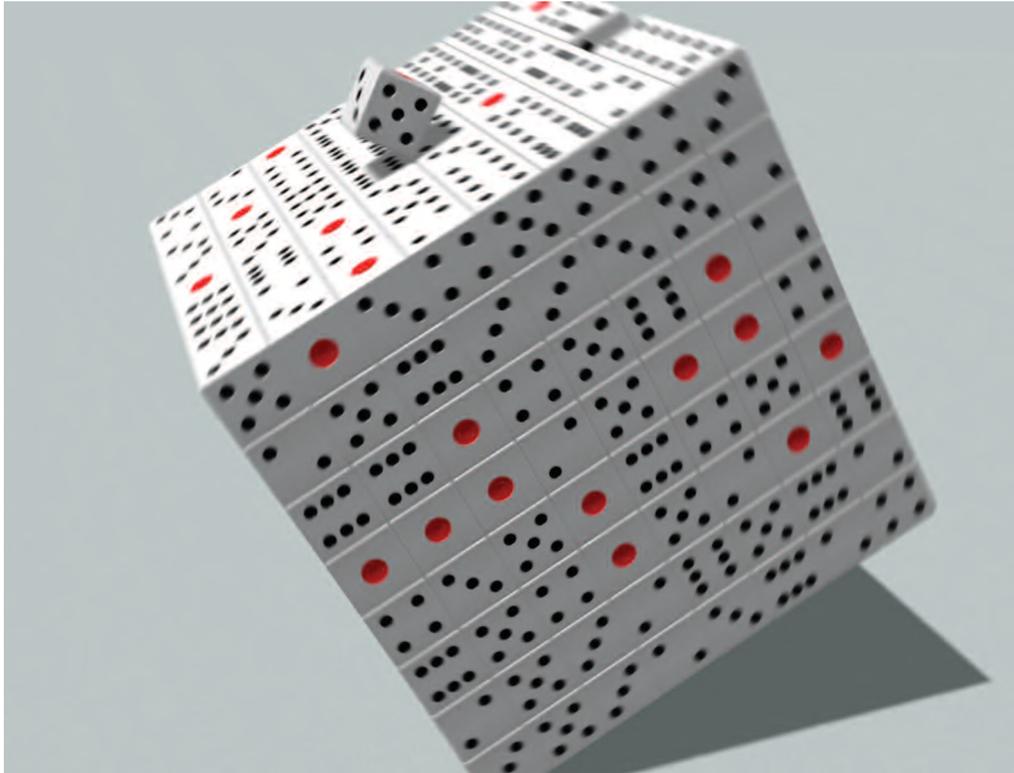
Producer

**Hitoshi Akayama**

### CONTRIBUTOR

**Saburo Hirano**

Kyoto Seika University



*Dice*  
01:55  
Animation

## Brian Andrews

### ARTIST STATEMENT

In the current discourses of art, the animal is seen as a representation, a symbol of our cultural projections and anthropomorphisms surrounding our ideas of nature. One goal of my work is to question the boundaries between contemporary culture and the construct of nature, and to explore how elements of artificiality and technology compound and distort these relationships. My current artistic investigation, *Hominid*, is a series of digitally constructed images composited as radiographs of humanoid anatomies. The images address the “hominids” with scientific lucidity, yet maintain an emotion of vulnerability as the figures betray the contradictions of their physicality.

It is my intention to confront the viewer with images and objects that reside on the uncomfortable line between the natural and the technological, the living and the automaton. To achieve these ends, I recontextualize taxidermied animals, as well as their environments, via the photography, film, and video. The *Bambi* series recreates visual tableaux from the popular film in order to illuminate and undermine the cultural narratives invested in our ideas of nature. The images are

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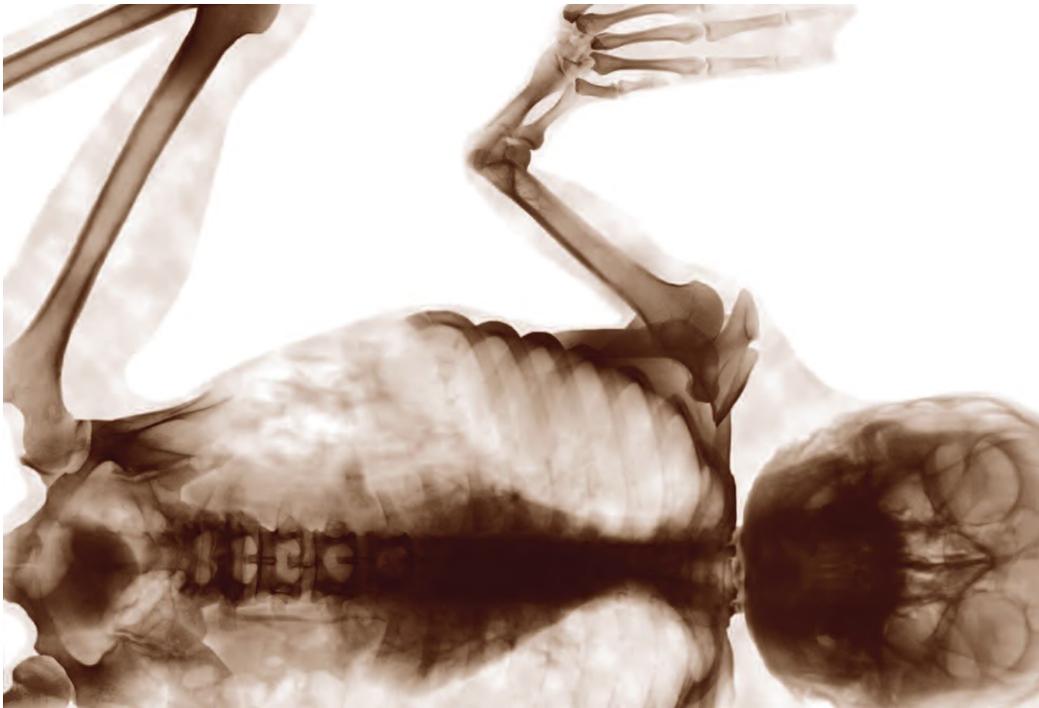
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rendered photo-realistically, to infuse the viewer in the tableaux; yet maintain a preternatural sense of untruthfulness, highlighting their internal fictions. *Humanity Diptych* induces the viewer into this mire of ontology. In two larger-than-life portraits, taxidermied primates are captured posing for the camera. Viewers are enticed to empathize with the emotionally human expressions, but they are betrayed by an uncanny undercurrent of the chimpanzees’ physical animality and the technological artifice of their glass eyes. As Steve Baker writes, “It is the animal which more than anything else prompts a rethinking of what it is to be a human ‘subject,’ and which points to the shortcomings of earlier philosophical accounts of the human.”<sup>1</sup> In exploring the representation of the animal, my images seek to inform the indeterminate ground between nature, humanity, and the technological.

1. Baker, S. *The Postmodern Animal*. London: Reaktion Books, 2000, 77.



*Quadruped Hominid*  
14 inches x 20 inches  
Lightjet print



*Amphibian Hominid*  
14 inches x 20 inches  
Lightjet print

Contact

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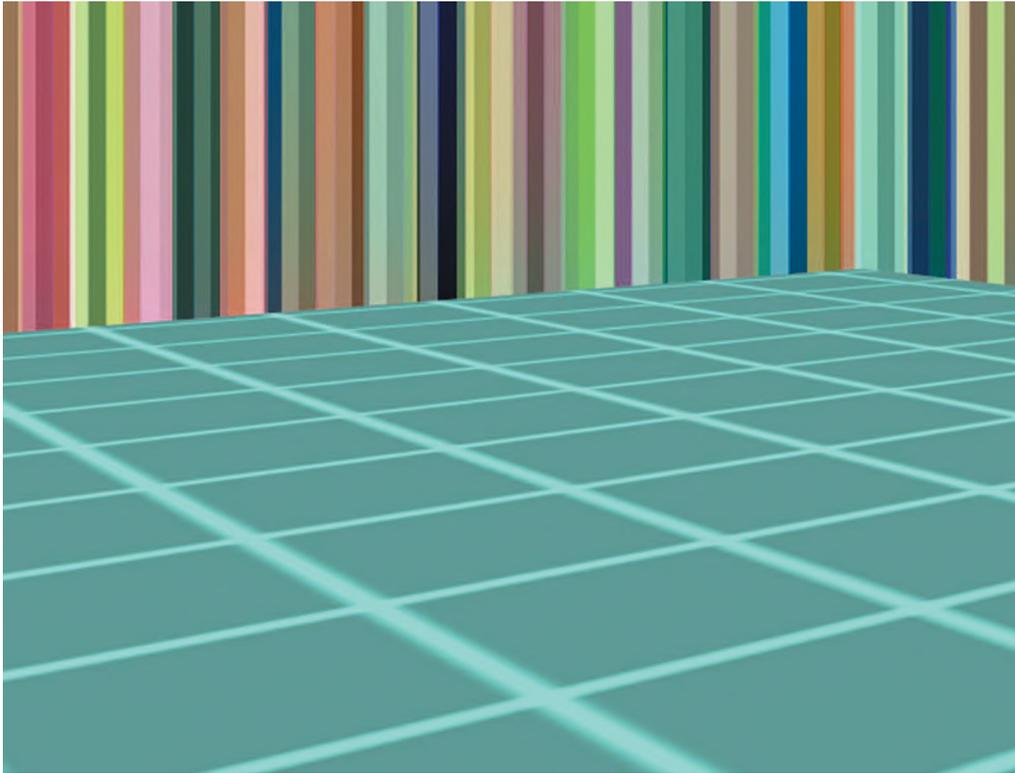
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## Lee Arnold

### ARTIST STATEMENT

In my recent body of work, I have attempted to create a dialogue between still and moving images through vibrant paintings and digital animations. The work consists of both time-based electronic image sequences and paintings that use digital stills as their source. The result of this mixing of analog and digital media is a convergence of worlds, both real and imagined, where representation and abstraction can intermingle.

Movement is suggested as one views a static painting, while a fluid animation slowly breaks up into its discrete parts. Intense colors, simplified shapes, and repeated patterns suggest geometric abstraction and synthesized space. My work brings the fluidity of the imagination to the precision of the digital aesthetic, watching them both change over time.



*Here*  
Screen-based program

## **Yann Bertrand and Damien Serban**

### ARTIST STATEMENT

Chrysalide transcribes different states of the Japanese dance, Butô. Mixing 3D animation and film, the work contrasts this carnal, visceral dance with the coldness of 3D and its architectures and polygons.

iki - [breathing]

Fully created in 3D, iki symbolizes the dancer's breathing by altering his dance and rhythm to the complete destruction of the body.

mono - [matter]

As the dancer interacts with the elements of nature, the filmed footage of mono blends with the computer-generated textures to create new matter.

ugoki - [movement]

Movement slows and merges with a maniacal, exhausting attempt to achieve perfection. A controlled walk brings the body to dysfunction.

### Contact

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### Directors

**Yann Bertrand and Damien Serban**

### Producers

**Yann Bertrand and Damien Serban**

### CONTRIBUTORS

#### Dancer

**Jean-Louis Le Cabellec**

#### Music

**Benjamin Holst**

#### Animation

**Hicham Bouhennana**

#### With the participation of

**Michel Lauricella**

**Dorothea Nold**



*Chrysalide*  
20:36  
Animation

Contact

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## Chiara Boeri

### ARTIST STATEMENT

The sun was beginning to beat upon the fields, fresh risen into the vault of heaven from the slow still currents of deep Oceanus, when the two armies met. They could hardly recognise their dead, but they washed the clotted gore from off them, shed tears over them, and lifted them upon their waggons. Priam had forbidden the Trojans to wail aloud, so they heaped their dead sadly and silently upon the pyre, and having burned them went back to the city of Ilus. The Achaeans in like manner heaped their dead sadly and silently on the pyre, and having burned them went back to their ships.

Homer, *Iliad*, Book VII

These words appear, in Italian and in English in my work, expressing my deepest feelings about all wars.

Last year was extremely trying for me. I got quite ill, and death became a very serious thought.

I believe that in such moments one either closes oneself in grief or fights and works a lot, to try to win.

Then again, I looked around me and felt all the world's tragedies in a manner even stronger than usual and thought of myself as a very lucky person.

I often spend my summer in Greece, travelling in quite deserted places. During those trips, I have noticed some very colourful little iron boxes shaped like little houses, sitting on short poles on the side of roads, especially of narrow mountain roads. Greeks place them wherever someone dies in a car accident. They remember the dead and remind the living.

They're not beautiful, but in a strange sort of way, merry.

Inside the boxes are several objects: a lighter, a bottle of coke or water, a candle, sometimes an icon, and a silver goblet. They always moved me.

The thought of all the wars that are going on forced upon me the completion of an old image that to me symbolizes all wars: a lonely wall still standing, smoke, the shadow of the Twin Towers, some planes passing by: sadness, desolation. And all the little Greek iron houses seemed to have to be there. Millions should be painted.

To remember and remind.



MAI PIU' - NEVER AGAIN  
122 inches x 52 inches  
Mixed media

Contact

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## Chiara Boeri

### ARTIST STATEMENT

My work has been inspired by the Tabula Peutingeriana, from the first century A.D. It is an early road map of the imperial highways of the Roman world, roughly covering the area from the southeast of England to present day Sri Lanka. It is not a “map” in the present sense of the word, but a cartogram. No copies of the original have survived, but a copy of it was made in 1265 by a monk at Colmar. The entire map was originally a long, narrow parchment roll, and in its present state measures 22 feet, 1.75 inches long by 13.25 inches wide. In 1508, the humanist Konrad Celtes of Vienna left the Colmar manuscript to Konrad Peutinger. It was first published in 1591, and since 1618, it has generally been known as the Tabula Peutingeriana.

What is life but a sort of cartogram?

Some people write autobiographies, others write diaries, but being a painter, my life story is best described as a cartogram. So, last year I started to build my own Tabula, which I called Fantastica, because life itself is a fantastic and beautiful experience. It is made of signs, colours, and words in any possible language. It does not intend to tell a story, but to make the reader feel a new experience.

Rolling the Tabula back and forth on its leather case is something unusual. The case is built to hold, just beneath the parchment roll, a DVD player with a flat screen on top of it. I made a video that perfectly integrates the still images of the cartogram and, through the transparency of the parchment, 2D and 3D animation live video. So reading the Tabula requires manual activity, but viewers can also see and hear the Tabula itself.

This piece is a never-ending work in progress.

1. Closed



2. Open



*Tabula Fantastica*  
Mixed media  
Closed: 20 x 24 x 12 inches  
Open: 44 x 24 x 12 inches

Contact

**boredomresearch**  
**(Vicky Isley and Paul Smith)**  
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## **boredomresearch**

### ARTIST STATEMENT

Vicky Isley and Paul Smith have been collaborating as boredomresearch for four years. boredomresearch are interested in building computational works inspired by simple rules found in natural systems. They are interested in a range of topics that include the aesthetics of emergence, synthesised ecological systems, networked communities, perceptive cognition of computational abstractions, A-life, and belief systems. Currently, they are exploring processes of computer modeling for creation of new and interesting observable phenomena, and investigating the creative potential of genetic algorithms and notions of ownership of digital space.

“The research of Smith and Isley is far from a bore. What they suggest is instead a play strategy in relation to computers, a sensual experiencing of potentials that develop over time. Furthermore, in their refusal to accept prefabricated images of computation, their work offers a critical perspective and a possibility to rethink virtual space outside the restrictions of rational organisation and simple representation.”

Anna Kindvall and Lars Gustav Midboe, *Electrohype*

boredomresearch have produced a number of interactive sound applications, online projects, and computational soundscapes that have been shown at events such as FILE04 in Brazil, the *Electrohype* festival in Sweden, the *Garage* festival in Germany, *Data:base* in Dublin, and in online exhibitions such as *soundtoys.net*, *e-2.org*, and *mobilegaze.com*. Since 2001, they have produced several computational soundscapes utilising artificial-life algorithms that have been mainly projected within galleries and festivals.

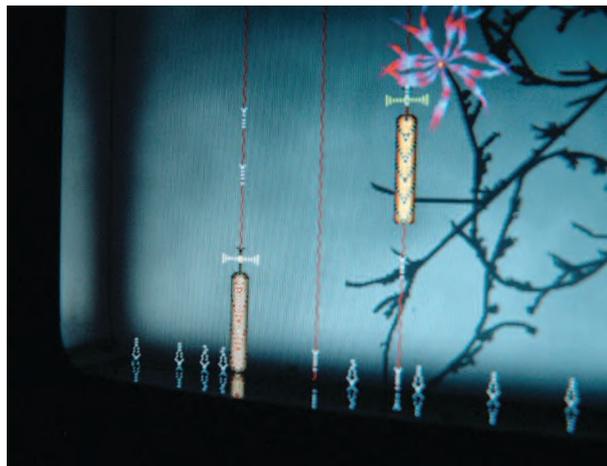
boredomresearch are interested in developing the relationship between the work and the viewer. *Ornamental Bug Garden 001*'s viewable area is sealed within a small glass front, which creates an intimate portal that the audience can peer into. The computer is also incorporated into the object, becoming part of the work. In this way, the work is built around the idea of closed systems like the commercially available biospheres that contain a small population of brine shrimp. These systems are the result of research conducted by NASA into closed viable systems and are sold as gifts all around the world.

*Ornamental Bug Garden 001* is the first of a series of wall-hanging, digital, self-contained systems built by boredomresearch in 2004. This system combines gaming techniques and artificial-life modelling to explore relationships between scientific modelling techniques and ornamental gardens. The individual elements of *OBG001* have been generated algorithmically using software created by boredomresearch, before being carefully composed in their final form. In building the garden, boredomresearch become the designers of closed ecosystems. In addition to considering the shape, colour and form of the elements used within the garden, they consider their effect on the overall ecology of the system. The complexities of the overall sound composition are the result of emergence within the system. As *OBG001*'s colonies of objects catapult around a garden containing bubble-pumping lifts and algorithmically composed plant life, collisions with its elements trigger sounds and compose an incidental audio piece.

*OBG001* has been awarded honorary mention in *Transmediale.05*; the International Media Arts Festival, Berlin; and *VIDA 7.0*, International A-Life Electronic Arts Competition, Madrid 2004.



*Ornamental Bug Garden 001*  
21 inches x 21 inches  
Computational



*Ornamental Bug Garden 001*  
Detail

Contact

**Thomas Briggs**

Salientimages

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## Thomas Briggs

### ARTIST STATEMENT

These images are discovered by exploring a variety of rule- and dynamic-based models for behavior. They exist on a continuum between randomness and order. The most interesting images are found at the brink of chaotic breakdown, or conversely, of strict mechanical repetitive structure. In either case, the ebb and flow of line density at a micro scale become fluidlike and gestural when viewed at a more macro scale. The intended engagement of the viewer with the artwork is a temporal one, where the large-scale structure of the image evaporates upon close inspection.

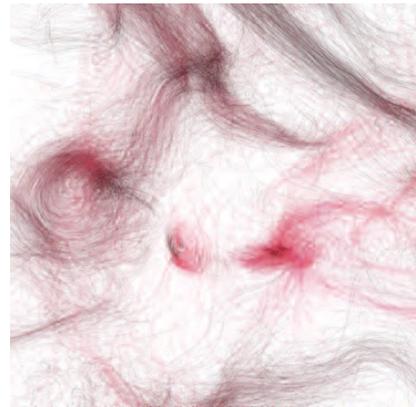
These images represent an attempt to approach the tactile sensibility of traditional drawing, while utilizing computational methods to achieve a scale and a consistency of line that would be unobtainable by hand.



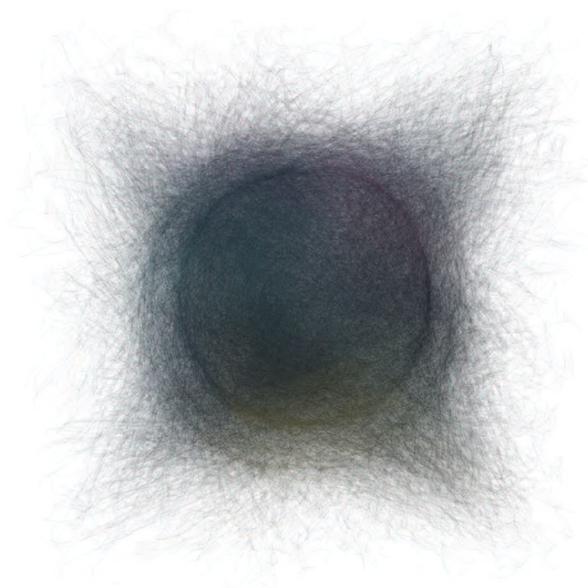
*The Greater Accumulation of  
the Infinite Fractions of Solitude*  
42 inches x 42 inches  
Ink on paper



*Arlecchino*  
42 inches x 42 inches  
Ink on paper



*Arlecchino*  
Detail



*50000 Attempts At A Circle*  
42 inches x 42 inches  
Ink on paper

Contact

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## Hue Walker Bumgarner-Kirby

### ARTIST STATEMENT

This animation is based on sketchbooks and a storyline provided by internationally known Los Angeles painter Gronk. Examining the flashpoint in a creative idea, the work begins and ends with a seed pod struggling to burst open. The story moves from a rock-strewn desert to a flaming mind, following an artist as he is pulled up into a hovering glass brain and broken apart. The fragments eventually coalesce into a new work of art.

The landscape and figures were modeled from Gronk's sketchbooks; the textures were created using scans of the artist's sketches and photos of his paintings and the murals in his Spring Street residence. The Glass Brain was modeled after a series of Giant Glass Brains Gronk made during a residency in Tacoma, Washington.

*Director*

**Gronk**

*Producer*

**Digital Pueblo Project**

### CONTRIBUTORS

*Director/Designer*

**Gronk**

*Lead Animator/Modeler*

**Hue Walker**

*Music Composer*

**Steven LaPonsie**

*Coordinator*

**Eric Whitmore**

*Academic Sponsor*

**Ed Angel**

*Student Mentors*

**Jin Xiong**

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*Gronk's BrainFlame*  
04:23  
Animation

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## Max Chandler

### ARTIST STATEMENT

I want to make art that is connected to contemporary technology. I do this by working with robots.

A real robot is very different from the robots offered by today's entertainment. Movies are full of android, human-like robots played, of course, by humans. The robots on popular robot-wars TV shows are really remote-control cars and not robots at all. The kind of robot I mean is a self-contained, autonomous, mobile device. It senses the environment around it and responds. These robots can be wonderful tools for making art.

I specifically design my robots with an artistic goal. One of my favorites is Gimpy1, a walking robot designed to have a limping gait that provides a distinctive line quality. It also turns with growth curves, rather than circular arcs. To make a robot like this requires understanding mechanics, electronics, programming, and art fundamentals.

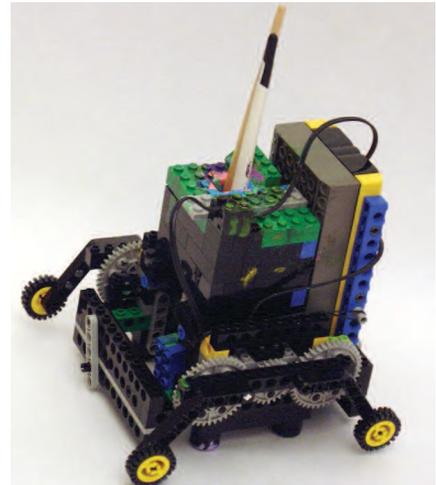
Gimpy1 has a light sensor aimed at the painting surface. It can see its own marks. I start the work by supplying a seed line or shape to trace. The resulting work is my input and guidance combined with the robot's personality.

The resulting images are calligraphic, organic, and geometric. They are infused at every place with the technology of the 21st century. This body of work could not be made at another time.

The Cacti series is a number of acrylic on canvas works inspired by the prickly pear (*Opuntia*) cactus. The texture, structure, environment, and life struggle combine in a visual jazz based upon cactus without actually depicting a cactus. These multilayered works overlay macroscopic and microscopic views embracing the cytology, physiology, and morphology of this type of cactus.



*Climbing*  
24 inches x 36 inches  
Acrylic on Canvas



*Climbing*  
Gimpy1  
Robot

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## Kate Chapman

### ARTIST STATEMENT

My sculptures represent motion in static form. Using digital tools, the shapes are derived from various animations of a figure, with the arc of a body's motion defining each form. Though the work may be compared to early Modernist paintings by Duchamp and Balla, they depict time as a continuum, rather than as a collection of discrete points.

Falling Down was created with video, 3D animation software, rapid prototyping technology, and meticulous hand-finishing. I began by filming reference video of a woman falling down. With the reference footage, I rotoscoped (animated over video) a 3D-animated character of the woman. Next, I modeled a mesh over the trajectory of the character's motion, filling the entire space of the action. The digital mesh was then output into physical form using a rapid prototyping machine (fused deposition modeling) and hand-finished with bronze resin and patina.

While one might argue that this piece may have been created entirely by hand, the technology used was essential in visualizing the boundary of a woman falling through space, with many subtle fluctuations in shape. Animating the actions in 3D provided me with a much deeper level of analysis to create the work than I would have gotten from observing the action from a single vantage point.



*Falling Down*

Approximately 8 inches x 8 inches x 7.5 inches  
Fused deposition modeling ABS (acrylonitrile butadiene styrene), bronze resin, patina.

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## David Crawford

### ARTIST STATEMENT

Stop Motion Studies is a series of experimental documentaries that chronicle my interaction with subway passengers in cities around the world. Begun in the fall of 2002, the project currently includes 13 installments from countries including Sweden, the United Kingdom, France, the United States, and Japan.

It is said that 90% of human communication is non-verbal. In these photographs, the body language of the subjects becomes the basic syntax for a series of animations exploring movement, gesture, and algorithmic montage. Many sequences document a person's reaction to being photographed by a stranger. Some smile, others snarl, still others perform. Some pretend not to notice. Underneath all of this are assumptions and unknowns unique to each situation.

The Stop Motion Studies extend my long-standing interest in narrative and, in particular, look at the subway as a stage upon which social dynamics and individual behavior are increasingly mediated by digital technology. As one of the most vibrant and egalitarian networks in our cities, subways bring people from a wide range of social and cultural backgrounds into close contact with each other. This process plays a significant role in shaping both the character of a city as well as our individual identities.

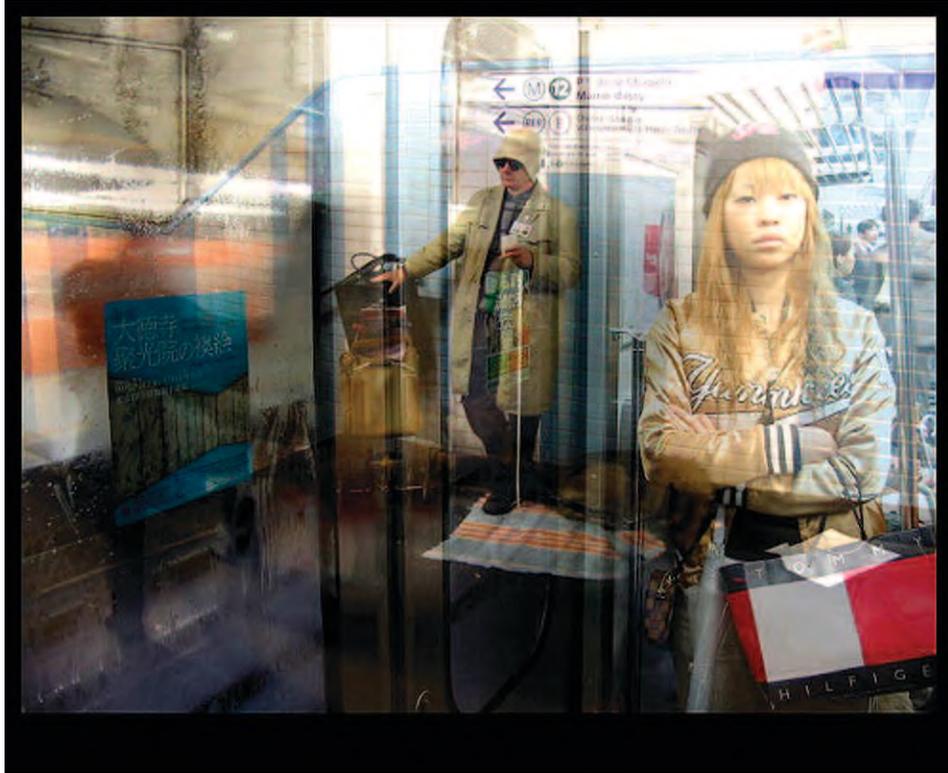
While these animations paint portraits and tell stories by documenting the interactions between passengers, the most powerful moments are those in which a passenger enters into an exchange with me as a photographer, an exchange based solely on visual cues and body language, and one which reveals something about each other's identity and character. In doing so, the project probes the "scripts" that we live by in our day-to-day interactions with strangers.

### Stop Motion Studies - Series 13

In this remix of footage originally shot for previous installments in London, Paris, Boston, New York, and Tokyo, each installment's modular structure has provided a library of building blocks that have been edited into a linear animation approximately seven minutes long. The algorithmic montage constituting each clip's DNA remains intact, while the individual sequences are now composited within a linear framework.

### Color Still

[www.turbulence.org/studios/crawford/press/SMS13.jpg](http://www.turbulence.org/studios/crawford/press/SMS13.jpg)



*Stop Motion Studies: Series 13*  
Web-based art  
[www.turbulence.org/studios/crawford/sms13](http://www.turbulence.org/studios/crawford/sms13)

# Hans Dehlinger

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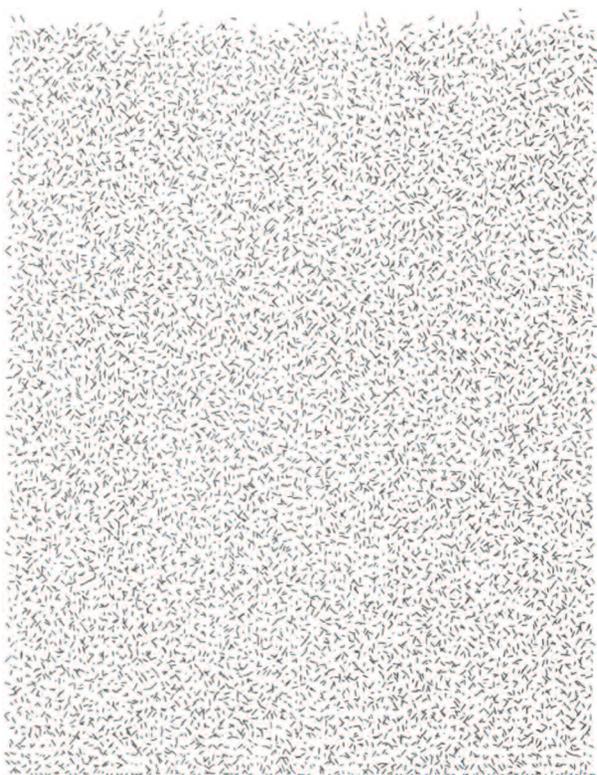
## ARTIST STATEMENT

Perhaps the most convincing way to communicate my lasting interest in the line as a basic element of artistic expression in drawings is the reference to the unaccountable and fascinating drawings we know from art history. Drawings rely on lines. It is absolutely spectacular what can be achieved with lines, and, drawn by the hands of artists, lines have been with art right from the beginning, when art emerged on stones, bones, and the walls of caves.

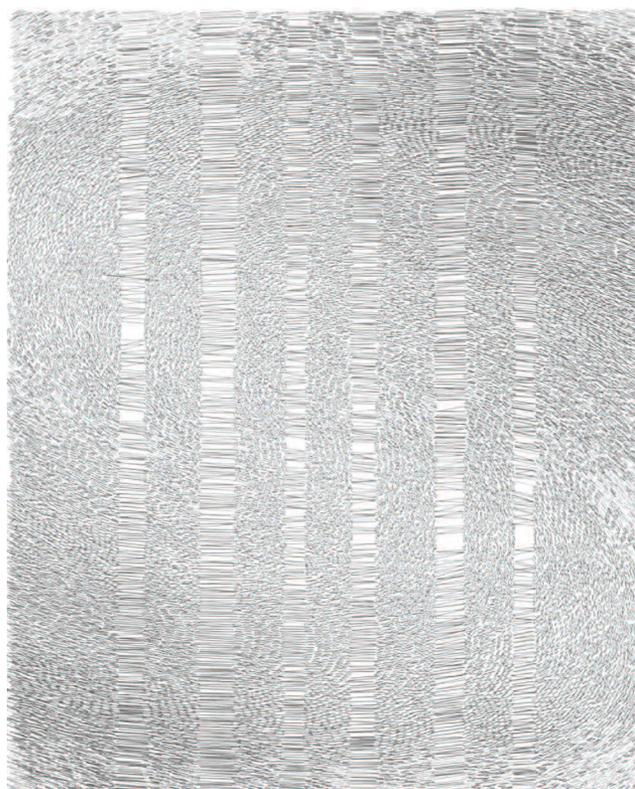
With respect to drawings (line-based artwork) I like to distinguish between "The Universe of Hand Drawings" and "The Universe of Machine Drawings." Both of these universes may be thought of as equally rich and very densely populated. The distinction between the two acknowledges the rise and formation of a universe of drawings different (and very much so) from the ones drawn by the hand of an artist. The Universe of Machine Drawings is a contemporary phenomenon, but its philosophical roots are old and found in the restless desire of homo faber to master and shape tools, and use them with a great intentional drive.

My efforts are focused on exploration of the universe of machine drawings. Algorithmic generation of a drawing or a sequence of drawings is a fascinating challenge. It requires coding of an intention, which the machine will follow to produce a result. I like to work on the old-fashioned (and now nearly extinct) pen-plotters. Although no longer in use as a standard peripheral device for computers, the basic idea of this technology (a mechanical arm equipped with a tool) is now widely used in industrial-production processes. For cutting of sheet metal with lasers, there is a very close analogy to plotting on the old-fashioned flat-bed plotter.

I am now using my old code for experiments, to cut drawings with a laser into aluminium, steel, layered plastic sheets, and thick cardboard. It is interesting to observe how very old and very new computer technology can be merged and used for production of aesthetic events.



*Striche\_10*  
19.7 inches x 23.64 inches  
Plotter drawing, pencil on paper



*Small\_Elements\_K*  
19.7 inches x 23.64 inches  
Plotter drawing, pencil on paper

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## Anna Dumitriu

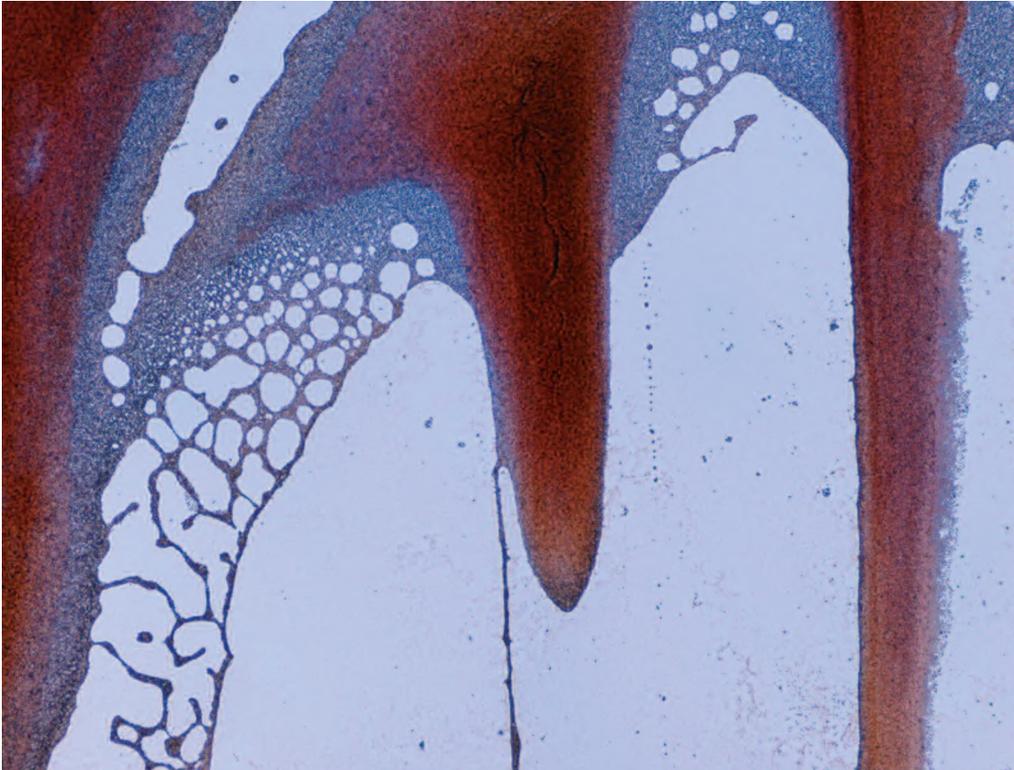


*Bed Flora*  
16 inches x 20 inches  
Lightjet print

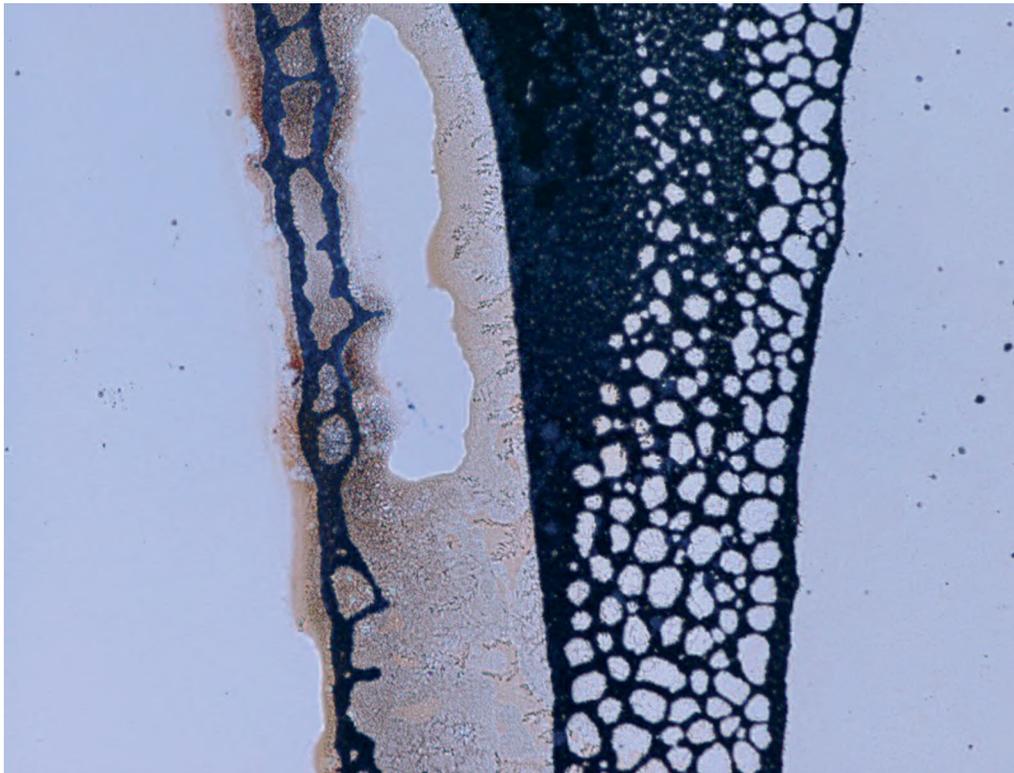
### ARTIST STATEMENT

I have been working in collaboration with scientists for over eight years, and over that time, I have become increasingly fascinated by microscopy and in particular bacterial life. Pathogenic bacteria have shaped the history of the world through plague and pestilence, but their non-pathogenic relatives help us in our everyday lives to perform mundane tasks such as digesting food. It is even suspected that mitochondria (the powerhouses in the heart of our cells) may even be bacteria that formed a

symbiotic relationship with their host at the early stages of evolutionary development. I am currently working on a major project entitled Normal Flora, looking at the unseen microbial life that shares our world, and I am developing a performance-based installation piece. These Normal Flora prints have a paint-like quality that relates closely to my earlier work.



*Plate Flora*  
16 inches x 20 inches  
Lightjet print



*Table Flora*  
16 inches x 20 inches  
Lightjet print

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## Doug Easterly

### ARTIST STATEMENT

This physical computing project creates an ecosystem for a rubber tree, where conditions for life or death are controlled by monitoring fluctuations in the price of Home Depot stock. The plant was purchased from The Home Depot, so the project is eligible for the company's one-year return policy if the tree dies.

Spore 1.1 makes visible the artificiality of our immediate reality by relating the stock market to the ecosystem. Using small-form-factor computing, microcontrollers, and custom software, the life of a plant is controlled with data typically used to monitor the life of a corporation.

The primary goal of the project was to find creative expression within a system of control that is systematically monitored through globalization, the growth of multinational corporations, and the loss of heterogeneity and market-driven economies. Another goal was to produce a visually engaging work that shows the familiar form of a potted plant encased within a cybernetic environment that reads as simultaneously unpleasant and bound, yet balanced and harmonious.

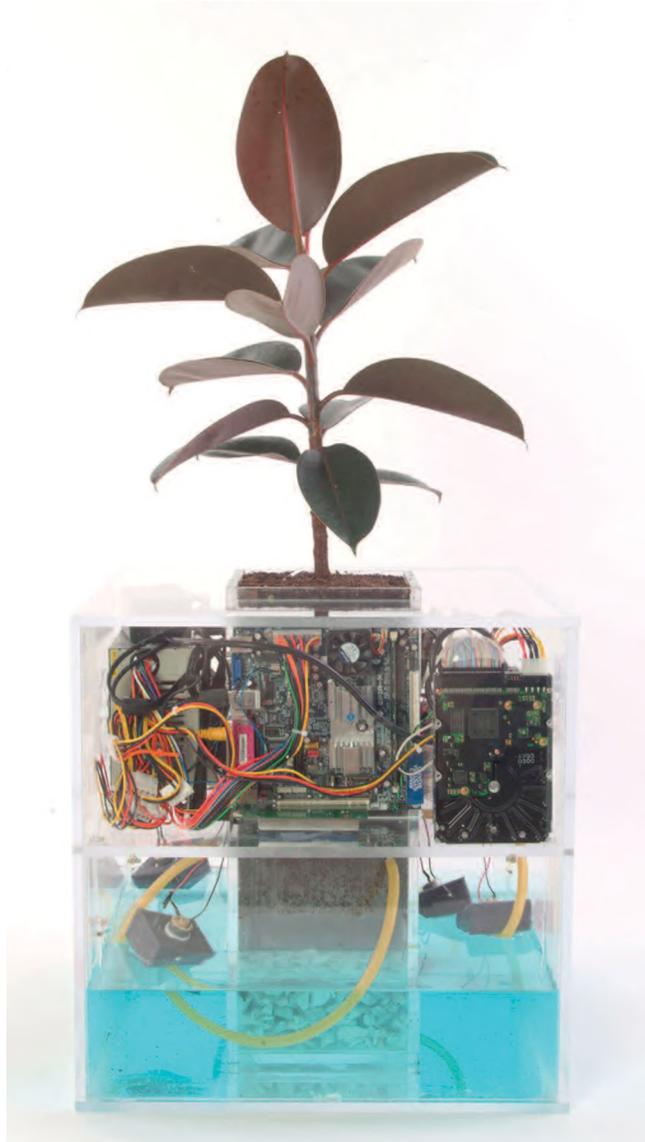
Spore 1.1 derives creative expression from, and visually exposes, a growing system of control that has steadily been replacing heterogeneous market-driven economies. These systems (or multinational corporations) employ a variety of strategies in the name of consumer freedom (liberal return policies, etc.) but forcefully act as consumer-control mechanisms on the macroscopic level.

Spore 1.1 has already died five times and been replaced each time through Home Depot's one-year guarantee. Unexpectedly, each death was a result of too much water, an interesting consequence that remarks upon the effects of runaway economic growth. While shareholders and executives are enjoying the capital rewards of this growth, other detrimental effects go unnoticed.

New Spore projects are in progress, utilizing physical computing technology and data mined from economies of scale. Spore 2.0 will be strategically installed to capture the recent propagation of wireless internet signals radiating from homes and businesses across the country. Internal components will compare signal-to-strength ratios, deploying nutrient-enriched water to encourage fungus growth in non-native urban settings.

### CONTRIBUTOR

**Matt Kenyon**  
SUNY Fredonia



*Spore 1.1*  
Network art installation

## Ecce Homology

### ARTIST STATEMENT

This physically interactive new-media work visualizes genetic data as calligraphic forms. A novel computer-vision interface allows multiple participants, through their movement in the installation space, to select genes from the human genome for visualizing the Basic Local Alignment Search Tool (BLAST), a primary algorithm in comparative genomics.

For both ethical and technical reasons, the function of each gene in the human genome cannot currently be ascertained directly from the human genome itself. Usually, in order to determine the function of a gene, scientists must rely on comparisons between our genes/genome and those of other organisms. BLAST allows researchers to compare DNA or protein sequences of unknown identity, function, and structure with “knowns” from validated databases, providing a measure of similarity or homology among sequences. BLAST analyses are conducted worldwide via web servers supported by major genome sequencing consortia in Europe, Japan, and North America, as well as in local laboratories on individual computers. Every day, an average of 100,000 unique BLAST runs from 70,000 unique IP addresses are conducted on the US National Center for Biotechnology Information's web servers. BLAST is arguably the most widely used data-mining tool in history. Yet, despite its ubiquity, BLAST is a “black-box” process that is not well understood, even by researchers in the biological sciences.

For Ecce Homology, intermediate information about the progress of BLAST is revealed by an animation of the intermediate products of the algorithm as it operates on genomic data in real time overlaid on the calligraphic forms. This revelation of the operation of a normally invisible process is at the core of the installation's aesthetic experience. Transformed into an experience that proceeds at the scale of human-perceived time, BLAST is the engine and subject of this interactive installation.

We believe that an artistic, holistic visualization of genomic data coupled with an esthetically engaging interactive experience of genomics-based biology can encourage the general public to engage the subject critically. Additionally, Ecce Homology's novel calligraphic visualization of multi-dimensional genomic data is an example of art-science research that explores the possibility that artistic or aesthetic

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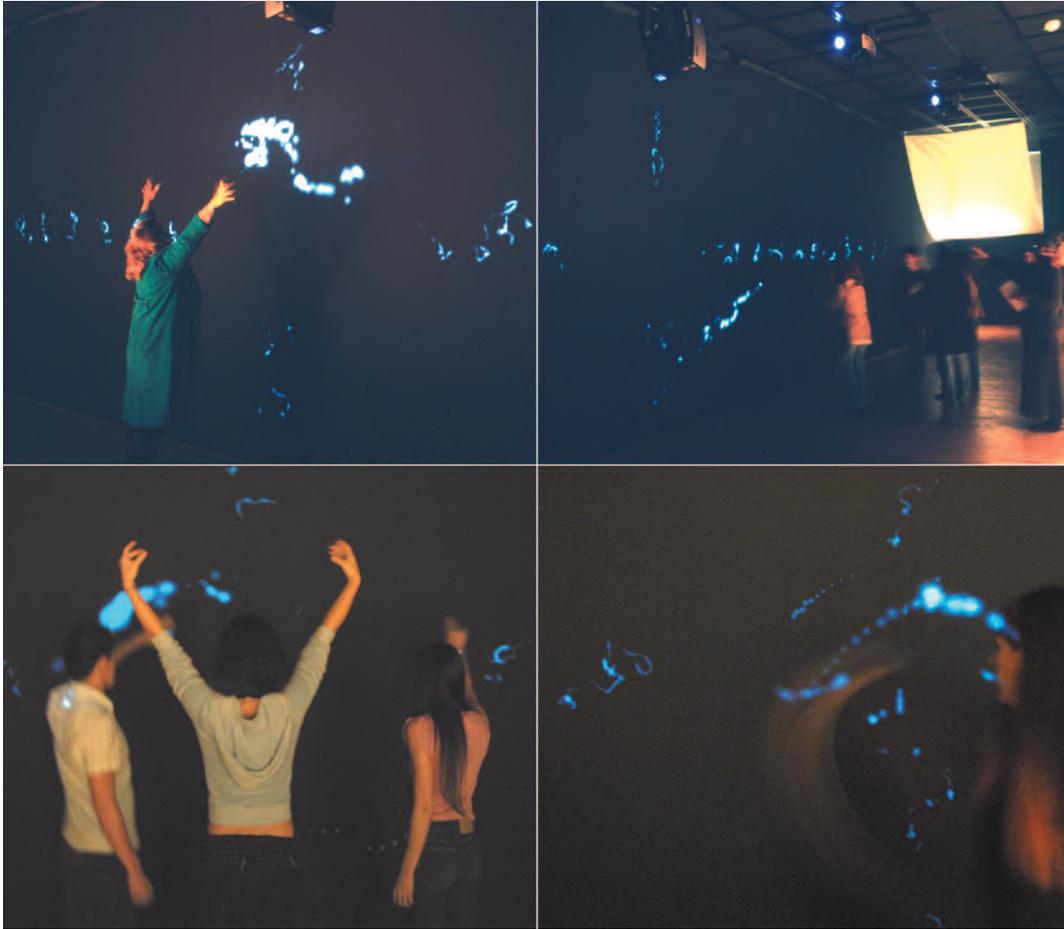
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approaches can nurture discovery in the sciences. Unprecedented amounts of genomic data are generated daily. To capitalize on this wealth of data, new tools must be developed. The need to build knowledge from data, or to find patterns within vast datasets, is driving development and application of interdisciplinary and alternative approaches. Ecce Homology is one such approach. Its outcomes are both hybrid process and product.

As the next era in the life sciences becomes increasingly dominated by interdisciplinary and discovery-based inquiry, Ecce Homology exemplifies an integrated art-science practice that goes beyond models of influence and convergence to explore the deep structures of science and technology in search of their expressive potentials and cultural relevance. Though it is driven by aesthetics, Ecce Homology suggests a new form of scientific visualization that may one day contribute to comparative genomics.

If the arts can nurture discovery in the sciences, it is possible that the process can bring about a new paradigm for our relationship to nature, one in which human creativity is the avenue for our rapprochement with nature.

Ecce Homology is sponsored by Intel Corporation; NEC Solutions America, Inc.; Visual Systems Division, University of California, Los Angeles; Technology Sandbox, UCLA Academic Technology Services; Computer Graphics and Immersive Technology Laboratory, University of Southern California Integrated Media Systems Center; University of California, San Diego Center for Research in Computing and the Arts; UCLA HyperMedia Studio; UCSD Sixth College: Culture, Art and Technology; National Center for Microscopy and Imaging Research; and the University of California Institute for Research in the Arts. We also gratefully acknowledge the instruction in calligraphy offered us by Hirokazu Kosaka, Buddhist priest, calligrapher, and director of the Japanese American Cultural and Community Center in Los Angeles. Special thanks to Neil R. Smalheiser, BetaTPred2, and the UCLA Fowler Museum.



*Ecce Homology*  
Art installation

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## Heather Elliott-Famularo



*ACQ: B14 (and me)*  
16.5 inches x 18.5 inches x 4 inches  
Inkjet print on back light film,  
fluorescent lights, wood, plexiglass

### ARTIST STATEMENT

#### AND THESE ARE THE NAMES OF THE DAUGHTERS

Series of eight digital prints in light boxes

This series of images address the artist's experience as a daughter, and more specifically, the role reversal that occurred when her mother became terminally ill and succumbed to metastasized breast cancer. Utilizing family photographs and video, her mother's MRI brain scans, nature, and her own body as source materials, she develops metaphors between matriarchal relationships and the seasons of the year. The artist was forced to continue life with only her mother's memory as a guide. During the advanced stages of her mother's illness, the artist became the nurturer and maternal figure for her own mother. The mother became her daughter's child. By

inserting her body into the scans of her mother's brain, she fills the memories her mother lost as a result of disease, simultaneously attempting to hold onto her own memories for the future.

The medium, illuminated prints, reflects the medical documentation (MRI scans), video sources, and the digital creation process utilized by the artist.

Dedicated in memory of Carrol Ann Elliott (21 February 1943 to 26 August 1996).



ACQ: E3 (and me)  
 16.5 inches x 18.5 inches x 4 inches  
 Inkjet print on back light film,  
 florescent lights, wood, plexiglass



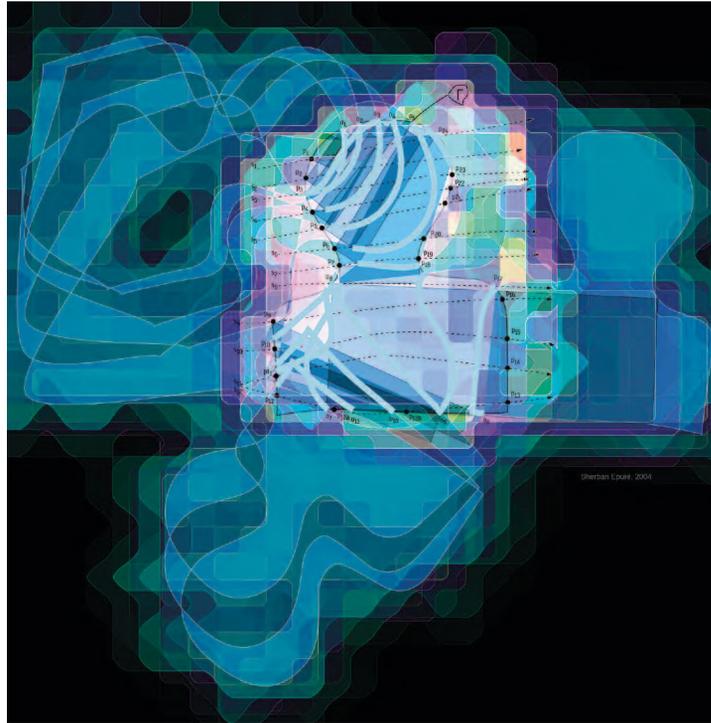
ACQ: F7 (and me)  
 16.5 inches x 18.5 inches x inches  
 Inkjet print on back light film,  
 florescent lights, wood, plexiglass

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## Sherban Epuré



*Condottiere*  
32 inches x 40 inches  
Inkjet

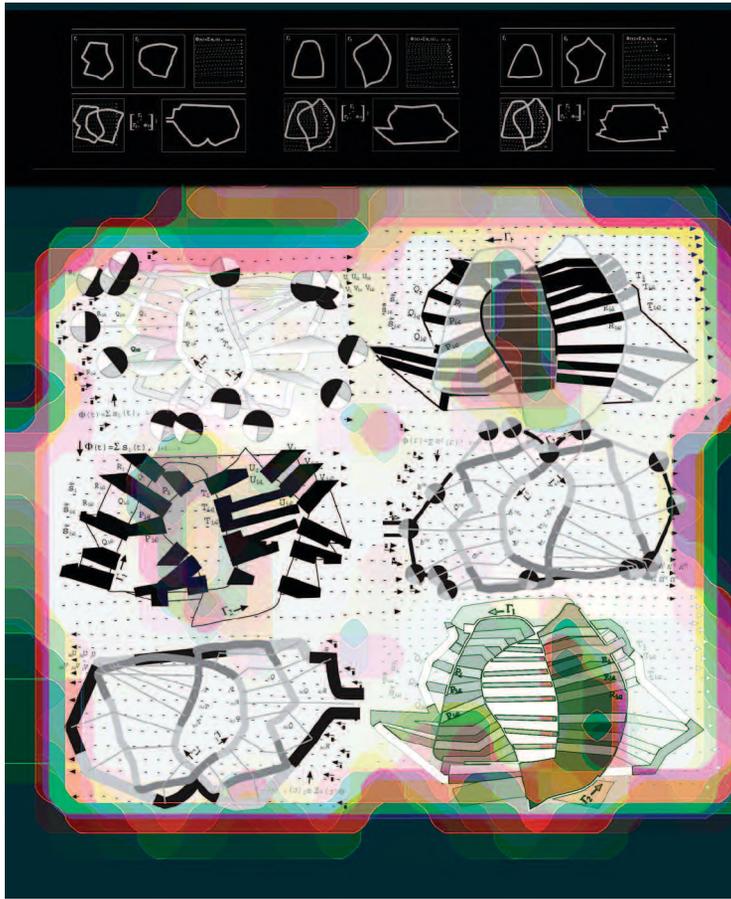
### ARTIST STATEMENT

These works belong to the Meta-Phorms category. In keeping with the spirit of the Renaissance, Meta-Phorms are artworks that combine science, mathematics, and computer techniques, while pointing to spirituality. I coined the term to describe a special geometry developed as a tool for artistic creation that encapsulates cybernetic mechanisms.

Mathematics encapsulates nature and knowledge through the use of symbols and abstract concepts. My process mixes the abstract concepts and disencapsulates the results in a reconfigured nature that is parallel and unforeseen. These elements of geometry can be understood as “thinking” entities, capable of discrimination and reacting independently when acted upon. Thus, a flow of information connects the two players: the artist and the artwork. Each reacts according to the information received from the other, which generates a creative dialogue. When rendered graphically, this dialogue grows into the final artwork. The computer and other Western technologies are the media of choice here, since these produce huge amounts of computation and visual signs. Moreover, the computer is involved directly in the creative process. It thinks, decides, and executes side by side with the artist. Its accuracy conveys a purity and emotional detachment that point toward the spiritual.

The work is a mix of mathematical rules, fine art criteria, and technological capabilities that complement each other. During the work process, visual metaphors, or images, emerge, which can be glimpsed in the interplay of graphic shapes. The meanings accumulate and from them emerge suggestions which trigger surprise, inspiration, and intuition, thus causing continuously fresh artistic decisions. The narrative here is the story of the Meta-Phorm and is, in fact, its inner maturation, an inward growth toward virtual nature. The initiating idea, written as a mathematical statement, embodies itself, grows and materializes through many phases to end as a visual artwork. Thus, what is recounted here is the story of an idea becoming matter. The whole process might be thought of as micro-genesis, or Genesis writ small.

Meta-Phorms reflect the relations linking the source or idea (creator), the process (creativity), and the material manifestation (the creation). In Hindu philosophies, the creator remains in and permeates each particle of the creation. Spirituality, or the awareness of the creator's presence, becomes a part of the artistic expression. The idea of a bridge between western technology and eastern spirituality comes to mind.



*The Poem of Apricots and Peaches*  
32 inches x 40 inches  
Inkjet



*Persona in Fields*  
32 inches x 40 inches  
Inkjet

## Brian Evans

### ARTIST STATEMENT

Everything reduces to data mapping and information design. The only hard question is why we do either. I never got past a fascination with numbers, a desire to write songs, a desire to make pictures.

All is number in the computer. I take numeric models and see what songs and pictures they will make. How can I map numbers to the senses, turn numbers into a tangible experience? Then I wonder how the senses map to each other. I map the maps.

Sound to image: a visualization. Image to sound: a sonification. In mapping numbers into sensory experience, aesthetic decisions are made. What palette of colors to use? What set of pitches? How long? How big? The artist chooses. In a digital world, the mapping itself is a choice. Beyond arithmetic there are no rules.

I make simple rules. You have to start somewhere. One loop (now it's a narrative). Two minutes (don't blink). The sound should be seen, the image should be audible. Other than that, make music. It's jazz in 4D. Hear the colors, listen with your eyes.

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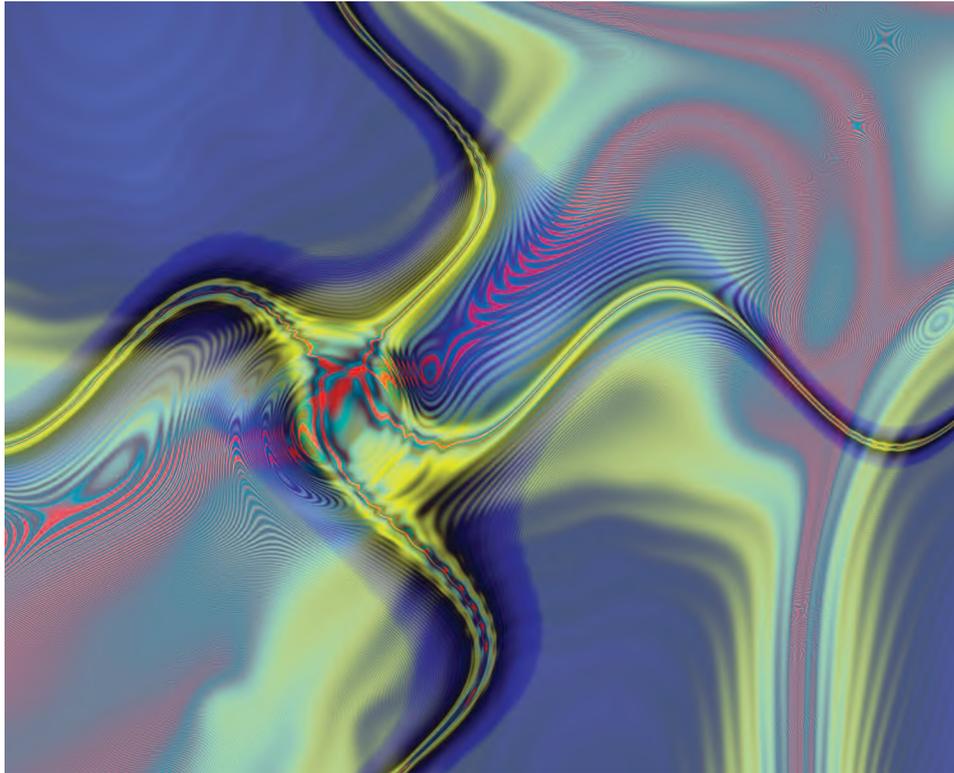
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### Director

**Brian Evans**

### Producer

**Brian Evans**



*limosa*  
02:15  
Animation

## exhale: (breath between bodies)

### ARTIST STATEMENT

The artistic concept of the piece exhale is in its most essential form: “to wear our breath,” as a mechanism for redirecting our attention to our own body states, individually and between bodies in a space, creating a group ecology through its breath. In exhale, the breath is contained within the body, and also is worn on the body, shared through the garments and the garments response in a group-body, a group-breath. This cycle of inside and outside forms the modes of representation selected for this wearable art installation.

exhale is a whisper[s] research group project based on designing and fabricating “a-wearable” body networks for public spaces. The rhythm of networked group breath is used as an interface for interaction and a mechanism for sharing our bodies’ affective non-verbal data. We use the networked breath of the participants within the system to actuate the responses of small fans, vibrators, and speakers that are embedded in the lining of sensually evocative skirts worn close to the body. This work integrates gestural interaction with fashion, developing new communication metaphors for wearable technologies network design.

### Art and Science

This work embodies the confluence of artistic design and expression with software and hardware technology. The whisper[s] research group combines backgrounds in fabric and garment design, choreography, and complex software systems, including both hardware and software architectures. The resulting work was influenced by their practices with modeling experience studies, networked micro-controllers, and real-time systems. It applies tools from choreography, such as Laban Effort/Shape Analysis, along with linguistic and statistical analysis, to investigate the physiological data that the work utilizes. The garments employ conductive fabric, shaped equally by the needs of the electronic elements and the design aesthetics. Placement and organization of the sensors and transducers is guided by body ergonomics, bio-energy systems, and interface design. Movement analysis is used to frame gestural interaction, creating playful, intimate connections between participants.

### Vision

In this work, garments are a step in a progression to systems that transparently exchange and express internal body state and intention via participant-mediated communication, mixing physiology-derived information with gestures and other non-verbal mechanisms. Concepts of device “listening” and biofeedback enable what we term subtle machine learning. The garments provide an environment in which we can augment verbal and visual modes of communication, where the quality of a gesture can replace many words, and can be exchanged with their affects as well as their effects through out-of-band pathways.

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### Experience

Participants walk towards the darkened space, becoming aware of eight textured and sensual garments: skirts made of silks and organza, natural fibers in earthy and vibrant tones, hanging from cables stretched from ceiling to floor. The visual image is a small forest of “skirt trees”: skirts suspended at various heights in space, connected to vertical cables dropping in plumb lines to the earth. A light positioned at the base of each skirt illuminates it upward from below, highlighting and bringing light to its materiality. Guides assist the participant in putting on the skirt and wrapping the breath sensor around the rib cage. As participants move through the space, consciously shifting their own breathing cycles, they create the interactions of self to self, self to other, and self to group: wirelessly communicating and creating a shared breath state. And as the lining of each skirt “breathes” with the participants, the small fans and vibrators respond to the breath beneath the lining unseen to others; the small speaker within the skirt marks the sounds of the breath data, creating a body network that tickles and caresses and whispers from within.

### Innovation

The core technical innovation of exhale: (breath between bodies) is integration of non-verbal models of network communication in a playful multi-modal environment, using layers of directionally conductive fabric to provide both electronic pathways within the garment systems and a sensual tactile experience for participants. Connections between participants are realized through specialized electronics and embodied through acts of physical contact, designed using gestural models for interaction.

The fabric that forms the conductive layers within the garment has electrical behavior due to its construction as a combination of very fine silver or gold wire with traditional materials such as silk. This conductive fabric is used as a replacement for conventional wiring, which is much heavier and less flexible. It is also used to form simple touch or pressure sensors, via contact between layers, and identification patches, using isolated fabric regions that include devices that have unique electronic signatures. Touch zones on the garment (or another garment) can make contact with these isolated regions, and the signature can be “read” to establish self-to-self, self-to-other, and self-to-group connections.

### Acknowledgements

the whisper[s] research group: Susan Kozel, Sang Mah, Gretchen Elsner, Robb Lovell, Diana Burgoyne, Norm Jaffe, Jan Erkkü, Calvin Chow, Camille Baker, Lars Wilke, Adam Marston; Industry Contributors: Thought Technology, Tactex Inc, Credo-Interactive; Sponsors: Heritage Canada, Canada Council for the Arts, B.C. Arts Council, Savage Media, CFI, I-Lab at SFU, and Shadbolt Centre for the Arts.



*exhale: (breath between bodies)*  
Art installation

## Heather D. Freeman

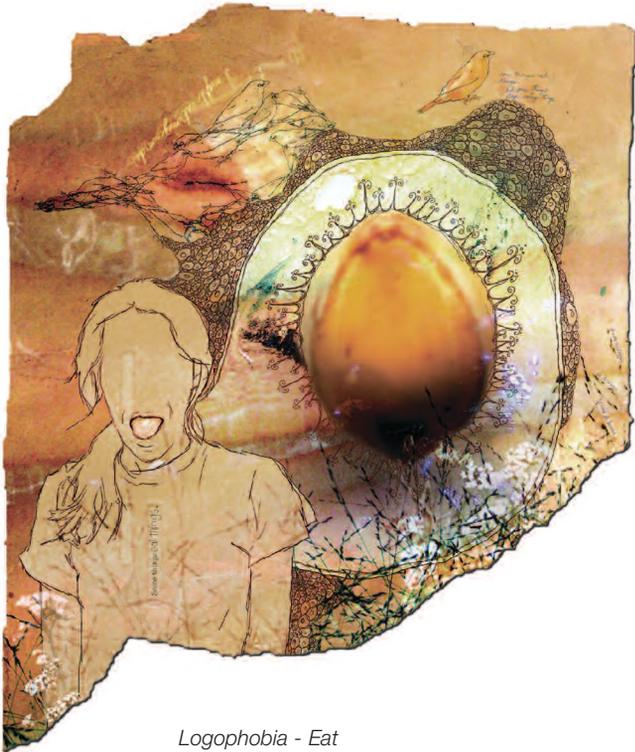
### Contact

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### ARTIST STATEMENT

The images are from my Logophobia/Logophilia series. These images explore language's limitations and the merits and frustrations of these limitations. The Logophobia/Logophilia series is printed onto HP Studio Canvas with an HP Designjet 500ps. The canvas was then cut along the edges (hence the irregular border). The prints are reinforced with fiberglass resin to evoke both skin and parchment, although they were originally spray-adhered directly to the wall. The process of creation involved both traditional studio practices and Adobe PhotoShop 7 and CS. First, player-piano-roll paper was painted with latex. Then I did drawings of songbirds with a Wacom tablet directly into PhotoShop, which I printed and transferred to the latex-painted paper. The roll was then torn into segments and scanned into a Macintosh G4 with an Epson Perfection flatbed scanner. I then took photographs of myself with a Canon EOS D10 and incorporated these into the scans of the player-piano paper. Sometimes the photographs were simply used as templates for line drawings. I also included photographs of plant matter and flowers from the Lexington arboretum, the Arizona desert, and the swamps of northern Florida. I also scanned in birdseed and other materials as appropriate to a given image.



*Logophobia - Eat*  
 38 inches x 25 inches  
 Inkjet on canvas



*Logophobia - Snap*  
 32 inches x 32 inches  
 Inkjet on canvas



*Logophilia - Tongues*  
 32 inches x 46 inches  
 Inkjet on canvas

## Gregory Garvey

### Contact

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### ARTIST STATEMENT

HOMAGE TO THE SQUARE: STEREOSCOPIC SUPREMATIST COMPOSITION II revisits the reductionist impulse of 20th-century modernism, literally through the “lens” of cognitive and perceptual psychology. To the unaided eye, the prints depict different sized squares that have different shades positioned side by side. When viewed with the handheld stereoscope, the different-sized squares, seen separately with each eye, are fused into a single “virtual” image of squares nested one inside the other. It is not a stereoscopic 3D illusion. Instead, a kind of 2.5D space is perceived. The squares appear to slowly slide over or behind the other as the brain’s visual apparatus strives to maintain a single coherent view that exists “only in the mind’s eye.”

As seen in the Suprematist Compositions of Kazimir Malevich, the mid-century Homage series by Joseph Albers, and the later minimalism of Ellsworth Kelly, the square has held a special attraction for successive generations of artists. Malevich considered the square the most elementary formal element of a creative art striving toward the “supremacy of pure sensation.” Echoing the empiricism of Bishop Berkeley, Malevich wrote in 1915: “Nothing is real except sensation ... the sensation of non-objectivity.”

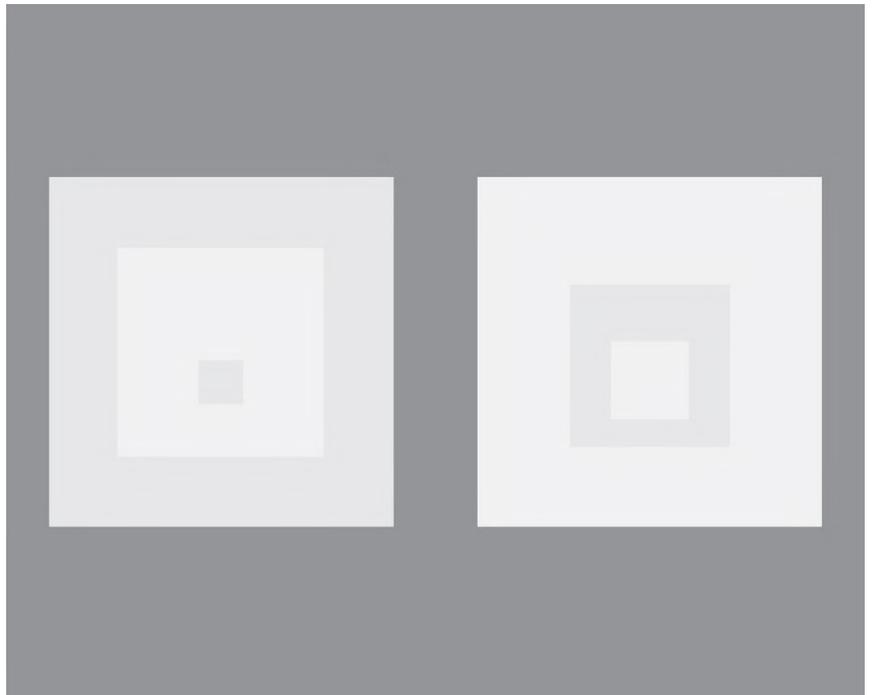
Albers systematically used the square to investigate vision. By means of color contrasts, he created advancing and receding shapes that engaged the viewer’s private visual mechanisms. Cornelia Lauf suggests: “This shift in emphasis from perception willed by the artist to reception engineered by the viewer is the philosophical root of the Homage to the Square series.”

Ellsworth Kelly’s single saturated color panels with a matte finish are exhibited singly or in multipanel arrangements. Kelly pursued a rigorous anti-illusionistic approach to eliminate figure-ground relations from his “painting-objects.”

How does the brain create what Steven Pinker refers to as the monocular cyclopean image? When each eye sees significantly different images that cannot be combined into a single coherent cyclopean image, binocular rivalry and hemispheric dominance suppress one image so that a coherent view is maintained. This work seeks to investigate what happens when there are two related but different images.



*HOMAGE TO THE SQUARE: STEREOSCOPIC SUPREMATIST COMPOSITION II*  
14 inches x 11 inches  
Inkjet print



*HOMAGE TO THE SQUARE: STEREOSCOPIC SUPREMATIST COMPOSITION III*  
14 inches x 11 inches  
Inkjet print

*Contact*

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## **Floyd Gillis**

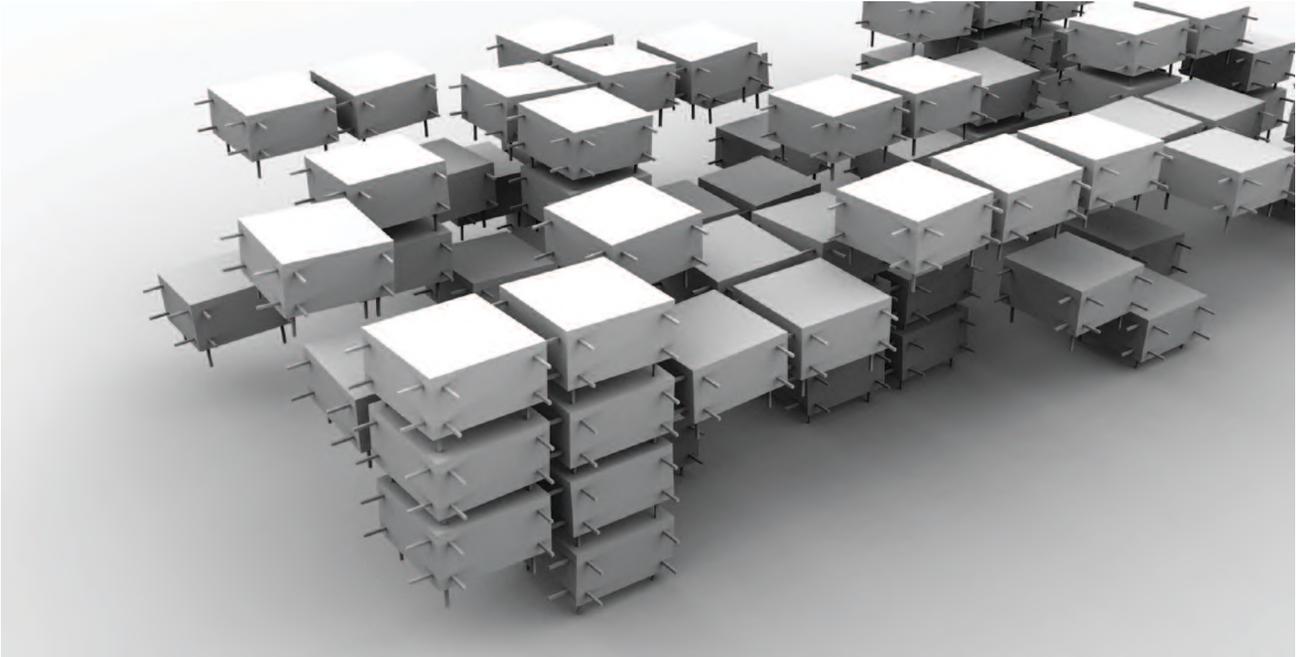
### ARTIST STATEMENT

When I was growing up in Vancouver's West End during the 1960s, my neighborhood of two- and three-story wood-frame houses was being torn down and replaced by high-rise concrete apartment buildings. I loved it. Not only did it provide exciting (and dangerous) places for me to play in after the construction workers had gone home, it also made me feel that whole city blocks were being transformed into massive sculpture installations, with each piece soaring hundreds of feet high.

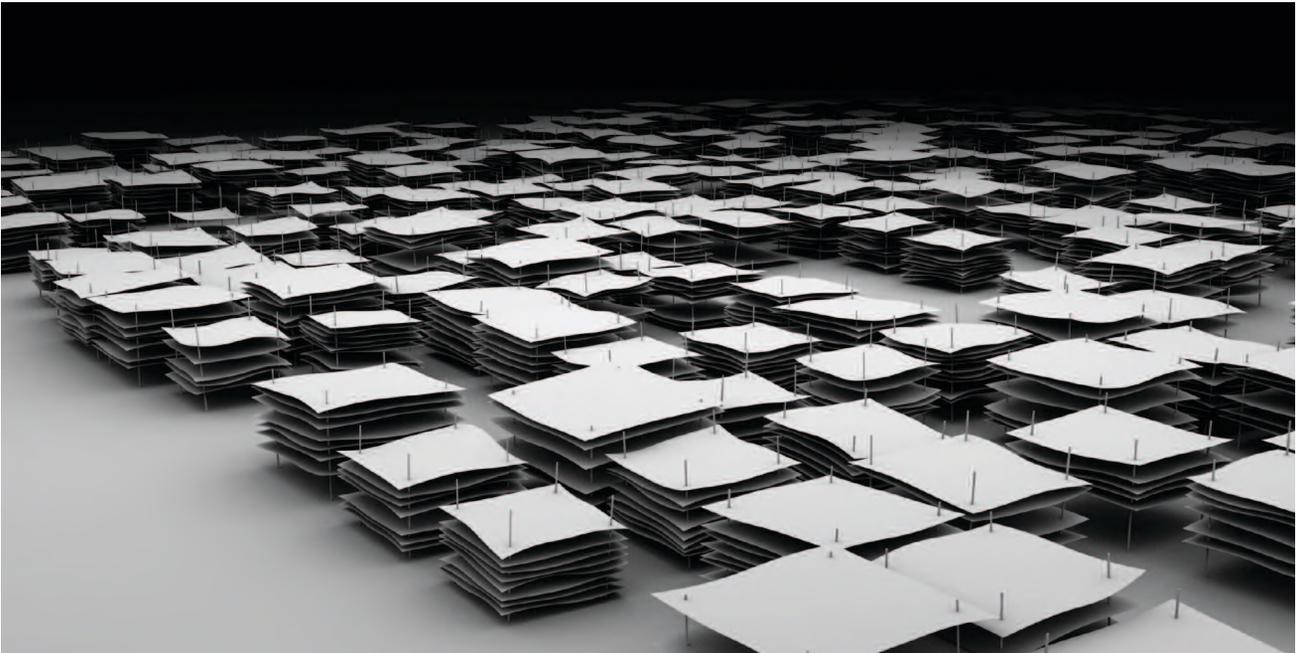
By the late 70s and early 80s, most of my personal work consisted of pen-and-ink and color-wash drawings of complex geometric compositions. I always viewed these pieces as frozen moments in time when massive, moving geometric elements had coincidentally come together to form a dynamic interaction.

My current personal work continues to echo those pen-and-ink compositions of the late 70s and early 80s. Elements are combined to form dynamic compositions that not only continue to move on paper, but also recall those early feelings of immersion within massive, neighborhood-filling, concrete sculptural pieces.

The process of creating these images calls for an extensive exploration of structural composition and lighting arrangements, and tends to be almost wholly intuitive. Fortunately, after working with 3D graphics software for almost 25 years, the physical process of using computers to create these images has become comfortably transparent.



*seri\_C A\_1*  
30 inches x 15 inches (image area)  
Gicleè on archival paper



*seri\_G B\_1*  
30 inches x 15 inches (image area)  
Gicleè on archival paper

Contact

**Pascal Glissman**

**Martina Höfflin**

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## **Pascal Glissmann and Martina Höfflin**

### ARTIST STATEMENT

Robots still do not have the abilities that science and fiction promised us. Therefore, our work is focused on very simple near-life approaching systems. "Elfs" are small mechanical systems powered by solar energy that behave as natural living systems in many aspects. Viewers' immediate compassion for these life forms is an amazing experience, even though their abilities are very limited.

Elf is a two-part installation developed in the context of a research project by Pascal Glissmann and Martina Höfflin. On one hand, the "elFs" are documented in their natural habitat, and the fading contrast of electronics and nature gives the scenario a surprisingly lifelike feeling. On the other hand, the imprisonment of these life forms in Weck-Preserving-Glasses reminds one of childhood adventures, exploring and discovering the world around us. The light-sensitive "elFs" desperately use their chaotic sounds and noisy movements to request the attention of the outside world.

The motivation for this project is an enthusiasm for creating living things, observing their independent behaviors in the lab and nature, and watching people's reactions when they get acquainted with simple life forms. In this case, art is technology. The artists do not rebuild organic creatures with the feeling that they are being forced to use ugly technology. They explore technology, especially small electronic components and their functions. It is fascinating to use very unorganic material, put it together so that it is still recognizable, and add some simple, pure function that conveys a lifelike expression.

The whole idea of this project is exploration of technology and putting it in a new context or environment or perspective that questions the relationship among technology, nature, and humans.

[www.electronic-life-forms.de](http://www.electronic-life-forms.de)



*Elf*  
(electronic life forms)  
Art installation with robots

## Meggan Gould

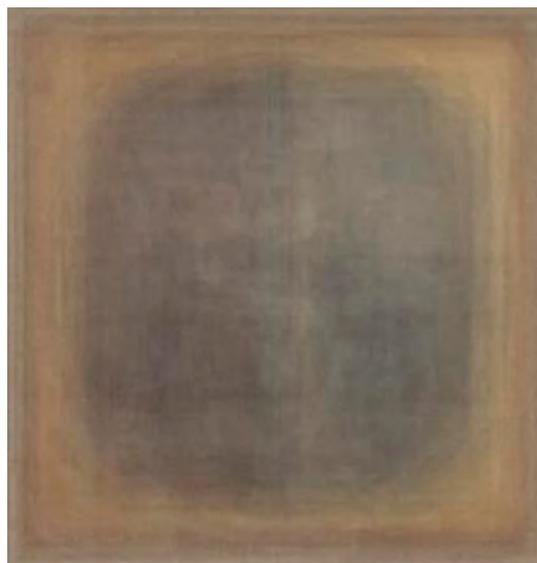
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*barcode*  
3 inches x 2.5 inches  
Photography



*daguerreotype*  
3 inches x 3 inches  
Photography

### ARTIST STATEMENT

#### Google

Through the Google series, I seek to examine the visual experience of the internet and propose a visual means of exploring encounters with the increasingly ubiquitous screen-based landscapes through which we routinely meander. Although these contemporary landscapes may be composed of gifs and jpegs, bits and bytes, as opposed to the trees, bushes, and buildings of conventional landscapes, they are nonetheless a new arena laden with visual stimuli within which we move – scrolling, moving backwards or forwards, opening and closing new windows on new imagery and new paths.

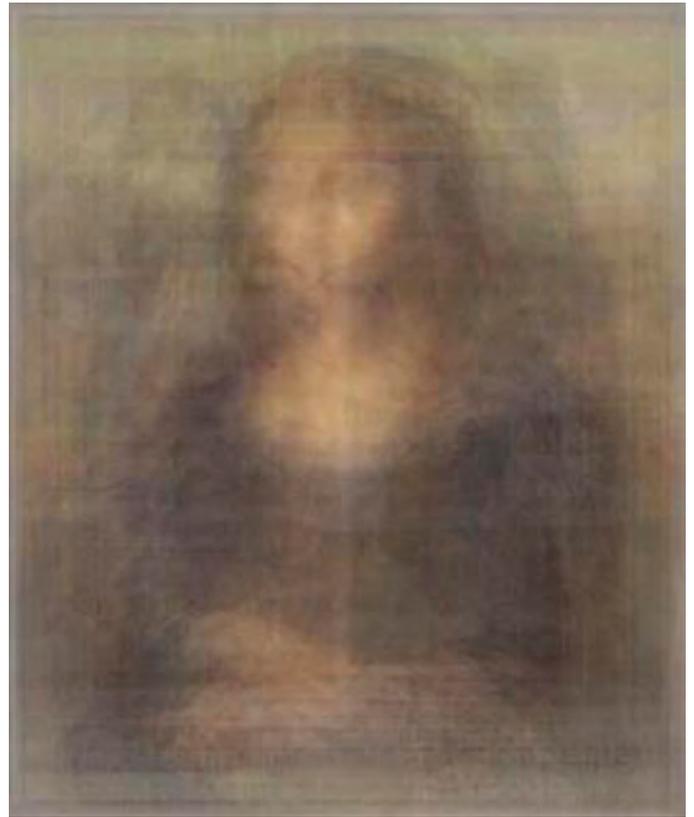
The Google search engine has reached iconic status in a few short years, entering the popular lexicon as a noun, a verb, an idea, a listed stock. Its ubiquity is a testament to the widespread use of new information technologies as well as a gradual shift in our interaction with information, in both textual and visual forms, attributable in large part to new forms of displaying and categorizing vast quantities of data. Google's Image Search function is based on an analysis of the text on the page adjacent to an image, image name, and unspecified "other factors;" from these factors, image content is deduced in response to a query. In the search-engine process, there is no

involvement of human judgment to define the visual content of individual drawings, photographs, clip art, or animations; unexpected, often inexplicable, connections between text and imagery occur frequently.

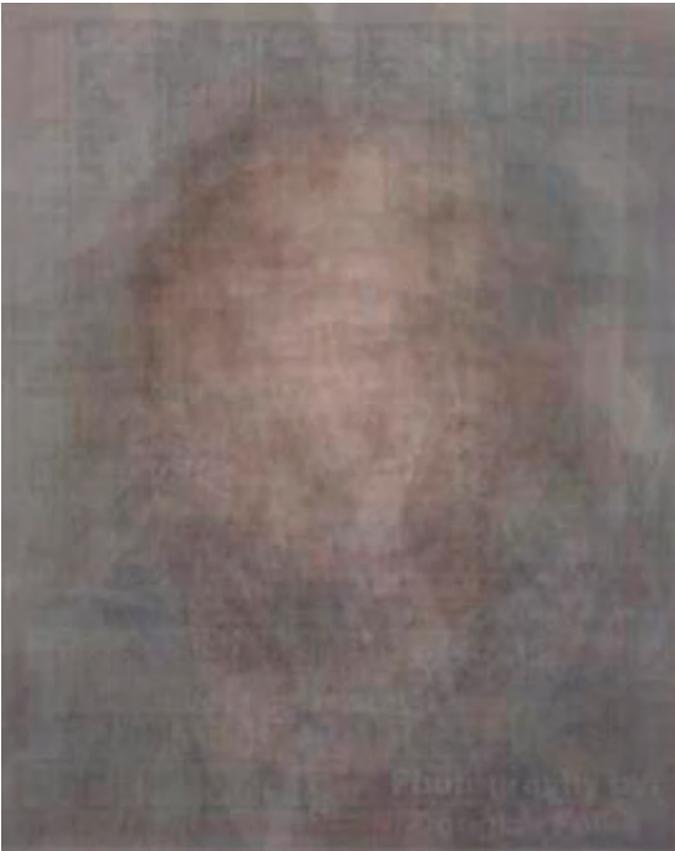
The images in the Google series are the results of contemporary encounters with the virtual landscape of the internet. They are composite images, mathematical averages of the first 100 images retrieved from a Google query for a specific word or phrase. Each downloaded image relinquished its size, its shape, and the clarity of its individual pixels in its merger with the other results from the query. The results, a visualization of intersections between Boolean logic and the popular imagination, are more often than not a hopeless jumble of unidentifiable pixels, but occasionally a recognizable form does emerge. Truly iconic imagery is elusive, particularly considering the glut of computer graphics through which internet spiders and archivers crawl daily. Only a small fraction of searches retain any degree of legibility through the averaging process. Like time-lapse photographs of movement through physical space, the Google Series explores how movement through virtual landscapes similarly obliterates detail, exploring the aesthetic potential within the motion itself.



*black+widow+spider*  
3 inches x 3 inches  
Photography



*mona+lisa*  
2.5 inches x 3 inches  
Photography



*portrait*  
2.5 inches x 3 inches  
Photography

Contact

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## Céline Guesdon

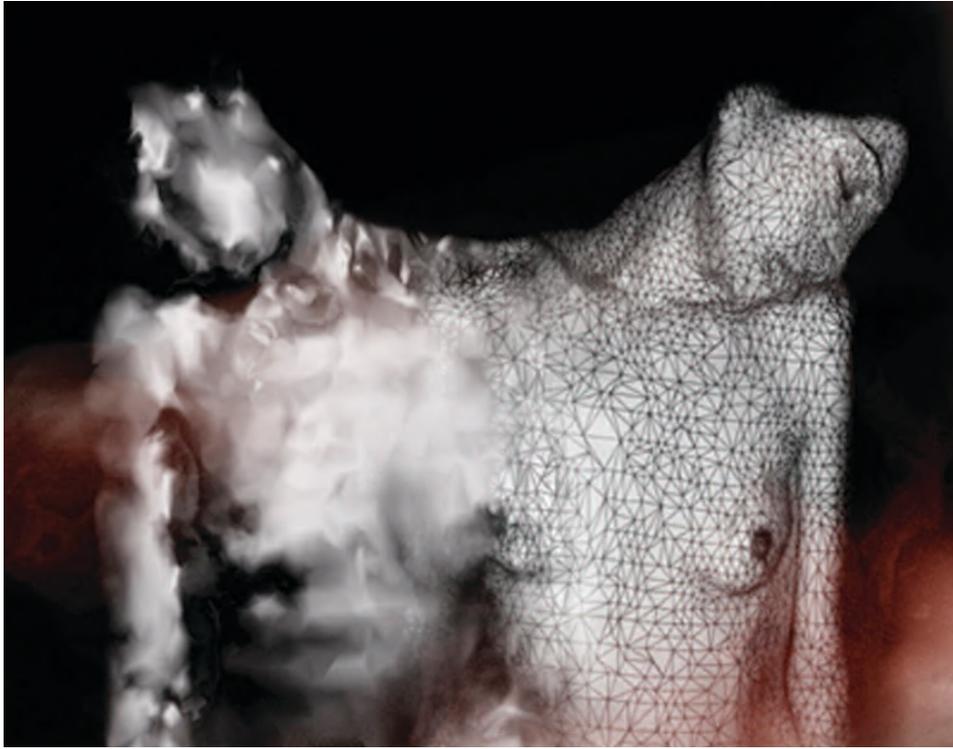


*Ondine: Absorbée*  
35 inches x 27 inches  
2D and 3D photograph

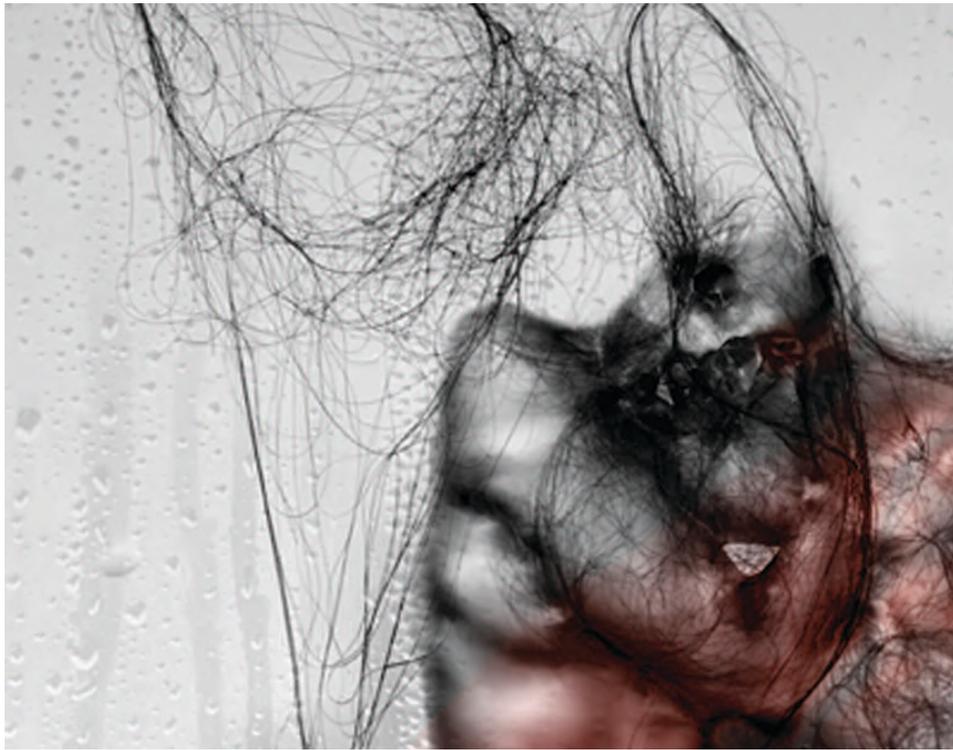
### ARTIST STATEMENT

Ondine is an interactive photographic installation mixing photographs, synthesized images and sound. The theme of the installation questions the concept of fluid image and the link that the photographic image, the synthesized image, and sound have with water. I used a prototype digital camera to generate a synthesised 3D volume from a single shot. This camera is, in my opinion, another way of perceiving photography as a volume-image. It generates a kind of floating, weightless, virtual mold in three dimensions, which one can visualise from every angle. The artistic richness is born from this hybridization. It leads the image toward another aesthetic: that of trouble and doubt. Photography would be in “trans-situation,” a kind of enveloping membrane, an organism of its simulation in its reversible transfer from 2D to 3D, like a skin.





*Ondine: Images-soeurs*  
35 inches x 27 inches  
2D and 3D photograph



*Ondine: Toison*  
35 inches x 27 inches  
2D and 3D photograph

## Jean-Pierre Hébert

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### ARTIST STATEMENT

This work was inspired initially by traditional Japanese Zen gardens. As the sand trace proceeds at a slow, quiet, meditative pace, time becomes an important element of the work. Drawing on paper, or tracing sand, takes time, and has its own rhythms. I have also explored the possibility of composing and synthesizing music, by linking space, time and sound. The current version of Ulysse is an investigation of the sets of rules that allow exploration of this continuum.

Victor diNovi built the mahogany plinth. David Bothman helped with motion control. And the music was developed in collaboration with Iannis Zannos.



*Ulysse*  
125 centimeters x 125 centimeters x 50 centimeters  
Live sand traces and sounds over a mahogany plinth

Contact

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## Eric Heller

### ARTIST STATEMENT

Art has a unique capacity to intuitively and emotionally convey insights about complex subject matter. If there is a short circuit to wisdom, it is through art. I try to exploit the powers of art to relate secrets of nature that have only recently been uncovered. A key element in my work is exploitation of nature's almost narcissistic self-similarity, her repetition of pattern on vastly different scales and in radically different contexts: the motion of the planets around the sun and electrons orbiting a nucleus; or waves on water and electron waves in a semiconductor. With such repetition, nature provides her own windows into otherwise secret worlds.

The images I produce always relate to concurrent research. Since September 2004, I have been investigating freak or rogue waves in the ocean. The Rogue image series arises from the complex branching patterns of energy flow that result as ocean waves negotiate a sea filled with complex currents (like the Gulf Stream and the eddies that spin off of it). Almost exactly the same patterns arise on a scale one hundred billion times smaller as electron waves negotiate paths through semiconductors. Both phenomena generate branching patterns familiar from trees and erosion landscapes. The branches are the danger zones: places where rogue waves are more likely to develop. The branches result from an unexpected focusing of wave energy. These images, at the same time abstract and literal, convey some of the mechanisms, the complexity, and the awesome danger of rogue ocean wave formation.



*Rogue IV*  
34 inches x 24 inches  
Lightjet print

*Contact*

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## Peter Horvath

### ARTIST STATEMENT

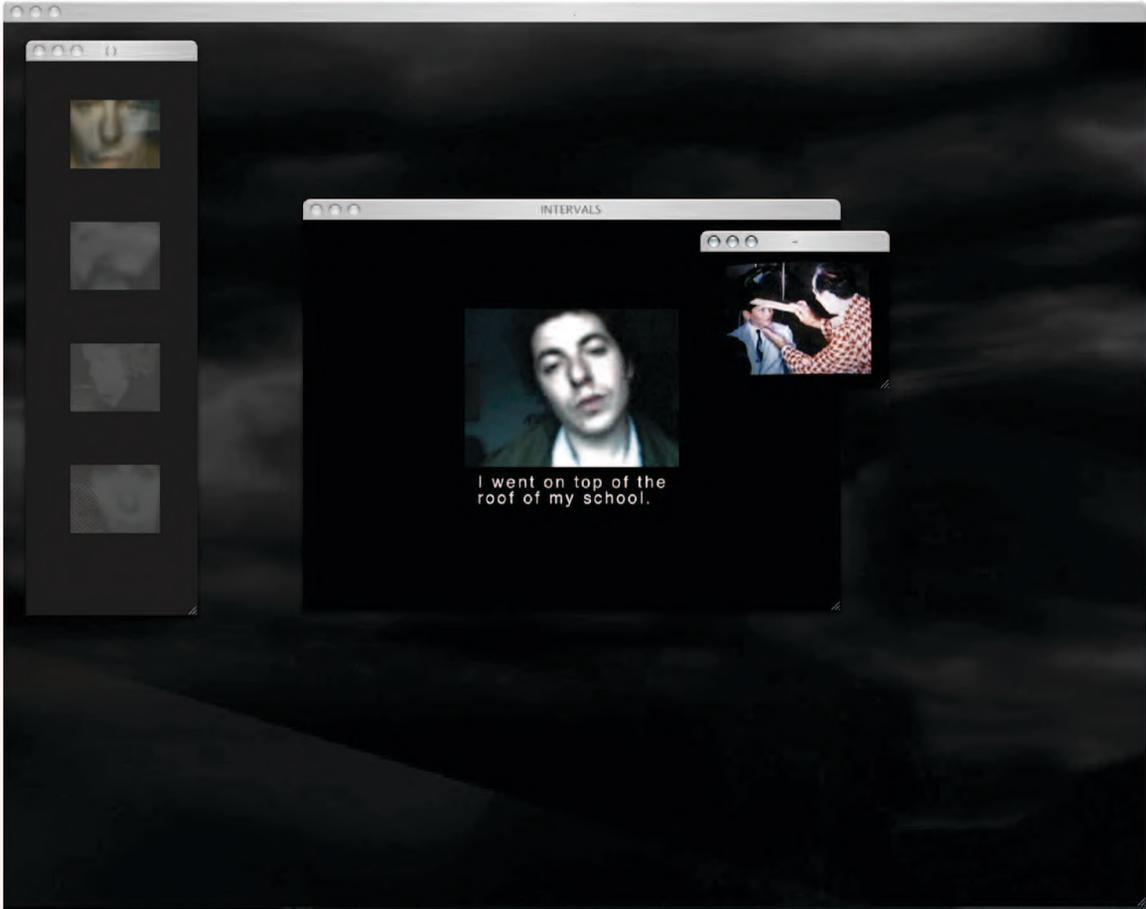
Formally, I see myself as a participant and investigator in the realm of new media art as it exists on the web. In its binary aspect, the web mirrors the process of choice-making by which we navigate our environments, making it an ideal medium to discuss issues relating to the realm of subjective experience. Conceptually, my work derives from and revolves around my unchanging curiosity about the nature of identity and consciousness. To me, identity is related to and generated by what belongs to the spectrum of one's history: subjective or objective, microscopic or macroscopic, private, familial, and socio-political. Through my work, I attempt to address the difference between conscious and subconscious identity and drives.

In the frontier world of web technology I have found a medium that encompasses and expands the lush, pluralistic, and multi-layered qualities of my previous Dada-inspired photomontage work. Freed from the restricting two-dimensional context by technological advances, I engage in fragmented narratives and sub-narratives that form and reform as multiple windows open and close. I orchestrate layers of history, including journal entries, sketches, written records, video, photographs, music, voice, and general sound loops, resulting in a atmospheric investigation into states of being.

Intervals explores a series of characters whose investigation of self and identity unfold and elide through a sequence of cinematic interludes. Hovering through an amorphous landscape, we begin by observing the mirror images of four animated figures. At once seductive and elusive, these portraits successively expose their most intimate selves through accounts of lost innocence, fear of the unknown, masculine ritual, and the mystery of love. Here identity is subject to slippages, distortions, and filmic alter egos that mimic and echo their subjects' memory.

[www.6168.org/intervals](http://www.6168.org/intervals)

High-speed internet access, Internet Explorer 5.0, and the Quicktime 6 plugin are required for viewing. Please ensure popups are active in your browser preferences. OSX Safari users: make sure "block popup windows" is unchecked under the Safari menu.



*Intervals*  
Web-based art

## MarkDavid Hosale and John Thompson

### Contact

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### ARTIST STATEMENT

The DEFENDEX-ESPGX combines real-time audio and video synthesis processing with physical interaction. The challenge in developing this work was providing a meaningful interface that connects the virtual and physical.

The context of the DEFENDEX-ESPGX, 1950s technology, affects how users interact with the medium. The device evokes a past era in which technologies were seemingly simpler and less abstract. This nostalgia is compelling and draws users to interact with the device. Users understand how to use the controls even though they are not aware of the virtual system behind the interface. Because of this, the continuum between the physical and the virtual becomes transparent.

Unlike conventional technologies where interaction with the device is predictable, the DEFENDEX-ESPGX may usurp the users' expectations. The device may have compelling nostalgic value, but is interwoven with modern technology. The combination transforms the device to something alien. It leaves its familiar context and becomes foreign.

The message is redefined through this contradictory medium. Parallels between past and current technologies and the eras they represent resolve this contradiction. These parallels are reflected in the content fed back to the user by the virtual system. The content is not meant to be pedantic or convey a particular message, but it draws on nostalgic references to encourage implied comparisons between the fearful culture of the Cold War and the culture of fear associated with the current War on Terror.

The device also performs surveillance functions. It grabs control data and content from an external video camera and microphone. The control data are derived from motion-detection and audio information, while the content can be displayed with or without processing. This provides the system with two modes of interaction: active and passive. Users who interact with the system directly through the DEFENDEX-ESPGX are active users. The subjects of surveillance within the system are passive users. This means that the system encompasses more than the DEFENDEX-ESPGX itself, but also the entire space in which it is contained (the sensor space). Active users control the surveillance device while being watched at the same time. In order to watch, you must be watched.

Physically, the DEFENDEX-ESPGX is a stand-alone unit approximately five feet tall, with a surveillance camera mounted above and a microphone attached. It has a data feedback panel, three master faders, and several switches and knobs. At head height, a monitor provides a visual interface. Speakers are mounted to the sides of the DEFENDEX-ESPGX, where they deliver stereo sound. Haptic feedback is provided via vibrating motors located within the DEFENDEX-ESPGX.

The source material includes pre-recorded political, military, and other footage, as well as audio and video streamed from the sensor space. With physical interface components, users navigate through various modes arranged in a non-linear narrative. The DEFENDEX-ESPGX rests in a default mode until engaged by a user. Once engaged, the DEFENDEX-ESPGX moves to either an action mode or a narrative mode. In action mode, users must complete tasks to move to the next mode. After they successfully complete a task, users might move to a consequence mode, where the ramifications of their actions become apparent. Otherwise, users are taken to a narrative mode consisting of prerecorded media playback, which delivers clues about the secrets behind the DEFENDEX-ESPGX. The route for each user is unique.



*DEFENDEX-ESPGX*  
Interactive art sculpture  
22 inches x 62.25 inches x 40.625 inches

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## Kenneth A. Huff



2004.4  
41 inches x 53 inches x 1 inch, framed  
Chromogenic print

### ARTIST STATEMENT

discover: to make known or visible; to obtain sight or knowledge of for the first time.

*Merriam-Webster Online Dictionary, 2004*

From the first tracing of a finger along the spiral of a seashell, our lives are permeated with the joy of discovery. Forms, patterns, and experiences are layered in our memories and become part of the fundamental cognitive framework through which we identify and classify the world. Tapping into these primal connections, this work evokes a desire to understand and makes possible the thrill of discovering something new.

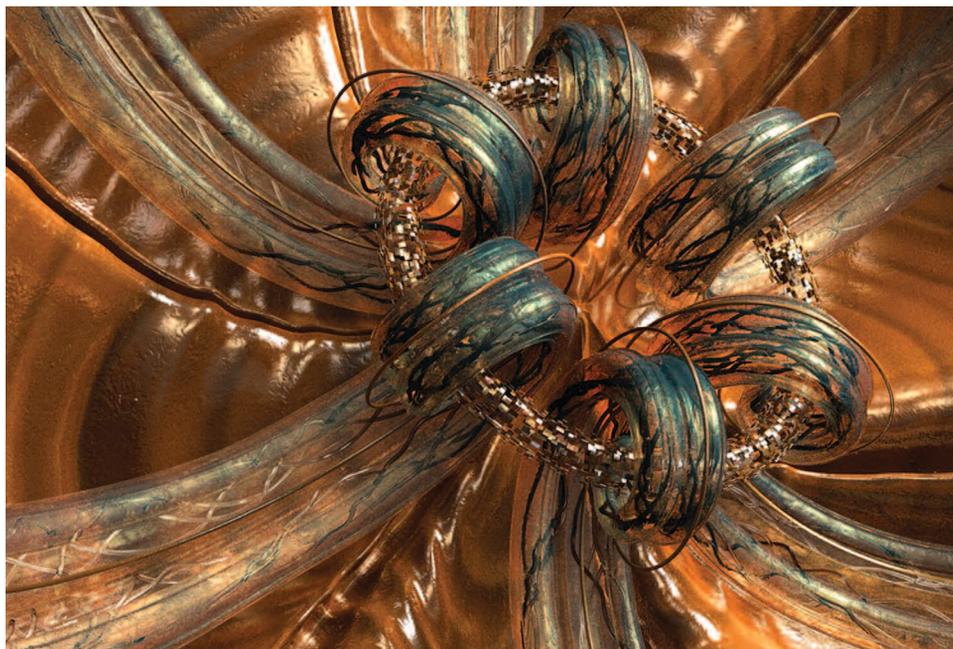
At a distance, these almost familiar forms engage the mind, beginning a journey of examination and interaction. There is no reference of scale, and the viewer is drawn closer, searching for additional clues that might aid in identification. With each step, the structures

trigger subliminal reactions based on past experiences. In the end, the viewer is left with undefinable organic connections suspended in the deliberate ambiguity of the work, an ambiguity not so abstract as to be without some connection to experience or nature.

The creations are abstract, organic, three-dimensional constructions, and while the subject matter is entirely imagined, the works are executed in a highly detailed, photorealistic manner. Inspiration is drawn from a variety of natural patterns and forms, combining ideas from a number of sources rather than creating literal reconstructions. Overarching themes based on ideas from mathematics and the sciences also weave through the body of work. With a sense of true understanding placed just out of reach, the experience of the work is in a constant state of renewal and discovery.



*2004.5*  
40 inches x 61 inches x 1 inch, framed  
Chromogenic print



*2005.1*  
41 inches x 58 inches x 1 inch, framed  
Chromogenic print

Contact

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## **Kenneth A. Huff**

### ARTIST STATEMENT

Today's frenetic, rapid-cut popular media serve as foil to the intent of Meditations, a series of animated works that explores slowly evolving patterns and forms inspired by the intricate complexities of nature. The undulating concentric lines of the arches, loops, and whorls of fingerprints were the basis for the forms in this work. Similar patterns can be seen throughout the natural world, from the growth rings of trees to the merging ripples on a pond. The various changes and movements are based on time scales observable at a seashore, from the rapid crashing of waves to the slower ebb and flow of tides and the even slower changes of the shoreline through erosion. In the work, some changes are very slow, apparent only if one looks away for a period of time and then returns to find some aspect has transformed. Other changes are rapid and noticeably rhythmic, but, as with breathing, the rhythms are imbued with variation. With no set beginning or end, the works allow the viewer to become lost in the complex, organic details and provide engaging, calming points of meditation – inspirations for visual and mental exploration.

Director

**Kenneth A. Huff**

Producer

**Kenneth A. Huff**



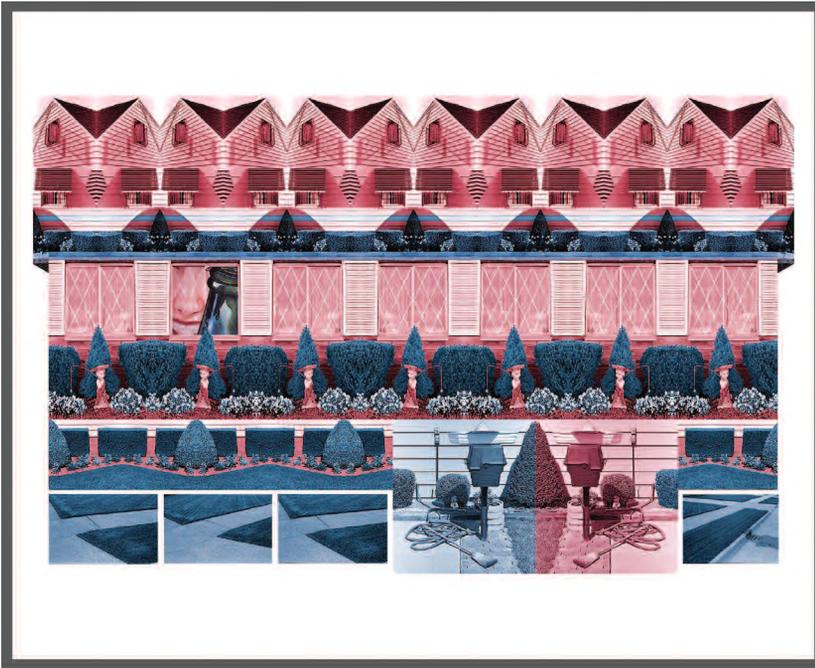
*Meditations Series, 2004.10a*  
20:00  
Animation

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## Dolores Kaufman



*Touring Suburbia / Number One*  
40 inches x 32 inches  
Pigment ink on fine art rag



*Touring Suburbia / Number One*  
Detail

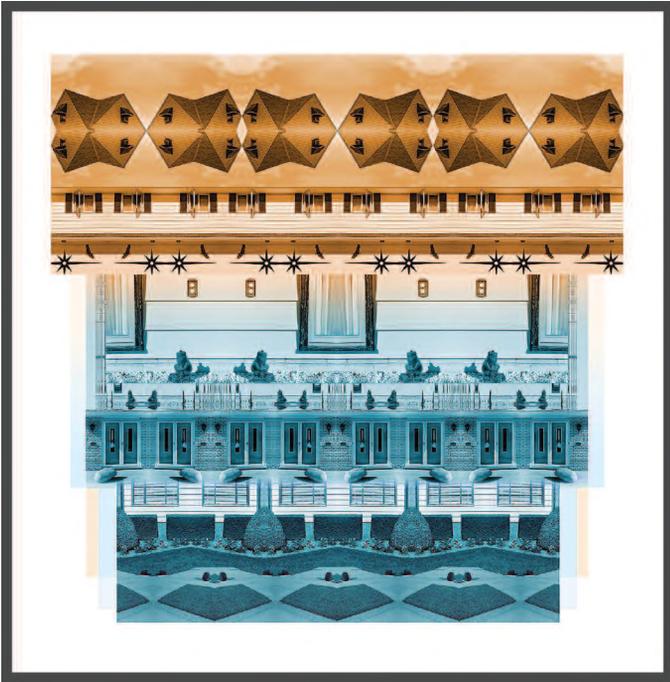
### ARTIST STATEMENT

A city girl at heart, I have had a love-hate relationship with suburbia for over 20 years. It began in 1979 when, over a period of many months, I photographed the lawns, gardens, and homes of Parma, Ohio, a western suburb of Cleveland and the epitome of middle Americana. To those who live on the East Side, the West Side is a cultural wasteland of cookie-cutter houses, meatball shrubs, bland lawns, and decorative clichés. So when I set out with my camera, it was as on safari to a strange and distant land. What I found were cookie-cutter houses, meatball shrubs, decorative clichés, patterns of light and shadow, geometric perfection, and quirky expressions of faith, love, and individuality. This was no modern gated community where a large question mark painted on a garage door would be against the rules. The result of the expedition was the series, Parma Piece, subsequently exhibited at the New Gallery of Contemporary Art and the Cleveland Art Museum.

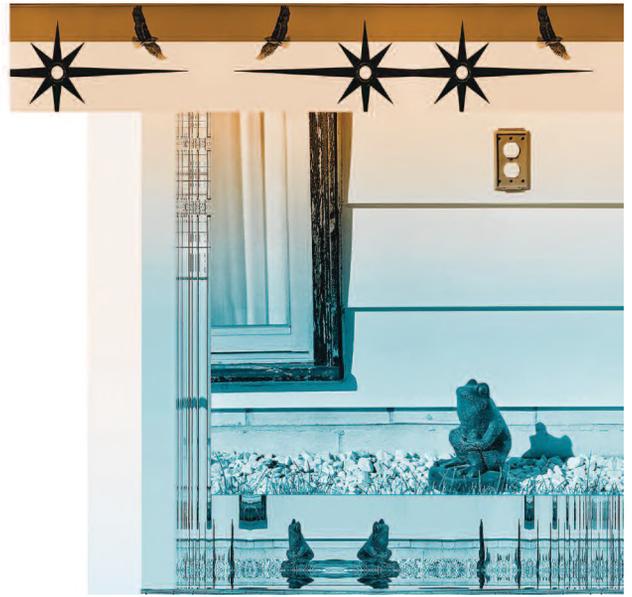
But Parma Piece was only part of the story. Suburbia is where the American Dream lives, and those who dwell there dream the Big Dream. Just as they (or their parents) fled to America in search of

freedom and prosperity, they, in turn, fled the dirt, noise, chaos, and racial strife of the city in search of the quiet, order, cleanliness, and safety of the suburbs. For the vast majority, however, prosperity only went so far while they held fast to the notion that if they worked hard, invested, and saved, they, too, could live in European-style palaces with manicured gardens, a status that was unattainable under European political/economic systems. For the time being, however, a bungalow nested inside a row of identical bungalows would have to do. And while the palaces and sculpted gardens of Versailles were out of reach, they had their little plots of earth on which to plant their shrubs and weedless grass shaped and trimmed to unearthly standards of perfection. Instead of monumental statues, they had rocks and swans and flamingos and little boys carrying fishing poles. Their homes would be their castles, of sorts, and they would dream ...

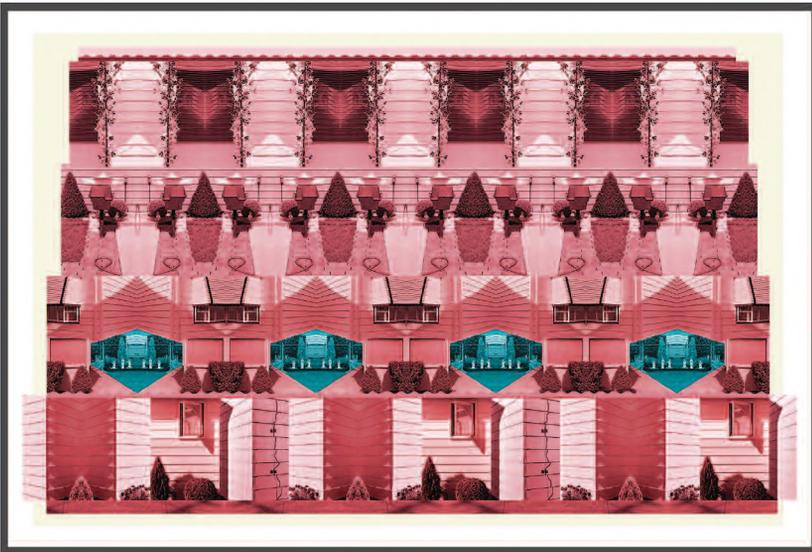
Using digital tools, I am able to re-visualize that dream, to begin to imagine Versailles from their individual efforts. Touring Suburbia represents an attempt to recapture a dream once glimpsed.



*Touring Suburbia / Number Three*  
 32 inches x 32 inches  
 Pigment ink on fine art rag



*Touring Suburbia / Number Three*  
 Detail



*Touring Suburbia / Number Four*  
 40 inches x 32 inches  
 Pigment ink on fine art rag



*Touring Suburbia / Number Four*  
 Detail

*Contact*

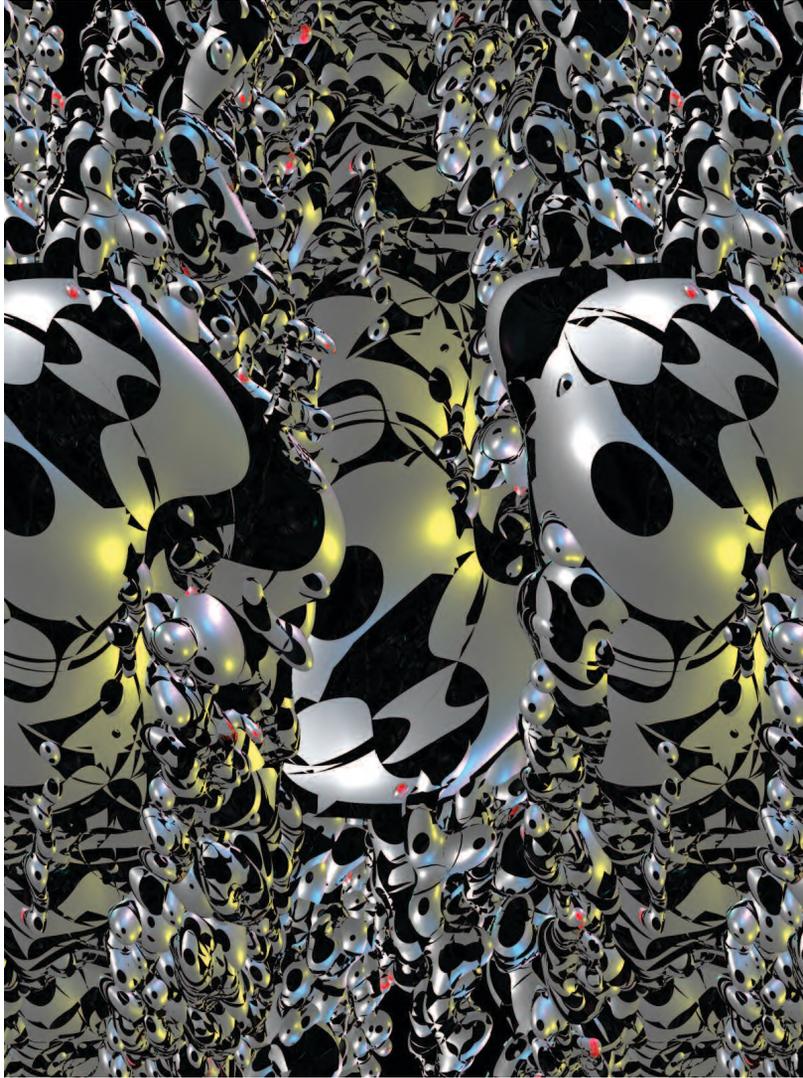
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## **Yoichiro Kawaguchi**

This mixed-reality work represents the growing visual impact of lenticular 3D imaging. Viewers can participate in this visual field without using any tools beyond their own eyes. As they stand beside or walk around this huge column of 3D images, they experience a kind of meta-perceptual vision with a feeling of devotion stimulated by deep stereoscopic CG visuals.

This 3D image is the highest resolution image composed in 15 serial flames and the first time such a huge scaled lenticular image has been used to cover four surfaces.



*Tentacle Tower*  
1 meter x 1 meter x 1.8 meters  
Lenticular 3D picture light box

## Ji-Young Kim

### ARTIST STATEMENT

The performance has three different screens of three different points of view. The long white scarf has ambiguities that suggest other meanings, such as woman's ego, child's memory, and god's power.

Salp'uri (Korean Spirit-Cleansing Scarf Dance) is a tool to express my point of view because the dance means literally to wash evil spirits. It is the solo dance of spiritual cleansing. The only tool the performer uses is a long white scarf as she moves through a series of emotions from sadness to invigorating joy. The performer expresses a woman's desire to call her identity back to the world of the living. The white scarf is a symbol of life, virginity, birth, space, time, and emotion. The performance does not fulfill any religious function. It only portrays itself in every step. During this process, the performer's movement reveals striking energy and movement as she creates each shape of the long white scarf.

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### Director

**Ji Young Kim**

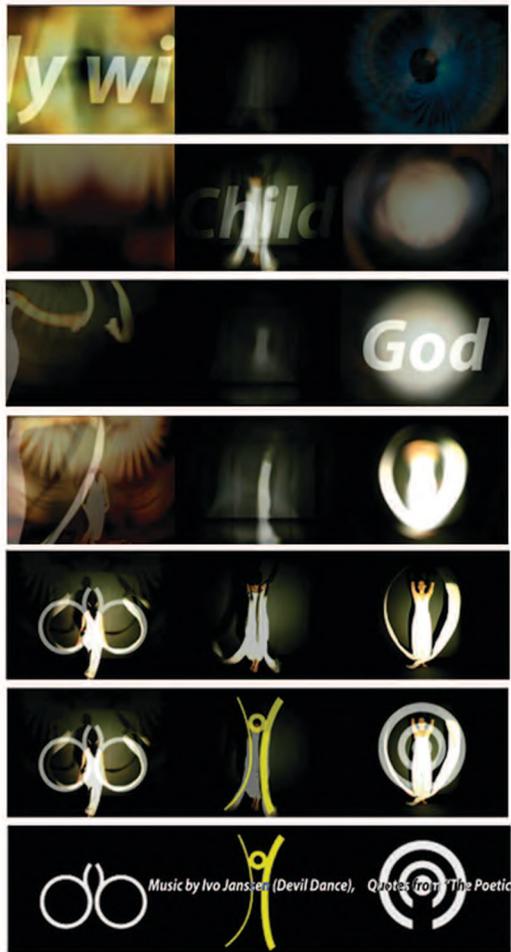
### Producer

**Ji Young Kim**

### CONTRIBUTOR

#### **Don Arieu**

Pratt Institute



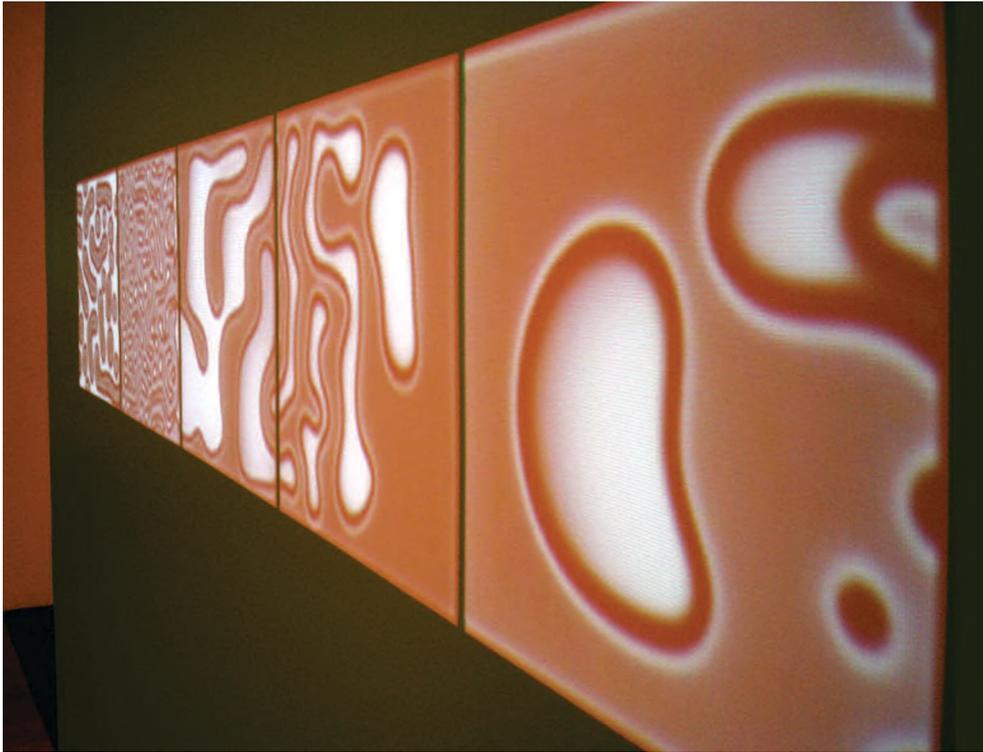
*Point of View*  
05:00  
Animation

Contact

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bkpub@blep.com  
www.blep.com

## Brian Knep



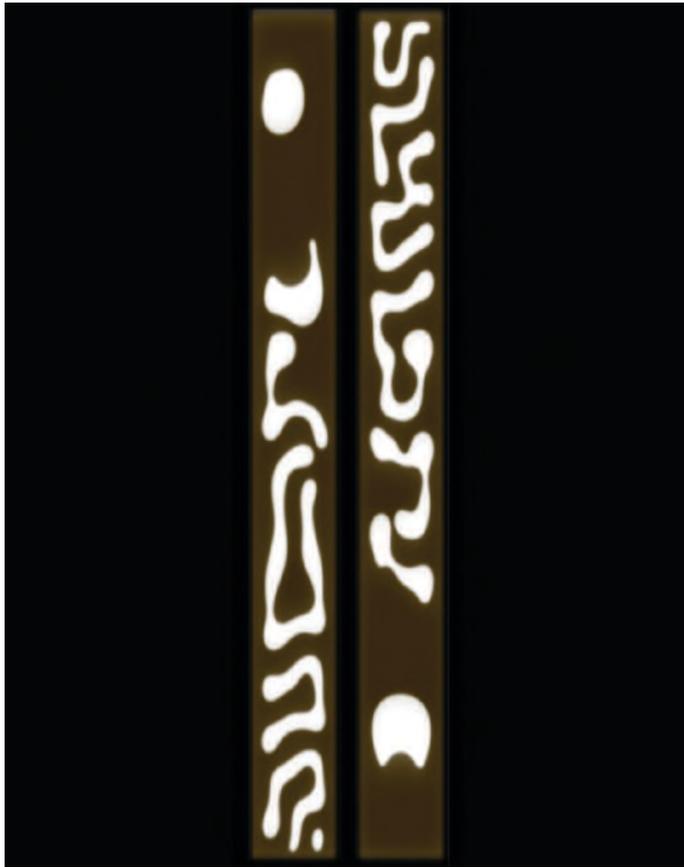
*Drift*  
75 inches x 15 inches  
DVD player, projector

### ARTIST STATEMENT

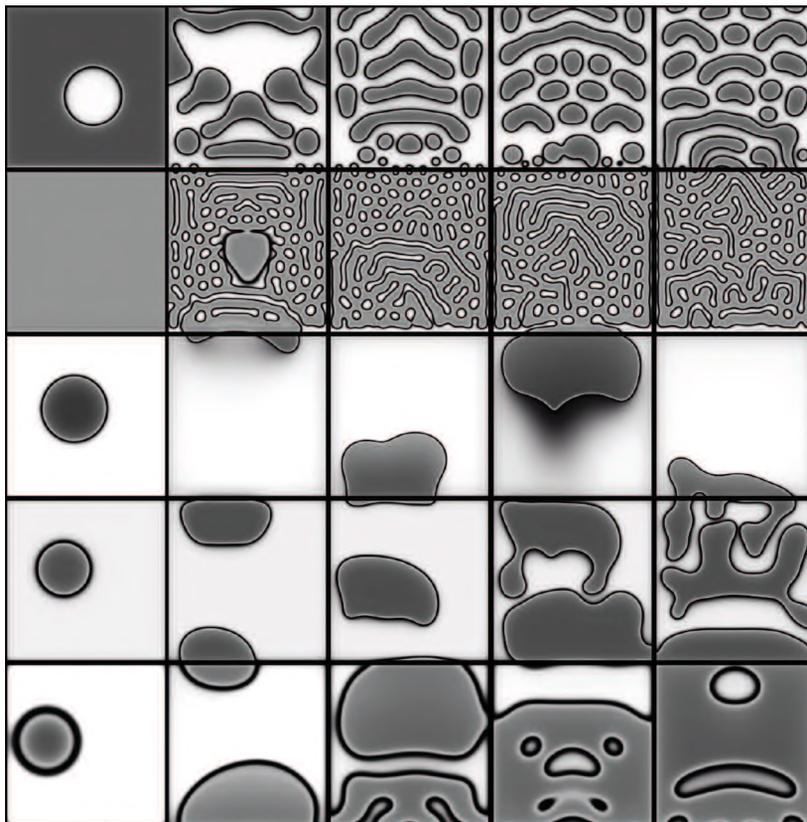
Organic shapes grow, shrink, split, and join across five projected panels, drifting slowly from right to left and traveling from one panel to the next. When a shape drifts off the left edge of the leftmost panel, it reenters into the rightmost panel. The system is a closed loop, and the shapes never repeat.

Each panel imposes a different set of rules governing movement and growth, and as a shape crosses a panel boundary, its look and behavior change. Although the panels look very different, the growth on each is based on the same set of chemical models, with simple changes in the parameters of these models causing large changes in behavior.

This work is one of a number exploring complexity-out-of-simplicity and infinite-out-of-finite. The works are embedded in architectural spaces (walls, columns), bringing the spaces to life.



*Drip*  
 30 inches x 96 inches (variable)  
 DVD player, projector



*Drift Grid 1*  
 80 inches x 80 inches  
 DVD player, projector

Contact

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## **Kumiko Kushiyama**

### ARTIST STATEMENT

Transparent Blue is a new type of interactive visual communication that combines art, virtual reality, and architecture. On the cold surface of a touch-screen table, users draw images by hand and experience the estrangement between humans and nature before they regain peaceful unity with the world.

In the future, We hope this system will be used by many people and will become a tool that enhances architectural environments and communication .

We presented interactive works in the Art Gallery at SIGGRAPH 2000, 2003 and 2004.

### CONTRIBUTOR

*Programmer*

**Atsushi Morimoto**



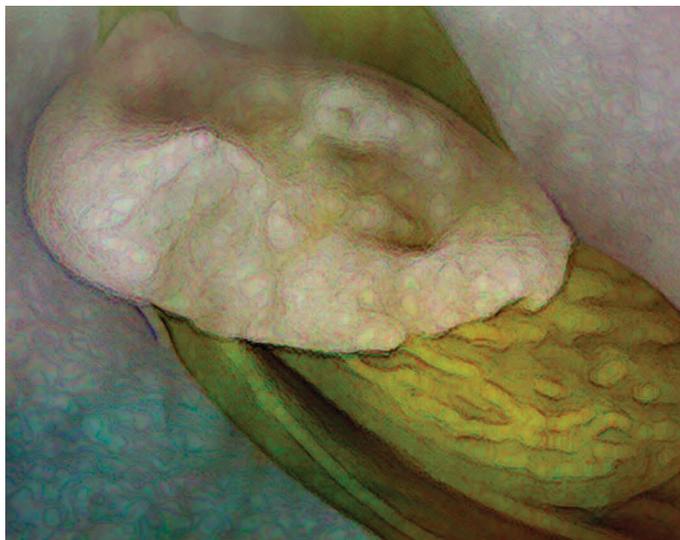
*Transparent Blue*  
Touchscreen interactive program

## AnnMarie LeBlanc

### ARTIST STATEMENT

Daughter's Rebirth uses organic objects (germinating plants and water) to depict natural life cycles and, in this work, the concepts behind the archetypal myth of Persephone. The work is an image celebrating the youthful goddess (depicted as a newly formed seedling) and her role as queen of the underworld. The imagery simultaneously celebrates her seasonal return to earth with the coming of spring. Persephone has returned from the underworld to walk the earth again, and Demeter, her mother, pours forth her blessings to welcome her beloved daughter home with the revival of spring.

AnnMarie LeBlanc began working in digital imaging in the mid-1980s, at the very birth of the medium. She is the chairperson of Visual Communication and Design at Indiana University–Purdue University in Fort Wayne, Indiana. Originally trained as a printmaker, LeBlanc naturally layers imagery, photography, color, and textures to create a visual history on the surface of her work. Her images possess a great feel for the physicality of traditional printmaking processes. LeBlanc applies and reapplies layers to achieve a rich and deep image. Within its framed boundaries, Daughter's Rebirth is a record of time and process.

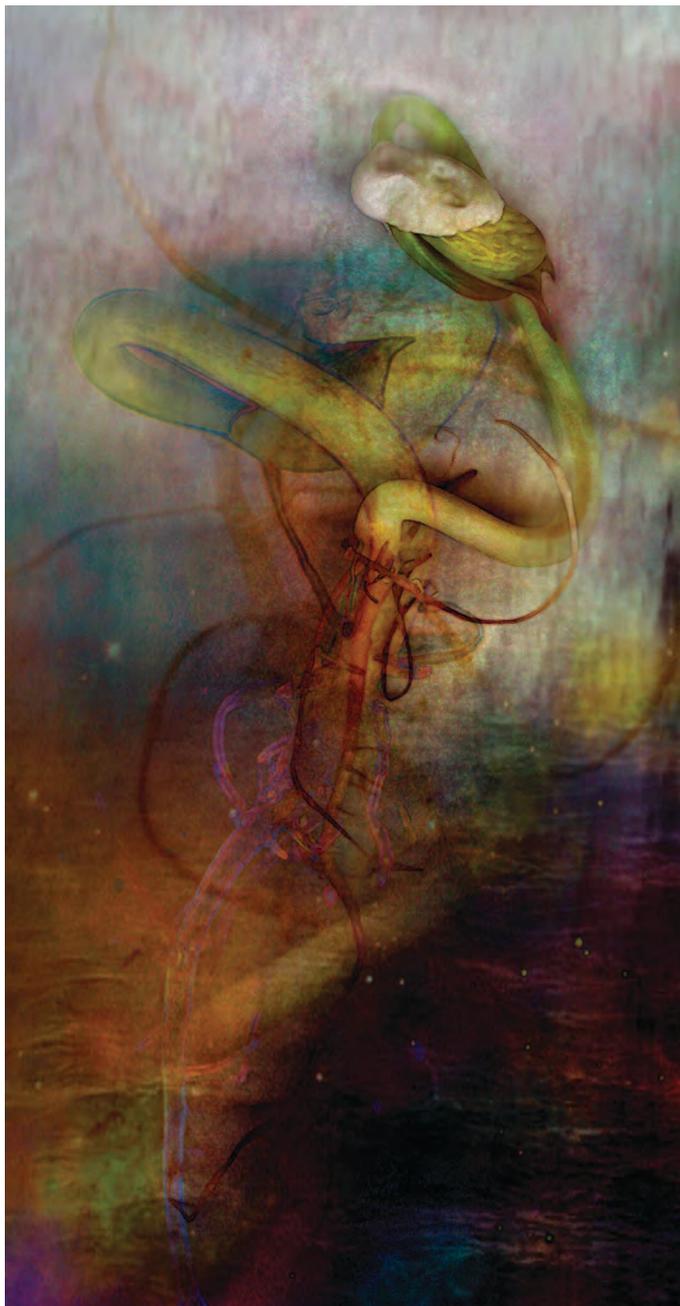


*Daughter's Rebirth*  
Detail

### Contact

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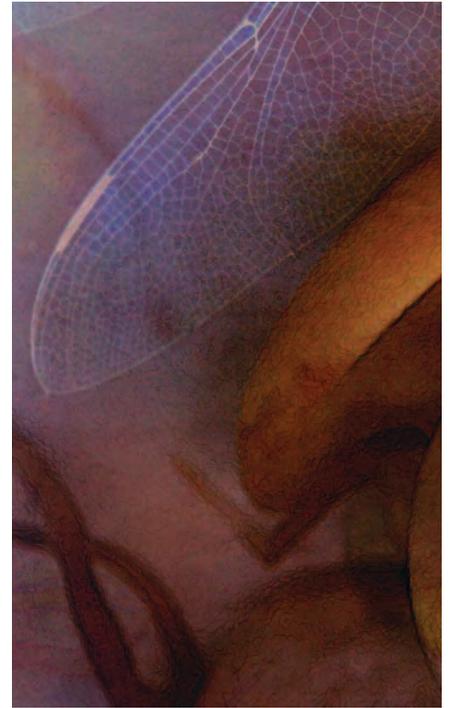
+1.260.481.6053  
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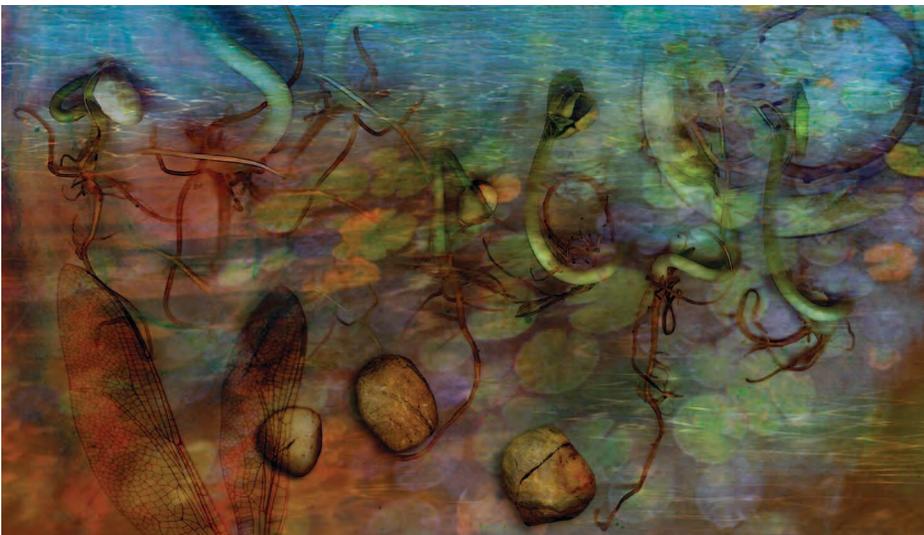
*Daughter's Rebirth*  
39 inches x 24 inches  
Archival, digital print



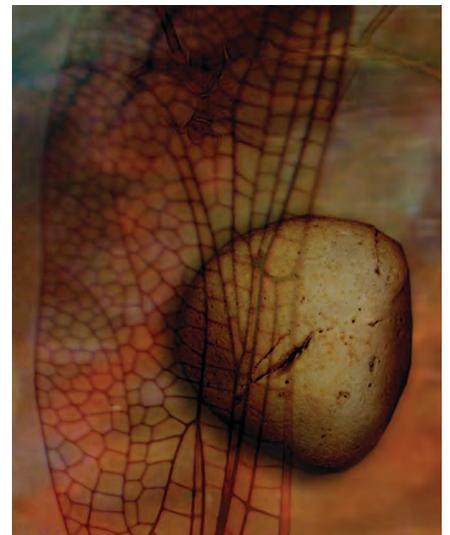
*Subterranean Empress*  
32 inches x 40 inches  
Archival, digital print



*Subterranean Empress*  
Detail



*Submariner: Epic Dance*  
24 inches x 40 inches  
Archival, digital print



*Submariner: Epic Dance*  
Detail

## Patrick Lichty

### ARTIST STATEMENT

The ongoing Made In China series takes a historical event from art history and combines it with elements of networked society and globalization. Made in China was created as art objects suitable for the gallery and museum industry, which has as part of its funding base corporate officers guilty of global outsourcing and resultant wage deflation. This series seeks to maximize the artist's return on investment (ROI) through utilizing Chinese copyist ateliers to short-circuit part of the capital outflow to Asia by obtaining retail pricing for the artist, while providing some compensation for workers in other countries.

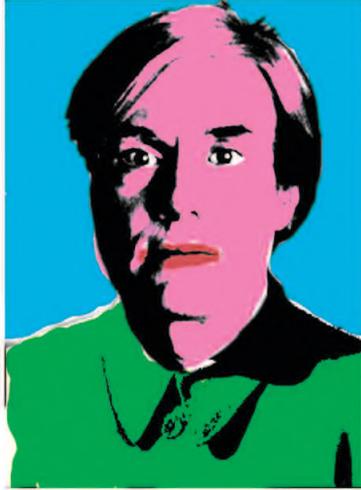
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The historical precedent for this work comes from Ludwig Mies van der Rohe, who gave directions to a sign shop for construction of a work over the phone. In the internet/globalist age, the sign shop is no longer around the corner; it is in any of the developed/developing countries. The artist no longer needs the "school" or atelier model; the atelier is now a just-in-time online reseller of ironic physically repainted digital copies, to be reworked by the artist, mounted and hung.

Currently, there are 12 works in this series.



*Made In China: Mao vs. Andy*  
4 inches x 20 inches x 16 inches  
Network-based oils

Contact

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## Ligorano/Reese

### ARTIST STATEMENT

We live in a world where the highest function of the sign is to make reality disappear and, at the same time, to mask that disappearance.

Jean Baudriallard, *The Perfect Crime* (1996)

In Memory of Truth takes off from the debate attributed to the medieval theologian Thomas Aquinas regarding the passage of angels. Over time, the philosopher's original proposition has been rephrased to be about angels dancing on a pin.

Ligorano/Reese reinterpret this theory with this installation. Like many of the artists' other pieces, In Memory of Truth combines media and manipulates imagery from print, film, and internet sources to reveal latent political meanings and messages.

Using a custom-designed optical system incorporating a micro-LCD display and primary lens, the artists have devised a way to project moving video images on the head of a pin. The viewer sees a montage of Hollywood films with the aid of a magnifying glass.

Warsaw, Beirut, Belfast ... the streets themselves have now become a permanent film-set ... The West ... now plunged into the transpolitical pan-cinema of the nuclear age, into an entirely cinematic vision of the world ... Those American TV channels which broadcast news footage around the clock ... have understood this point very well. Because in fact this isn't really news footage any longer, but the raw material of vision ...

Paul Virilio, *War and Cinema: The Logistics of Perception* (1984)



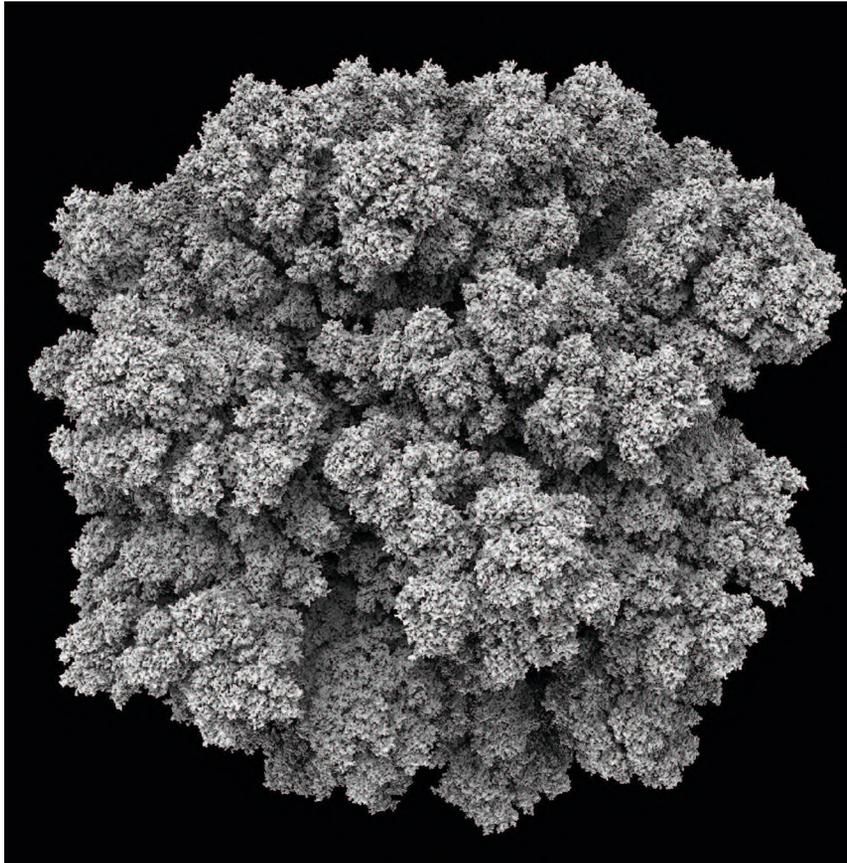
*In Memory of Truth*  
Table top, with 8 feet x 8 feet wall piece  
Micro-video projection system, digital print, DVD video

Contact

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## Andy Lomas

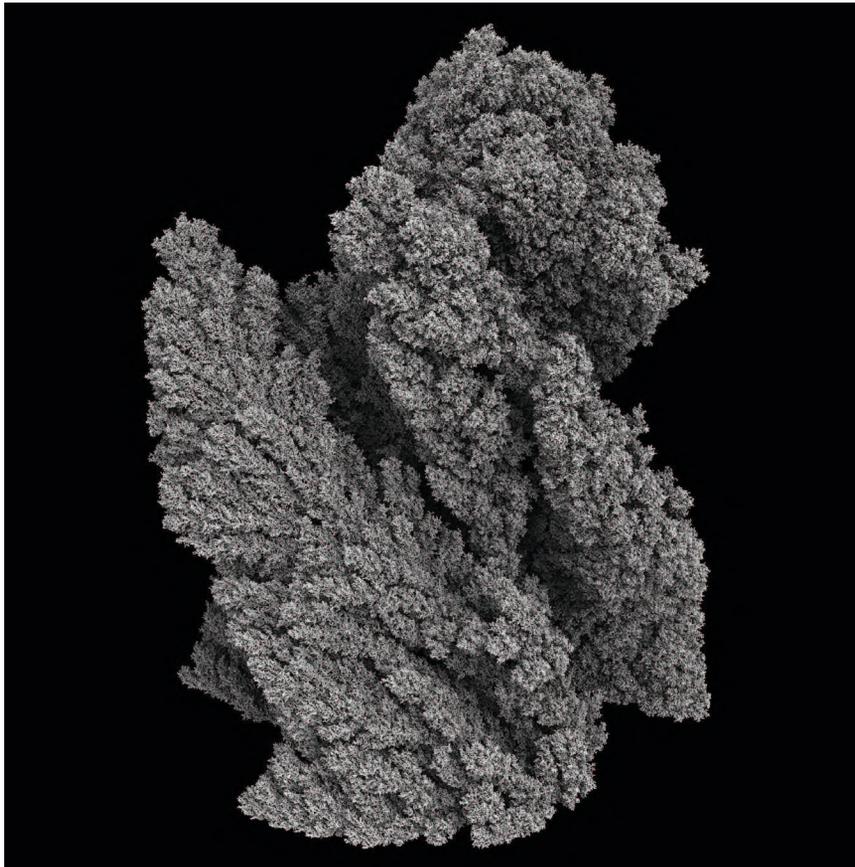


*Aggregation 2*  
15 inches x 15 inches  
Printed digital image

### ARTIST STATEMENT

These works come from a fascination I have had for many years with the complexity of organic natural forms and their relationship to simple mathematical rules. Influenced by the work of D'Arcy Thompson, Alan Turing, and Ernst Haeckel, they study how the forms of plant and coral-like structures can be created by digital simulation using rules for flow and deposition.

These sculptural shapes are created by a process of accretion over time. They are gradually grown by simulating the paths of millions of particles randomly flowing in a field of forces. Over time, they build on top of an initial simple seed surface to produce structures of immense complexity.



*Aggregation 4*  
15 inches x 15 inches  
Printed digital image



*Aggregation 9*  
15 inches x 15 inches  
Printed digital image

Contact

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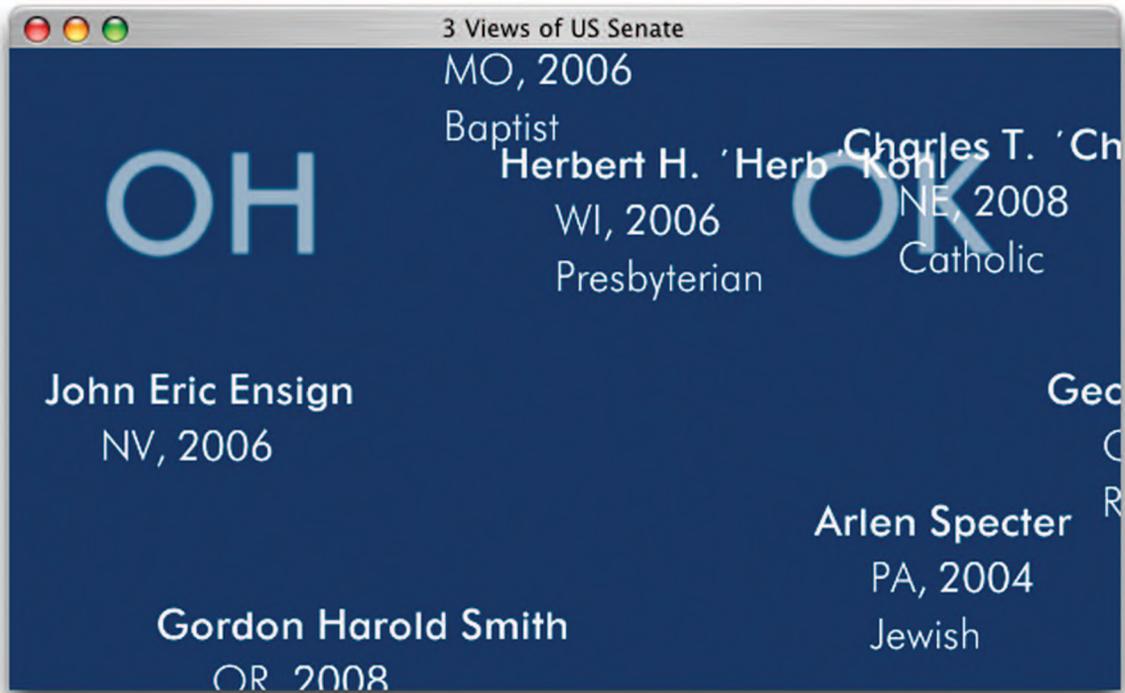
[www.david-lu.net/v5/\\_senate.html](http://www.david-lu.net/v5/_senate.html)

## David Lu

### ARTIST STATEMENT

Three Views of the US Senate (2003) is a political data visualization that uses dynamic typography to tell a story about the makeup of the United States Senate prior to the then-upcoming 2004 elections. In particular, senators are presented by party, by year of next election, and by state. The story that emerged from the data was an open-ended one: could the Democrats retake the Senate?

The project uses data scraped from Project Vote Smart, an online political database, by a robot written in Python. The visualization itself was designed in Adobe Illustrator and implemented in Processing. A Java-enabled web browser is required to view this piece.



*Three Views of the US Senate*  
Web-based art

Contact

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## Meats Meier

### ARTIST STATEMENT

Meats Meier hasn't put a pencil down since the time he drew Superman when he was two. Creating art that pulls you inside a world of complex forms and shapes, Meats communicates a strange universe of comingled mechanics and organics. By using Maya, ZBrush, and Photoshop, he has the freedom to explore infinite variations of his vision in multiple dimensions. With themes that include nature, toys, childhood, and vision, he allows us to look at the world around us with entirely new eyes.

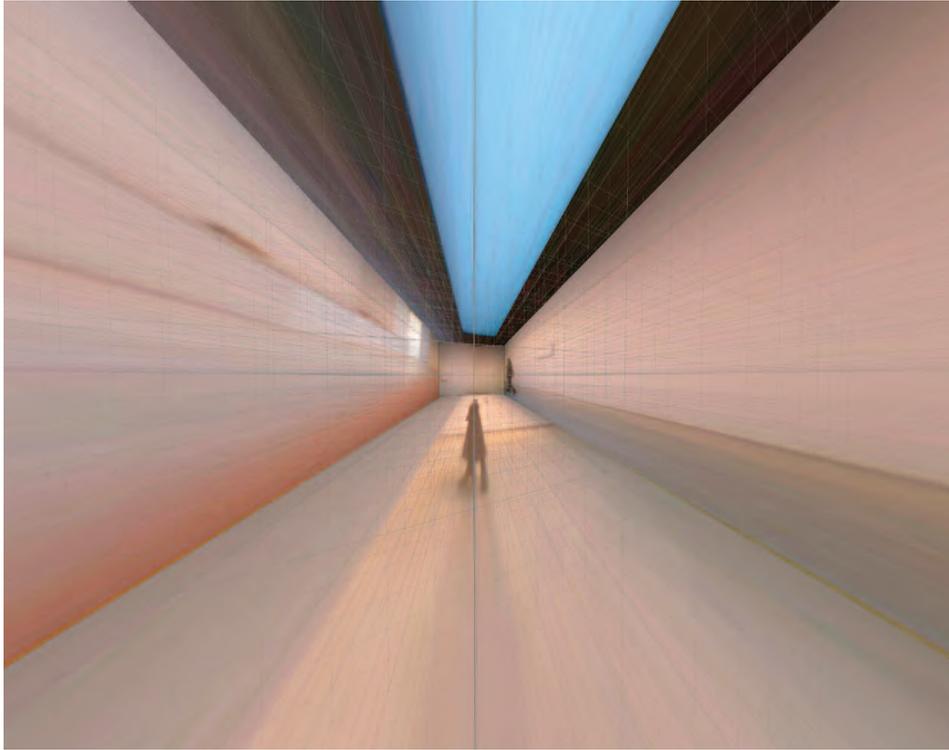


*Rocking Horse*  
40 inches x 40 inches  
Digital image

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## Jon Meyer



#86b.13  
Chelsea, New York, 2004  
Screen-based installation

### ARTIST STATEMENT

These two images are part of an ongoing series of multiperspective collages I started in 2001.

To construct the collages, I start by taking dozens of digital photographs of an environment. Then I use perspective warps to map the images to a nearly orthographic projection. Finally, I position the warped images in a three-dimensional computer model. The results are presented both as screen-based computer installations and as still images. In the installations, I show the models rotating in real time but disable the hardware depth buffer, further collapsing the image plane.

My intention is to create spaces that simultaneously evoke the real, the imaginary, and the virtual (mediated reality), without letting the viewer settle on any one reading. The images and installations emphasize the co-existence and co-dependence of these three modes of experience.

The work is inspired by Lorie Novak's multiple-exposure images and by David Hockney's Polaroid montages.



#86b.1  
Oaxaca, México, 2002  
30 inches x 24 inches  
Digital C print

## Mark Millstein

### ARTIST STATEMENT

The design of kite forms is born from my inclination for combining the disciplines of digital imaging, printmaking, and sculpture. I employ digital tools to appropriate, composite, and manipulate elements of photography, drawing, and synthetic images, which are applied onto natural-fiber paper using wide-format inkjet printers. Design variables and elements are also derived from historic Chinese, Japanese, and German kite design. Older technologies such as woodworking, knot-tying, and paper folding help complete the manifestation of each object, which originates only as a technological virtual vision.

The forms are partly influenced by the structures and rigging of fishing vessels in my home city, New Bedford. The surface designs are created for both close and distant viewing from layered photographic elements of natural and industrial forms, and textures are selected and altered primarily for overall color effect. The shapes of the kites

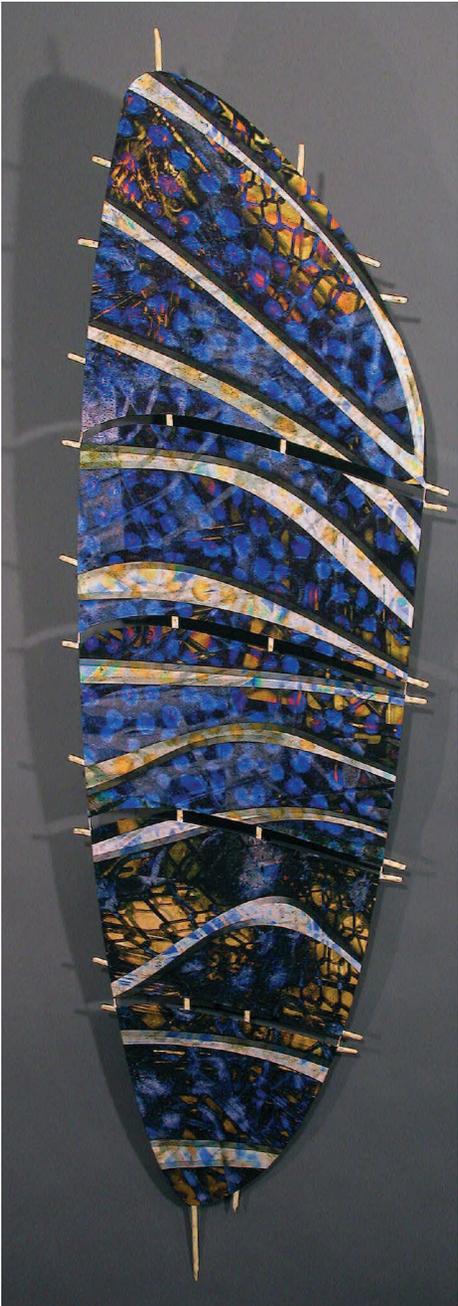
### Contact

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and individual sails are drawn to create an asymmetrical yet emblematic implied relationship with flight and wind. I print on a small variety of Japanese papers that I pre-coat to improve the surface reception of ink. I typically design in series, where each group of two or three share a common structure in evolution. Light and shadow may also play a role in displays.

Ultimately, the alliance of digital design, quality paper, and sculpture becomes the medium that I am able to express myself best with, as I am able to draw directly on a variety of old and new technologies including photography, three-dimensional design, and printmaking.



*Reach Kite*  
54 inches x 16 inches  
Inkjet on paper, mixed media



*Echo Kite*  
54 inches x 16 inches  
Inkjet on paper, mixed media



*Lichen Kite*  
54 inches x 16 inches  
Inkjet on paper, mixed media

Contact

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**Masaaki Kawata**

**Kenji Kohiyama**

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## **Yuta Nakayama**

### ARTIST STATEMENT

In the 19th century, postcard-size stereoscopic photographs were very popular. 3D Muscle aims to recreate these photographs with 21st-century mobile communication technology that captures the perspective and depth we perceive in real life.

Today, mobile phones are essential components of our daily lives. Camera phones, especially, enrich conventional audio communication by sending images. 3D Muscle is a stereoscopic moblog system that shoots stereographic images and posts them to a weblog using two mobile phones with cameras arranged in a line. A custom controller sends a serial communication signal to synchronize exposure times in the camera phones so they can be operated as one mobile device. This project is partially supported by CREST, JST.



*3D Muscle*

Two mobile phones controlled by special hardware  
Network art installation

Contact

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## Laura Nova

### ARTIST STATEMENT

Laughing, crying, kissing, blowing, arguing, apologizing are only some of the human actions and dramatic gestures that I explore to create my art. Exploring sculpture, installation, and performance, my work is inspired by universal emotions like sadness, happiness, desire, anger, and remorse. "The Last Word" is typical of my work in that it engages the viewer in a real and unmediated experience, bringing unsuspecting rituals of life under the lens of art. It reads as a street sign, depicting a "Dear John" voicemail message, exposing an instance of vulnerability through the use of language. At a glance, my work deals with one-liners, puns, and cliché, but it delves deeper, exploring concepts of public and private behavior and how these moments manifest in the everyday. Commonplace elements connect us to these situations that I produce (we know these things, we know their use), yet they surprise us and catch us unaware.



*The Last Word*  
Billboard, 10 feet x 20 feet  
Banner-grade PVC

## Oral Fixations

### ARTIST STATEMENT

Oral Fixations is a single-channel video installation that evolves over a seven-hour time period. The project is a darkly humorous look at a habit of endless consumption and the resulting accumulation of waste. A narrative gradually emerges from the on-screen action that depicts a large-mouthed character who dances while flossing its one protruding tooth. A conveyor belt regularly delivers factory-farm-fresh hams that the character delights in taking one large bite from and then tossing aside. Over the duration of the piece, the hams begin to pile up in the room until, after seven hours, the room is filled with the refuse of this gluttony. The viewer is encouraged to revisit the piece periodically throughout the day and see how the discarded hams build an oddly humorous environment of waste around the character.

The length of this piece introduced several technical challenges: displaying changing images for seven hours at a constant frame rate and simulating the motion of seven hundred falling hams. Each iteration of the character's motion was constructed using several technical elements. The animation of the character is motion capture data captured using a Vicon motion capture system with 12 MX-40 cameras. The motion capture data has been non-uniformly scaled in Maya to emphasize the action. The floss is a dynamic simulation created within Maya.

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The project was created and produced by an interdisciplinary team of artists, actors, and computer scientists:

### Artists

**Moshe Mahler**  
**Bum Lee**  
**James Duesing**  
**David Tinapple**

### Computer Scientists

**Jessica Hodgins**  
**Doug James**

### Actor

**Jay O'Berski**



*Oral Fixations*  
Projected video

## Stephanie Owens

### Contact

**Stephanie Owens**  
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### ARTIST STATEMENT

I developed Liquid Eden as an installation informed by the concept of organic data modeling but with a focus on the aesthetics of public space. I am interested in how network technologies like the web extend the techniques used by traditional landscape painting to define a threshold between representational and real space. By pairing the dynamics of real-time interaction with the art-historical understanding of the landscape, Liquid Eden seeks to visualize and extend the concepts of transparency, materiality, and presence in the context of an interactive environment.

As a frequent subject of landscape painting, gardens have often been used to convey a sense of tension between form and content, raw material and human intervention. As in the work of Rococo artists like Fragonard, the garden is a stage for human action. Its contrived rhythms and regular patterns convey the will of someone no longer present. In this sense the garden is a system, artifice, and theatrical space that always anticipates its user and betrays the actions of those who have come before.

In the same way that we can read the patterns of landscapes as the evidence of human intention, Liquid Eden seeks to visualize the collective mark of networked communication. It is conceived as a dynamic, living landscape that makes people and their online presence the vital material in creating its form.

The installation exists as two large-scale, networked projections of two single, white lilies onto a pair of Baroque panels. The lilies are entirely controlled by online users whose interaction with the lilies is immediately reflected in the physical installation. Over the course of the exhibition, the lilies are systematically destroyed by the cumulative actions of visitors to the project web site, forming a luminous animation in perpetual erosion. If at any time there are no online users interacting with the images, the eroded lilies slowly regenerate back to their original state.

As witnesses to this cycle of life and disintegration, viewers who stand in proximity to the installation see the remote interaction of anonymous others, typically invisible in everyday use of the web, made visible. With the sense that someone is intentionally transforming their immediate surroundings, viewers of the installation experience the project as a kind of threshold architecture where the presence of others, layered in time, has an impact on the way they understand and interpret their relationship to public space.



*Liquid Eden (The Discreet Paradise of Networks)*  
Web-based art installation  
[www.medianoche.us/liquid\\_eden](http://www.medianoche.us/liquid_eden)

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## **Vivek Patel**

### ARTIST STATEMENT

Black lines extend, curl, and twirl to the silky notes of a trumpet. They grow, expand, and dance to the rhythm and melody of a sound track. As time passes, so does the black that turns to red, blue, green, and yellow. On the right notes, lines disappear one by one and reveal the painting beneath.

*Director*

**Vivek Patel**

*Producer*

**Vivek Patel**

CONTRIBUTOR

**Center for Electronic  
Communication**



*Black Lines Dancing*  
02:43  
Animation

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## **Vivek Patel**

### ARTIST STATEMENT

The gestures of a cello player with his bow on the belly of a cello are described as line strokes in this animation. All the lines are synchronized to Johann Sebastian Bach's Suite No. 2 in D minor. The lines grow and move to the rhythm and create visual metaphors for the melody. What makes this animation a treat for the eyes and ears is the impeccable timing of the abstract elements with the music. In the end, what remains on the screen is the idea of a cello with four strings.

*Director*

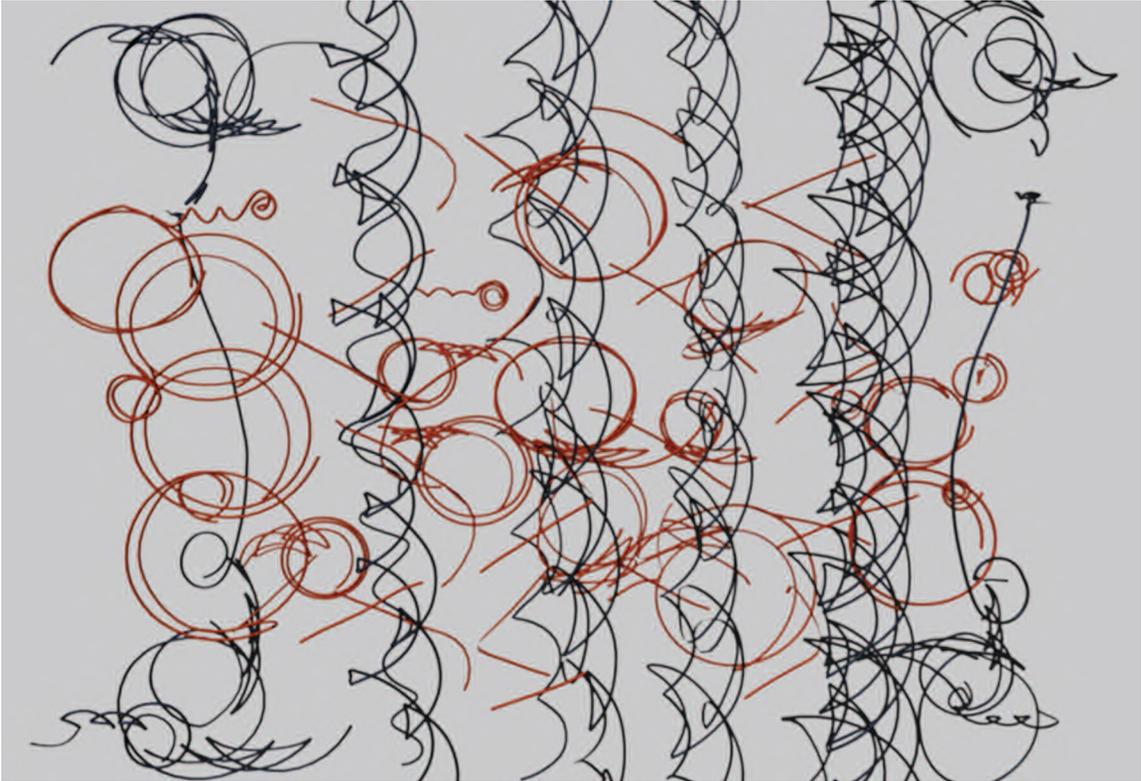
**Vivek Patel**

*Producer*

**Vivek Patel**

CONTRIBUTOR

**Center for Electronic  
Communication**



*Four Plays*  
02:15  
Animation

Contact

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## Kate Pemberton

### ARTIST STATEMENT

My practice addresses the cultural effects that technology has on society by examining the influence of the machine and digital technologies. My work ranges from interactive electronic installations, computer animations, digital photography, and collaborative projects to canvas-based work and textiles.

My current interest is in the status of craft objects in an age of electronic consumerist culture. I identify crossovers between computer graphics and craft techniques, and explore them by making tangible art objects.

My latest projects suggest an emotive, quirky, humorous aspect of functional computer graphics and electronic devices by drawing parallels between their form and function, and the techniques and meanings embraced in traditional needle crafts. For example, I have recently completed a project that allows wallpaper designs to be sent to mobile phones via WAP technology. The designs can also be downloaded as patterns for cross-stitch samplers.

I concern myself with the visual appeal of machines and electronics. I am interested in how they are considered as objects of desire, in terms of their fabrication and capabilities, and the status they give the individuals who own them.

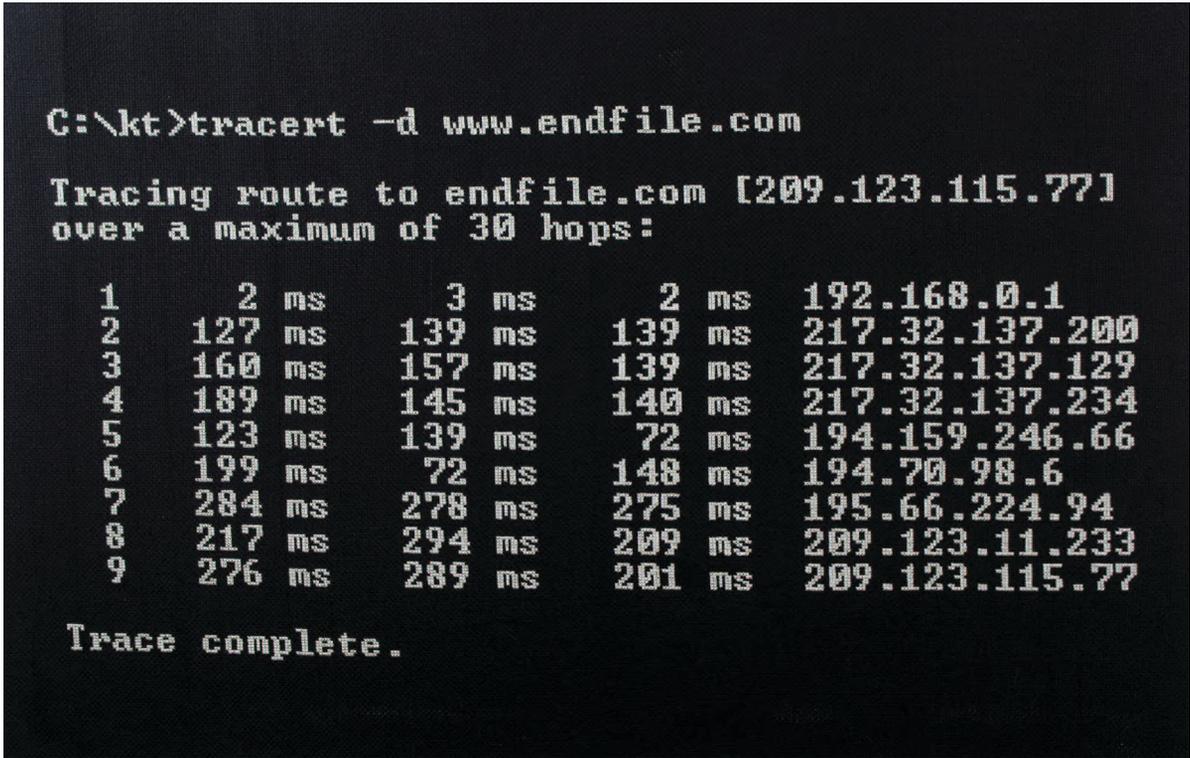
The catalogue section of endfile.com includes visual and written references to my individual projects.

Tracert is an examination of how traditional craft ideas translate into the modern multimedia networked world. The sampler has been cross-stitched from a transposed graphic of a tracert DOS command.

Tracert can be seen as a modern metaphor for the crafted tradition of creating cross-stitch samplers. Essentially samplers were a method of learning to stitch, and they were also used to express important details of your life in a pattern of simple icons and symbols that represented what you had accomplished, or endured. Samplers included icons for how many children you had and where you lived, and included symbols that suggested emotional events (for example, marital infidelity – a duck – and luck – a horseshoe).

The tracert DOS command is the command users enter into a DOS window to trace the network points that join them with another computer on the internet. Typing “tracert www.endfile.com” into DOS will print a numerical display of where a small packet of data travels between the computer where the command was entered and the computer that is www.endfile.com. In tracert, the IP address relates firstly to my computer in the UK, then the internal network in my house, then the local telecom exchange down my road, then the larger exchange, and so on until it reaches the www.endfile.com computer in America. As each point is reached, its time is relayed in milliseconds. These points have significance to me, as they contain personal, locative data in the journey to find my web site.

These events, written in numbers that account for a journey through a network, are contrasted with the idea of traditional narrative samplers.



*Tracert*  
30 inches x 18 inches (framed)  
Cross stitch: grey embroidery silk, black aida



*Tracert*  
Detail

Contact

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## Jan Piribeck

### ARTIST STATEMENT

For close to six years, I have been acquainting myself with GIS (Geographic Information Systems) and have utilized this medium in tandem with other digital imaging systems to chart the geography of physical and psychological space. The GIS components include people and methodologies as well as the hardware and software devices used to combine and generate data and visual displays.

This image is a map that gives form to the aesthetic preferences of a group of people that I selected to do a visual survey of my neighborhood in Portland, Maine. While the subject matter is local, the project has relevance in the larger context of exploring the role of art, aesthetics, and creativity in community development. The map is part of a series of small-scale multiples that reflect my concern with visual cognition; I am interested in creating images that serve to illustrate or embody thought patterns and processes.

Influences on my thinking and creative work include the writings of Theosophists Annie Besant and C.W. Leadbeater, who in 1901 published the book, *Thought Forms*, which addressed the power of thought and its manifestation as visible form. I am also very interested in the blackboard drawings of Rudolf Steiner and Joseph Beuys, which were a means of visualizing ideas about art and other subjects. Beuys once stated: "Everyone is an artist," which is a concept central to my project.

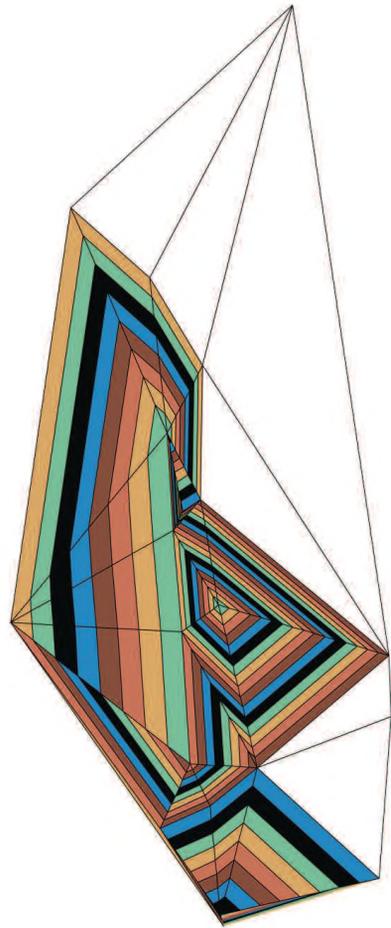
While I am trained in the tradition of making authentic forms in relationship to a specific medium (painting) and a primary discipline (visual art), my current interests lead me toward producing visual forms that can be co-authored or replicated by individuals other than myself. GIS has to do with spatial analysis and awareness, and has the capacity to create a better understanding and appreciation of both the natural and the built environment. My intention is to make maps of individual and societal perceptions, views and opinions, which serve to both unite and separate human beings from one another. Many contemporary artists are incorporating elements of GIS into their work, such as spatial coordinates, digital maps, and remote-sensing images. I am very interested in the full aesthetic impact of this medium, and more specifically I'm interested in using it to address issues related to cultural and environmental sustainability.



*ColorTin*  
14 inches x 20 inches  
Inkjet print



*ContourTin*  
14 inches x 20 inches  
Inkjet print



*FunctionTin*  
14 inches x 20 inches  
Inkjet print

*Contact*

**Amit Pitaru**

[pitaru@nyu.edu](mailto:pitaru@nyu.edu)

<http://pitaru.com>

<http://insertsilence.com>

ITP, New York University

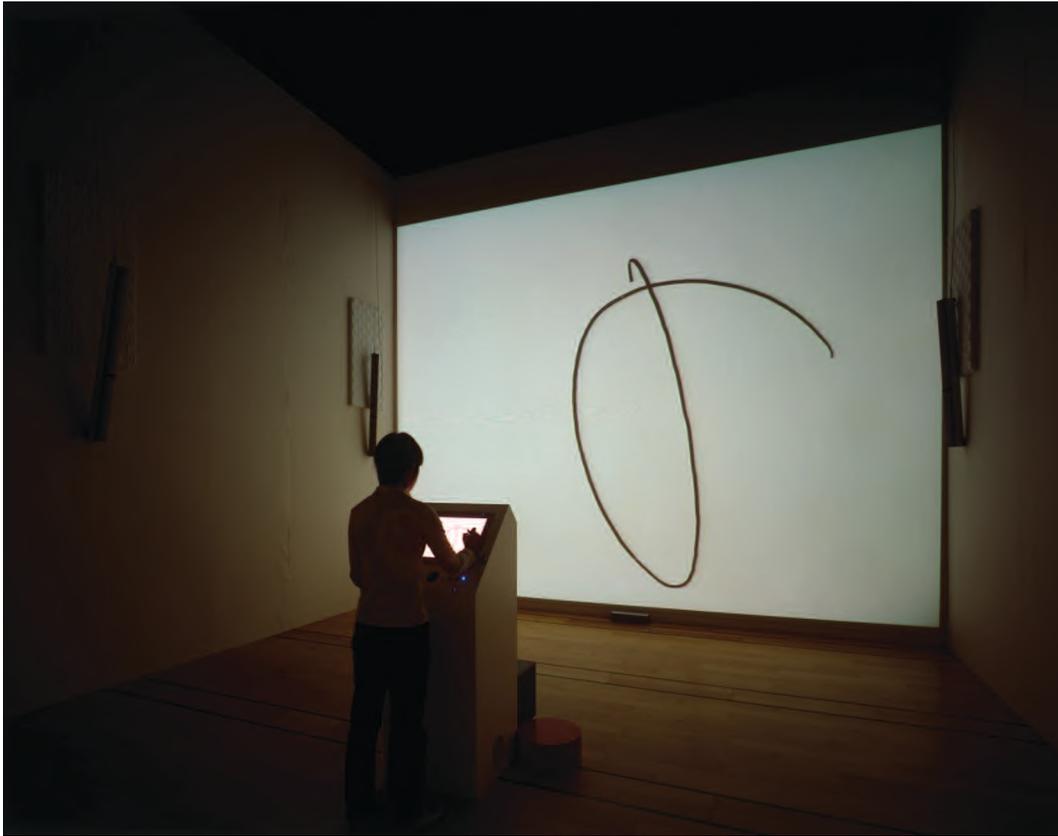
<http://itp.nyu.edu>

New York, USA

## **Amit Pitaru**

### ARTIST STATEMENT

Sonic Wire Sculptor allows users to draw three-dimensional wire sculptures that produce audio in surround sound. By using a pen on a screen, users experience tangible audio/visual events as they explore new connections between the two media.



*Sonic Wire Sculptor*  
Room 15 feet x 20 feet  
Projection, surround-sound system,  
Wacom Cintic, custom-made kiosk

*Contact*

**Jeff Prentice**  
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## Jeff Prentice

### ARTIST STATEMENT

My prints are constructs of territories and borders, catalogs, and crowds. They became more personal when I returned to Southern California, where already expensive real estate increases in value daily, traffic is congested, neighborhoods are bursting at the seams, and different cultures and lifestyles are the rule and not the exception.

I think of the print area as real estate. The objects and individuals become crowds, populations, neighborhoods, and contained worlds. I view them as cultural portraits and visually percussive formal arrangements.

They are organized as both vistas and flatland, panoramas and page spreads, and consist of thousands of digital photographs, primarily of people, taken in specific locations. Some elements are obtained through web searches and scans.

The process involves shooting over 200 photographs a day for several weeks in various locations. As I cut and paste the images together, I'm balancing digital and painterly aesthetics, allowing aliased rips and rough edges to be the drip and gesture of paint. The obsessive activity of cutting, pasting, reducing, and combining hundreds or thousands of images together is done without a formula and permits radical redirections and changes in form, open to unexpected developments.

My background as a painter influences the way I work digitally. In my studio projects, it can be the unintentional mark, the under-painting, or a subtractive process that resolves the image. Digital technology and installation are natural evolutionary steps, embracing accident, chance, and coincidence. Elements are easily rearranged, stacked, erased, enlarged, suspended, and ordered.



*Diamond Age*  
15 inches x 60 inches  
Digital print

Contact

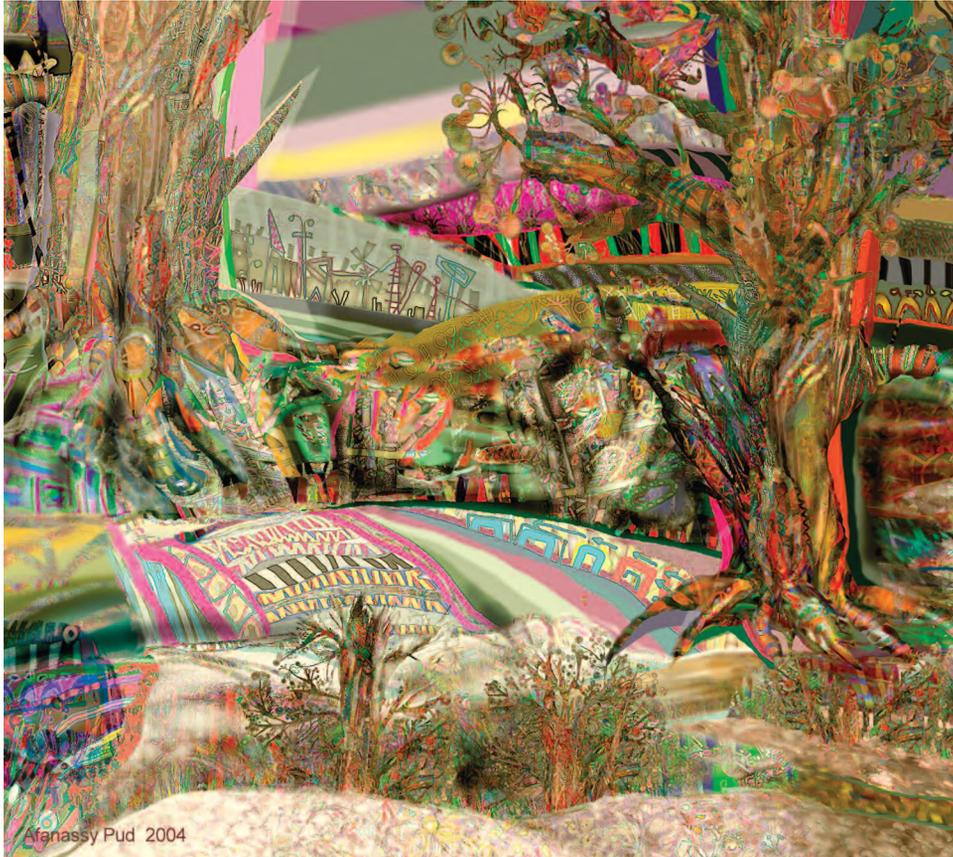
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## **Afanassy Pud**

### ARTIST STATEMENT

Afanassy Pud (Fainzilber Eugeny) was born in Leningrad in 1951 and lives there now. He earned a doctor of science degree from the Leningrad Polytechnic Institute. Since 1983, he has been a member of the Partnership of Experimental Fine Art in Leningrad, and his work has been shown in all of the partnership's exhibitions. Before 1989, Afanassy Pud's works were frequently deleted from exhibitions by government authorities and the KGB. Since then, his work has been seen in many exhibitions in Russia, Germany, Austria, and the US.



*Landscape*  
24 inches x 18 inches  
Digital art

## **Kate Pullinger, Stefan Schemat, babel**

### *Contact*

**The Breathing Wall**  
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[www.schemat.de](http://www.schemat.de)  
[www.babel.ca](http://www.babel.ca)

### ARTIST STATEMENT

The Breathing Wall tells the story of a girl, Lana, communicating with her boyfriend, Michael, through the wall of his prison cell. She is dead; he's been falsely convicted of her murder.

The story is told in parts, alternating between daydreams (which reside in Flash movies) and night dreams. The night dreams reside within the Hyper Trance Fiction Matrix (HTF), experimental software that allows the story to respond to the listener's rate of breathing.

To experience the piece (which resides on a CD, PC only), users need a headset that includes earphones and a microphone. When the microphone is positioned under the nose, the HTF sections respond to users' breathing. The goal of these sections is to induce a hypnotic or meditative state so that users enter the dream.

The Breathing Wall was funded by Arts Council England.



*The Breathing Wall*  
Screen-based interactive program  
[www.thebreathingwall.com](http://www.thebreathingwall.com)

## Joohyun Pyune

### Contact

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### ARTIST STATEMENT

Making Labyrinth led me to process existentialist ideas from the West and Buddhist traditions from the East, and to begin to accept the pattern of life. By embracing both modes of thinking, I seek out the cycle of nature, understand universal loneliness through making art, and share my investigations with others. In this way, I take part in a process of nurturing that forms a basic component of our shared quest for the value of existence.

Computer technologies and digital processes allow me tremendous freedom to create images of multi-layered unconsciousness.

The physical quality, flexibility, and transparency of fabrics are maintained and accelerated when images are placed on them. Fabric flows, it moves and breathes, and, as an art medium, its very presence in space draws in and engages the viewer to partake in the translation of images.



*Labyrinth*  
5 feet x 5 feet x 2 feet  
Dye sublimation/digital printing on fabric

Contact

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www.kevinquennesson.com/  
conscious=camera

## Kevin Quennesson

### ARTIST STATEMENT

“The image is not a state, a solid and opaque residue, it is a consciousness.”

Jean-Paul Sartre, *l'Imaginaire*

This project relies on one main idea: the reality we are perceive is not of flat images, as a digital camera or video camera provides. It is a consciousness “of things,” which are made of a completely different material.

For instance, the consciousness of a walking person is completely different from a movie of a walking person, and the consciousness of somebody is different from a picture of that person.

What would the consciousness be, for instance, of a static person sitting in front of you? In this case, you perceive the person's face, eyes, maybe hands. What of somebody walking on the other side of the street? In that case, you will probably not give place as much importance on the person's face and hands. You would perceive a more impersonal “body in motion.”. What is a consciousness of movement? As Sartre says, it is not different poses following the one after the other; it “is” the consciousness of “a before and an after”.

This project attempts to “represent” those consciousnesses, by detecting in a video stream (from a camcorder or webcam through a computer) the face and hands of a person. Movements are analyzed with statistical body tracking.

If the movement is slow, then only the face and hands are shown: this is the consciousness of a static person. If the movement becomes more important, the face and hands disappear, and the body starts to appear, with a trail. This is the consciousness of a less distinguishable body in motion. The trail reveals its “before” and “after” moments.

Each consciousness shown leaves a mark on the background, which will very slowly vanish. This represents the memory.

While interacting with the camera, users discover the effect of the oscillation between movement/motion blur and static states: only some poses and bodies appear in the screen. It could be a profile or a face with a look in a particular direction – maybe these are those “privileged instants” (Bergson) we would remember from an interaction with somebody, or those “decisive moments” (Cartier-Bresson) that a photographer would like to capture.

If the conscious=camera does not represent the actual biological state of consciousness, it provides at least a poetic and meaningful way of looking at how we act and how we appear, and how we are seen.



**static body**



**moving hands**



**moving body**



**a memory**

*conscious=camera*  
Interactive art installation

## Laura Rusnak

### ARTIST STATEMENT

I am the child of a pack rat and a neat freak, therefore I hoard, but very specific things. I find myself continually making lists and re-organizing my life in an endless cycle of setting “things” in their respective places. I believe there is already an over abundance of accessible information repeatedly begging for my attention. I do not feel the need to create more information to add to the barrage, but to collect, recycle, and re-organize existing information, putting it into some “respective” place.

In 1976, Bantam Books published *The R Document* by Irving Wallace. Almost 30 years, later I incidentally discovered a copy in a neatly bound Reader's Digest tucked away at a Goodwill Store near my parents' home. Although the story is nearly 30 years old, it depicts uncanny similarities to our own current political climate and legislation, such as the Patriot Act.

*The R Document* tells the story of a political conspiracy involving an FBI director, Tynan, who would like to bring about a police state in an effort to control crime, but the proposed 35th Amendment would undermine the Bill of Rights. Enter our protagonist, the Attorney General, Christopher Collins.

### Contact

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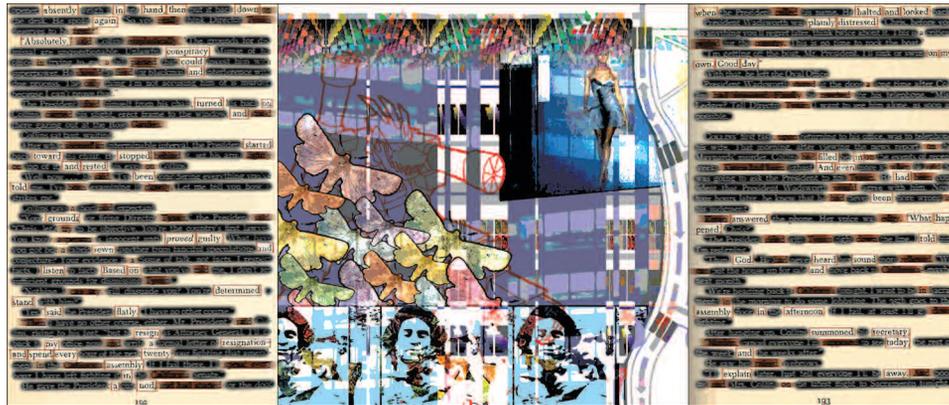
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The (R) Doc Series is a group of digital collages that are the basis for a future handmade book. The series employs erasure: the act of erasing, rubbing into, scraping out or removing from existence (m-w.com) as a way of altering the original text, just as, in many so-called “unclassified” documents, words of concern are blackened out, removing not only content, but also context. Viewers of the documents are then left with the various fragments to piece together into their own interpretations.

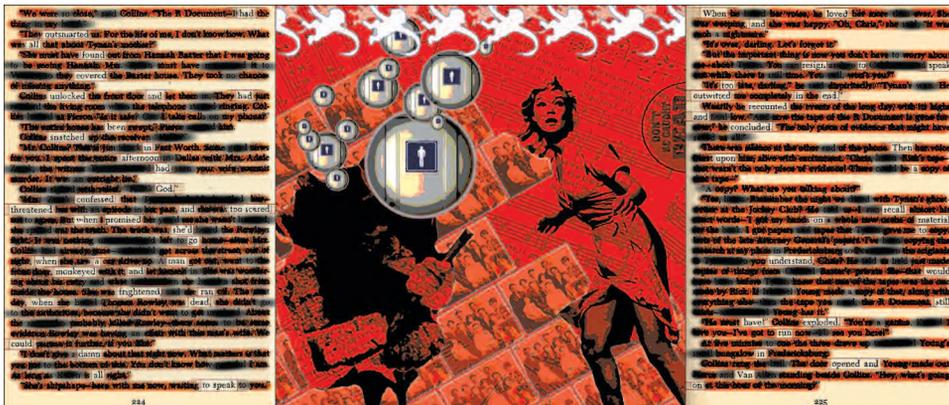
The (R) Doc Series explores removal of randomly selected words to create a new, visual rhythmic pattern to the text, transformation of context when words of different levels of importance are obscured or erased, and finally, recycling of a time-worn text from its original linear form into a non-linear aberration.



(R) Doc Series #1: Our Citizenry Is Ambiguous To The Democracy  
26.5 inches x 12.5 inches  
Inkjet print



(R) Doc Series #6: Absently In Hand, Then Down Again  
26.5 inches x 12.5 inches  
Inkjet print



(R) Doc Series #8: Threatened And Too Scared...  
26.5 inches x 12.5 inches  
Inkjet print

## Ansen Seale

### ARTIST STATEMENT

#### **The Unmanipulated Image**

For the most part, photographers have applied their craft to imitation of the real world. The camera has been used to capture a frozen slice of time, arresting a single instant from its place along the flow of the timeline.

Rather than suspending a single moment, my photography examines the passage of time. With the aid of a digital slitscan camera of my own invention, the horizontal axis of the image is rendered as a time exposure. A single sliver of space is imaged over an extended period of time, with moving objects inserting themselves into the data stream at different speeds and directions. The result is a mind-bending swap of the dimensions of X and time. Counter to classic photography, still objects are blurred and moving bodies are rendered clearly. Some figures are elongated and have stick legs; others are stretched out, and their feet resemble skis. Shadows curve and landscapes are devoid of perspective.

### Contact

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www.ansenseale.com

Instead of mirroring the world as we know it, this camera records a hidden reality. The apparent “distortions” in the images all happen in-camera as the image is being recorded. There is no Photoshop manipulation. These “distortions” could really be described as a more accurate way of seeing the passage of time, although it is unfamiliar to our traditional concept of the depiction of time and space in art. In other words, this camera is recording a reality that exists, but one we cannot see without it.

I draw a link between the ephemeral nature of these fleeting images and the elusive nature of the quantum-mechanical universe. Some scientists argue that the orbits of electrons do not exist in nature unless and until we observe them. So then, to observe is to create. Figures appear and disappear in my work like quantum particles. and uncertainty rules the day.

My work reveals my admiration for and awe of the real world. Indeed, the camera doesn't lie, and truth is stranger than fiction.



*Evergreen*  
25 inches x 66 inches  
Digital slitscan photography, Gicleè



*Evergreen*  
Detail

Contact

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www.grau1001.de

## Robert Seidel

### ARTIST STATEMENT

“MF: ...for me, life consists of black and white only...  
RS: ...I think there is just the in-between...”

\_grau is a personal reflection on memories that appear during a car accident, where past events emerge, fuse, erode, and finally vanish ethereally. Various real sources were distorted, filtered, and placed into a sculptural structure to create not a simple abstract, but a very private snapshot of a whole life in its final seconds.

The living paintings (*tableaux vivants*) of growing structures branch out over 10:01 minutes (a reference to the binary system by Gottfried Wilhelm Leibniz, in which he ascribes 1 to god and 0 to the devil) without ever reaching pure black or white. Every element originates from real experience and is adapted from my sketches, my own body fragments, or scientific visualization methods. For example, the first still colored seconds are the prismatic halos of the collision fading into gray (*grau in German*). The musical framework connects memories born of the dramatic moment to clusters. These are unleashed from the image flux to ease the desired free associations of the beholder.

Director

**Robert Seidel**

Producer

**Robert Seidel**

### CONTRIBUTORS

Made with the help of scientific sources and software kindly provided by many supporters of the project.

Music

**Heiko Tippelt**  
**Philipp Hirsch**





\_grau | robert seidel | 2minds.de



\_grau | robert seidel | 2minds.de

\_grau  
10:01  
Animation

*Contact*  
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animation@premium-films.com

## **Supinfocom Arles**

### ARTIST STATEMENT

A snail takes us into a different universe to the beat of music that interacts with the surrounding elements.

*Directors*  
**Julien Rancoeur**  
**Vincent Baertsoen**  
**Emilie Boyard**  
**Charles Blanchard**

*Producer*  
**Supinfocom Arles**



*LOOP*  
08:00  
Animation

## Joe Takayama

### ARTIST STATEMENT

WATERDROPS is an abstract animation on the theme of formless water. All scenes were generated using original software. 2D metaball was used as the main algorithm, and random numbers were applied to each metaball.

### Contact

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joe@designer.so-net.ne.jp

### Director

**Joe Takayama**

### Producer

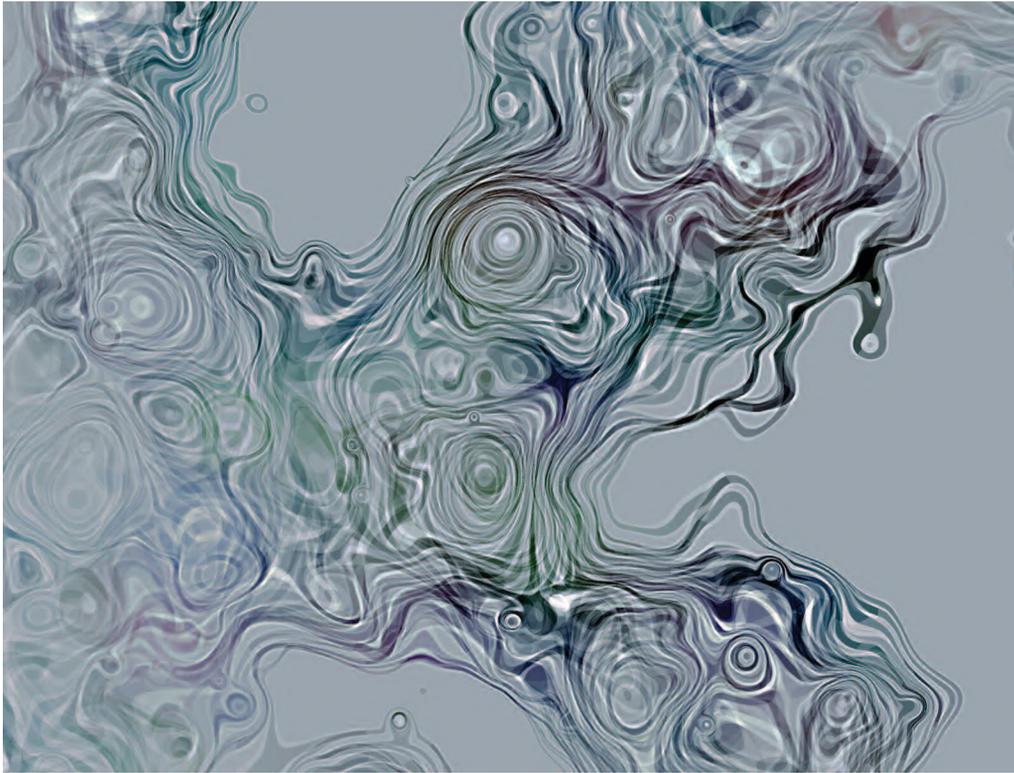
**Joe Takayama**

### Faculty Supervisor

**Etsuo Genda**

### CONTRIBUTOR

**Tatsuro Ishii**



*WATERDROPS*  
01:00  
Animation

Contact  
**LiQin Tan**  
Research Assistants:  
**Shaun Jennings**  
**David Thomlison**

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www.tanimation.net

## LiQin Tan



*BurlHead*  
42 inches x 40 inches x 4 Pieces  
Digital rawhides prints with 3D animation

### ARTIST STATEMENT

“Digital-primitive art” is a multifaceted and reciprocal process: making digital 3D images through primitive technology and materials, and making primitive rawhide/wood art through digital technology and equipment. My hope is that digital-primitive art can transcend the traditional and modern uses of art elements and can result in integrating digital and primitive values in one manifestation.

One way in which I think about the relationship between the primitive and modern technology can be symbolized as Digital <¥ (Finite) and Primitive ¥ (Infinity). I would suggest that any modern technology could be changed or replaced; however, the primitive systems of signification retain their significance. As the ideologies and technologies of society change, today’s state-of-the-art technology will be tomorrow’s primitive skills.

As a digital naturalist, I chose the burl as the natural art form to explore this “digital-nature” theme in search of applications for the products of digital evolution. The term “Burl+4” refers to the natural five elements: water, metal, fire, wood (burl), and earth.

The artwork specializes in digital woodprints and animation clips featuring effortless movements of the natural elements, incorporating a LCD TV display. It transforms ordinary materials, such as burl wood, lighting, texture, and digital debris, into “unison-Installations” inspired by Tao principles.

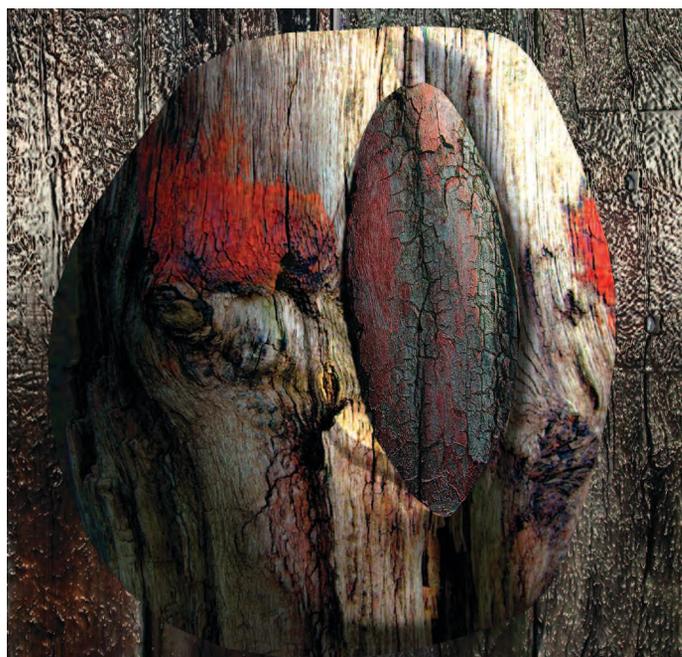
This series of digital-primitive art is divided into six components: digital-rawhide prints, animation through rawhide projections, digital woodprints with animation, animation through wood projections, digital rock prints with animation, and animation devices.



*BurlNuts + 4*  
 32 inches x 32 inches x 4 Pieces  
 Digital woodprints with 3D animation



*Burl + 4*  
 Detail



*BurlNuts + 4*  
 Detail

# Seigow Matsuoka and Naoko Tosa

## ARTIST STATEMENT

The goal of this project is to generate interactive literature and scripts for interactive cinema.

Narrative is most vivid when emergent technologies are born. "Emergent" means when a product or idea, in the course of its advancement, breaks through a critical barrier and a heretofore-unimagined paradigm appears. The trick to finding this kind of "emergence" is "daring to pursue the marriage of completely different ideas."

As methods for computing inspiration, we used "thoughtforms" (concatenation, balance, division, unification, crisscross), a "psychological thesaurus," and "chaos search," which uses a chaos engine to add a swaying element within the word relationships.

We built the following software for to generate inspiration context:

### 1. Inspiration Space

This system discovers the hidden connections between words. It determines that a connection between words exists if two words are found in the same thought-form or make up a stimulus-response pair in the Edinburgh Associative Thesaurus. Then it finds several connections between the two words by tracing a large set of possible paths between them, so that the paths traverse several two-word connections. If the chaos engine is in an appropriate state, a preference may be added so that longer paths are displayed, or so that the paths are forced to connect through a more distantly connected word. The user may further expand the connections of any word of interest.

### 2. Inspiration Restaurant Guide

A restaurant guide based on the inspiration system was built from France Télécom's Yellow Pages database. Each of the restaurant categories and locations in Paris was entered into the system and connected to related words (pizzeria: italian food, tomato; crêperie: date, sweets; fast food: quick, cheap).

Users select (or ask the system to select) a location and input their preferences for restaurant atmosphere. A set of words appears, and users can select any word that appears on the screen. The system searches for a restaurant type closely related to that word, and a nearby restaurant of that type is displayed on the screen.

## Contact

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### 3. Context Inspiration

Using data obtained from the open database WordNet (Princeton University) as well as manual categorization, the words in the database were classified according to their grammatical properties in six categories: who, what, where, when, how, and verb.

Users seed the system with a few idea words. The system then generates a sentence of various lengths ranging from two to five words (minus articles, conjunctions, etc.) based on these input words. Wherever there is a blank space in the sentence, the system fills it in, seeking words inspirationally linked to the words surrounding the space.

### 4. Symbol Inspiration

Rather than attaching symbols to existing word associations, the system applies a set of associations directly between symbols. These associations are based on the thought-forms explained above, where connections are based on geometric forms. Users can seed the engine by entering words linked to images in the input textboxes or by clicking one of the colored thought-form buttons at the top of the screen.

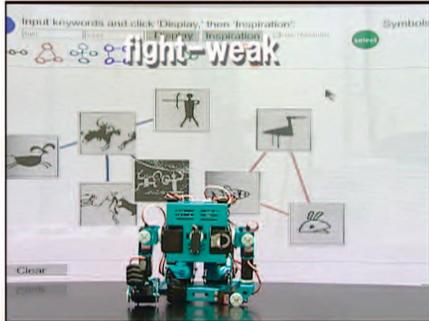
### 5. Inspiration Blog

The blog system allows the system to accept complete sentences as input. Connections between key words in the sentence are all considered, and intersecting words are displayed on the screen. The connections between each entry and the preceding entry are also included, so that the context generated within each entry is continuous.

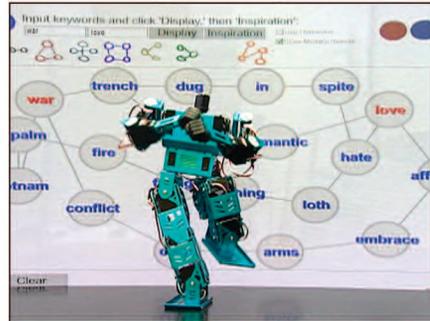
### 6. Robot Agent Interface

The robot's emotional expression and synthesized voice are automatically generated in accordance with the inspirational word context. When users interact with the inspiration system, the key words are extracted by the system and converted into behaviors via language-emotion mapping and sent to the robot over a Bluetooth connection.

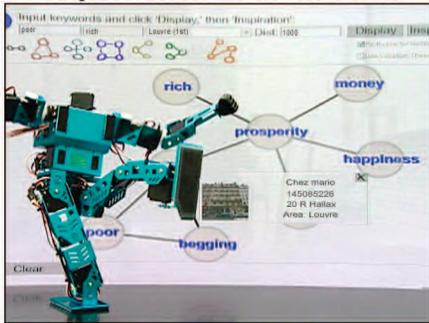
### Symbol Inspiration



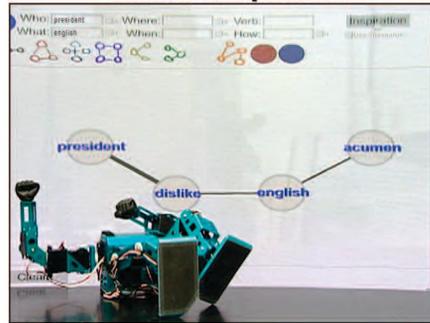
### Inspiration Space



### Inspiration Restaurant Guide



### Context Inspiration



Inspiration Computing Robot  
Art installation with robot

Contact

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## Anna Ursyn

### The Grammar of the City

*Rhythms of floors, crossings, passages and street signs  
Reflected in window panes  
Make space for replicas of people attracted to the City center,  
Create multiplied layers of singular existences  
Who learn the grammar of the City.*



*Grammar of the City*  
34 inches x 38 inches  
VAX mainframe, FORTRAN 77, Interactive Graphic Library (IGL),  
COM recorder, photosilkscreen, photolithograph, scanner, and PPC

### ARTIST STATEMENT

Acutely aware of order, I try to examine what technological and human worlds have in common. Natural order, revealed randomly and regularly, infuses several levels of both worlds: some determined by humans (through buildings, their windows, even cars parked in lots) and some determined by nature (through trees, branches, and leaves).

Natural order guides our understanding of big data sets related to network analysis when we employ physical analogies of the data, render the data graphically, explore them “by eye,” and interact in real time. My task is to juxtapose the regularity of nature with human constructions, both physical and intellectual. The big-city images, for example, combine how humans affect their environment and, at the same time, how a city metaphor reflects the rhythm and organization of big datasets and makes data mining easier. Observers, whether artists or technology experts, perceive such relationships in different lights and from different perspectives and different points of view.

Sometimes my computer graphics explorations result in a three-dimensional design based on an image of a transformed manikin.

When a repetition of human figures depersonified for the purpose of fulfilling the goal is put into an ordered, endless landscape, I have unified the meaning of humans and a landscape using rigid order created with a computer.

My work has been inspired by my interest in the common processes of nature in the human and animal worlds, and their surrounding environment. I transform an image of an animal into a simple image, an iconic object such as a rocking horse or a symbolic picture of a man or a bird, to present them in dynamic movement as the visible texture of the sky and the ground. In our visual planes of multiple horizons, we can see the same familiar crowd on the floor of ground and the wall of sky, soft and hard inhabitants sharing lots and acres, having common goals, joining tasks, ongoing.

Processes in nature and events in technologies inspire my images. Such processes also support my instruction in computer art and graphics, where students learn to create artwork inspired by science and demonstrate what they understand of scientific concepts.

## Yellow Pages

*This is the space of  
Transition from rural to urban,  
From production to consumption,  
From essentials to ornamental detail.  
Odd houses of obscure use,  
Old viaducts,  
Sources for our flourishing.*



*Yellow Pages*

32 inches x 36 inches

VAX mainframe, FORTRAN 77, Interactive Graphic Library (IGL),  
COM recorder, photosilkscreen, photolithograph, scanner, and PPC

## Fragile Balance

*Volcanic ridges catch rainwater on the windward slopes,  
Rainforests catch dew, and deities of the clouds  
Put forth their powers over water to sustain fishponds.*



*Fragile Balance*

34 inches x 36 inches

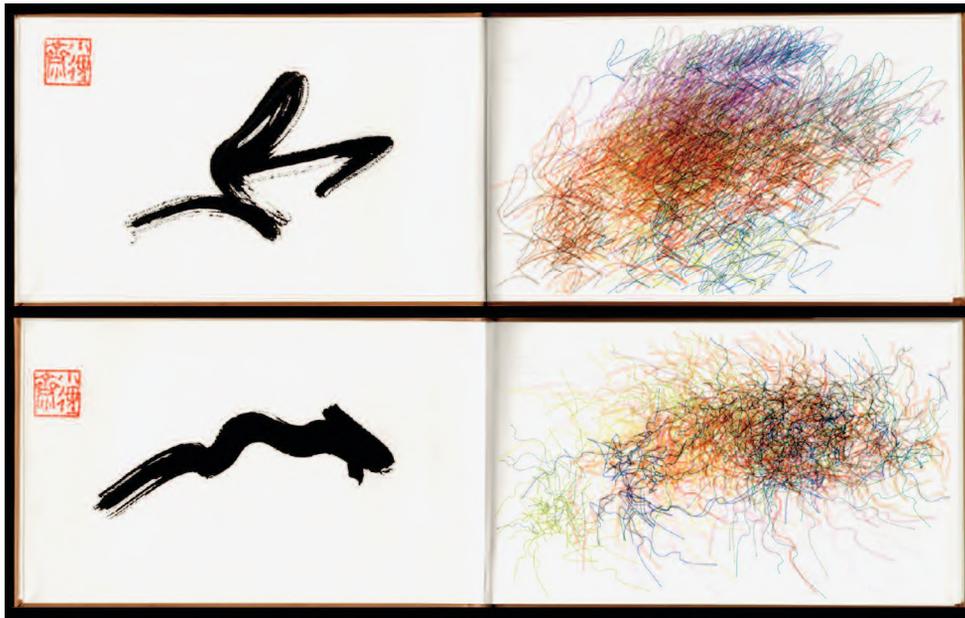
VAX mainframe, FORTRAN 77, Interactive Graphic Library (IGL),  
COM recorder, photosilkscreen, photolithograph, scanner, and PPC

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## Roman Verostko



*Illustrated Limited Edition of George Boole's "Derivation of the Laws..."*, Frontpieces: #75 and #74  
Each open book: 6 inches x 20 inches  
Algorithmic pen-and-brush plotter drawings

### ARTIST STATEMENT

George Boole (1815-1864), considered the father of symbolic logic, demonstrated a method of expressing logical processes using algebraic symbols. In his "Derivation of the Laws," he spells out the connection between Aristotle's "principle of contradiction" and the "laws of thought" governing logical procedure. These laws, known as Boolean operators, govern the operation of the circuits and software of our digital culture.

#### Intentions

In reading of George Boole's life and work, I was impressed with his commitments and interests, which ranged from classical learning and social concern to poetry. For myself, being neither a scientist nor a mathematician, I was surprised to learn that knowledge of classics informed his work with algebra. George Boole confirmed, for me, the value of maintaining continuity with the past and being open to renewal by the insights and work of those who have preceded us.

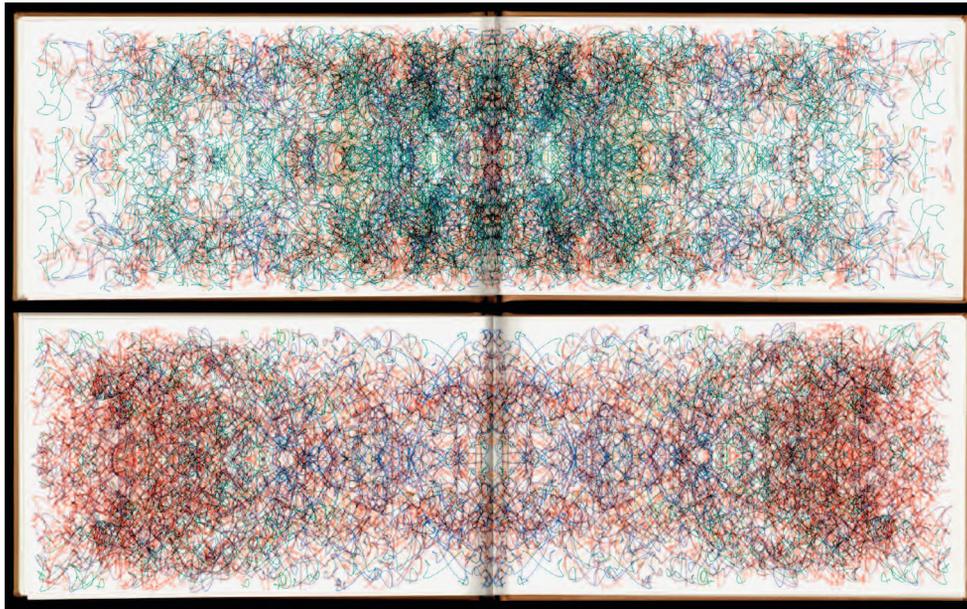
This edition attempts to honor him with illustrations created with algorithmic procedures that embody his theories. All of the drawings and brush work for this edition were executed in my studio with original coded procedures. Since these procedures are informed by

Boolean operations, the illustrations are descended, to some degree, from his pioneer work. They are, to some extent, expressions of Boole on Boole.

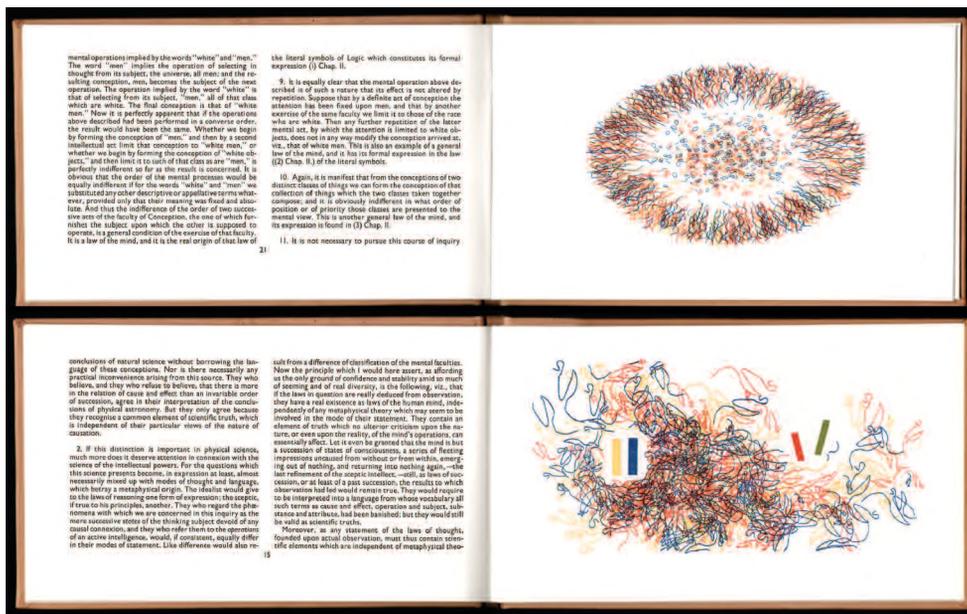
#### Frontpieces & Endpieces

The frontispieces and endpieces exhibit a unique and powerful feature of generative art. Each one was drawn or brushed, stroke for stroke, with a pen plotter driven with original software. One parent code was set for generating 125 frontispieces, and another was set for 125 endpieces. The procedure yielded 125 unique works, each with its own individuality bearing a familial resemblance to its "siblings." These two families of form, 125 frontispieces and 125 endpieces, introduced a radical new procedure in post-mechanical reproduction. This edition exemplifies generative art whereby a series of originals can be created in a family of forms using a parent code. This edition (1990) may be the first instance where an algorithmic, improvisational series of original drawings was created from a parent code for a bound limited edition.

See: [www.verostko.com/boole.html](http://www.verostko.com/boole.html)



Limited Edition of George Boole's "Derivation of the Laws...", Endpieces: #66 and #71  
 Each open book: 6 inches x 20 inches  
 Algorithmic pen-plotter drawings



Limited Edition of George Boole's "Derivation of the Laws...", Text Pages with Illustrations:  
 Pages 15-16 and Pages 21-22  
 Each open book: 6 inches x 20 inches  
 Letterpress prints from algorithmic pen-and-ink plotter drawings

## Roman Verostko

### ARTIST STATEMENT

#### Intentions

The Pearl Park Scriptures, a series of new works, present algorithmic glyphs with colorful drawings in a format reminiscent of medieval manuscript illumination. This series seeks continuity with traditions that honor writings in works of art.

#### The Artwork

The most common format, as seen in this work, presents a page left (verso) and a page right (recto). The right page presents the opening text from George Boole's "Investigation of the Laws of Thought" (1854) in a sequence of visual characters (glyphs). The glyphs read: "The design of the following treatise is to investigate the fundamental laws of those operations of the mind by which reasoning is performed; to give expression to them in the symbolical language of a Calculus, and upon this foundation to establish the science of Logic" (the glyphs do not include spaces between words)

The visual characters are generated with coded procedures for which George Boole lay the groundwork 150 years ago. A classicist as well as a mathematician, he would have enjoyed these "made up" glyphs that translate his very words into yet another language.

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The left page, with hundreds of intricately drawn pen and ink lines, celebrates Boole's contributions. The drawing plays with junction and dichotomy in both form and color, a procedure with Boolean twists and turns! The operational procedures for making these twists and turns descend from his pioneer work with "the laws of thought"..

#### Form Source

As I have often noted, my work emerges from the tradition of early 20th Century pioneers who sought to create an art of pure form. Around 1960, as a painter, my focus turned to the theory and practice of pioneers like Malevich, Mondrian and Kandinsky. Since then my work has continued the quest for visual form realities without reference to other objects.

With the advent of computers and a course in Fortran, I began experimenting with coded procedures, "algorithms", that mimed methods I used in my earlier work. The awesome power of recursive drawing drew me to a full commitment developing a program of procedures for drawing and painting. All of my current work, generated with coded procedures, continues the quest for "pure form".



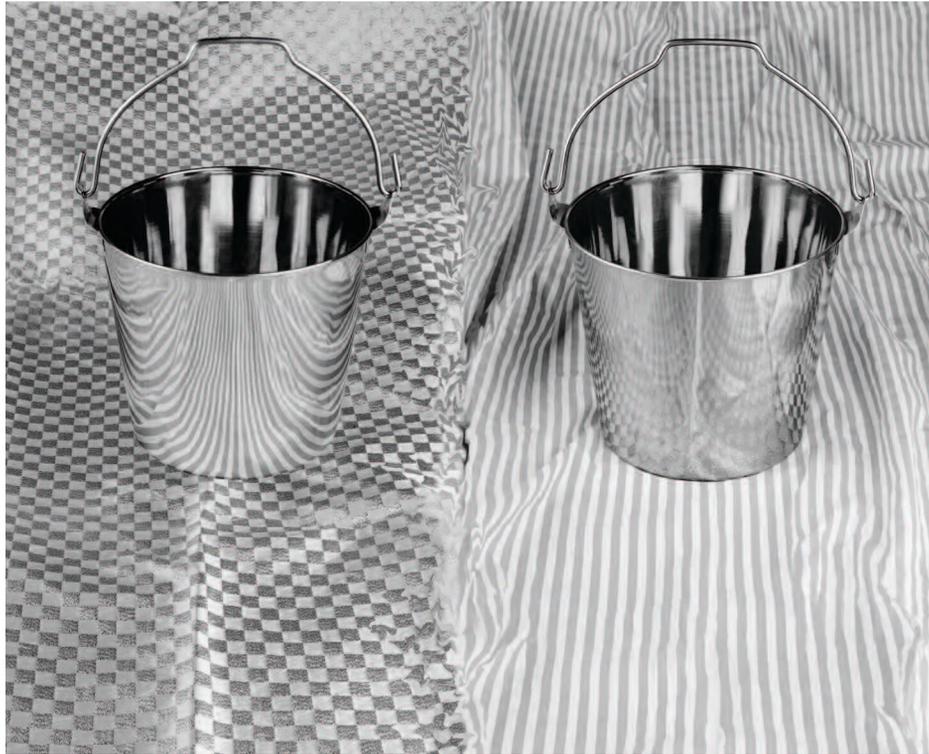
Pearl Park Scripture, George Boole on the Laws of Thought  
32 inches x 22 inches  
Algorithmic pen-and-ink drawing

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## Marilyn Waligore



*Contamination*  
22 inches x 16 inches  
Gelatin silver print

### ARTIST STATEMENT

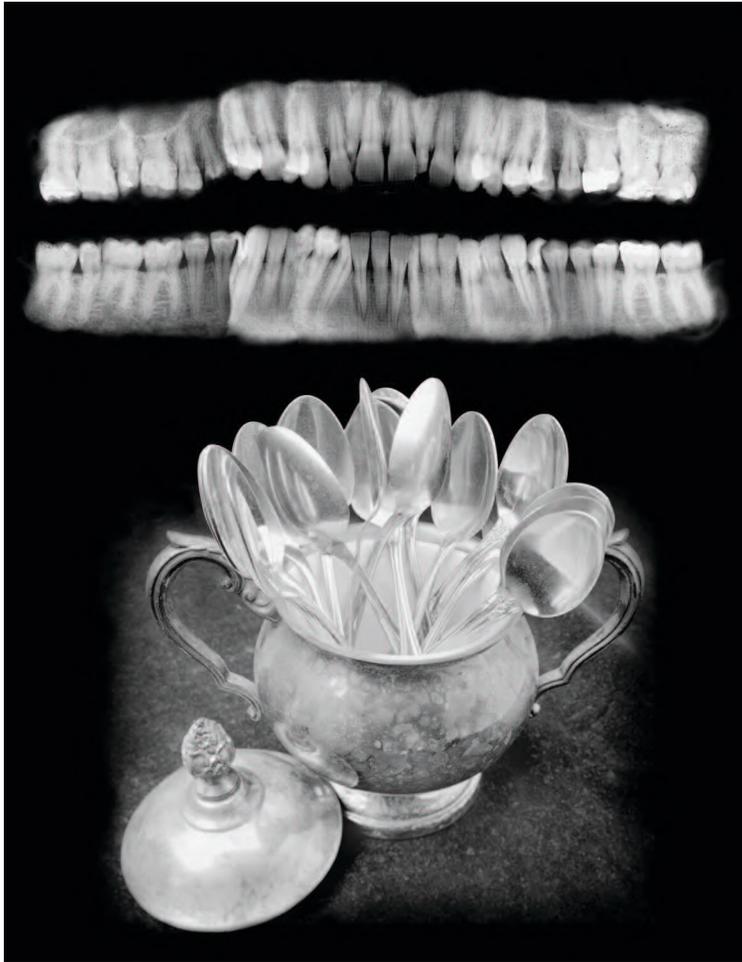
Using digital processes, I re-present objects associated with the domestic sphere in the context of the electronic age. My images combine tools and personal objects that are found in the home, and in some cases belong in a laboratory. With the aid of digital technology, I aim to remove the hierarchical distinctions associated with higher and lower forms of technology. I attempt to muddy the separation between women's work, especially menial labor, and the rest of cultural achievement. Menial, unseen, uncompensated work is often central to daily life, and is performed in the home (cleaning, cooking, and care-giving). By extension, there is a culture connected to women's activities that is also denied importance.

The history of the witch, including tales of subversions of domestic activity, has provided a point of departure. The myths of the witch parallel those of Dedaelus and Icarus, through references to science, magic, immortality, and defiance of the laws of nature. I am drawn to stories of attempts to overcome human physical limitations. With the advent of the laboratory research of the 21st century, controversies of our time often circle around decisions over sustaining or terminating human life, which encourage reflection on myths of immortality.

Still life often references the messiness of our humanity, through a documentation of domestic activities such as eating and drinking, what Norman Bryson calls "the small-scale, trivial, forgettable acts of bodily survival and self maintenance."<sup>1</sup> The rendering of intimate, close spaces reinforces this connection back to the physical presence of the viewer, placing the body at the center. Still life has the potential to acknowledge the anonymity of daily life while also providing a vehicle for the allegories generated by the vanitas, a traditional approach to still life that references human mortality and rejection of worldly possessions.

The products of a diverse range of our collective activities can now be stored as digital code. Simultaneously, we acknowledge the cultural aspects of physical labor and personal ritual. At times, we may express a longing for abandoned rituals practiced in the recent past. Embedded in my working methods lies my ambivalence about shifting technologies as I exchange one set of processes for another. My intimate images hold the viewer close and encourage reflection on commonplace rituals. We rarely question our selection of the daily electronic tasks we now embrace or consider those manual processes we have discarded.

1. Norman Bryson, *Looking at the Overlooked: Four Essays on Still Life Painting* (Cambridge: Harvard UP, 1990) 14.



*Sugar Jar*  
16 inches x 22 inches  
Gelatin silver print



*Cocoon*  
22 inches x 16 inches  
Gelatin silver print

## Jonathan Wilkinson

### ARTIST STATEMENT

Jonathan Wilkinson has worked in the creative industries for 15 years. His focus for the last 12 months has been channelled into development of an interactive panoramic video technique. His love of travel, cinema, and sound combined with his relatively recent discovery of virtual reality technology has offered him the inspiration and tools to pursue his new way of working.

Inspired by the captivating cinematic experiences of times gone by, his experimental work recreates the entertainment value of the “big screen,” while placing the user at the intersection of both viewer and director, transforming traditional filmmaking into a personal experience, and uniting both art and technology to broaden the concept of creativity.

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design.co.uk/360art

These pieces comprise four ultra-high-resolution, interactive 360-degree panoramic video art pieces for intimate screen viewings. Viewers can interact with the images, pan 360 degrees, and explore the subtleties of each environment. Each piece is designed to provide the flexibility of interactive viewing, using manual controls, or passive viewing through an auto-pan facility. For the viewer, this is a multi-sensory experience that combines directional sound with seamlessly stitched high-resolution imagery.

Viewers may linger over each of the four pieces, exploring details and revisiting scenes, or skip through them as they would through the pages of a magazine. Directional sound enhances the experience of intimacy, immediacy, and immersion, and allows the viewers to relocate themselves within the scene.



*Natalie*  
Interactive Panoramic Video Sequences  
Screen-based interactive program

## Brigitta Zics

### ARTIIST STATEMENT

This interactive networked installation projects a personal, virtual mirror image onto the screen by combining the viewer's face with data collected simultaneously from the internet. The image behaves like the physical presence of a real mirror image. It changes its position, dimensions, and features according to the movement of the viewer. The common mirror representations of individual viewers also interact with each other, and their audio/visual representation is perceivable as within the "mirror space." The mirror image is active and alterable as long as the visitor remains in the data-space of the installation. When the visitor departs, the image remains and continues to move together with other representations. The mirror images of previous viewers disappear when the images of new visitors appear on the screen.

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Viewers are invited to identify with a virtual mirror image that reflects their internal state (through mood analysis) and their external affiliations (through information streams from the internet). The person is viewed as a node that is networked with the whole of existence. Effects that can be grasped by our perception are presented in this system as dynamic data and converted into three-dimensional objects. This process also involves compiling a virtual image, but the filter is a computer calculation, which not only processes our extended characteristics but also data gathered simultaneously from the outside world.



*Mirror\_SPACE*  
Interactive art installation

# Memory Rich Garments: Body-Based Displays

## ABSTRACT

This paper describes conceptual and technical prototypes of reactive body-worn artifacts that display their history of use and communicate physical (or embodied) memory. This work concentrates on garments that reflect more subtle, playful, or poetic aspects of our identity and history.

The pieces described here are part of a larger research project called Memory Rich Clothing. A variety of input and output methodologies are explored to sense and display traces of physical memory, raising the question: What exactly do we want to remember.

## Author Keywords

Reactive garments, wearable computing, electronic textiles, history of use, physical memory.

## Introduction

The miniaturization and reduction in cost of digital memory input devices and other digital accessories enable us to capture and store a constantly growing amount of personal data. The term “life caching” describes the process of compulsively photographing, annotating, and saving photos to document moments in everyday life.<sup>1</sup> The term “memory industry” is being used to describe our growing interest in various gadgets that help commit to computerized memory all of the things that we otherwise might forget, such as appointments, commitments, and other important life details. The more traditional research in wearable technology deals with memory under a framework of efficiency and productivity enhancement. Although these technologies are portable/wearable, they often overlook the presence of the body when registering memories. The data make their way through physically intimate personal devices, but these devices only capture a very objective sort of user experience. The technology mediates people’s relationships without taking into account corporeal or embodied ideas of intimacy, and ignores the body as an instrument for communication.

The garments we wear, on the other hand, are some of the most physically intimate things that we interact with in our daily lives. As we wear them, they become worn and start to carry the evidence of our identity and history. Digital technologies, through the form of reactive displays integrated into the garments, allow us to shape and edit that evidence to reflect more subtle, or more poetic, aspects of our identity and history. Gestures and personal history can in this way be perceived, manipulated, and represented on displays integrated into the fabric. Collectively, these digitally augmented garments change and modulate social interactions.

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## Memory Rich Clothing

Memory Rich Clothing is an ongoing project that focuses on research and development of reactive garments that display their physical memory, or “history of use.” Our primary objective is to produce garments that show personal data, such as where and when they have last been touched, including subtle evidence of intimate contact.

The secondary objective in this work is to raise several questions relating to the ubiquity of digital memory accessories and wearable/portable electronics. These questions relate to the narrow definition of memory as it is used in the consumer-electronics market, issues of privacy and surveillance, and explorations of visualization of physical memory.

The term “physical memory” is used to describe spatial and tactile memory inherent in experiencing things through the body in activities such as playing an instrument. Here, we refer to the fact that the garments build up physical memory insofar as they retain some traces of presence of the user, through the ability to sense and record a history of interaction that can be communicated visually.

Computer memory refers to the saving of data, whereas human memory describes a more personal, interpretive process. By placing these memories directly on the body, we question assumptions about the ways that the body remembers. If the way that the body is perceived or used changes, the way we build our memories can also change.

## Intimate Memory

Intimate Memory was our first experiment in Memory Rich Clothing. The garment consists of a shirt and a skirt, which employ two different input and output methodologies to record acts of physical intimacy and indicate the time elapsed since those “intimacy events” have occurred.

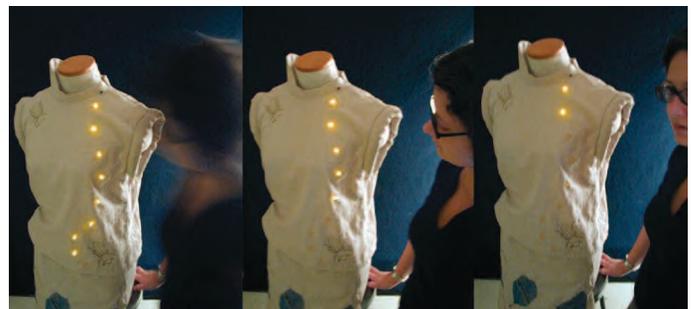


Figure 1 Indication of time in the Intimate Memory Shirt.

The shirt deploys a microphone in the collar and a series of LEDs stitched in a curved line across the front. When someone whispers something into your ear, or blows on your neck, the shirt lights up, showing that an “intimacy event” has occurred. The number of lights represents the intensity of the intimacy event, similar to the volume indicator on a stereo. Over time, the lights turn off, one by one, to show time elapsed since the event took place.

The skirt incorporates soft switches, sewn out of conductive metallic silk organza, and connected with conductive threads to a stitched analog circuit. When they are groped, LEDs illuminate in the embroidery to register the intimacy event. In a similar fashion to how our skin registers touch, the illumination fades over time to indicate the time elapsed since the event. The light not only registers intensity but also how the event unfolds over time. Do things that mark us intensely last longer in our memories?

The circuit design becomes an aesthetic component of the garment design. The shapes created can be decorative as well as functional, especially when using highly conductive yarns. Together with the use of traditional materials and components for garment making (integrating snaps, rivets, zippers, beading techniques, etc.), we can create simple circuits that fit into the aesthetics of fashion and that can be manufactured in similar ways.

### Invasion of Privacy

Because of the sexual aspects of groping someone’s skirt, this garment highlights the fact that many memory technologies (and wearable technologies) are potentially invasive. Most people who view this piece remark that in general, they would not want other people to see that they had been groped. They claim that this information, and this physical memory, is a private one. It is a memory that they might not want to share with others.

This piece visualizes ways in which our actions and our personal histories can be recorded, stored, and displayed. It highlights issues of surveillance and loss of privacy implicit in the deployment of many wearable technologies.



**Figure 2** The Intimate Memory Skirt illuminates when someone touches, or gropes, the leaf patterns.

A more recent experiment in memory-rich garments consists of two sets of three dresses that explore touch, embodied intimacy, and the technical implementation and construction of visually reactive substrates for displaying use data on textiles.

The conceptual framework consists of gathering and displaying intimate touch events but also explores social choreographies that emerge when three bodies actively inhabit three identical reactive costumes.

### Spotty Dresses

The first set of three dresses is called Spotty. The dresses are constructed out of thin, light cotton, overprinted with an irregular pattern of thermochromic spots, based on animal camouflage patterns. These dresses remember traces of presence, similar to the idea of hit counters on web pages, to show when and where the users have been touched.

The direct touch memory is displayed when one user touches another and affects the color of the spots using body heat. Since the dresses display a camouflage pattern, body contact – whether touching, rubbing, pressing the fabric against their bodies, or the bodies of other – makes the inks change color and effectively disappear.



**Figure 3** The color of the spots in the Spotty dresses changes when they are touched.

Increased physical intimacy makes their spots blend into the skin, it erases the camouflage patterns. Because of physical intimacy, the wearer comes out of hiding. The wearer becomes nude, revealed, exposed. This simple interaction paradigm highlights the dichotomy between privacy and intimacy and how we happily relinquish one in exchange for the other.

### Feathery Dresses

The feathery dresses deploy similar technology to that used in the Intimate Memory skirt, but replace the analog circuit with a microcontroller, so as to better control the illumination of the feathers embroidered onto the front of the dresses.

The touch memory is based on the idea of intimacy maps on the body. There are three touch sensors (soft, conductive textile switches) that record touch events. These events act as input into the simple program running on the microcontroller and affect the pattern of illuminated feathers embroidered on the dress. Each “sensitive” area on the dress is directly mapped to illuminate a different intimacy area of feathers. The microcontroller allows us to use much less conductive material in the body of the dresses and reduces failure rates due to broken connection. It also allows us to experiment with different representations, behaviors, and timing.



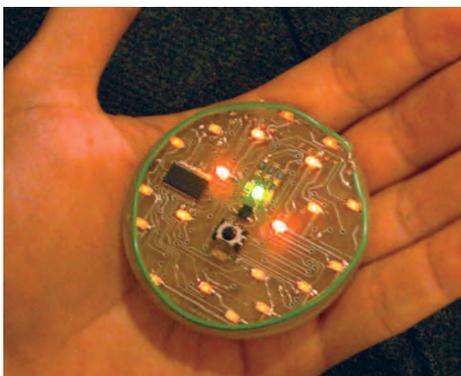
**Figure 4** The feathery dresses illuminate to display site-specific touch events.

### Body-Worn Interactive Modules

While the Feathery Dresses and Intimate Memory garment allowed explorations of intimacy and interactivity, their physical configuration was fixed as components were embroidered, stitched, or woven directly into the garments. To allow more flexibility in our investigations, we developed the “Octopus” modules: compact, body-worn displays that support a range of possible interactions. Several devices, approximately five to 15, are affixed to a single person, using magnetic snaps that can be attached and rearranged on a reconfigurable garment substrate.

### Octopus Modules

Each palm-sized device has a flash-programmable microcontroller and a 20-LED display. Each has its own rechargeable battery, so the garment need not carry power or data wires. The devices can communicate with each other and can detect movement of the wearer.



**Figure 5** Octopus module.

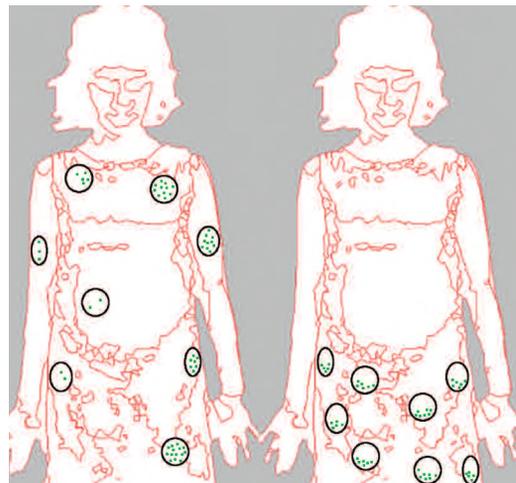
In designing the modules, we aimed for compactness and power efficiency. By using model-aircraft batteries and surface-mount components, we kept the weight to 18g (0.6 oz.). The current battery provides up to three hours of operation, depending on display usage.



**Figure 6** Octopus modules distributed on the body, in two different configurations: a representation of contact (on the left) and body movement, or acceleration (on the right).

### Sensing Activity

Three types of events can be sensed using the Octopus modules. Body movement (an accelerometer detects shaking and tilting; thus simple changes in posture or gait can be detected), contact (a capacitive sensor and an IR reflectance sensor detect the contact of hands or objects with the front surface), and communications (the devices can interact over line-of-sight using an IR remote-control protocol).



**Figure 7** Representing motion and acceleration on the Octopus module.

### Interaction Concepts

“Suntanning” – portraying exposure to IR beacons or to incandescent lamps.

“Viral infection” – visualizing transmission of a code between parts of the body and between people.

“Body usage history” – display which parts of the body have been moved or touched recently

“Movement representation” – visualizing the movement and acceleration of the body over time and through space.

### Prior Work: TouchCounters, FishFace, and Shakepad II

Several projects from the Tangible Media Group at the MIT Media Lab were a source of inspiration for the development of the modular and reconfigurable Octopus system.

The TouchCounters are an integrated system of electronic modules that, through physical sensors and local displays, record and display usage history information, allowing access to this information during the performance of real-world tasks. A distributed communications network allows this data to be accessed remotely. TouchCounters incorporate techniques that include usage history tracking for physical objects and multi-display visualization.<sup>4</sup>



**Figure 8**  
TouchCounters showing correlation of usage of multiple containers.

The FishFace modules are a set of independent but connectable gestural input devices with proximal visual feedback, with integrated motion detection through electric-field sensing and a graphics display on an array of LEDs that allow representation of abstract information.



**Figure 9** FishFace electric field sensing modules for non-contact, gestural input.

The Shakepad II deploys an embedded accelerometer as a gestural interface for an extremely small computer. This tilt- and shake-sensitive interface captures the expressive nuances of continuously varying spatio-temporal input.<sup>5</sup>

### Recoding Use Data

Human use has an impact on the integrity of digitally-augmented objects. Drawing upon previous work in "history enriched digital objects,"<sup>2</sup> the memory-rich experiments layer a history of use on a variety of digitally augmented clothing. The primary purpose of these augmented layers of information is to inform, involve, and unite, to create a feeling of social presence in textured history and assign value and identity.<sup>3</sup> Collecting use data interests computer scientists who see possibilities in leveraging people's simple behaviors in order to assist others and develop more collaborative practices.



**Figure 10** Drawing on the Shakepad II.

Many traditional human-computer-interaction (HCI) or ubiquitous-computing (UbiComp) research projects that record history of use are predicated on data analysis and user modeling. The assumption is that use data is recorded in order to provide useful information. How we define this is an interesting question. These dresses could be theorized as such use-history artifacts that show how often the wearer has come into contact with other people or objects. In the evening, the dresses could display a history of their daily physical contact. But they do not: none of this data is saved. This is meaningful because it creates a different kind of paradigm where context and evanescence both contribute to emergent meanings as they evolve between people. As the illumination fades, so do the memories; as the body carries marks of time, so do these garments. In this paradigm, data are impermanent and perpetually contextualized within interpersonal relationships.

### Conclusion

In closing, we have noted the limitations of current memory-recording devices to address embodied interaction between people. By recording and visualizing the "history of use" of garments and the bodies that inhabit them, we create garments that show personal data, such as how they move through space or where and when they have last been touched. These representations reflect more abstract, subtle, and possibly more poetic aspects of our identity and our history.

### Acknowledgements

We would like to thank the research assistants who have worked with XS Labs on these projects: Marcelo Coelho, Georges Côté, Ali Gorji, Karie Little, Agata Michalska, and collaborator Vincent Leclerc. The six Touch Memory dresses were produced during a thematic residency at the Banff New Media Institute.

The Octopus Modules were designed and produced at Blackdust Design.

XS Labs research is funded by Heritage Canada, the Hexagram Research Institute in Montréal, the Social Sciences and Humanities Research Council (SSHRC) of Canada, and Concordia University.

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# Interactive Wallpaper

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Figure 1 Sample interactive wallpaper prototypes in action at Sever Hall.

## ABSTRACT

Interactive Wallpaper represents a new category of digital art. Deeply embedded into our built surroundings, interactive wallpapers exhibit the following characteristics, blurring the boundaries between decorative art and useful science:

1. They operate in everyday life
2. They are open
3. They are spatial.
4. They are alive.

Interactive wallpapers combine these primitives into powerful “immaterial” building blocks for creation of future spaces, buildings, cities. In this paper, we present a series of interactive wallpaper prototypes in order to explore how the tectonic and psychological effect of our surroundings can be augmented, subverted, and estranged by animating wallpapers and introducing an interactive, possibly darker dimension into architecture. What happens when traditionally static and innocent wallpapers become alive, get a sense of memory, spatiality, connectivity and randomness, and become part of our everyday lives?

## Introduction

Around the turn of the 21st century, digital networks, like viruses, began to spread and infiltrate the last bastion of the physical order and challenge architecture as the de facto shelter for protection and privacy.<sup>4</sup> Architecture thus challenged reacted vigorously, albeit slowly, resisting a complete takeover, and temporarily blocking the digital intrusion. Left hanging in the air, digital networks deviated into wireless ether and began to pervade humans’ mobiles and wearables, absorbing anything portable anywhere.<sup>6</sup> From the beginning, however, it was clear that architecture’s brave resistance could not last forever. Architecture is now being forced gradually, building block by building block, to abandon its traditional purity and solidity, and finally get wired. In this paper, we trace this transition from physical architecture to wired architecture by recounting the story of one particular building block: the wall, and especially its veneer: the wallpaper. We discuss how the tectonic and psychological effect of our surroundings can be augmented, subverted, and estranged by animating wallpapers and introducing an interactive, possibly darker dimension into architecture. What happens when traditionally static and innocent wallpapers become alive, get a sense of memory, spatiality, connectivity, and randomness, and become part of our everyday lives?

We examine such questions through the lenses of architecture, which traditionally has operated at the intersection of art and science. Our method is a critical investigation of media-influenced changes in our environment, followed by hands-on prototyping of new and estranged spatial objects that operate in everyday life.

## Interactive Wallpaper

Interactive wallpapers differ from more traditional digital art forms, such as computer graphic images, renderings, and animations, along the following four dimensions:

1. They operate in everyday life. Interactive wallpapers are not stand-alone objects to be exhibited in galleries, nor functional applications, but situated spatial elements that are integral parts of everyday life. Estranging familiar, space-defining elements, interactive wallpapers appear at the periphery of attention, liberated from habitual routines of uses. They are inhabitable, embracing and surrounding the everyday citizen.
2. They are open. The wallpaper designer shares authorship and control of the art work with the user. The viewer's and the inhabitant's presence and input completes the experience of the interactive wallpaper. An unpredictable canvas of possible interactions, interactive wallpapers are never the same, changing in time based on external interaction.
3. They are spatial. Interactive wallpapers are distributed in space. They are organized around their own geographies, at their own scale and resolution. Escaping the conventional separations of ceiling, floor, and wall, interactive wallpapers liquefy space-defining boundaries and offer a new freedom.
4. They are alive. They are responsive and in constant flux, like a sun clock, only without the linearity and predictability. They sometimes play a more obscure role, that of a friend, a filter vis-à-vis the exterior world. They remember things, events, and people. Recognizing people, wallpapers are able to respond in a personal fashion. They give an illusion of a certain form of intelligence and autonomy, surprising yet comforting at expected moments.

## Precedents

From the perspective of the history of architecture, interactive wallpaper is a new and largely unexplored design territory. The idea of wall surfaces as a visual interface is, however, not new. Architecture and wall surfaces as interfaces for communication have been known and used throughout history.<sup>3</sup> From the cave paintings and Plato's cave to the rich and iconic illustrations on the walls of temples and churches in medieval and Renaissance architecture, we encounter architectural wall surfaces employed as projection surfaces for communicating stories and beliefs in different cultures and different times.

Beyond passive surfaces that carry images and stories, walls as active interfaces have been investigated more actively since the Renaissance. In the mid-17th century, for example, Athanasius Kircher, the Jesuit savant, proposed what could be seen as precursors of interactive wallpapers. His projects include architectures in which acoustical and visual interfaces were seamlessly integrated into the walls. A particularly illustrative example is the "Klangschnecke," a building proposed around 1650, in which walls operate as sonic interfaces: spaces are connected by winding acoustical interfaces.<sup>5</sup> Standing in a side chamber, hiding behind a statue, one may overhear a conversation happening in the adjacent big hall, or spread gossip by whispering secrets into the wall interface.

The advent of digital media changed the notion of walls as interfaces in the 20th century. The IBM Pavilion in New York. "Think" (designed

in 1965 by Ray and Charles Eames), provides a good example of an attempt to merge information, digital media, and architecture into an integrated structure. Later dubbed the "information machine," the pavilion remains an important precedent for a new kind of architecture that results from a deep concern with information organization, retrieval, and use.<sup>1</sup>

Interactive wallpaper builds upon and extends this tradition of wall interfaces. What distinguishes interactive wallpapers from the precedents are, as the name suggests, the facts that they are interactive and that they are wallpapers, applied onto walls, with the flexibility and transportability those characteristics imply.

## Wallpaper Technologies

To explore the range of possibilities and better understand the nature of interactive wallpaper, we present in the following sections sample interactive wallpapers that we prototyped in our new digital design studio at Harvard University in collaboration with student researchers. In terms of software, we used Director/Lingo, Flash/Actionscript, Java, and Logo. In terms of hardware, we used off-the-shelf sensors, actuators, projectors, and micro-chips. The innovation is in creative aggregation and poetic application of technology rather than invention of singular technology elements.

## William Morris Wallpaper

Our first example is the fruit-and-flower wallpaper based on an original arts-and-crafts design by William Morris. The fruit-and-flower wallpaper decorates the walls of spacious salons and halls. Light yellow lemons and red blossoming flowers hang on the branches of a tree. Green leaves provide a colorful backdrop for the unfolding scene. This magnificent wallpaper reminds us of a time of siestas and endless meals, when we imagined a thousand stories while looking at the wallpaper. The rich ornaments suggest a hidden life behind the wallpaper. The lemons lightly balance on the branches. Some lemons appear to be more mature than others, and the branches seem to be shaking subtly. A lemon falls to the ground, probably overripe.

Minutes pass, hours pass, and the wallpaper changes, telling its story and also speaking of the seasonal and weather conditions outside and the passing time. The interactive fruit-and-flower wallpaper has been programmed to have a memory and a behavior deeply associated with the geographical and temporal conditions of the location where it is situated. The wallpaper changes color when it senses changes at its location. It recognizes the presence of humans and remembers the passage of certain people. Coincidences, accidents, and hazardous events are all part of the wallpaper program and guide the behavior of the fruits, flowers, leaves, branches, and colors, transgressing the routines of habitual life. This wallpaper is well-meaning, containing pieces of information that are disguised to the public eyes. The underlying information is visible only to the passengers who know the code.



**Figure 2** The William Morris wallpaper estranges the room it inhabits, exhibiting an Alice in Wonderland quality. Did it happen or not? Did the flowers become larger? Did the leaves jitter slightly?

### Word Map Wallpaper

Interactive Wallpaper #32: Word Map is a different category of wallpaper that complements the visual sense with the acoustic. We created the piece in 2003 for an installation in Cambridge, Massachusetts. Located in the main foyer of the Carpenter Center, this wallpaper remembers conversations happening in the space. Microphones capture snippets of conversations and turn them into floating text that appears on the interactive wallpaper. The text swirls on the surface of the wall, and sinks, fades, and scales gradually to become sediments of thoughts on the floor, indicating the presence and traces of human interaction over time. As visitors approach the memory sediment, the individual words sense the warmth of human presence; and the words move slowly toward the visitors, curiously attracted by their bodily activities.



**Figure 3** Word map. The walls of the Carpenter Center become a memory container of conversations.

The wallpaper is simultaneously co-constructed at a distance. Visitors can interact with the wallpaper via the internet by typing in

words that appear on the projected wall. The hall transforms itself into an archive space, capturing the memory of the moods and thoughts of the day. At the end of each day. The ensemble of words can be printed out as daily poems that are the memory of the intellectual discourse happening in this place, physically and virtually. The piece shows how simultaneously recordings in the space, expressions from the web and interpretations and misinterpretations from the computer combine to create a spatial composition of words that reflect upon the various kinds of information inputs that co-exist in everyday life. The interface devices – microphones, webcam sensors, projectors – are visibly exposed to make the presence of the machines known. The machines are not spying, or secretly recording conversations and intruding privacies, but rather are conversational partners actively listening to visitors.

### Haptic Wallpaper

A different idea informed a series of other wallpapers that go beyond the visual and acoustic. Overwhelmed by a world of images, text and sound and the domination of the visual over the other senses, this series started with a desire to confront the body's loss of sensibility in front of the screen. How can the tactile and olfactory senses be integrated to enrich visual and auditory perception? How can other senses be evoked to open up a powerful world of more unconscious and visceral responses, of feelings and emotions? How can we create inhabitable media that make us be afraid, exult, feel pleasure and suffering? Such emotions are felt by the body; they can be evoked directly by the choreography of the different senses or associatively by tapping into our tactile memory.



**Figure 4** Haptic Wallpaper. The haptic wallpaper encompasses the tactile senses of perception, inviting the viewer to scratch the surface.

Digital Tape is an example of this kind of wallpaper. The interactive-digital-tape wallpaper taps into our tactile memory. In this piece, the wall is a projection of fragments of semi-transparent adhesive tapes. The tapes appear to hide something precious behind its translucent veil. In order to go beyond the surface, however, it is necessary to remove the adhesive tapes. The interactivity is not symbolic here. There are no iconic buttons inviting us to participate. Our engagement comes spontaneously from our tactile understanding of the wallpaper. We automatically feel compelled to scratch the surface with certain gestures. We begin with one corner and scratch that corner slightly with our fingers and fingernails in order to remove the

adhesive tape. This knowledge of the right gestures (the “scratch” movement) is innate in us, impregnated in our memory through time, since childhood. We all have once scratched an adhesive tape, and our tactile memory has registered these gestures. Incorporating the body in our interaction with the strong and rational computer, the haptic wallpaper makes our media experience sensual and natural.

### Skin-Deep Wallpaper

Skin Deep takes the tactile dimension one step further. It deals with interactive wallpapers that go beyond the screen, when media are no longer projected onto a material surface, but the material surface itself becomes animated. In a time when computer chips, sensors, and actuators have become increasingly small and inexpensive, it is inevitable that there will be more and more informational devices surrounding us, infiltrating our daily lives. What should these new elements of our everyday environments be? Will they have a life of their own? Do we want them to have a life? Who or what controls them? How are they changing the way we practice our daily activities? Are they reflecting, subverting, or enriching the way we act in various contexts? How are they estranging our feeling of intimacy and closeness?

Skin Deep explores such questions by taking elements of the built environment and giving them a certain “depth” and interactive potential.

Samples include:

**Affectionate Velour.** The affectionate velour is an interactive material that develops a relationship with its user over time. The velour reacts to caresses by emitting unfamiliar noises. It remembers the type of caresses and may ask for more. An inanimate object, the velour takes on a life of its own.

**The Water Wall.** The Water Wall prototype uses falling water as an architectural barrier by forming a thin water curtain and emitting the sound the water makes. Sensor technology allows users to pass through the wall in certain instances without getting wet; at other times, users can interact with the water but cannot pass through without getting soaked. The water wall introduces fear, evoking the displeasure of getting wet. The body is involved.



**Figure 5** Interactive Fabric made of electro-luminescent wires (elwires) interweaved with angora hair. The fabric lights up when touched and fades down over time.

**Interactive Fabric.** The interactive fabric uses traditional crocheting techniques to interweave angora hair with electro-luminescent wires (elwires) and embedded touch sensors. Soft and inviting to the touch, it is also connected, electric, responsive. The interactive fabric

lights up gradually when you touch it and fades down over time. The blanket makes it seem as if a person is warming it as opposed to it warming a person. Rather than bringing warmth and security, this blanket emits an unsettling electric light and sound.

**Lightwall.** The Lightwall was developed as a subversive alternative to two architectural details: the light switch and the wall. When viewed as a freestanding piece, the outside world is visible, though filtered through layers of screens, wires, fabric, and light. The light wall can be turned on by tracing with the hand the area to be illuminated. This intuitive one-tone correspondence is shaken when the same area is approached again.

### Lichtenstein Wallpaper

The painting of Lichtenstein is revisited, redrawn with today's tools and incorporated into an interactive wallpaper. The Lichtenstein wallpaper is interactive: the dots in the painting respond to viewers and enhance their experience of the painting. Each dot is programmed to have its own (interdependent) behavior: it moves, contracts, jitters.

The dots are contained within the contour lines of the drawing and are not allowed to escape: they belong to a specific area (for example, the blue dots belong to the eyes and tears, the orange dots belong to the nose and eyelid, and so forth). As the viewer approaches the wall, the dots become smaller in proportion to the distance of the viewer, creating an interesting optical effect: the size of the dots (the granularity and resolution of the image) feels as though they remain always the same. Finally, when the viewer moves very closely to the wall, the dots start moving away to the corners and along the lines of the drawings, leaving an almost blank contour. The behaviors of the dots give life to the painting and are strongly responsive.



**Figure 6** Lichtenstein Wallpaper. Each dot has its own behavior constantly interacting with the contour lines, the viewer, and neighboring dots.

Perhaps Lichtenstein might have approved of mathematically programmed dots. As an artist, he always tried, at least conceptually, to give an industrial and mass-manufacturing quality to his paintings even if in reality he was painting each little dot with a paint brush. Here the dots are programmed to duplicate themselves, fade away, move the lines of the drawing with their full weights.

### Digital Shadows Wallpaper

The shadows piece is a collection of remembered interactions

between two people. The interaction is frozen in time, and the frozen statues become temporary traces of people on the walls of the room. Similar to an antique frieze illustrating the sentences and gestures of protagonists and antagonists, the silhouettes recount the brief stories of heroes and encounters. The set of shadows slowly fades away after a few hours.

When two or more people have an intense discussion, a sensor detects their strong movement and gesticulation, and a camera takes a snapshot. The image of the snapshot is transformed into a gray-scale image that reveals the beauty of the movement. However, the faces and identities of the actors remain difficult to discern, so they do not violating the private realm. As one enters the room of shadows, the shadows of recent encounters are superimposed and provide a backdrop to actual activities. The various shades of grey create a living memory of body interactions in space.



**Figure 7** Digital Shadows wallpaper: visual layering of interactions and encounters through time.

## Conclusion

We have presented several early prototypes of interactive wallpapers. The work started with the desire to converge physical and virtual architecture and articulate potential directions for media art when it is no longer flat. Clearly, these are still early examples of what could be; we are only beginning to understand what the real opportunities and challenges are, but the examples seem to be already indicative of the directions where this could be going.

A common pattern that links the examples together is the way we view digital media and computers: no longer a stand-alone static painting but an interactive surface that is part of the environment, computers are seen as a social and spatial device. It is important to stress this social and spatial aspect of digital media. First, the computer is no longer our grandparents' mainframe or our parents' desktop calculator, it is a social device, a window to other places and to other people, an inhabitable place for creating communities based on shared affinities.<sup>2</sup> And secondly, it is a spatial device. The computer is emancipating and liberating itself from the beige, plastic (or translu-

cent) box and becoming part of our everyday environment, augmenting, possibly subverting familiar everyday objects and surroundings.<sup>7</sup>

With this shift to a view of the computer as a social and spatial device, architecture can no longer remain an impatient, yet passive place where computing happens, but must rise to the occasion and become an active communicative vector, an interactive medium itself, an entryway to virtual space, and a surface for interactive play: an inhabitable interface that not only responds to body interaction but also connects to other places, and filters and orchestrates information flows.

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## Dare to be Digital: Japan's Pioneering Contributions to Today's International Art and Technology Movement

A number of pioneering artists began experimenting with the computer as a visual arts medium in the late 60s and early 70s when most fine-arts circles refused to recognize art made by computers as a viable product of human creativity. This was the era of computer punch cards, when the visual results of algorithmic input were nothing more than line drawings. Many of the forward-looking artists who were experimenting with this technology were not taken seriously by the established art venues, and were, in fact, often ostracized by their peers.<sup>1</sup> More recently, the work of computer artists has begun to appear in general textbooks on the history of art, but each book features one or two completely different artists. The books are inconsistent in their documentation of this fairly new medium. There are a number of journals that have had special issues devoted to this topic, including the *Art Journal*, and there are also whole journals dedicated to the field, such as *Leonardo*. There are, however, very few books that do justice to the movement, and few that include artists of Japan. In other words, there is a great deal of activity in the field, but the documentation is neither thorough nor consistent.

In this essay, I would like to present the recent history of these contributions to the International Art and Technology movement. Japan's contribution to the global art scene is often ignored, but it is certainly worthy of further exploration. From the exhibitions, installations, and performances of the 1950s avant-garde *Gutai* group and the exploration of materials and space of the *Mono-ha* movement of the 70s to experimentation with electronics and computer technology of the 80s, the ideas and concepts put forth by innovative artists from Japan have certainly had an impact on our contemporary art scene.

One of the earliest pioneers of computer-graphic art in Japan is Masao Komura. Komura graduated from Tama Fine Arts University in 1969. He initiated the first computer art group in Japan titled Computer Technic Group (CTG) in 1966 while still a student. The work of the Computer Technic Group parallels that of E.A.T. (Experiments in Art and Technology), a similar collaboration of artists and engineers from New York that was founded in the same year (1966). E.A.T. included such internationally renowned artists as Robert Rauschenberg, Jasper Johns, Andy Warhol, John Cage, and Merce Cunningham and engineer Billy Klüver. A number of the E.A.T. artists collaborated on installations for the Pepsi Pavilion at the Japan World Exposition, Osaka, of 1970.<sup>2</sup>

Although the Japanese Computer Technic Group was shorter lived and perhaps not as internationally renowned as E.A.T., their activities are evidence of the emergence of the art and technology movement in Japan during that same year, and their legacy had an impact on future artists in Japan as well as abroad. The British art critic Jasia Reichardt, in *The Computer in Art*, lists the members of the CTG group as including Haruki Tsuchiya (systems engineer), Kunio Yamanaka (aeronautic engineer), Junichiro Kakizaki (electronic engi-

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neer), Makoto Ohtake (architectural engineer), Koji Fujino (systems engineer), and Fujio Niwa (systems engineer). Komura was the only artist of the group, but the group's activities, as a whole, were of an avant-garde art nature. All of the members were in their early twenties. Reichardt describes their aim (stated in the group's manifesto) as the restoration of man's innate rights of existence by means of computer control.<sup>3</sup> Most of their art pieces involved the transformation of simple line drawings of well-known images, as in *Running Cola is Africa*, in which a contour drawing of a running man changes to an outline of a Coca-Cola bottle and then to a line drawing of the continent of Africa. Jasia Reichardt explains:

Their attitude to computer-aided work is somewhat different from that of their colleagues elsewhere. They felt, for instance, that one of the major underlying possibilities of computer art is that the "artist" actually designs a system – a method of producing a given repertoire of forms and generating patterns. The artist's work consists largely of envisaging possibilities rather than producing individual works. It is the program itself that is the work of art.<sup>4</sup>

The Computer Technic Group created an interactive computer installation entitled *Automatic Painting Machine No. 1*, which responded to sound and light input from a "happening zone," an area that gallery participants would sometimes inadvertently pass through.<sup>5</sup> The group disbanded in 1969. Komura went on to create other computer-based conceptual work. Katsuhiko Yamaguchi, in his book *Robot Avant-garde, 20th Century Art and the Machine*, describes Komura's "wordless dictionary" of the 1980s, as a "non-man performance" about the process of production. Yamaguchi says it is "conceptual art of the computer era." He writes; "In this computer society where a variety of information is digitized, the digitization of meaningless words is a kind of non-art."<sup>6</sup> The conceptual nature of Komura's art and the activities of the Computer Technic Group are reminiscent of the *Gutai* activities of the 1950s, only transferred to a technological format. The *Gutai* (Concrete) group was formed in Osaka in 1955.<sup>7</sup> In the 1955 *Gutai* exhibition at Tokyo Ohara Kaikan hall, Tanaka Atsuko created an interactive piece using electricity and bells.

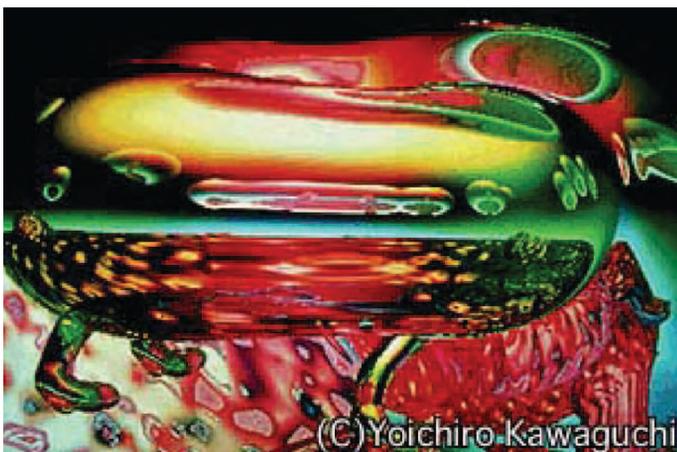
Bell piece, which took six months to construct, was conceived as a "sound painting." Connecting twenty electric bells with some 150 feet of cord, Tanaka devised a contraption which set the bells to go off in a chain reaction as soon as one was kicked or in some way activated by a person.<sup>8</sup>

In addition, Tanaka is particularly renowned for her electric-light dresses, made of long blinking light bulbs painted in bright colors. Tanaka modeled these dresses during staged *Gutai* performances. The *Gutai* performances occurred as early as 1957, well before Allan Kaprow's "Happenings" considered by Western critics and art historians as the first performance art. Akira Kanayama, another member of

the *Gutai* group, created paintings with a remote-control toy car with cans of paint attached to it in 1957.

An art movement called *Mono-ha* (School of Things) that was unique to Japan, and uniquely Japanese, came about in the late 1960s and early 1970s. The *Mono-ha* artists were a far cry from computer artists. Their interests lay in the exploration of natural materials with space and time relationships. They would fill the gallery with blocks of wood, clay, cotton, or fiber to visualize the natural effect of the materials on space, visual contrasts of one material on another, or the effect of time on the materials. The artists would sometimes display sets of materials together to emphasize their irony. Among these artists was Takamasa Kuniyasu, who would stack his materials (bricks and logs) without a preconceived plan. Kuniyasu describes his method of working in which he continues to stack his objects until he reaches a kind of meditative state at which point his subconscious intuition takes over.<sup>9</sup>

There are interesting parallels between the computer graphic art of Japan and art derived from the *Mono-ha* and post-*Mono-ha* movements. Some of the characteristics of contemporary Japanese sculpture and installation art that I have found in computer graphic art are: an interest in the subconscious revelations of intuitive technique or natural selection, the desire to explore materials while remaining true to their natural state, arrangement of materials to create new environments, the act of “growing” a work of art through repetitious stacking of small components within an environment or space, and appropriation of traditional imagery. Yoichiro Kawaguchi’s computer animations involve growing virtual forms by repeatedly reproducing the building blocks of data in a computer created environment. Kawaguchi, as well as other digital artists, utilizes the random (*guzen*) capabilities of computer programming to represent the natural selection process.



In the 1980s, video art and cinema were the new technological fields in Japan as well as the United States. In the U.S., Laurie Anderson became a cult hero. Her technical concerts involved distorted sound and images. She was, however, a kind of storyteller to her audience. Paralleling her technical performances in Japan is the group Dumb Type, an ensemble of 15 artists, actors, architects, musicians, and computer programmers who use digital technology for staged interactive performances.<sup>10</sup> The group was founded in 1984, but is still active today. The subject matter of the group’s performances is often postmodern in their collection of popular imagery and “allegories of post-industrialized society.”<sup>11</sup> They control their pastiche of imagery

through motion sensors and remote-control devices. Without a linear story line, the juxtaposition of images is collage-like and disconnected at the same time.

Several daring Tokyo artists experimented early on with computer technology as an art medium. Yoichiro Kawaguchi began in 1975 to program simple line drawings using FORTRAN when he was a student in a painting program at Kyushu Art and Design University in Fukuoka, Japan. He did his senior research project on computer graphics software, and completed his first animated film (*Pollen*, 1975). Kawaguchi went right on to graduate school at Tokyo University of Education. Even in Japan, however, the computer medium used in the art field was often addressed with alienation. Kawaguchi states that “the ill feelings toward computers was extremely strong, whatever work was created with a computer was not recognized (as art).”<sup>12</sup> After graduate school, Kawaguchi did an internship with the Product Research Institute at the Ministry of International Trade and Industry (M.I.T.I.). This is where Kawaguchi began to experiment with CAD and growth algorithms.

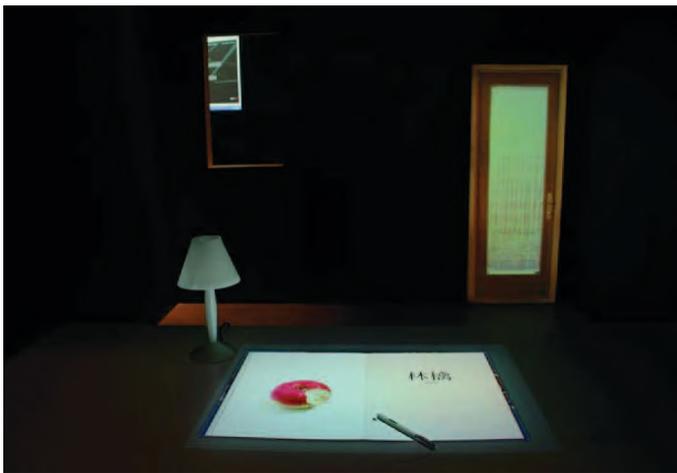
Before Kawaguchi began experimenting with growth algorithms, there were programs that produced simple line drawings of trees and such, but when combined with polygonal models, three-dimensional forms were the result. By substituting a cylinder for a line, and a cone for a point, three-dimensional tree-like forms were randomly constructed using recursive algorithms. Kawaguchi found a great deal of support and enthusiasm for his work through the engineering department at Osaka University. Kawaguchi collaborated with Koichi Omura, a professor of engineering at Osaka University, where a new form of surface rendering was developed into the Meta-ball program. The Meta-ball software was based on implicit surfaces instead of polygonal surfaces (conceptual spheres, rather than flat planes). By combining Kawaguchi’s 3D growth algorithms with the Meta-ball software, life-like forms with organic surfaces were produced. These ever-changing organisms have become the trademark of Kawaguchi’s work.



In the field of computer graphics and digital media, Kawaguchi is renowned today. His work is clearly recognized by his many followers, but few understand the importance of his contributions to the field. His work with CAD and 3D growth algorithms mixed with the Meta-ball renderer was innovative for its time. When most 3D modeled computer graphic images were composed of geometric shapes with unnatural-looking polygonal surfaces, Kawaguchi’s images were

organic and fluid. When his work was first presented at the ACM SIGGRAPH conference in 1983, the audience response was one of surprise and enthusiasm.

Another artist, Masaki Fujihata, also began experimenting with computer-animated images in the early 1970s as a student at Kyoto Fine Arts University. His work was concept oriented, and he often incorporated traditional Japanese tales or Buddhist ideas into the content of his work. Fujihata began submitting his work to the SIGGRAPH conference in 1983, the same year that Kawaguchi presented his work using the growth algorithm. Fujihata's work, however, was much more concept based, and he collaborated with the Supercomputer center in Minneapolis, Minnesota to render his data into startlingly high-resolution images. In 1990, Fujihata created a series of objects that he entitled Forbidden Fruits. These were the results of algorithms that he designed to mimic nature's selection process within the weightless virtual space of the computer. Fujihata was also one of the first artists to use a stereo-lithographic device to produce actual tangible objects from his Forbidden Fruits data. Fujihata went on to experiment with interactive pieces. Global Interior Project allowed four users at a time to move through a virtual environment and interact with one another. Another work, Beyond Pages, explored the concept of what the book of the future would be like using digital technology and interactive design. Beyond Pages is a picture book that is projected onto the desktop, and the images seem to come alive as the user interacts with them. Each page presents a new artistic concept to the viewer.



Fujihata was honored for his interactive work with the Golden Nike award at Ars Electronica in Linz, Austria (1996).

Naoko Tosa began as a video artist who first used the computer for editing and adding visual effects to her time-based productions. Then she collaborated with a group of computer scientists at Carnegie Mellon University in Pittsburgh, Pennsylvania. The result was Neuro Baby, an interactive computer baby that responds to voice input using a new form of artificial intelligence that simulates the neurological networks of the human brain. This kind of artificial intelligence includes a random component and has the unpredictable quality of nature's rhythms.



Tosa continues to work with human emotional input and digital responses with a piece called Unconscious Flow displayed for audience participation in the TechnOasis Gallery of SIGGRAPH 99 with the sponsorship of Sony-Kihara Research Center, Inc.

Certainly, the art and technology movement was not born in Japan, but a number of Japanese artists have helped fan the flames that have caused it to spread across the globe. Today, many of these artists continue to be active and innovative in the field. Kawaguchi is producing multimedia pieces that incorporate live performance artists and digital projections of his work. Animation is the utilization of a medium in motion, similar to live performance. Kawaguchi combines these two forms of art in presentations to the public. Fujihata creates interactive pieces over the internet, in which a global audience participates. Tosa is working with more intimate interactive pieces. Many new emerging artists from Japan are exploring the computer algorithm as a medium for their art, including Toshio Iwai and Haruo Ishii.



Ishii works with virtual 3D grids utilizing motion sensors that detect the movement of the participants' arms and hands, so that the user can conduct sounds and images like a conductor with a symphony. Iwai creates interactive tables that can be used by participants for composing music through visual arrangements on the surface of the table. Iwai has been experimenting with the visualization of music since 1993, and has just begun to explore its interactive potential. Artists of Japan began experimenting with the computer as a tool for producing art as early as the late 1960s, and have continued to contribute to the field. Many of these artists continue to be active today. Their trials and tribulations often parallel artists from the United

States, but they bring new ideas from a fresh perspective. They often include their own cultural influences from experimental groups and currents outside of the technological milieu. Mainstream critics and writers have not always had ready access to information and dialogue about their work, but these artists' contributions to the field of digital media are nevertheless undeniable.

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# doing interface ecology: the practice of metadisciplinary

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## ABSTRACT

The interface can be modeled as an ecosystem: connected, dynamic, and characterized by relationships. The model is predicated on a process of working with the interface as a border zone between heterogeneous systems of representation. This paper uses sensation, embodiment, and semiotics to initiate this process, by addressing the range of systems of representation that are involved in its own production. This presence of the theorist is found to create a self-referential metastructure.

As an alternative to the beneficial but ad hoc assemblages of multi-, inter-, and trans-disciplinary approaches, the ecosystems approach establishes that meshing of systems of representation is an inherent property of interface phenomena. The meshing process causes elements from the involved representational systems to recombine, forming hybrids. Recombinant information is a structural formula for creating new knowledge, which can be invoked for that purpose, intentionally.

Theorists are part of the environment that they theorize about. The products of theorizing are information artifacts that are also part of the environment. They themselves function as interfaces. The term “metadisciplinary” is developed to describe the inherent and self-referential nature of this structure. The structure of metadisciplinary connects theory and practice. This stands in direct contrast with studies approaches, such as performance studies, which is separate from theater practice.

## border zone where systems of representation meet

An interface is a border zone where systems of representation come into contact. It is a membrane, regulating the exchange of vital messages from one side to the other. The more open the membrane, the more flow, the more new combinations that an interface supports. Particular membrane structures can act as filters, tuning feedback loops.

Interface Ecosystem, The Fundamental Unit of Information  
Age Ecology (Kerne, 2002)

What are the systems of representation that are brought into relationships by interfaces? Let's start with a simple example: a typical personal computer, connected to the internet. Most immediately, we have the sensation systems of a human being seeing a computer screen, touching a mouse and a keyboard. The physical is translated into the electronic, and vice versa. The analog representations of the physical, real world are converted to and from the digital representations manipulated by the computer. We have layers of hardware and software. Since I specified “typical,” that means Intel processors and

a Microsoft Operating System. Thus, we have the old anti-trust litigation between Apple and Microsoft, and newer jostlings with Linux and those who believe in free software. Somewhere, the voices of the hardware and software engineers are echoing. Perhaps they worked very long hours. Perhaps they were content with their rewards; perhaps they felt exploited.

Those working on the “low level” manufacturing were probably women [Grossman, 1980]. Among them, those who built the primary circuit board, known as the *motherboard*, were probably Chinese (Millard, 2003). Let's open the case and check it out. Perusing the motherboard, integrated circuit labels indicate that they were made in countries such as China (again), Malaysia, the Philippines, El Salvador, and Guatemala. According to the LABORSTA database of the International Labour Organization, during 2000, the average woman electronic equipment assembler in China earned \$106 per month (ILO, 2002). The interface of the personal computer puts the user in touch with the assemblers, tactilely and economically. The economic relationships leave a sticky trail of money. It gets under my fingernails. As I close the case and get back to writing this paper, I worry it will gum up the keyboard.

So many relationships, and we have not yet gotten to the network. There are some open standards here, the TCP/IP protocol stack, and higher-level protocols such as HTTP for the web, SMTP and POP for email. There are standards, too, for declarative languages such as Hypertext Markup Language (HTML) and Cascading Style Sheets (CSS). Of course, no web browser is complete without search. So Google is here, too.

At the time of this writing, it seems that there is an 85% likelihood that the web browser being used is Microsoft Internet Explorer (Upsdell, 2004). So then we have another of Microsoft's anti-trust litigation scenarios, this one with Netscape. The U.S. Department of Justice and the Sherman Antitrust law are here. So are various states and judges, and the European Union. Operating systems, application systems, legal systems, economic systems, national systems, international systems, and multinational systems are interconnected in complex flows.

At the moment, I am sitting in front of an IBM laptop. So product designers are represented. Selker's work on the Trackpoint sits in front of me (Ehrlich, 1997). So does the brand identity of Big Blue. Paul Rand's logo is present and accounted for. In my memory, a legion of ad campaigns wails reverberantly, from “Solutions for A Small Planet,” to “His name is Linux ... The future is open.” The sound over sound sounds muddy.

Vast infrastructures of research and production are at work. Universities, national labs, and corporations carve out highly connected roles (DeLanda, 1997, Hayles, 1999). They constitute the social relations of digital production. They selectively filter what gets produced, and what gets omitted.

We have yet to begin browsing, to encounter “content.” Yet, already, I feel like I’m caught in the sticky web of a horror movie, or at least, a haunted house. I’m typing this paper in Microsoft Word, wanting to experience a blank slate for writing. Yearnings for tabula rasa give way, to the multilayered reality of a highly structured, complex ecosystem of entities and representations. There are too many windows, too many menus, too many entries, too many buttons. The magical number that defines the capacity of working memory,  $7 \pm 2$ , is violated repeatedly (Miller, 1956). Branded toolbars pervade the digital parchment. I <alt-tab> back and forth from the word processor to web browsers, scanning for supporting materials, and then writing some more. Icons trail my every move.

In my web browser, I jump from a background article in an industry rag (Millard, 2003) to the SIGGRAPH Proceedings web site to the New York Times for today’s news. I drop in on Slashdot, then over to the ACM Digital Library for more research. Then to whatisthematrix.com to find a link to a video, which I connect to an entry about Baudrillard’s concept of hyperreality, in the site for the metadisciplinary undergraduate class I am teaching, Structures of Interactive Information (Kerne, 2004a). The hyperreal refers to the replacement of real-world representations, relationships, and values by electronic ones (Baudrillard, 1983). I keep myself over-stimulated to the point of anxiety. I am saturated with information, out of habit.

This little computer is a meeting point for many codes. Codes of signification. Codes of automata: operators and operands. Codes of expression. Codes of control. A mesh of media renderings, disciplinary structures of methodology, cultural groundings, and epistemological foundations is formed. As I consider all these systems of representation that are in play, all of this signification, I return to the start of this exegesis, to the role of my body-mind. I return to sensation, the core of user experience. I turn to phenomenology:

The sensor and the sensible do not stand in relation to each other as two mutually external terms ...  
It is my gaze which subtends colour, ... In this transaction between the subject of sensation and the sensible it cannot be held that one acts while the other suffers the action, or that one confers significance on the other (Merleau-Ponty, 1962).

According to Merleau-Ponty, sensation is an active process. Sensation situates the individual in the environment. In the field of artificial intelligence and robotics, Brooks’ model of embodiment operates similarly: perception and action are integrated through cognition (Brooks, 1999). Through the process of sensation, through perception and action connected, at the nexus of the interface, I encounter all of these systems of representation, their forms as media, the rules that govern their production and the subversions that attempt to countervail, the underlying epistemologies, and their methodologies of practice. As a creative agent, my body is signifier and signified, subject and object. I create information artifacts, which function as interfaces. This paper is one such. I am linked into the

complex web of relationships, through my act of writing about this interface ecosystem. With this action of cognition, the representational forms that I produce are likewise linked. Soon these words will move from the word processor. They will be uploaded as bits using a browser, and web protocols. Perhaps they will be published. They may influence the environment they refer to. This is our first encounter with the reflexive, recursive, self-referential structure called *meta-*.

### **disciplinary assemblages**

Behind each type of representational form that interfaces connect lies one or more disciplines of methodology. These disciplines enable and govern practice with their codifications of methodological discourse (Foucault, 1972). The composition of disciplines into hybrid assemblages is necessary, in order to address the diverse heterogeneous systems of representation that connect through the interface border zone. Examples of these disciplinary assemblages are well known. (Gaver, 1991) and (Norman, 1988) translated Gibson’s perceptual model of affordance (Gibson, 1979) from cognitive science into human-computer interaction. Walczak brought notions of temporality and self-organizing structure from architecture into interaction design, in the web-based artwork, Apartment (Lamontagne, 2001). Schiphorst utilized techniques and philosophy from choreography and somatics while creating the Bodymaps installation (Schiphorst, 1997). Mateas and Stern have developed computational models of theater’s “beat” and integrated them with artificial intelligence and computer graphics for the computer game, Façade (Mateas, 2003). Kerne has built a generative space for browsing, authoring, and collecting with principles from music composition and collage, as well as machine learning and computer graphics in CollageMachine (Kerne, 2000). In collaboration with creative cognition researcher Smith (FWS, 1992), principles of cognitive science are being integrated with this work in combinFormation (Kerne, 2004b).

### **transdisciplinarity**

While these examples constitute instances of practice, they are not sufficient to define an approach. Prior work has begun to address these phenomena of disciplinary assemblage more systematically. Century describes the advent of the studio-laboratory, “a site ... through which artists, scientists, technologists, and theorists commingle” (Century, 1999). Among the examples he gives are ZKM, Banff, Ars Electronica, and IRCAM. (Gibbons, 1994), (Norman, 1997), (Century, 1999), and (Ascot, 2002) call these assemblages transdisciplinary. Transdisciplinary research is said to “interpenetrate disciplinary epistemologies” (Century, 1999); it is “transgressive” (Nowotny01).

Transdisciplinarity’s valuing of the practice of disciplinary assemblage is a good beginning. The problem is that trans- means, “across, to or on the farther side of, beyond, over” (OED, 1992). While going across, beyond, and over disciplinary boundaries, what is missing in the denotation of trans- is the structural imperative for assembling disciplines, and a sense of how processes of disciplinary recombination are a formula for creating new knowledge. (Nowotny, 2004) observes that, “Transdisciplinarity ... is more than juxtaposition ... If joint problem solving is the aim, then the means must provide for an integration of perspectives in the identification, formulation, and resolution of what has to become a shared problem.” But how can this type of integration occur?

## recombinant information

In fact, juxtaposition is a starting point for integration. As the collages of Ernst established early in the 20th century, juxtaposition can serve as the first step in a human algorithm for generating new meanings. Juxtapositions and recontextualization draw the mind to puzzle about potential connections between elements. The next steps depend on what sensory and semiotic relationships can be drawn between elements, through cognitive processes. As (Kerne, 2003) develops, Dada collage, filmic montage, Debord's detournement, audio sampling and remix, and hypertext practices of authoring by reference are all examples of this cognitive and semiotic restructuring. They are types of recombinant information.

"Recombination is the process of taking existing coded compositions, breaking them down into constituent elements, and recombining those elements to form new codings" (Kerne, 2003).

Recombinant information forms new meanings through the process of composing elements from the disparate systems. (Kerne, 2003). The process works similarly to the shuffling of base pairs in genetics, except here, cognition plays the role of interpreter.

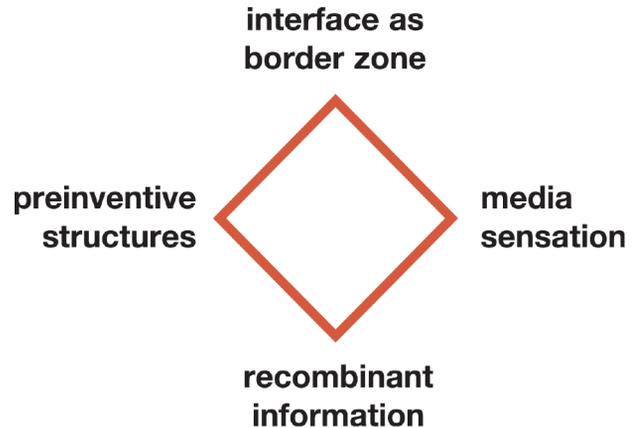
Our cognitive processing of recombinant information is addressed by the *geneplore* model of creative cognition (FWS, 1992). According to *geneplore*, creative experiences sometimes develop when phases of generative processes (for example, memory retrieval, analogical transfer) alternate with exploratory interpretive operations (for example, attribute finding, hypothesis testing). Certain conditions increase the likelihood of creative experience. The generation of *preinventive structures*, which serve as the grist of creative process, makes the development of creative results more likely. Combinations of images and words (recombinant information) are a form of preinventive structure, as are visual patterns and mental models. The exploration phase consists of articulation, interpretation, and refinement. We play with the preinventive structures in search of understanding. We may iteratively cycle back and forth between phases of generate and explore.

Some preinventive structures are also characterized by *preinventive properties*. Examples of these include ambiguity and incongruity. That is, when information elements are recombined, if a combination makes sense immediately, the cognitive process is not likely to go anywhere. But, if there are potential relationships that are not immediately clear, the mind tends to work on making sense of them, to find new connections. Sometimes, configurations of preinventive structures don't lead anywhere. There are no guarantees. On other occasions, we experience, "Ah-ha!" This is the emergence of new ideas.

A theorem of recombinant information, then, is that the ambiguous and incongruous juxtaposition of heterogeneous elements that are related through the operation of an interface is likely to stimulate the emergence of new hybrid forms. *Element* here may be a nested signifier. That is, whole representational systems of elements can function themselves as the elements that are juxtaposed. In interface ecosystems, among the elements that are subjected to processes of juxtaposition and recombination are systems of representation, such as sensation and text, video and interactivity.

The notion of *metadisciplinarity* focuses on the recombination of disciplinary systems. Disciplines are referenced and juxtaposed by the

sensory, media, and technical intersections of the interface border zone. The juxtaposition invokes recombinant information principles of collage, detournement, and *geneplore*. Disciplines are represented by methodologies and epistemologies. Using them together initiates processes of translation. Translations are inherently imperfect. And that is where things get interesting. In the context of the interface ecosystem, practitioners have to resolve the ambiguities between disciplines. They/we have to figure out how things fit together. The theorem of recombinant information applies. The result is that when juxtaposition is followed by *geneplorative* processes of conceptual integration, interface ecosystems generate hybrid metadisciplinary forms, as well as new media and new theory. These processes create new species of meaning. Those of us with any need to sell something (including grant proposals) may be prone to calling this a formula for innovation.



**Figure 1** Sensation of Recombinant Information. Emergence of new hybrid forms.

## metadisciplinarity

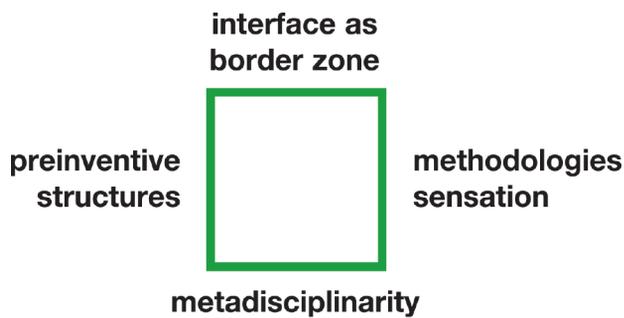
Hofstadter uses the term *strange loop* to describe a tangled hierarchy in which following a chain of levels of reference returns us to a previous state (Hofstadter, 1979). These levels of reference are *metalevels*. One example is Gödel's proof of the incompleteness of Whitehead's *Principia Mathematica* (PM). PM is not complete, because it can't contain all possible statements about itself. (The counter-example is: "P.M. is not complete.") Those are meta-statements. Mathematics and metamathematics (and by extension, recursively, metameta...mathematics) are parts of the same system.

The interface described in the first section above, which develops and represents theory about interfaces is another example of a *strange loop*. We will find this structure again, by examining the role of disciplines in the interface ecosystems of the information age.

The notion of *metadisciplinarity* develops a structurally identical chain of self-reference. In examining and developing phenomena of interface ecosystems, we refer to the underlying knowledge structures of disciplinary inquiry. We refer to the structure of disciplines, themselves. Our process of referencing is situated in our bodies, which are connected to technology and information through sensation, in experiences of reading and writing, seeing and clicking, authoring and designing. Sensation and action mesh in cognition. Action has the potential to express and create. This grounds metadisciplinary inquiry in an ecosystem of practice. This theorizing becomes part of

our work with interfaces. It takes form as a metadisciplinary interface.

Using cognitive principles such as *geneplore* to describe the process through which we form relationships between disciplines and their constituent languages is another form of self-reference, another strange loop. The practice of metadisciplinary invokes cognitive science to understand and explain phenomena such as its invocation of cognitive science in constellation with other disciplines, such as computer science and cultural theory. And so we see again that the theory of metadisciplinary constitutes its practice.



**Figure 2** Sensation of Multidisciplinarity. The notion of metadisciplinary develops a structurally identical chain of self-reference.

### ethnography and “studies”

While relativity and quantum mechanics have previously refuted the notion of the unbiased observer, this model still pervades the scientific method. And even while the subject and observer model is refuted and critiqued in discourse, it still governs the structure of disciplines in the humanities and social sciences.

Ethnography has been known as “writing culture.” With the suffix *-graphy* involved, we extend this to include the visual. In his classic work of cultural anthropology, Geertz identified “doing ethnography,” as thick description, a piling of layers of narrative signification, which situates the emblematic stories of particular individuals in broader contexts of social practices and relationships, aesthetics, and values (Geertz, 1973). (Clifford, 1986) followed by turning ethnography’s tools into its practice. He identified the reflexivity of ethnography, realizing that what gets written down is inevitably about the writer, as much as “the other.” The result is an onus on the writer to make her/his presence explicit.

We apply this sense of reflexive self-reference to the products of writing culture, and representing it graphically. The products of ethnography are, themselves, information artifacts. They function culturally, in the ecosystem of the culture that is described. By representing observations, in the form of thick descriptions, they may exert influence. They are *meta-artifacts* that integrate theory and practice.

However, ethnography is located in the discipline of anthropology. The making of cultural artifacts involves self-expression. It is typically found in disciplines such as art, design, and creative writing. The separation of theory and practice by disciplines interferes with the development of hybrid forms, obscuring the development of the creative role of the individual in “discourse.”

This is the model of many *studies* approaches, such as performance studies, which observes and writes about theater, dance, and ritual, without engaging directly in performance practice. In currently established procedures, performance studies these are not performances. This is true, in spite of the fact that a sampling of the NYU Performance Studies Department listserv indicates that many performance studies scholars are accomplished, practicing performers, and that doing performance is important to them.



**Figure 3** Theorizing and Developing. The structure of metadisciplinary connects theory and practice.

### conclusion

The structure of metadisciplinary connects theory and practice. Doing interface ecology involves analysis, to develop understanding of interface phenomena. It involves synthesis, the development of new interface phenomena. These modes of practice are inseparable. Metadisciplinary develops an awareness of the structure of situated disciplines forming relationships in interfaces. Through its practice, cultivating these relationships intentionally, we can create hybrid forms of representation.

When we are doing interface ecology, we are awash in strange loops of signification, producing self-referential information artifacts. As doing ethnography is creating thick description, so doing interface ecology also creates branching structures of reference across levels of signification. Here, metadisciplinary is constituted through the reflexive relationships of methodologies invoked to understand and create the interface’s inherent panoply of representational systems, while theorizing and developing wrap in a generative postmodern braid.

Doing interface ecology means connecting theory and practice through metadisciplinary structures. Separating New Media Studies, or Internet Studies from practice would avoid the metadisciplinary nature of interface phenomena. Connecting disciplines promotes the creation of hybrid forms. As computational artifacts and their interfaces become tangible and pervasive, as they permeate a wider and wider range of human activities and environments, the need for metadisciplinary practice grows. Future work will explore how the practice of metadisciplinary can play a new role in pedagogy and research among fields such as computation, information, graphics, interaction design, and “new” media.

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# Being Paintings

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## ABSTRACT

This paper focuses on art created by new techniques such as cellular machines, L-Systems, genetic algorithms, neural networks ... We propose here several methods of implementation combining the rules of construction of cellular machines and L-Systems with genetic, neuronal networks, couplings, translation of codes. These methods result in the morphogenesis of bodies, as well their structure (shape) and their functional aspect (neuronal networks with driving, sensory neurons, balance, etc.). It's a part of what we can call "a new kind of art", and we can see here how Beings Paintings emerge.

## Keywords

Cellular Machines, L-Systems, Fractals, Morphogenesis, Neuronal Network, Genetic Algorithm. ACM Classification Keywords H.5.m.

## Introduction

For a very long time, artists were inspired by forms of nature. Without referring to the myths of antiquity, we can quote notably the fundamental influence of Odilon Redon, in his 1883 series of pictures *Les Origines*,<sup>1</sup> which presents some hybrid and surprising creatures. Also, Goethe contemplated biology and more particularly the very particular theory of the evolution of plants in his work *La Métamorphose des plantes*.<sup>2</sup> These works inspired the fundamental publications in this domain of Ernst Haeckel<sup>3</sup> (see fig. 1), which presented the main lines of art and forms of nature in the art, followed a short time later by authors as Martin Gerlach and Karl. More recently, with the arrival of the computer as the working tool for as a new generation of creators appeared. After the fascinating discovery of fractals by Benoît Mandelbrot,<sup>6</sup> new perspectives of nature were born. Then "breeders of art" used the techniques of Darwin adapted by Richard Dawkins<sup>7</sup> and his famous biomorphs.

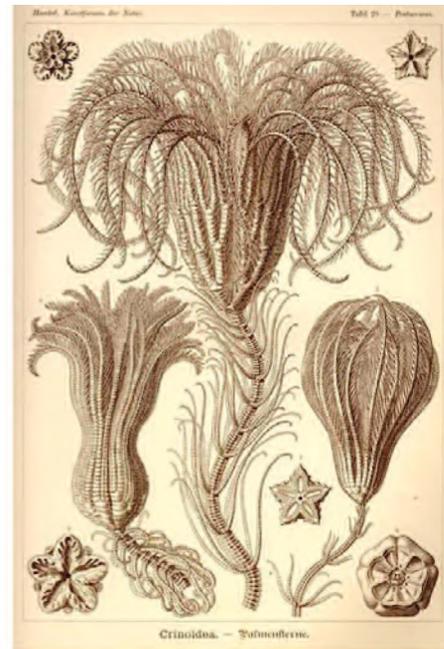


Figure 1 Crinoidea, Ernst Haeckel.

Among the best-known artists in this category are William Latham,<sup>8</sup> Karl Sims,<sup>9</sup> Steven Rooke,<sup>10</sup> Jeffrey Ventrella,<sup>11</sup> and Michel Bret<sup>13</sup> (see fig. 2).

## A New Kind of Art

In the vast field of tools implemented by applications of artificial intelligence, cellular machines were some of the first to appear, notably in the famous game of life proposed by Conway.<sup>14</sup> Tools abound, and the models of cellular machines diversify with great names that strangely advance the domain, as in Stefen Wolfram's work, *A New Kind Of Science*.<sup>15</sup>

Naturally, a certain number of artists tries to bring to the foreground new styles. Let us refer for example, to Paul Brown,<sup>16</sup> who has interested in this domain since the 1970s. Also Scott Draves<sup>17</sup> (see fig. 3); Erwin Driessens and Maria Verstappen,<sup>18</sup> who create real 3D constructions; and Matthew Fuller who introduced the group Human Cellular Automaton.<sup>19</sup>



Figure 2 Hybrid Creature, created by Michel Bret.

### Computational Beauty of Nature

As is described well by G.W. Flake in his magnificent work *The Computational Beauty of Nature*,<sup>31</sup> very many creations can be modeled by tools such as L-systems, fractals of types IFS, strange attractors, etc. At the same time, another language that shapes the intentions of new morphogenesis was invented by Lindemeyer:<sup>20</sup> L-Systems, which enable generation of forms, in particular plants, from recursive grammars. The results obtained with this technique are excellent, and artists such as Laurent Mignonneau and Christa Sommerer,<sup>21</sup> and Christian Jacob,<sup>22</sup> among others, are interested in these new modes of expression, by coupling them very often with evolutionary algorithms to get closer to the theories of Darwin.

### Morphogenesis

We shall not return in this paper to the impressive literature that defines the techniques of morphogenesis. Let us refer simply to the inspiration provided by the works of D'Arcy Thompson<sup>23</sup> and Rupert Sheldrake,<sup>24</sup> thanks to his innovative theories on "formative causality" and "morphogenetic fields," which are inescapable on this topic. Morphogenesis is a fascinating subject that raises big, not-yet-resolved questions. It is an area of magnificent experiment for artists, and the works presented here illustrate their fascination with the subject.

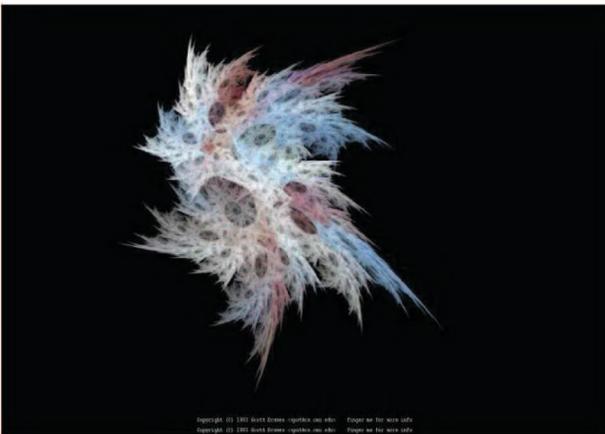


Figure 3 Flames by Scott Draves.

### Structural and Functional Aspect

These comments do not, however, amount to research on structural morphogenesis alone. Indeed, if the shape, and thus the aspect, of the body are necessarily areas of major concern for artists creating images, we are interested just as much in the functional aspect of the engendered creatures, which can not be separated from the structural aspect. It is, moreover, this difference that is too present in current realizations (3D characters, the first virtual actors), the visual aspect of which is already pushed to a very high level, even to photo-realism. On the other hand, the functional aspect of new semi-intelligent creatures is, for the moment, only at the experimental stage.

### Hybrid Creations From Chaos Tools

The originality of this work rests essentially on combining cellular machines and L-Systems, although we also use fractals IFS, Flames, strange attractors, etc. This research ensues from a simple report: all the systems that propose realization of virtual creatures (vegetable or animal) start generally at assembly of components that have already been realized, as in the famous blocks or sticks we encounter in the works of Sims (see fig. 4), or in the creation of Golem, the Framsticks software that we use in our work, etc. The stage of development corresponding to molecular chemistry is systematically avoided, because we believe that it can not help us understand of an original development. So far, nobody has all the answers necessary for development of life, vegetable or animal, and we can allow ourselves as artists to experiment in new directions and show the results of hybrid creations (an unmistakable advantage compared to scientists, who must prove what they advance).

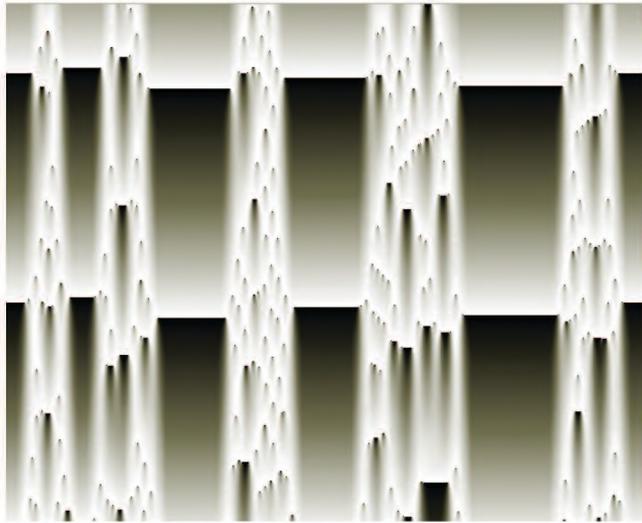


Figure 4 Galapagos © Karl Sims

Several methods of combining cellular machines with L-Systems are proposed. We quote here only those who are beginning to report interesting results, but many other citations are possible. The principle in every case is to use the rules of generation of cellular machines as a function of chemical processes, which occur in various stages of physical morphogenesis.

Method 1: creation of whole landscapes with cellular laws. This method consists simply of covering (marking out in squares) a 3D ground and in using rules of cellular machines to place L-Systems seeds, which survive and grow according to very precise plans.

Several levels of complexity are studied, according to the forms of these rules. The simplest are based on combinations of survival/birth vectors, on which we can grow a variety of L-Systems where life is possible. More complex rules, with parameters of machine evolution, can influence the L-Systems grammars that change according to these parameters (for example, states, generations, etc.) (see fig. 5).



**Figure 5** A cellular machine used for painting strokes.

Method 2: form L-Systems modified by cellular machines. In this case, it is a question of using the cellular machines to generate rules used in every recursive stage of the construction of L-Systems. So in addition to the usual grammatical rules used in these systems (among whom F to draw branches), we add the use of rules (A, B, C, etc.), which are in fact rules of classic cellular machines. At every new stage of the process of creation, the cellular rules apply to the shoots of new branches/sheets/segments, according to the principles of survival and birth. This slightly more complex method presents the advantage of creating less predictable creations, which are more natural.

Method 3: genetic coupling up of the rules of L-Systems with the rules of cellular machines. This method is possible only with certain forms of machine rules (there are numerous variants, but we based our work on those presented in Mcell, software created by Mirek Wojtówicz.<sup>26</sup> Here, as well, L-Systems cellular rules are considered as phenotypes, and genotypes are built on the basis of binary multi-parametrized coding. Surprising results are obtained, even if scientific justification of such a process is excessively difficult to explain. But, after all, morphogenesis is indeed a very complex process that can be achieved by combining in a very narrow way chemical reactions with physical evolutions (see fig. 6).

Method 4: The images created with tools feigning the forms of nature and chaos are used to generate paint brushes (or other effects) that will be directly applied (we should say transformed) in the bodies of virtual creatures. It is this last method that allows creation of “beings paintings.”



**Figure 6** A creature plants created with Method 3.

### Cellular Morphogenesis

In addition, our research led us toward other uses of cellular machines for morphogenesis. So, in the same way we used the rules of cellular machines to generate vegetation, we applied them to construction of elementary forms from Metaballs (or blobs). This very simple method allows us to obtain various base forms, which we can consider either as future creatures (for the structural aspect) or functional organs of these creatures (muscles, sensory neurons for touch, smell, sight, the search for balance, etc.). The forms used are the simplest to generate and are built from basic rules of survival and birth: what we can consider as the essential cells of living bodies. Those created for the functional aspect can be generated only with more evolved rules in machines. It is interesting to note that evolutionists' experiments on populations of cellular machines were also used for this process.

### Other Morphogenesis

In the same kind of idea, the grammatical rules of L-Systems were used to create creatures, vegetable or animal, in their structural aspect. This type of rather classic creation did not generate very innovative tracks in our system of creation, but it completed the realizations. It was especially one of the test stages for neuronal co-evolution applied to creatures, which was realized mainly with the Framsticks.<sup>27</sup> We also use other fractal rules, such as IFS fractals, flames, strange attractors, dispersion-diffusion models, boids trajectories, etc.

### Neuronal Co-Evolution

One of the very important stages of our study of morphogenesis takes place within Framsticks. It focuses on a simulator of artificial life that is very evolved and programmable, which allows us to realize all sorts of experiments, so it is included in our pipeline of realization to develop creatures in their structural aspect and especially in their functional aspect (network of neurons) (see fig. 7). Different populations of creatures realized with these various higher methods were subjected to the evolutionary system of Framsticks. With various established criteria (speed, balance, or simply aesthetics), we mimed the processes of large-scale evolution to obtain original, autonomous creatures that could be used for various basic tasks: running, catching prey, escaping, and even dancing!



**Figure 7** An evolved creature stemming from the process of creation. Image from “Otedal Ahoahoha.”

### Realizations

From this creative plan, it is possible to create three types of work: fixed images, pre-calculated full-of-life images, and real-time full-of-life images. Only the last category can really exhibit the functional aspect of creatures, even if the quality of the real-time depiction does not allow one to totally appreciate the structural quality that can be implemented with this system. For that, we also realized calculated works, with various types of depiction, to take advantage of a very interesting pictorial morphogenesis. Notably, we performed a certain number of trials with non-photo-realistic rendering methods, according to the principles published by Aaron Hertzman<sup>28</sup> for video painting. Among our realizations, these present the advantage that they supply new styles of “alive” paintings that are self-organized original pictures directly derived from artificial life (see fig. 8). Furthermore, this method results naturally in new aesthetics, as described by the author.<sup>29</sup>

### Beings Paintings

Using these techniques, “Otedal Ahoahoha” was created as an “alive” painting, rather than a painting of artificial life. The work’s concept rests on the generation of full-of-life painting created by artificial beings. These creatures do not paint themselves on a canvas. Instead, they use their bodies to compose new paintings, in ballets of autonomous movements.

Numerous experiences of different painting modes were attempted in the past. We can notably quote the very well known Jackson Pollock, who painted with leaky jars, or Yves Klein, who used women’s bodies to paint canvases. Examples of digital paintings are also rather numerous, and they demonstrate many different processes of reproduction; for example, those implemented by Roman Verostko in his algorithmic art works. The realizations that I present here are created in a very different way, and the film “Otedal Ahoahoha” is a good demonstration of this technique. Indeed, it presents virtual, genetically evolved creatures that possess a neural network that allows them to move in the space where they compose full-of-life paintings. But these compositions are directly made by artificial bodies that move, become entangled, and contact each other. These bodies are thus themselves the painting. They form the pigments and paintbrushes,

just as they form the jets, the tracks, the touches of painting on the picture. They are beings painting, and they are becoming the instruments of their own creations.



**Figure 8** Another creature made with a non-photo-realistic technique, “alive painting.”

Image from “Otedal Ahoahoha.”

### Conclusion

The originality of this system lies in the combination of techniques presented to build models of new morphogenesis. The rules of cellular machines and L-Systems have never been used in this way before. The main purpose here was to supply “patterns” of creation of life such as described very well by Fritjof Capra in his work, *The Web of Life*.<sup>30</sup> On the other hand, the system allows achievement of very different results from a visual point of view, which leaves to the artist the choice of a particular aesthetic, whether to present fixed or full-of-life images, even in real-time, especially for producing beings paintings.

### Acknowledgements

I am particularly anxious to thank Michel Bret for the inspiration that he provided and for allowing me to succeed in this work, as well as all the team at Arts et Technologies de l’Image” (Université Paris 8) for their very valuable enthusiasm and creativity.

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# A Transformational Object: Artistic Authorship and the Phenomenal Aesthetics of New Media

Presented at the First Beijing International Media Arts Exhibition and Symposium, May, 2004.

If there is any metaphor that has come to act as a signpost of current developments in the realm of digital art and design, it is the blur. We have seen the blur as a building, the blur as the theme at conferences, and the blur as a means to describe the totality of the overlapping processes and intentions that all converge in what can be called interactive experiences. For shorthand, we call this convergence new media. Given the various aims and contexts from which the larger category of art objects arrives, the blur seems to best approximate a still undistinguished body of work and its cultural momentum.

While creating hard definitions and fixed categories of work made using technology may limit the emergence of a new art form, not identifying the points where it overlaps and samples from existing disciplines might likewise suppress the emergence of a new aesthetic language parallel to that overlap. The blur, in this regard, legitimizes the idea of a mass without boundaries, a suspension of the sensible and cognitive precision that we have come to expect from an object of art. It is a kind of mass experience of a totality that Merleau-Ponty describes as revealing “another modality which is neither the ideal and necessary being of geometry nor the simple sensory event.”<sup>1</sup> The blur is an object we can recognize as form without committing to any particular shape.

With the introduction of the viewer as participant and part collaborator in the work of art, the expectation that art is a single object of representation has changed. Yet despite the lack of representational meaning, there is a general sense that art made using the processes and methods of digital computation, communication technologies, and information networks is nonetheless carving out a new territory where the possibility for action has its own kind of precision. It is this fluctuation between precision and openness, visual style and usability, poetics and science that introduces an idea of art as an existential object whose resonance and power comes from its use rather than its creation.

In the context of new media art, we have come to expect responsive interfaces, immersive environments, even new perspectives on social organization. The openness of the current sensibility has been described in critical writing as non-linear, uncertain, layered, in flux, flexible, discontinuous, plural, relative, and distributed. A project in new media is somehow simultaneously an object and not an object. New media emerges, therefore, from the complex mass of influences, contradictions, and objectives that act to suspend the object

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more than define it. The challenge for both educators and practitioners of emerging forms of media art lies in how to structure and identify this suspension as a mode of authorship.

In relating new media production to the history of making objects, and observing the influence of the mechanics of computation on the creative process, this essay suggests that the interdisciplinary mode of thinking represented by computational art, in particular work made using networks, is framing a new object.

## Anticipatory Space: Authoring Suspension

Given the open nature of a medium that finds itself suspended between disciplines, or is considered not-quite-a-discipline, what does the author of new media work with? What is the tool set, framework, or criteria with which the author works if the outcome is in some way more a process than an object? While a development process in computational media is often directly related to the outcome (a web site, for instance, will adhere to the procedure of design, coding and implementation), the outcome has not traditionally been so dependent on the process. But despite the greater influence of methodology on the new-media object, the basic nature of the creative process itself has not changed.

Traditionally, there are three components or aspects to any creative endeavor: the idea (content), the medium (form), and the intention (context). The history of Western visual culture can be understood as the way in which artists and their cultural contemporaries have prioritized these three elements. In pre-modern sensibility, representation was bound to the context of religious or mythological values that determined both the idea and the medium. The symbolic correctness of the color and position of the Madonna's hands, for instance, dictated the order of the labor and processes involved in her creation.

With the advent of photography and the interest in mechanically fixing the image, the importance of the intention of a work gave way to a preoccupation with the idea. From Kandinsky to Duchamp, idea becomes the primary consideration over an interest in formal exploration or concern for the social role of art. In our time, the ubiquity of telecommunications technologies has proven McLuhan's insight to be correct. The medium is the not only the message,<sup>2</sup> but it has also become the sole priority, collapsing all distinction between idea and medium, medium and context.

Blurring idea, medium and intention, new media engenders a self-reflexivity that challenges the notion of authorship as a “creative” act. The author becomes someone who reveals or transforms. Most network-based telepresence, database, and visualization projects can

be said not to create something as much as to establish a device through which content or data are made apparent. What arises as a consequence is an object “pregnant with form”<sup>3</sup> rather than form in itself. From a practical perspective, seeing one’s creative decision making as separate from or as a mere pretext for the actual form is directly influenced by the level of abstraction inherent in programming languages and the modularity of coding. There is a metaphorical relationship between code and image that can cause confusion about where artistic subjectivity resides. Is the artist the author of devices or the author of the resulting effect of the device? Either way, there is a sense that as a creator, the artist raises functionality to the level of expression. The artist is the producer of an anticipatory space or field of action whose creativity is actualized only in the aftermath of the object’s use or implementation.

The non-discriminatory treatment of content in computation can lead to the conception of a neutral object that accommodates alternate or variable content. Neutrality is aestheticized by seeing computation itself as content worth contemplating. With the idea of a neutral object, an artist can focus on developing a device through which meaning can be deciphered, giving wholeness to an otherwise intimidating, unformed sea of information. That we are fascinated with the mechanics of computation (elevated by new aesthetic categories like software art, algorithmic art, generative art) is not evidence of artistic enchantment with a new medium of expression, but rather evidence of a new awareness that the structure of a medium can express itself.

Technology has always influenced the scope and potential of art, from the subtle impact of tube oil paint on the range of subject matter available to painting to the total re-evaluation of art that came with the advent of mechanical reproduction. But the relationship between content and form is significantly altered when what is done is synonymous with how it is done. Once “what” and “how” are the same, the only creative space open to an artist is the space to identify or fabricate another medium, a super-medium whose specific method of interaction or particular quality of change is equivalent to its content.

### Revealing Systems

There are certain types of new media art that catalyze meaning by establishing a functional framework through which we can witness existing social, economic, or political structures of communication. *Carnivore* (2002) by the Radical Software Group (RSG) in New York,<sup>4</sup> for example, uses an existing method, in this case “packet sniffing” or programmed FBI surveillance of the contents of email communication and individual web use, as the content itself. By appropriating the FBI software for use in an artistic context, RSG was able to convert the invisibility of the surveillance practice to a visible form of intervention. The visibility of surveillance is possible because the way it is used by artists is extremely varied. The common denominator among all variations is data surveillance, and as a result, the system of surveillance is legible. The poetics of the work lies in our “seeing” the mechanics of the sniffing operation and the way that it functions. Aesthetic value is therefore not created by RSG as much as it is a result of RSG’s ability to frame the FBI practice. In revealing FBI activity, RSG shows how the neutrality of computation can be employed as a kind of empty machine that, when used, has the capacity to give shape to the restrictions and protocols to which it must also subscribe.

In an artistic context, data visualizations and algorithmic code structures show that in many cases scale plays a large role in creating this revealing experience. For instance, *TextArc* (2002) by Brad Paley<sup>5</sup> and *Secret Lives of Numbers* (2003) by Golan Levin<sup>6</sup> both use a Java algorithm to bring a range and scope of information into one visible interface. Without this visible interface, such information would be unavailable to normal human perception. In computer or medical science, algorithms can bring understanding and insight to a problem obscured by the details of everyday life. In art, such scaled visualizations reveal the contours of our social and cultural life that can be used for the forms they suggest. Much of computational art’s creativity and meaning are not predetermined by the artist but are revealed on a scale that transcends the individual subjectivity that constitutes the style or signature of art. In this sense, the number of urban wireless projects developed to allow personalized tours through the city or as a way to map local histories are more likely to reveal the structure of wireless networks than they are to offer any subjective aesthetic experience.

Under the ever-increasing deluge of information, artistic survival is ensured not by generating more cultural clutter but in parsing the image stream to discover and nurture what is real, tangible, influential, and consequential. Net practices like culture jamming, hacktivism, and social mapping show how artists already do this. Their focus on the process of revealing, like others who act on already existing content, point to a new metaphysical interest in creating an empty machine or instrument. When the creative process is centered on anticipation of action or on how to best identify existing patterns, form no longer follows function but becomes function itself. Empty machines have artistic value only in their capacity to make something else accessible, available, closer, faster, or possible. But one has to wonder if making an instrument is equivalent to making music. How is it different? If we can allow that making an instrument or empty machine is the same as making music then we have arrived at an expanded sense of artistic authorship.

### Transformational Objects

This expanded sense of authorship, of someone who creates conditions rather than content or form, is what Martin Heidegger in his essay *The Question Concerning Technology* sees as the role of technology itself. In defining the essence of technology, Heidegger refers to this role as its *Ge-Stell* meaning “Enframing.” For him, Enframing is a concept of gathering together, a mode of ordering so that what is evident is a “standing-reserve” or space of waiting for actions to take place.<sup>7</sup> The new media artist is author of this standing-reserve or Enframing. Artistic expression lies in the ability to determine a set of functions, features, and conditions rather than in the ability to represent. Enframing (or simply framing) in turn is the act of using a created set of functions, features, and conditions to reveal or extend this same set of functions, features, and conditions through change or use. Change or use makes conditions apparent. Software projects like *Data Diaries* (2003) by Cory Archangel<sup>8</sup> or *Digital Landfill* (2000) by Mark Napier<sup>9</sup> show this by establishing a window through which we experience the processing of computer or net functions as continuous or unfolding form. Sometimes just the witnessing of a process is aestheticized as an object. For example, here is the artist’s description of a recent project by Victor Liu posted on Artport, The Whitney Museum of American Art’s web site for showcasing net art:

The life of American machines\_

This is pris. I put her to the task of eternal rebuild. The window above shows a live stream of her going about this task. It shows the commands she is running, followed by the output of the commands.

She is rebuilding herself from metal. This is an arduous and time-consuming process, especially for an older machine like pris. The rebuild process consists of downloading her source code, freely available from various sites on the Net, and compiling the source code into her operating system and programs. The source code she downloads is simply a set of text instructions for how to build her programming, and in computer parlance, this process of building binary programs from source code is called compiling.

A small blue window of self-updating code constitutes our experience of the work of art. We watch the symbols that can be interpreted as the exact code necessary to the reconstruction of the artist's computer as an object, although the object itself, pris, is nowhere in view. By prioritizing process as an object, new media is ostensibly a meta-process, a practice of transferring the responsibility of meaning from subject to object.

In my own seminar class at Parsons called Signs of Life: The Aesthetics of Reality in Digital Culture, we discuss how to re-insert the subjectivity of the author in both the process and outcome of projects by comparing the natural and computational worlds. Networks, being attached in some way to the real world, are discussed as playing a role in opening up the metaphysical cul-de-sac that often limits computational art. Natural phenomena such as light, wind, breathing, smog, etc. and fabricated phenomena like flash mobs, generative algorithms, and online communities have an essence and can be recognized even when experienced in different forms. Anyone, for example, can picture the phenomenon of rain, although in reality it can take on many different forms and characteristics. Similarly, creation of an organic interface like Ben Fry's "Anemone" applet<sup>10</sup> starts from assigning value to a set of elemental principles such as scale, shape, and frequency of change, which will in use transform the look of the original design. As a consequence, the form is one that will never have the same appearance twice, manifesting an infinite number of variations identifiable as the same form.

I have found that in their careful observation of what is constant and what is variable in the forms that change, students in my seminar have a better understanding of their role in relation to the variable object they are making. The growing interest in bio-morphic metaphors and real-time dynamics supports the idea that the ubiquity and volatility of networks has emerged as a phenomenal form, particularly when directly connected to human activity and presence. While many art movements from Realism to the Situationists to Fluxus have reacted against the objectness of art, the new media artist does not reject the object as much as support the radical idea of the object as something perceivable only as a disruption or transformation. Without constant change in the amount of information passing through the network, the dangling wire used in LiveWire,<sup>11</sup> an art project by Natalie Jeremijenko, would be of no formal interest. It is only in its wiggling or spasms that the work becomes available as a comment on the pervasive nature of technology. It is not its form (materials of ethernet wire, wall, installation) per se that causes us to enjoy this work. The set-up makes a perceivable object out of the process of information parsing, which is what gives us pleasure in it as art.

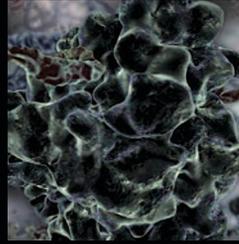
It is the nature of transformational works to keep continuity and change in balance. Listening Post<sup>12</sup> by Mark Hansen and Ben Rubin, exhibited at the Whitney in 2002, for example, gives us access to the scale and volume of text-based communication in a way that we can appreciate it as more than simply quantifiable information. The installation fascinates by being both a beautiful grid of LCD screens and a platform for witnessing the visual and aural summary of chat-room content across the net. As an object, it is simultaneously fluid and fixed in a way that transcends the self-reflexivity of computation and anchors our attention in the human and social forces that fuel its transformation.

The transformational object is a crossroad between subject and object where each makes the other visible. In his writing on the psychoanalytical meaning of the transformational object, British psychologist Christopher Bollas discusses the enviro-somatic condition that gives rise to the identification of an object as process. In identifying this object, he describes it as something more ephemeral than fixed, where the object "is 'known' not by cognizing it into an object representation, but known as a recurrent experience of being – a kind of existential, as opposed to representational, knowing."<sup>13</sup> It is the active mode of deciphering that is both more and less than a representation that makes transformation a form that is both known and unknown. It is this edge where new media finds its poetry.

As artists continue to create processes and instruments that reveal other processes and instruments, it is apparent that representation as a method of artistic communication and authorship has given way to manifestation – a hybrid intentionality where meaning is a product of a shift in perspective. By merging the concept of the object with the concept of transformation, artists show a post-representational commitment to the legibility and significance of process as an anti-commercial, anti-product, anti-historical blur that leaves the mechanisms of aesthetics bare.

## Notes

1. Discussed in M. Merleau-Ponty's *The Phenomenology of Perception and its Philosophical Consequences*, Northwestern University Press, 1964.
2. Appears in *The Medium Is The Message*, from *Understanding Media*, by Marshall McLuhan, MIT Press 1994.
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5. [www.textarc.org](http://www.textarc.org)
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12. [www.earstudio.com/projects/listeningpost.html?middle=listening\\_statement.html](http://www.earstudio.com/projects/listeningpost.html?middle=listening_statement.html)
13. *The Transformational Object*, by Christopher Bollas, *International Journal of Psycho-Analysis*, (60), 1978.



# computer animation festival

CHAIR  
**Samuel Lord Black**

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- 281 Love Letters
- 282 Lucia
- 283 Manufacturing Proteins  
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- 284 Moscow Souvenir
- 285 Nature Sweet “Triage”
- 286 The New Deal
- 287 Piñata
- 288 Recapturing the Lost  
Colors of BASARA  
*(abbreviated version)*
- 289 The Regulator (Le Régulateur)  
*(abbreviated version)*
- 290 Sal and the Great Frustration
- 291 Samuroid Zero:  
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- 292 Scent of a Robot
- 293 Sealed Lips
- 294 Street Stories - Episode 14:  
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- 295 Surgical Planning in Congenital  
Heart Disease by Means of  
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- 296 Surly Squirrel \*
- 298 Tick Animation 1
- 299 Transformations in  
Architectural Design
- 300 True Color
- 301 Twisted City
- 302 Venice Beach
- 303 The Zit

\* includes pre-production artwork



# committee & jury

## committee

### **Samuel Lord Black**

*Executive Producer*

SIGGRAPH 2005 COMPUTER

ANIMATION FESTIVAL CHAIR

Penguin Flight Dynamics

### **Betsy Johnsmiller**

*Assistant Producer*

Event Alchemy

### **BZ Petroff**

*Electronic Theater Director*

Wild Brain

### **Leo Hourvitz**

*Animation Theater Director*

Electronic Arts

### **Laurin Herr**

*Director of Technology*

Pacific Interface

### **David Beining**

*Full-Dome Director*

LodeStar Astronomy Center

### **Andrew Lyndon**

*Editor*

izzit media

### **Terrence Masson**

SIGGRAPH 2006 COMPUTER

ANIMATION FESTIVAL CHAIR

Digital Fauxtography, Inc.

### **David Ebert**

*Outreach Director*

Purdue University

### **Timothy Childs**

*Chocolatier*

Cabaret Chocolates

## jury

### **David Ebert**

USA

Purdue University

### **Donna Cox**

USA

National Center for

Supercomputing Applications

### **Emru Townsend**

Canada

fps Magazine

### **Linda Lauro-Lazin**

USA

Pratt Institute

### **Pierre Hénon**

France

Ecole Nationale Supérieure

des Arts Décoratifs

### **Shuzo John Shiota**

Japan

Polygon Pictures

### **Ted Burge**

USA

Walt Disney Feature Animation

## alternate jurors

### **BZ Petroff**

Wild Brain

### **Leo Hourvitz**

Electronic Arts

### **Terrence Masson**

Digital Fauxtography, Inc.



# introduction

SIGGRAPH Two-Thousand-Five is in LA  
To bring the best in graphics right to you.  
Computer Animation leads the way  
And to participate, here's what to do.

Just entertain us with a clever coup,  
And visual effects to amplify.  
Or real-time graphics make it all come true  
With animations made up on the fly.

Bring scientific truth to clarify,  
Or teach us new techniques that we can wield.  
We like to know your drive, your how and why,  
There really is no limit in our field.

Come on, submit your pieces, don't just lurk.  
The show cannot go on without your work.

Thus began the Call for Participation and the wildest  
ride of my life.

When I wrote that sonnet, I decided to challenge myself  
by using the Spencerian form rather than the simpler  
Shakespearean or Petrarchian forms. Little did I know  
that writing that poem would be the least of my chal-  
lenges in the process of putting together what I hope  
you will consider one of the best SIGGRAPH Computer  
Animation Festivals.

I let my vision shine through that poem, and I am very  
happy to see that you, the SIGGRAPH community, truly  
came through with clever coups, visual effects, and sci-  
entific truth. We could not possibly have put together  
the show we did without your work.

There are far too many people to thank for me to name  
them all, though I have tried to do so. On the next few  
pages, you will see the names of the people whose  
tireless efforts made this show possible, from my com-  
mittee and jury to the many volunteers who helped out  
before, during, and after the jury meeting to the most  
important people of all – the artists, scientists, and  
visionaries whose work is highlighted in the show. I tip  
my hat to all of you, give you my eternal gratitude, and  
leave you with this final thought:

Our long long road  
Is near its end,  
It really is a show.

The edit's done,  
The music's in,  
The projector's set to go.

Through endless hours  
of paperwork  
and images well drawn,

It's ready now,  
We have your work,  
The show can now go on.



**Samuel Lord Black**

COMPUTER ANIMATION FESTIVAL CHAIR  
SIGGRAPH 2005

# acknowledgments

Academy of Art University  
Alex Stahl  
Andra Smith  
Andrew Britt  
Andrew Lyndon  
Apple Computer, Inc.  
April Ramey  
Ashley Masen  
Betsy Johnsmiller  
Bill Kinder  
Brad Lawrence  
Brandon Foster  
Brian Blau  
Brice Parker  
BZ Petroff  
Chip Harris  
Chris Armstrong  
Chris Bregler  
Chris Lasell  
Cindy Stark  
Dan Kunz  
Dana Plepys  
Darin Grant  
David Beining  
David Ebert  
Dexter Masland  
Dino Schweitzer  
Donna Cox  
Ed Catmull  
Ed Goodman  
Ed Lantz  
Edgar Quinones  
Eldon Tam

Emru Townsend  
Entire Pixar Security Team  
Ex'pression College for Digital Arts  
Gary Clark  
Glenn Kasprzycki  
Gordon Henson  
Ian Young  
Industrial Light & Magic  
Jamie Mohler  
Jason Strickland  
Jeff Whittle  
Jessica Hurst  
Jim Irwin  
Jocelyn Edin  
John Hazleton  
John Kirkman  
John Takkacksen  
Joni Superticioso  
J.Walt Adamczyk  
Kathleen Lord Black  
Keith Kops  
Ken Condit  
Kevan Parmelee  
Laura Dohrmann  
Laurin Herr  
Leo Hourvitz  
Leona Caffey  
Linda Lauro-Lazin  
Liz Greenberg  
LodeStar Astronomy Center  
Mayet Bell  
Meagan Miller  
Michael Lee

Mike Overbeck  
MT Sylvia  
Nadine Takvorian  
Natalie von Osdol  
NVIDIA Corporation  
Osvaldo Tomatis  
Penguin Flight Dynamics  
Phred Lender  
Pierre Henon  
Pixar Animation Studios  
Ramon Ford  
Randy Nelson  
Renee Lamri  
Richard Dent IV  
Scott Slater  
Shannon Thomas  
Sherrie Sinclair  
SkySkan  
Snader and Associates  
Steve Savage  
Ted Burge  
Terrence Masson  
Timothy Childs  
Todd Szymanski  
Tom Rieke  
University of New Mexico  
Wendy Tanzillo  
Wild Brain

**...and everyone else who has given their time, effort, and experience to making this show a reality. If I failed to mention you, I sincerely apologize.**



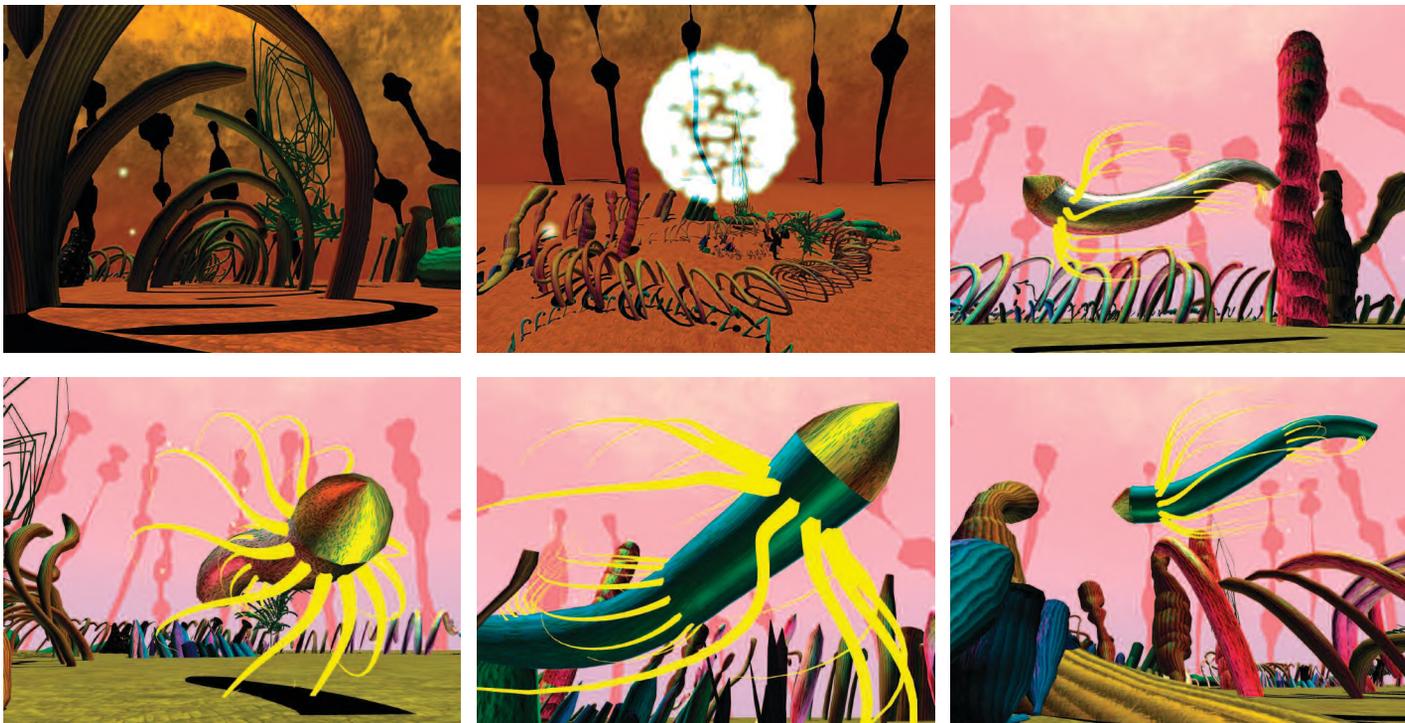
# electronic theater

DIRECTOR  
**BZ Petroff**

## electronic theater : opening performance

### Autocosm: Gardens of Thuban

Live Performance, 17:00



Autocosm: Gardens of Thuban is a live performance which brings interactive computer graphics techniques into the realm of theatrical and musical performance. This work incorporates elements of animation, theater, dance, painting, sculpture, music, and interactive art. The creative process for this piece is to shift continually between painting, programming, animating, composing music, designing interfaces, and performing. Gardens of Thuban is a structured improvisation: I start with an empty field and draw in real time before the audience. Stroke by stroke, I create an alien landscape populated with organic plants, trees, stones, and flowers.

#### HARDWARE & SOFTWARE

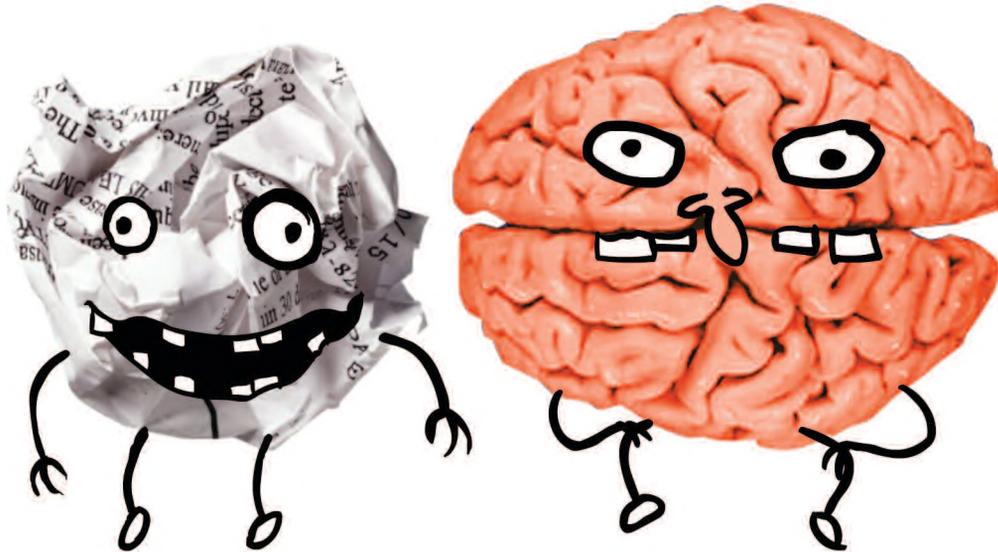
Graphics hardware provided by NVIDIA Corporation.

*Director and Producer*  
**John "J.Walt" Adamczyk**

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# electronic theater : opening animation & interstitials

## Previs & Brainhead



Previs wants Brainhead to meet him at SIGGRAPH this year. Brainhead, inspired by an illegal download that Previs sends him, gets his butt over to SIGGRAPH so they can party down, see cool stuff and meet some hot chicks.

*Director*  
**Mike Overbeck**

*Producer*  
**Wild Brain Animation Studios**

### CONTRIBUTORS

*Writers*  
**Mike Overbeck**  
**BZ Petroff**

*Producer*  
**BZ Petroff**

*Previs*  
**Richard Dent IV**

*Brainhead*  
**Dexter Masland**

GREEN FAIRY INSERT

*Producer*  
**Nina Rappaport**

*Audio Recording*  
**Ex'pression College  
for Digital Arts**

*Sound Mix*  
**Outpost Film Center/SF**

*Video Post*  
**Rough House/SF**

*Contact*  
**BZ Petroff**  
Head of Production  
Wild Brain  
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+1.415.271.9230 cell

## award winner : best of show

9

USA, Animation, 10:28



A mechanical beast attacks two rag doll creatures as they scavenge the ruins of their world. After witnessing the death of his mentor, 5, the rag doll, 9, must confront this vile creature. Only through cunning and the use of his primitive technology can 9 hope to destroy the monster and steal the talisman of trapped souls it carries as a trophy.

Inspired by the work of stop-motion animation masters Jan Svankmeyer, The Brothers Quay, and the Lauenstein Brothers, I sought to immerse the audience in a gritty textural world inhabited by creatures composed of fabric scraps and bits of broken machinery. The fantasy artwork of Zdzislaw Beksinski and photographs of European cities destroyed in World War II inspired the scenic design. The non-verbal narrative is loosely based on the Old English poem "Beowulf" and relies heavily on pantomime combined with strong composition and staging to tell the story.

### HARDWARE & SOFTWARE

Maya for animation, modeling, and rendering  
Adobe After Effects for compositing and editing  
Adobe Photoshop for textures and matte painting

*Director and Producer*  
**Shane Acker**

### CONTRIBUTORS

*Sound Designer*  
**Dave Steinwedel**

*Music Composer*  
**Eric Olsen**

*Contact*  
**Shane Acker**  
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+1.310.397.3714  
shaneacker@gmail.com  
www.shaneacker.com

# pre-production artwork

9



Storyboard panels for 9, part 1  
**Shane Acker**  
Pencil on paper



Storyboard panels for 9, part 2  
**Shane Acker**  
Pencil on paper



## Fallen Art

Poland, Animation, 05:22



On an old, forgotten military base in the Pacific, soldiers who have lost their minds due to the hardships of war have gathered to complete one final mission. There, far away from civilization, Sergeant Al cultivates his love for the brave soldiers, Dr. Friedrich cultivates his talent for photography, and the mentally lost General A creates his art. But General A does not use neither paper nor canvas. He attempts something completely different.

### HARDWARE & SOFTWARE

3ds max, LightWave, Brazil R/S, messiah:animate, Photoshop, After Effects

### Director

**Tomek Baginski**  
Platige Image

### Producer

**Platige Image**

### CONTRIBUTORS

### Producers

**Jarek Sawko**  
**Piotr Sikora**  
**Tomek Baginski**

### Executive Producer

**Marcin Kobylecki**

### Concept Art

**Rafa Wojtunik**

### Animators

**Grzegorz Jonkajtys**  
**Lukasz Pazera**  
**Zbigniew Lenard**  
**Marcin Wasko**  
**Arek Zawada**

### Artists

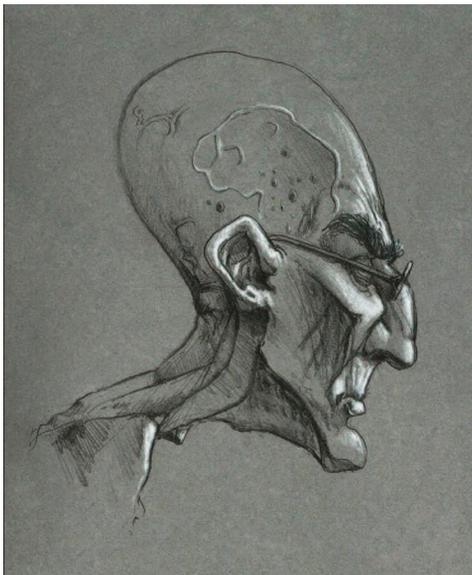
**Radosaw Nowakowski**  
**Szymon Kaszuba**  
**Krzysztof Kamrowski**  
**Wojtek Baginski**  
**Piotr Tomczyk**  
**Andrzej Sykut**  
**Selim Sykut**

### Contact

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+48.2.284.46474  
mk@platige.com  
www.platige.com  
www.fallen-art.com

# pre-production artwork

## Fallen Art



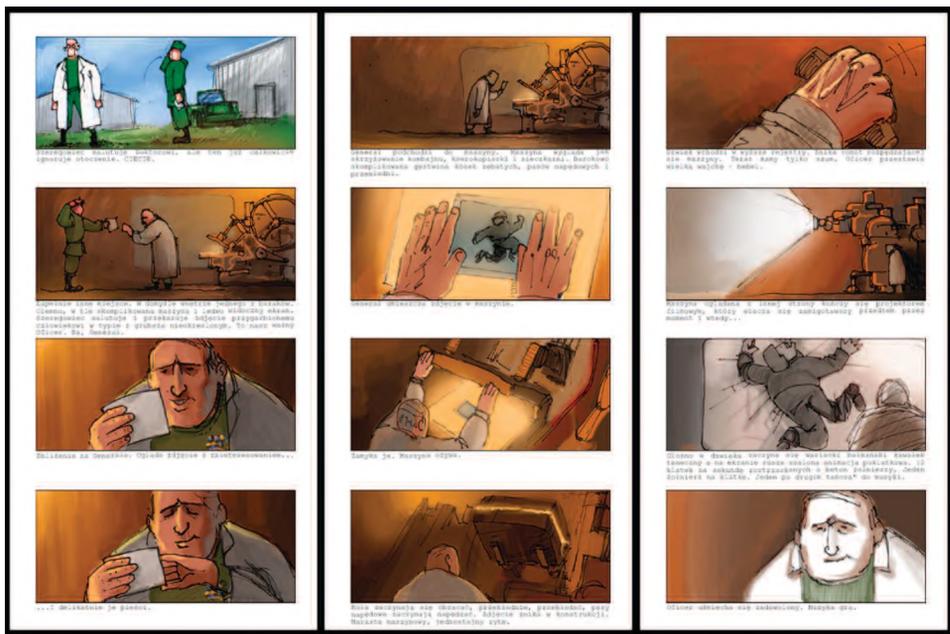
Dr. Johann Friedrich - sketch  
Rafal Wojtnik



Dr. Johann Friedrich - concept  
Rafal Wojtnik



Dr. Johann Friedrich - sketch  
Rafal Wojtnik



Fallen Art - storyboard  
Tomek Baginski

# pre-production artwork

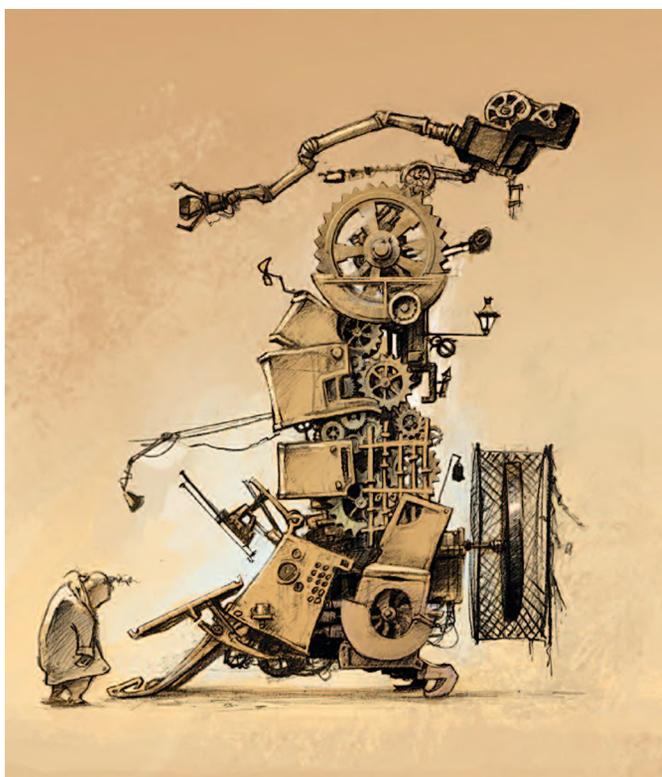
## Fallen Art



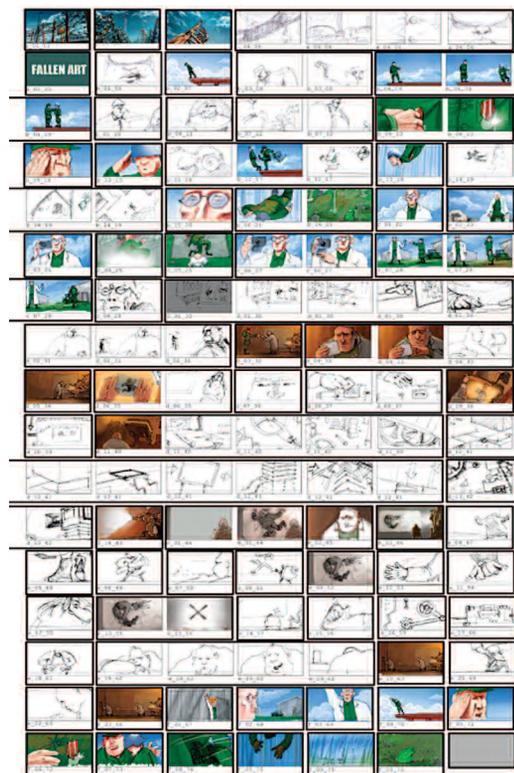
Sergeant AL - concept  
Rafal Wojtunik



Soldier - concept  
Rafal Wojtunik



Machine - concept  
Rafal Wojtunik



Fallen Art - shootingboard  
Tomek Baginski

# pre-production artwork

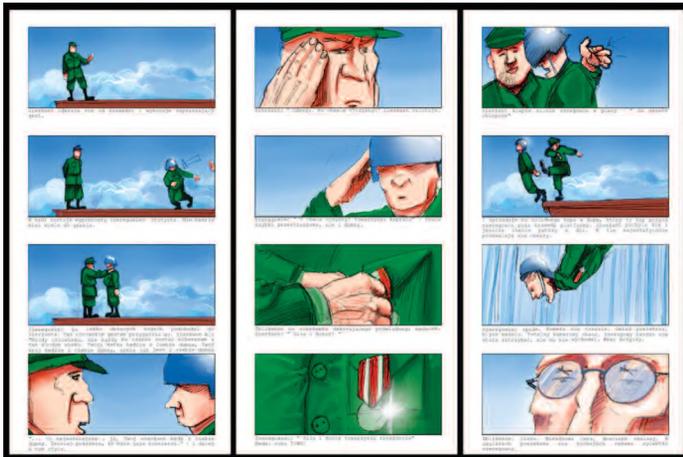
## Fallen Art



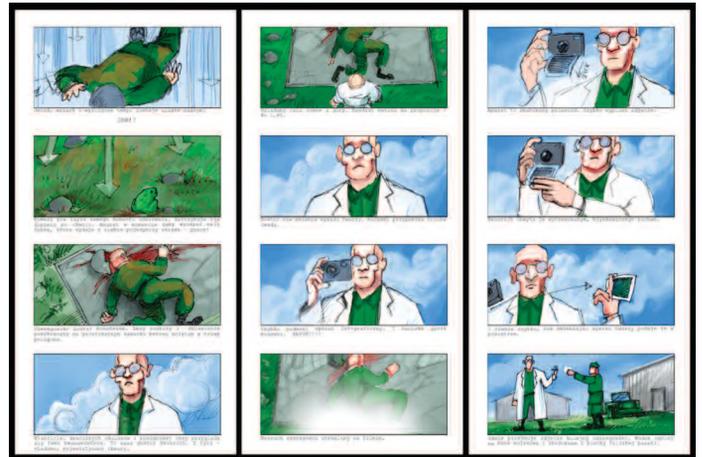
Terrain - concept  
Rafal Wojtunik



Tower - concept  
Rafal Wojtunik



Fallen Art - storyboard  
Tomek Baginski



Fallen Art - storyboard  
Tomek Baginski

**award winner** : jury honors

## La Migration Bigoudenenn

France, Animation, 02:36



A group of ladies from Brittany in traditional dress compete in a contest to cook the Breton speciality, crêpes of an ethereal lightness.

### HARDWARE & SOFTWARE

MAYA 6, Photoshop 7, After Effects 6, Premiere Pro

### Directors

**Eric Castaing**  
**Alexandre Heboyan**  
**Fafah Togora**

### Producer

**Gobelins, l'école de l'image**

### Contact

**Eric Riewer**  
73 boulevard Saint Marcel  
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eriewer@gobelins.fr

### CONTRIBUTORS

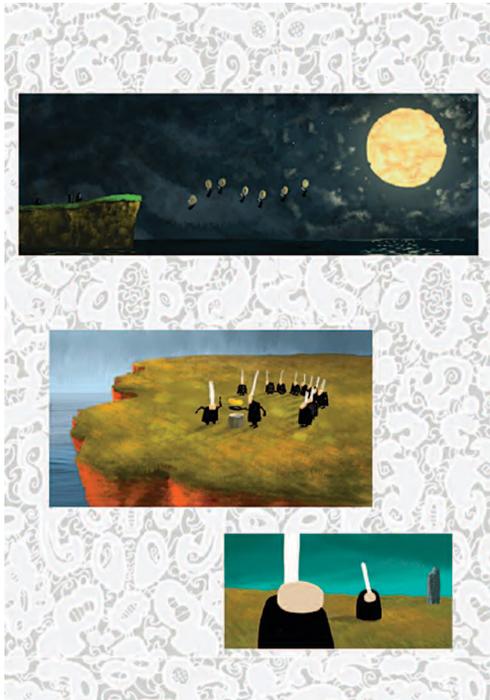
**Eric Castaing**  
l'école de l'image

**Alexandre Heboyan**  
l'école de l'image

**Fafah Togora**  
l'école de l'image

# pre-production artwork

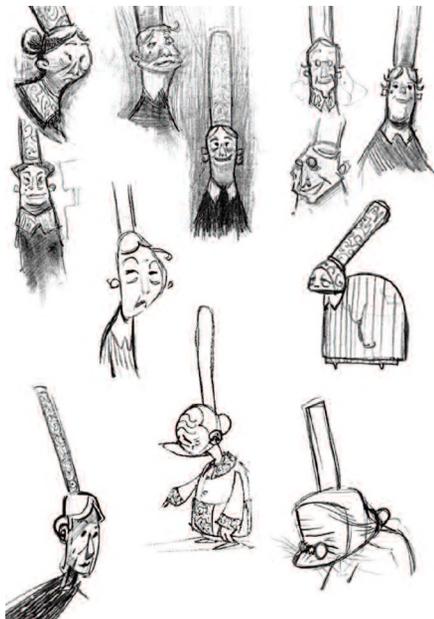
## La Migration Bigoudenn



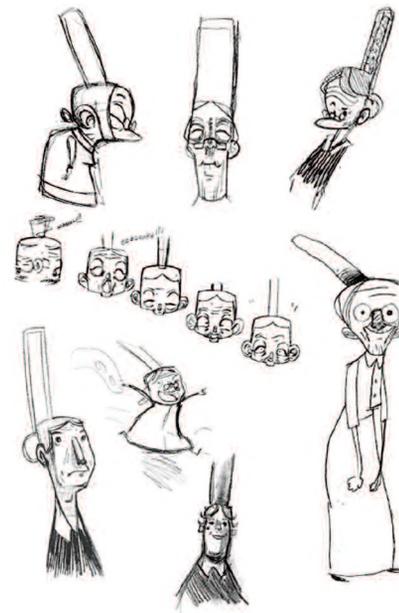
Concept Design  
Alexandre Heboyan  
Brush



Concept Design  
Alexandre Heboyan  
Brush



Character Design  
Eric Castaing, Alexandre Heboyan, Fafah Togora  
Pencil



Character Design  
Eric Castaing, Alexandre Heboyan, Fafah Togora  
Pencil

# Cubic Tragedy

Taiwan, Animation, 03:30



A polygonian girl tried to make herself look better by using her newly purchased cosmetic tools: Beauty Sculptor DIY (for polygon modeling, of course). However, she didn't read the user manual carefully (who does?) before using her new tools to edit the vertices of her face. And very soon everything was out of control.

## HARDWARE & SOFTWARE

PC, P4 1.7 GHz, 3ds Max

*Director*  
**Ming-Yuan Chuan**

*Producers*  
**Chun-Wang Sun**  
**Ming-Yuan Chuan**  
National Taiwan University  
of Science and Technology

## CONTRIBUTORS

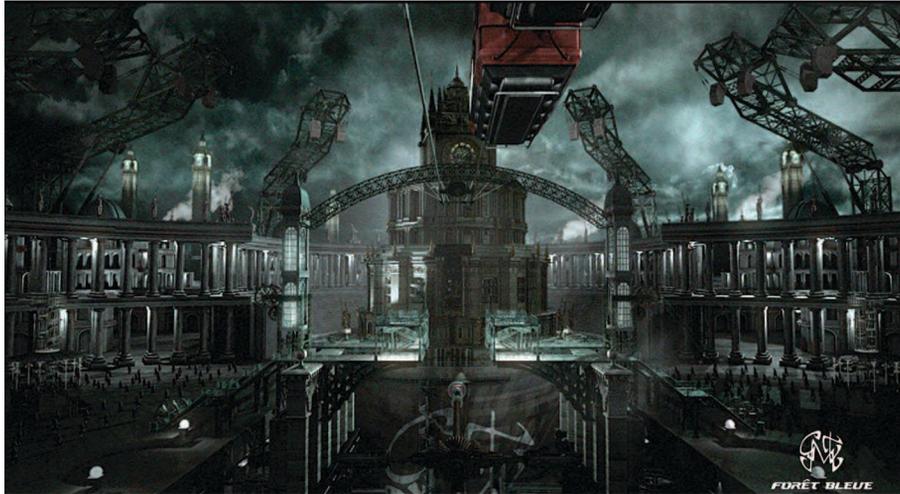
*Story*  
**Chun-Wang Sun**

*Animation, Lighting, Rendering,  
Post-Production*  
**Ming-Yuan Chuan**

*Contact*  
**Chun-Wang Sun**  
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and Commercial Design  
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## La Dernière Minute (abbreviated version)

France, Animation, 02:40



The adventures of two almost-identical brothers, one forever early and the other forever late, in a world obsessed with standard time and absolute punctuality.

### HARDWARE & SOFTWARE

Alias Maya, Pixar RenderMan, Discreet Flame, Adobe Photoshop, PC NT, SGI Irix

*Director*  
**Nicolas Salis**

*Producer*  
**Lazennec/Forêt-Bleue**

### CONTRIBUTORS

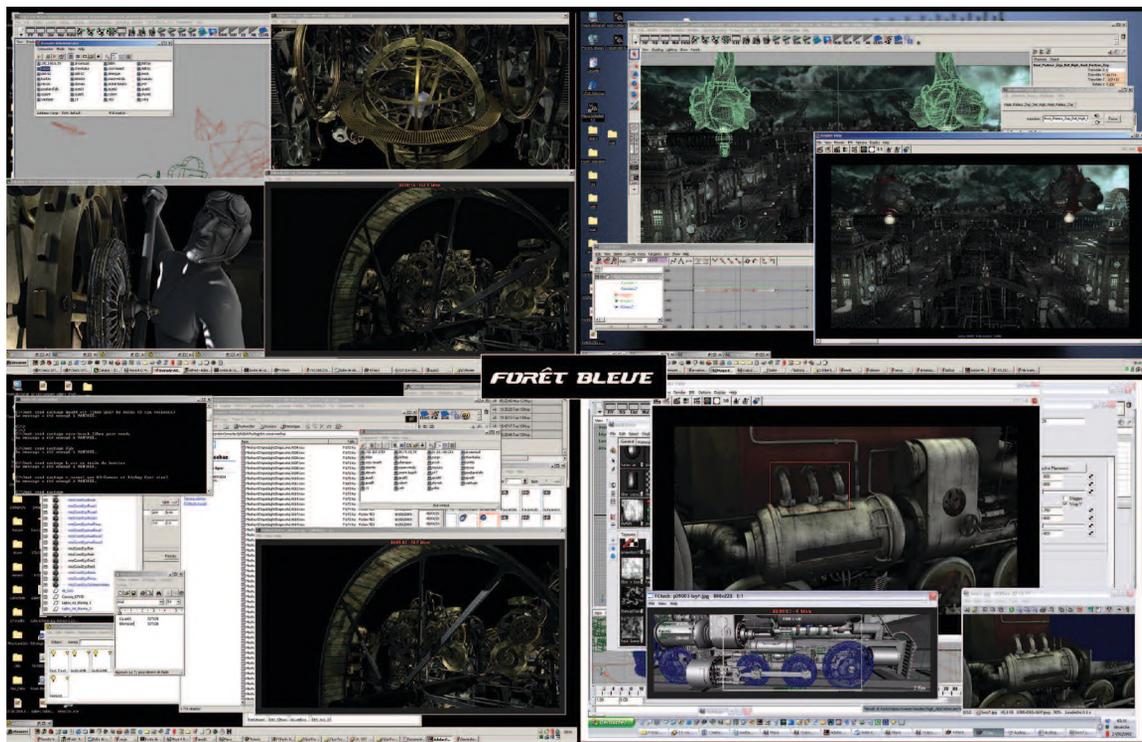
*SFX Supervisor*  
**Yan Allain**

*Director*  
**Nicolas Salis**

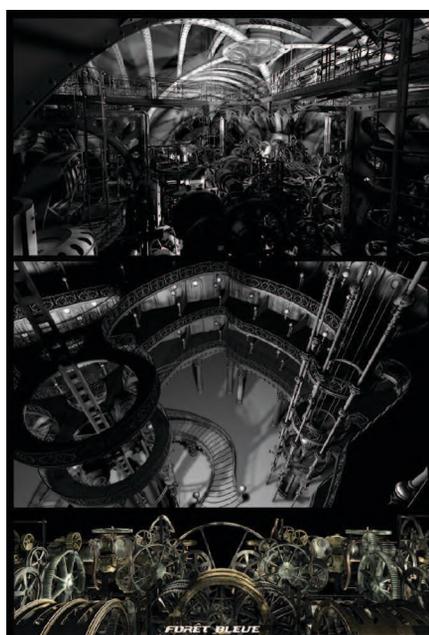
*Contact*  
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foret-bleue@foret-bleue.com

# pre-production artwork

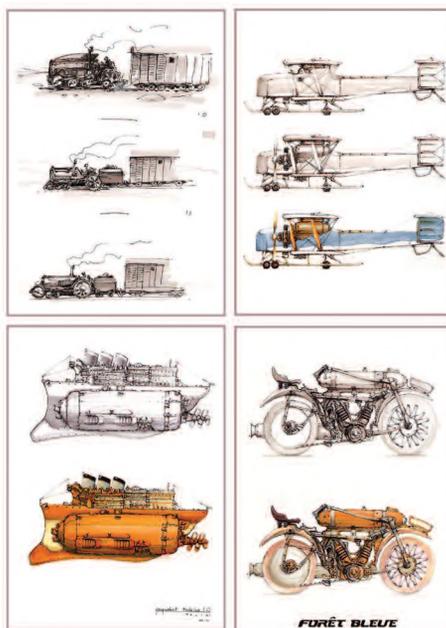
## La Dernière Minute



3D work in progress  
Forêt Bleue



3D work in progress  
Forêt Bleue



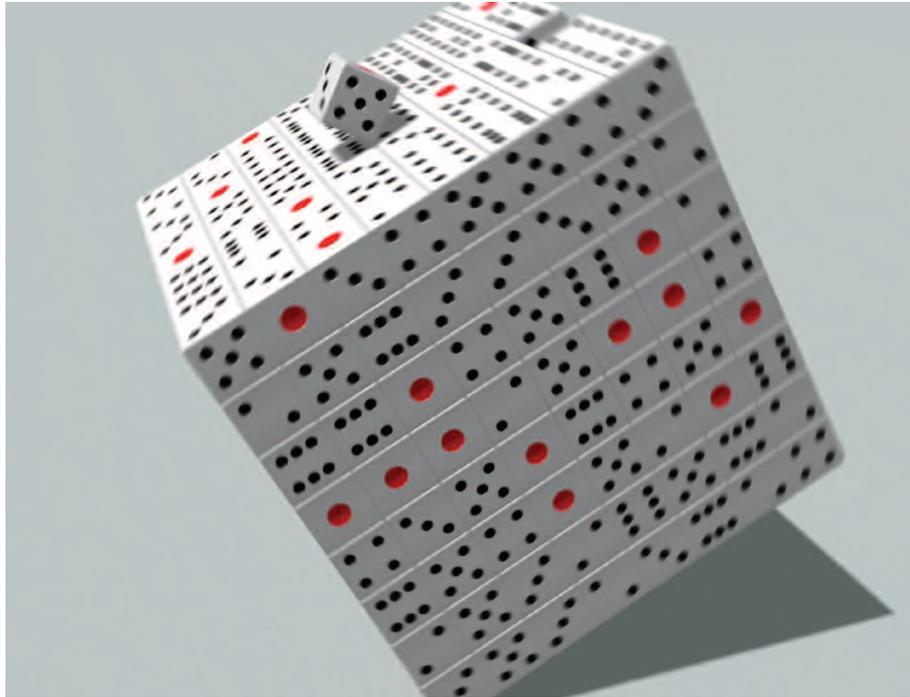
Concept art  
Forêt Bleue



Concept art  
Forêt Bleue

## Dice

Japan, Animation, 01:57



This CG animation presents the enjoyable rhythms of rolling dice. Many movement patterns of rolling dice were captured, and then surprising movements were selected. The work consists of a single, continuous take of movements in the chain reaction of rolling dice, one scene rolling into the next.

The production was created with Maya and a software tool written with Mel, a script language that can control dice moving in arbitrary directions at various speeds. As the dice landed and collided with each other, localization and time data were collected by Maya and exported to MAX/MSP sound software to generate the audio track and synchronize it with the movement of the dice. These data were also used to create melody.

### HARDWARE & SOFTWARE

Hardware: Windows PC 2.8 GHz, Apple PowerBook G4

Software: Alias Maya 4.5, Adobe Photoshop 6.0,  
Adobe Premiere 5.1, MAX/MSP 4.5, Cubase SX3

*Director and Producer*  
**Hitoshi Akayama**

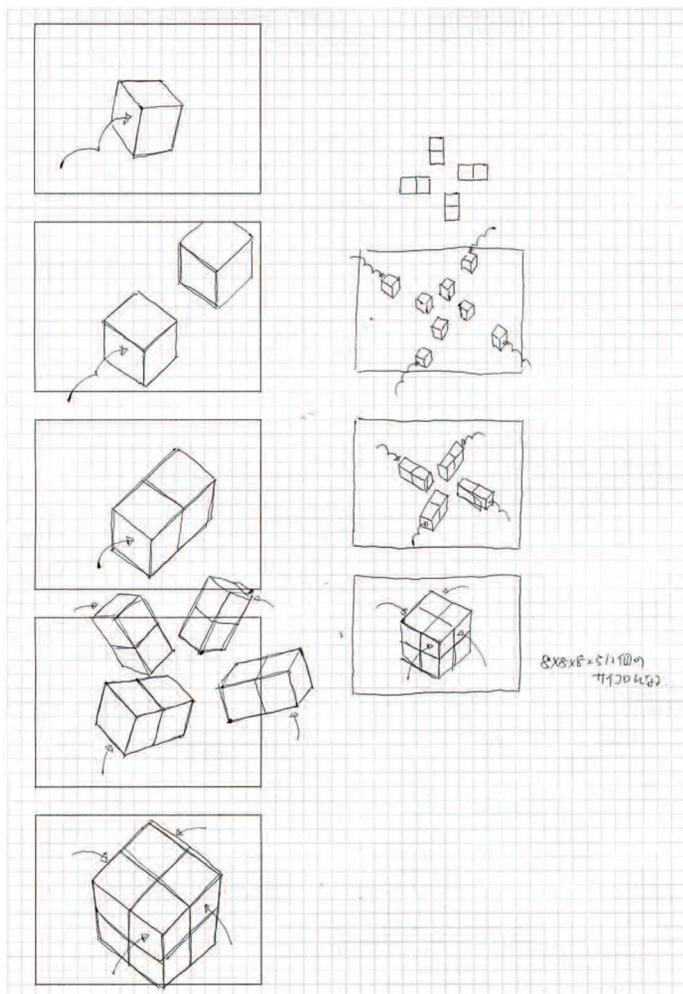
CONTRIBUTOR

**Saburo Hirano**  
Kyoto Seika University

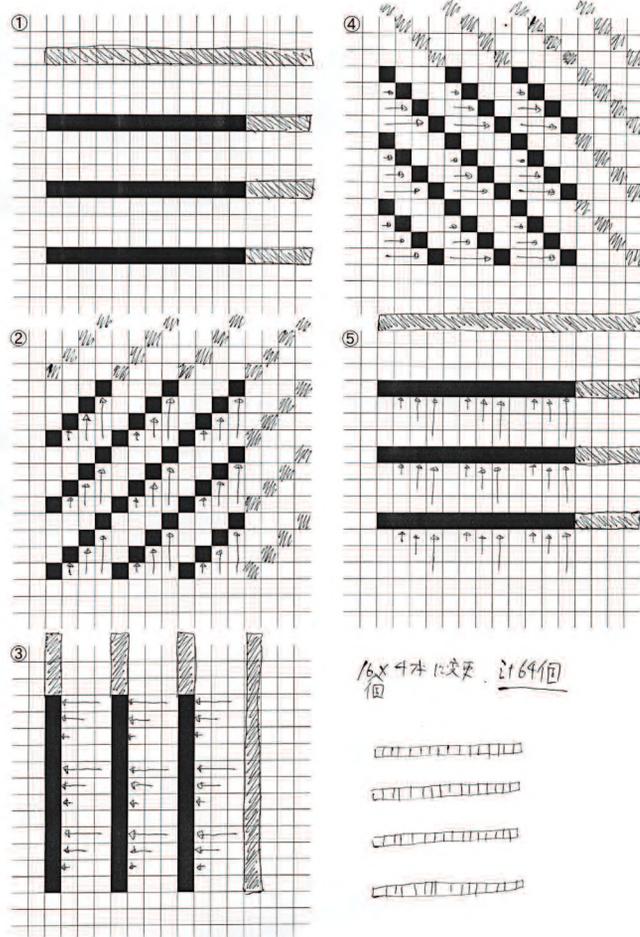
*Contact*  
**Hitoshi Akayama**  
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# pre-production artwork

## Dice



64 dice become 512 huge dice  
**Hitoshi Akayama**  
 Paper



Dice move in rhythmic motion  
**Hitoshi Akayama**  
 Paper

# East End Zombies

United Kingdom, Animation, 03:13



This animation was created using Maya and Shake under Red Hat ES Linux. The short story is written by Ed Clayton and narrated by Jan Weddup. London's east end is invaded by herds of zombies, and our "hero" is there to save the day. The short is animated using a quirky caricature style technique, while the action takes place in a carefully staged 3D environment.

## HARDWARE & SOFTWARE

Dell PCs running Linux OS, 3D modelling and animation using Maya 6.0, and post-processing using Shake 3.0

*Director*  
**Damian Hook**  
NCCA Bournemouth University

*Producer*  
**NCCA Bournemouth University**

## CONTRIBUTORS

This animation was based on a short story by Ed Clayton, narrated by Bournemouth Media School Senior Lecturer Jan Weddup.

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## Espace “La Vie d’Hector”

United Kingdom, Broadcast & Commercials, 01:02



The adventures of Hector, a flat, “paper” cartoon character who escapes from a newspaper in a waiting room and hitches a train ride to the country. He hikes through a variety of environments before climbing a hillside and enjoying the beautiful view.

The challenge facing the team was to create a character who, while essentially 2D, was interacting in a 3D world. This required construction of two separate rigs, a 2D one and a 3D one for moments when an element of depth was required, and for little extras like Hector flapping in the wind. Altogether, it took about six weeks working in Maya to bring Hector to life.

One small detail likely to be lost on people who are focusing on Hector is that the beetle he rides briefly is also a CG creation. The incredibly life-like creature was built, textured, rigged, and animated in two weeks in Maya, using a real (and distinctly smelly) preserved beetle as a model.

### HARDWARE & SOFTWARE

Maya, Inferno, Shake

#### *Director*

**Dom and Nic**  
Framestore CFC

#### *Producer*

**Outsider (UK)**  
**Bandits (France)**  
**Production Companies –**  
**for Publicis Conseil (Agency)**

#### *Contact*

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### CONTRIBUTORS

**Framestore CFC**  
(Team of 10)

# Gopher Broke

USA, Animation, 03:44



Styled in classic cartoon comedy tradition, “Gopher Broke” tells the tale of a cunning rodent’s smashing encounter with a produce truck on a lonely country road.

## HARDWARE & SOFTWARE

### Hardware:

IBM IntelliStation workstations with dual Intel P4 Xeon 2.8 or 3.06 GHz. Each workstation has 2 GB of RAM and an NVIDIA Quattro 980XGL graphics card.

### Software:

3ds Max, Brazil, Digital Fusion, Premiere, DPS Velocity, Photoshop

### Plug-Ins:

Afterburn: Dust FX, Deep Paint, Shag

*Director*  
**Jeff Fowler**

*Producer*  
**Al Shier**

## CONTRIBUTORS

*Writer*  
**Jeff Fowler**

*Executive Producer*  
**Tim Miller**

*Additional Story*  
**Keith Lango**  
**Tim Miller**

*Associate Producer*  
**Mandy Sekelsky**

*Animation Supervisor*  
**Marlon Nowe**

*Lighting & Compositing Supervisor*  
**Dan Rice**

*Storyboards*  
**Jeff Fowler**

*Concept Art*  
**Sean McNally**  
**Chuck Wojtkiewicz**

*Layout*  
**Jeff Fowler**  
**Derron Ross**

*Animation*  
**Wim Bien**  
**Jeff Fowler**  
**Remi McGill**  
**Marlon Nowe**  
**Samir Patel**  
**Derron Ross**  
**Davy Sabbe**  
**George Schermer**  
**Jason Taylor**

*Modeling*  
**Ricardo Biriba**  
**Sze Chan**  
**Jangwoo Choi**  
**Zack Cork**  
**Remi McGill**  
**Barrett Meeker**

**Sid Moye**  
**Cemre Ozkurt**  
**Dan Rice**  
**Seung youb (Kull) Shin**  
**Sung-Wook Su**  
**Jason Taylor**

*Rigging*

**Carlos Anguiano**  
**Remi McGill**  
**Barrett Meeker**  
**Seung youb (Kull) Shin**  
**Jason Taylor**

*Lighting & Compositing*

**Heikki Anttila**  
**Sebastien Chort**  
**Tom Dillon**  
**Makoto Koyama**  
**Kevin Margo**  
**Sid Moye**  
**Dan Rice**  
**Brandon Riza**  
**Derron Ross**  
**Seung youb (Kull) Shin**  
**David Stinnett**  
**Tim Wallace**  
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**Allison Bernardi**  
**Chris Trent**  
**Gary Zacuto**

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**Greg Berg**

*Sound Mix*

**Gary Zacuto**  
Shoreline Studios

*Digital Film Recording and Film*

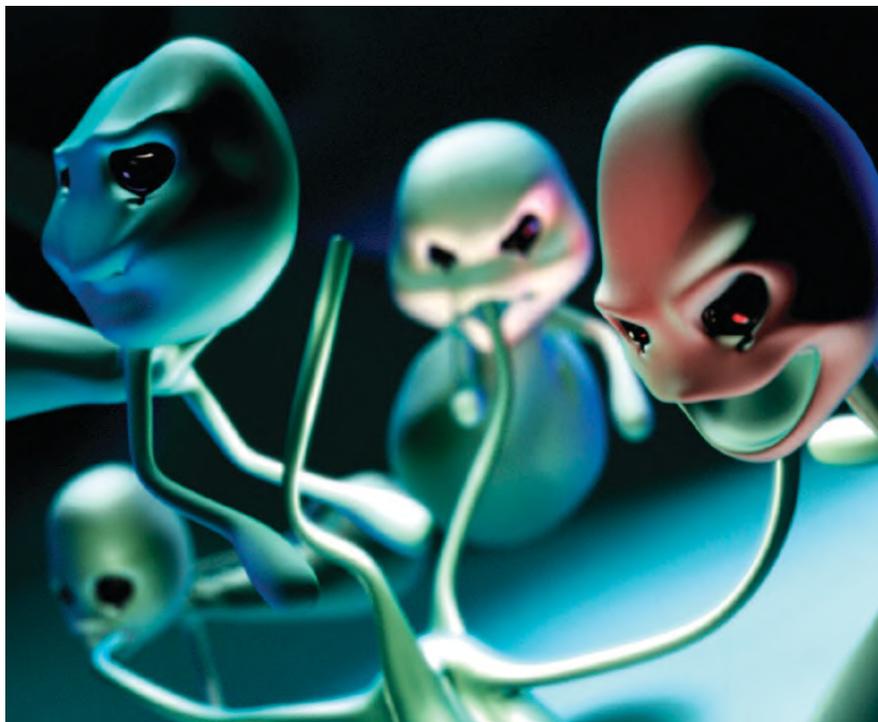
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## Helium

France, Animation, 05:16



A small aerial world inside a sphere. Freshly born little creatures float in a ballet set to the rhythm of Sibelius' "Sad Walz." As they dance, more creatures are born, and the growing creature population struggle for air until their overcrowded world explodes.

### HARDWARE & SOFTWARE

3ds Max, Combustion, After Effects, Premiere, Photoshop

Directors  
**Adam Janeczek**  
**Florian Durand**

Producer  
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# HP “Constant Change” (and The Making of)

USA, Broadcast & Commercials, 03:12



Hewlett Packard’s “Change” campaign has been one of the best advertising campaigns in recent years. Digital Domain had the opportunity to work with David Fincher to create an interesting spin on HP’s ability to adapt and change to the business environment. In this highly visual commercial, a man walks from his office to the elevator in surroundings that change every 3-5 frames. Office furniture changes, people change, the lighting changes, and even the clothes he is wearing change. This spot was shot completely on green screen, and 95 percent of the office furniture and the man’s clothing were added in CG. “Constant Change” was an extremely complicated concept that required a lot of patience and imagination.

## HARDWARE & SOFTWARE

SGI and PC-based workstations  
Nuke, Custom tools with Lightwave, Maya, Track, and other Digital Domain proprietary software

*Director*  
**David Fincher**  
Digital Domain

*Executive Producer*  
**Ed Ulbrich**

## CONTRIBUTORS

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**Eric Barba**

*H.O.P./VFX Producer*  
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*Digitographer*  
**John Allardice**

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*Animation Supervisor*  
**Walt Hyneman**

*Lead Composer*  
**Patrick Ferguson**

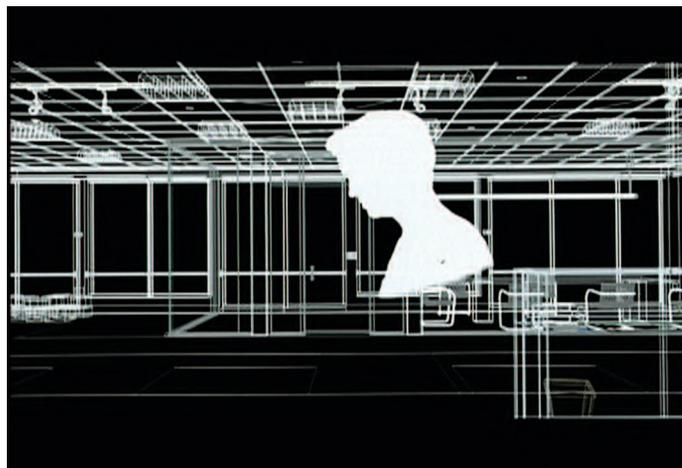
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## pre-production artwork

### HP “Constant Change” (and The Making of)



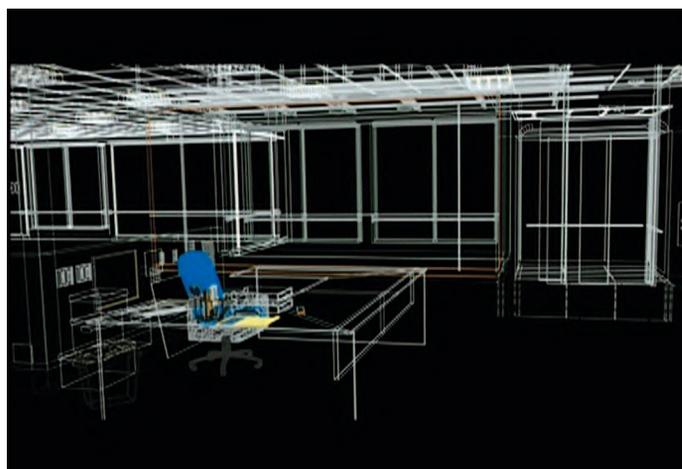
Wireframe still of prevised clothing simulation  
**Ed Ulbrich**  
Digital



Wireframe model of office environment  
**Ed Ulbrich**  
Digital



Rough, non-textured office environment  
**Ed Ulbrich**  
Digital



Wireframe model of office environment  
**Ed Ulbrich**  
Digital

## ILM 2005

USA, Feature Film, 03:32



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ILM 2005 provides a sampling of Industrial Light & Magic's achievements over the past year. Highlights include Sunny, the all-CG baby from Brad Silberling's "Lemony Snicket's A Series of Unfortunate Events;" the speeding vehicles and environments of Lee Tamahori's "XXX: The State of the Union;" and the ominous tripods of Steven Spielberg's "War of the Worlds."

### LEMONY SNICKET'S A SERIES OF UNFORTUNATE EVENTS

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**Dean Yurke**

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**Terry Chostner**

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 P. Jeep Naarkom  
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 Zain Homer  
 Gregor Lakner  
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 Luke Longin  
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 Ryan Smith  
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**Colum Slevin**

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XXX2: STATE OF THE UNION

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**Joshua Ong**  
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**Phil Brotherton**  
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**Richard Spah**

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**Shawn Kelly**  
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**Steve Braggs**  
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**Lydia Choy**  
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**Jeroen Lapre**  
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**Judith Weaver**

# pre-production artwork

## ILM 2005



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XXX2: President's arrival. Concept for capitol lighting.

**Christian Alzmann**

Digital



TE003 "Poe Leaving City" (wtang 7.27.04)

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Lemony Snicket: Concept for end shot matte painting

**Wilson Tang**

Digital

# In the Rough

USA, Animation, 04:28



Styled in classic cartoon comedy tradition, "In the Rough" is a wry prehistoric fable on the pursuit of marital bliss.

## HARDWARE & SOFTWARE

### Hardware:

IBM IntelliStation workstations with dual Intel P4 Xeon 2.8 or 3.06 GHz. Each workstation has 2 GB of RAM and uses an NVIDIA Quattro 980XGL graphics card.

### Software:

3ds Max, Brazil, Digital Fusion, Premiere, DPS Velocity, Photoshop

### Plug-Ins:

Afterburn, Deep Paint, Shag

### Director

**Paul Taylor**  
Blur Studio

### Producers

**Mandy Sekelsky**  
**Al Shier**

## CONTRIBUTORS

### Writer

**Paul Taylor**

### Executive Producer

**Tim Miller**

### Additional Story

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**Leo Santos**

### Animation Supervisor

**Leo Santos**

### Lighting & Compositing Supervisor

**Brian Kulig**

### Effects Supervisor

**Kirby Miller**

### Storyboards

**Leo Santos**  
**Paul Taylor**

### Concept Art

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**Chuck Wojtkiewicz**

### Layout

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**Leo Santos**  
**Paul Taylor**

### Animation

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**Luc Degardin**  
**Jean-Dominique Fievet**  
**Bryan Hillestad**  
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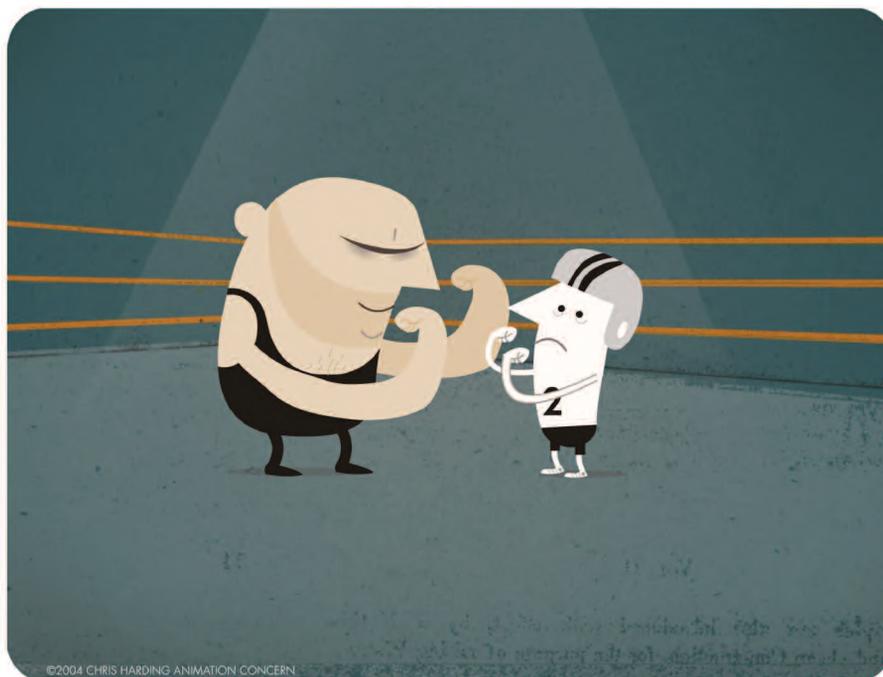
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## Learn Self Defense

USA, Character Animation, 05:02



After being brutally attacked in an alley, a man named George decides he must learn to protect himself. A cocksure narrator walks him through five practical lessons of self-defense for the individual ... or nation-state!

### HARDWARE & SOFTWARE

Mac G5, Flash, Photoshop, After Effects, Aeron Chair

*Director and Producer*

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# “Madagascar” Technical Reel

USA, Feature Film, 03:04



This three-minute showcase of technical achievement in the making of “Madagascar,” from DreamWorks Animation, features four key areas of production: extreme character deformations using the latest developments in rigging systems; squash-and-stretch 3D character animation; sand and fire effects; and major effects systems such as the ocean, jungle, and integration and variation of furry crowds.

## HARDWARE & SOFTWARE

Proprietary software and customized 3rd party tools running on HP Linux workstations

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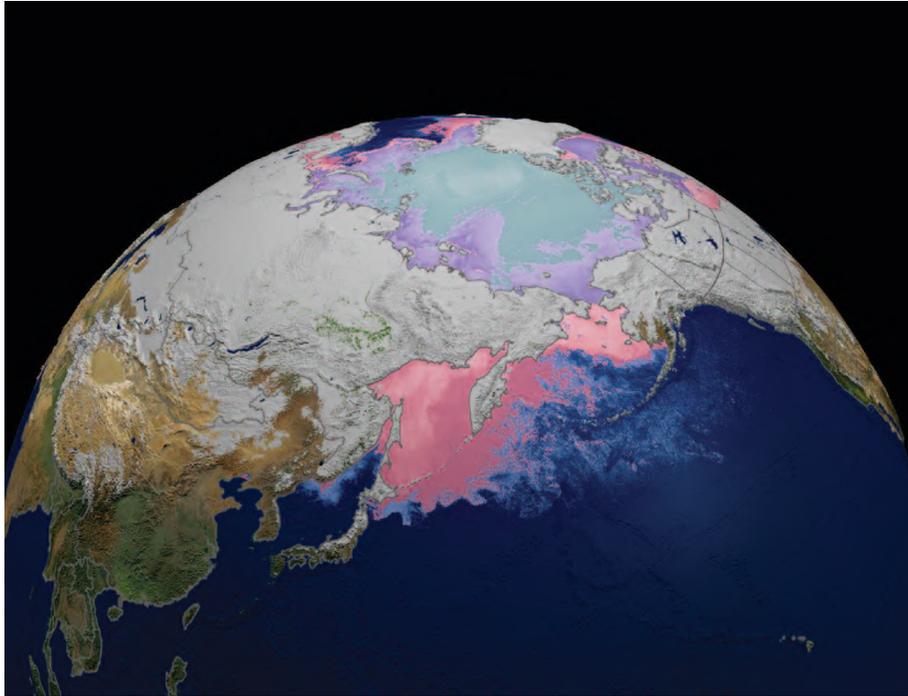
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# MODIS Daily Global Snow Cover and Sea Ice Surface Temperature

USA, Scientific Visualization, 03:00



This animation of the Northern Hemisphere portrays data collected via daily MODIS satellite images acquired during the winter of 2002-2003. A circle of darkness increases with the onset of autumn, reaching a maximum at the winter solstice on December 21st. Thereafter, darkness shrinks as the period of daylight increases.

Daily changes in sea ice are shown as ice-surface temperature. Sea-ice surface temperatures range from about -40 to -2 degrees Celsius. Here, ice-surface temperatures are depicted by colors, with temperatures near freezing shown in shades of pink. Colder ice is shown in purple shades, while the coldest ice is shown in shades of blue/grey.

The snow tracks of several winter storms across the United States can be clearly seen. Snow from such storms may melt quickly or linger for weeks. With an albedo of up to 80% or more, snow-covered terrain reflects most of the incoming solar radiation back into space, cooling the lower atmosphere. When snow cover melts, the albedo drops suddenly to less than about 30%, allowing the ground to absorb more solar radiation, which heats the Earth's surface and lower atmosphere. Rapid changes in albedo, resulting from snowfall and snowmelt, cause significant changes in the regional energy balance.

## HARDWARE & SOFTWARE

Linux and Mac OSX-based hardware systems. Renderman, Maya, Photoshop, and IDL. Edited with Adobe After Effects.

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NASA

*Producer*

**Horace Mitchell**  
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MODIS data courtesy of the  
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Blue Marble MODIS data composite  
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## Overtime

France, Animation, 04:58



Small fabric puppets find their creator lying on his bench, dead. The sad creatures don't understand that he died, for they never had considered such a concept, so they try to live a normal day.

### HARDWARE & SOFTWARE

PC, 3DS Max, Combustion, Photoshop, Premiere

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## RESfest 2004 Opening

USA, Broadcast & Commercials, 01:33



RES magazine asked Motion Theory to create the opening trailer for RESfest 2004, a showcase of the year's best digital films. Teaming with illustrators kozyndan, Motion Theory directed and animated the 90-second opener, which combines motion-control filming with 3D animation in a series of inventive scenes connected into a single camera move. The characters, themes, and animations strike obliquely cultural, political, emotional, and musical chords, but the driving force of the opener is its distinctive and surreal visual style, which compels viewers to constantly scan the dense panorama as it unfolds.

### HARDWARE & SOFTWARE

Maya, Adobe After Effects 6.5, Adobe Illustrator, Adobe Photoshop, Final Cut Pro HD

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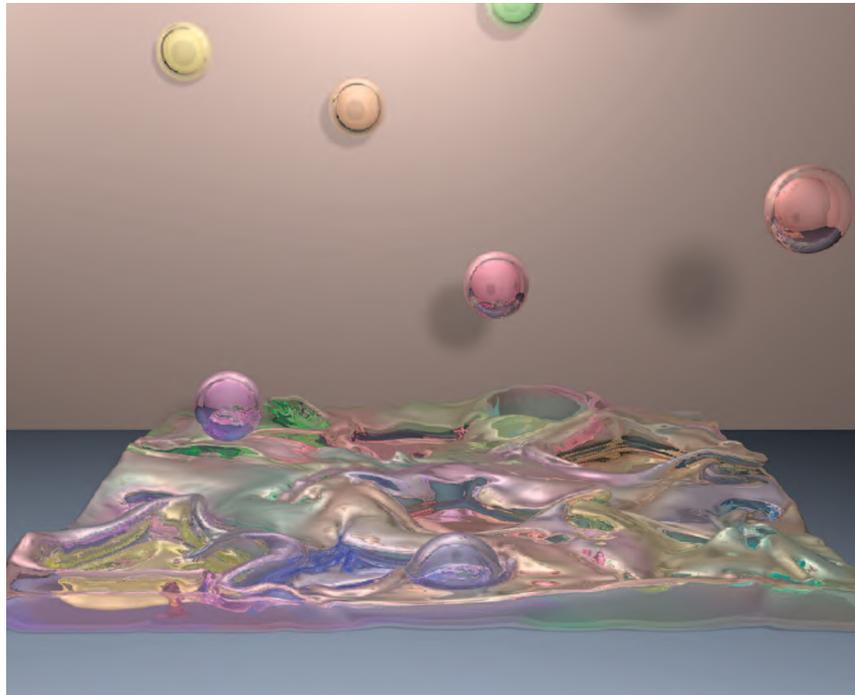
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# A Semi-Lagrangian Contouring Method for Fluid Simulation

USA, Technical Programs, 00:48



This video demonstrates a semi-Lagrangian surface tracking method for use with fluid simulations. The method maintains an explicit polygonal mesh that defines the surface, and an octree data structure that provides both a spatial index for the mesh and a means for evaluating the signed-distance function away from the surface. At each time step, the surface is reconstructed from an implicit function defined by composition of backward advection and the current signed-distance function. One of the primary advantages of this formulation is that it enables tracking of surface characteristics, such as color or texture coordinates, at negligible additional cost.

## HARDWARE & SOFTWARE

BFS (Berkeley Fluid Simulator), Pixie renderer, and Final Cut Pro

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# Star Wars Episode 3: Revenge of the Sith

USA, Feature Film, 04:04



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Jedi Master Yoda leads the cast of 135 CG creatures, droids, and clonetroopers as they join Anakin Skywalker, Obi-Wan Kenobi, General Grievous, Mace Windu, and Darth Sidious in the most ambitious visual effects film ever. Star Wars: Episode III "Revenge of the Sith" features action, adventure, and treachery. The 2,151 shots of Episode III include 136 CG models, 1,083 animated shots, 195 environments, and 75 minutes of animation, and required 122.5 terabytes to archive.

The digital world plays a key role in its exotic and disparate locales, including the lava planet Mustafar, the sink holes of Utupau, the Wookiees' home in Kashyyyk, and several locations previously visited in the Star Wars Universe: the city planet Coruscant, the desert planet Tatooine, and the idyllic paradise Naboo. The digital realm also fuels the opening space battle sequence, Yoda in action, and the most epic light-saber battle in all of Star Wars.

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# pre-production artwork

## Star Wars Episode 3: Revenge of the Sith



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Early lighting study for duel in front of lava dam.  
**Aaron McBride**  
Digital



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Early lighting and terrain concept study of Mustafar main complex.  
**Aaron McBride**  
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Early lighting study for Obi Wan and Anakin's duel.  
**Aaron McBride**  
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Early concept for water ballet dancers in Coruscant Opera.  
**Aaron McBride**  
Digital

## Stealth

USA, Feature Film, 03:00



“Stealth” is a photorealistic, live-action film thrill ride. Digital Domain avoided the physical constraints of filming actual planes by creating CG aircraft that appear photographically captured and move like physical aircraft. Particular attention was paid to the interaction of the airplanes and their environments. We created all manner of visible atmospheric interactions of the airplanes with air and water, such as supersonic shockwaves, engine exhaust, condensation trails, vortex-induced vapor trails, and wake-turbulence interaction with clouds and fire. The environments were created using Terragen and other digital tools in order to maintain photorealistic quality. This gives us the ability to create any kind of terrain and allows our camera to fly freely over every location. The terrain was modified to suit the action, but the natural gradients and proportions dictated by nature were incorporated. In addition to creating terrain, we created photorealistic sky environments with weather, including rain, snow, fog, and lightning. Sequence choreography and direction required us to create digital fire as seen in the gaseous fuel cloud that ignites into a rapidly burning ring of fire and smoke, culminating in a massive explosion.

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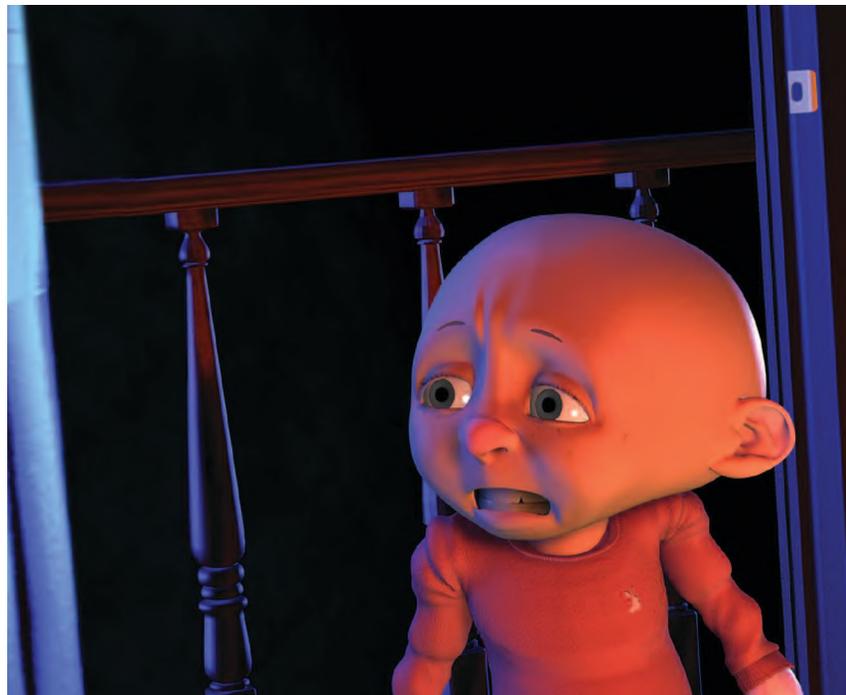
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# Things That Go Bump in the Night

USA, Character Animation, 02:01



What is a child's true deepest fear? A small child worries about what might be bumping in the shadows of night, but nothing he imagined could have prepared him for this.

## HARDWARE & SOFTWARE

HP workstations, Maya 6.0, Syflex, Shake, Photoshop, Premeire, Painter 8, Soundforge, Acid

*Director*  
**Joshua Beveridge**

*Producer*  
**Ringling School of Art  
and Design**

## CONTRIBUTORS

*Ringling School of Art and Design*  
*Instructor*  
**Jim McCampbell**

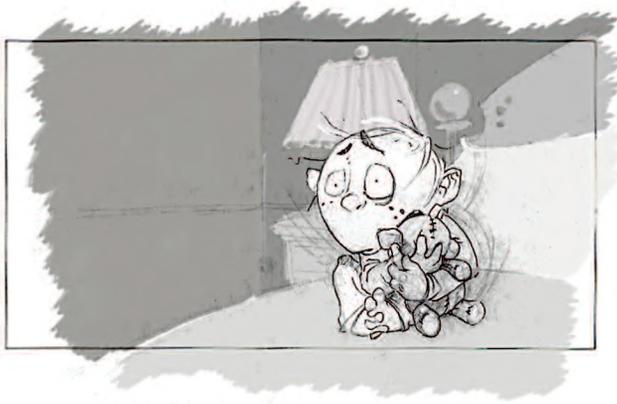
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**Brian Shea**  
**Mack Sullivan**

*Sound & Music*  
**Matt Tate**  
**Pat Jensen**

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# pre-production artwork

## Things That Go Bump in the Night



*Character is in nightmare  
staring behind back of foot*

final shot • ©joshua beveridge

Final shot; catatonic with bear  
**Joshua Beveridge**  
Graphite, Photoshop



alternate ending • ©joshua beveridge

Alternate final shot; catatonic at feet  
**Joshua Beveridge**  
Graphite, blue erase pencil



©joshua beveridge

Shot 06; milk trembling  
**Joshua Beveridge**  
Graphite

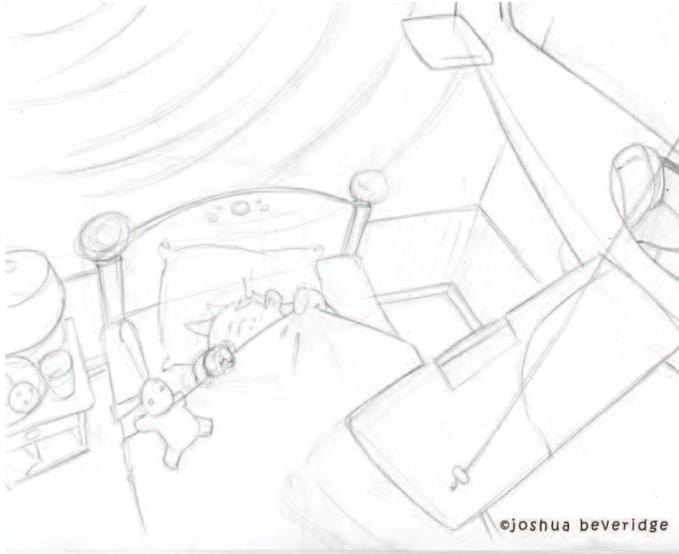


©joshua beveridge

Shot 07; plane shakes overhead  
**Joshua Beveridge**  
Graphite

## pre-production artwork

### Things That Go Bump in the Night



Shot 008, Wall bumps overhead  
**Joshua Beveridge**  
Graphite



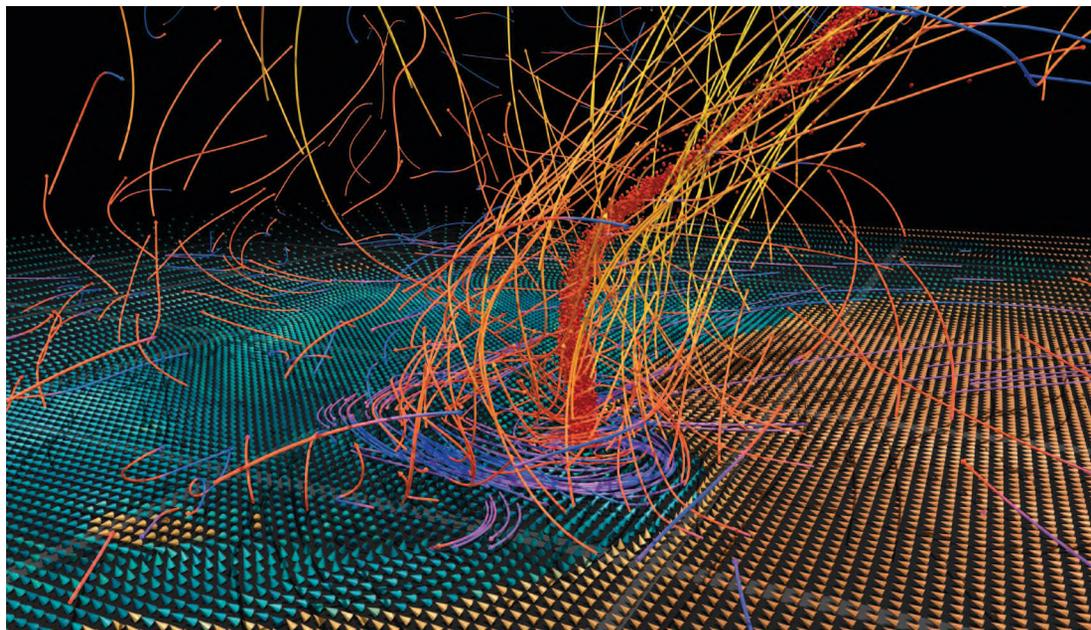
Progression of character designs  
**Joshua Beveridge**  
Graphite, blue erase pencil



Shot 023; monster smashes door, lighting study  
**Patrick Jensen**  
Maya 6.0, Photoshop

# Visualization of an F3 Tornado Within a Simulated Supercell Thunderstorm

USA, Scientific Visualization, 01:30



The National Center for Supercomputing Applications collaborated with the National Severe Storms Laboratory, National Oceanic and Atmospheric Administration to create this simulation and visualization of tornado genesis.

The simulation recreates a supertwister similar to one that ripped through Manchester, South Dakota, in June 2003. The initial conditions were “seeded” with recorded pre-storm physical conditions near Manchester. The digital thunderstorm simulates the actual physical eruption and growth of the deadly tornado.

Visualization feature extraction algorithms locate tracer particles at critical points in the evolution. Derivative stream tubes track the motion of these virtual weightless particles and show airflow geometry in and around the tornado. Stream tubes are orange when rising and blue when falling. The tornado is represented as spheres rising in the updraft and colored by pressure. The tilting cones represent wind speed and direction at the ground plane and show the interaction of warm and cold air around the developing tornado.

The second counter-rotating satellite tornado was not observed in Manchester; however, this phenomenon has been infrequently recorded by storm chasers. The visualization extracts the satellite tornado though it was a surprise to the scientists who developed the simulation model.

## HARDWARE & SOFTWARE

Visualization software: NCSA custom Maya plug-ins, NCSA trajectory server, NCSA data representations and transforms, VTK;  
Simulation software: WRF atmospheric science community code, customized design by NOAA

### *Directors*

**Robert Patterson**  
**Donna Cox**  
National Center for  
Supercomputing Applications

### *Producers*

**Donna Cox**  
**Robert Patterson**  
**Stuart Levy**

### **Robert Patterson**

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### **Stuart Levy**

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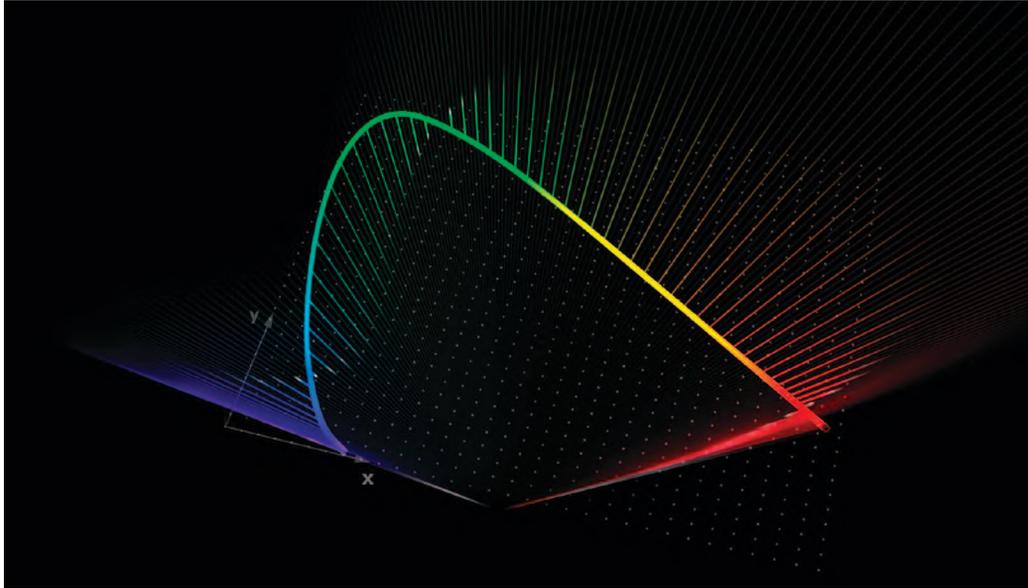
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# Visualizing the XYZ Color Space

USA, Scientific Visualization, 02:39



Development of the standard for digital-cinema colorimetry presents the problem of how to represent color in a manner that will accommodate future developments in display technology. Unfortunately, RGB coordinates tied to a physical display device are not ideal, as they intrinsically limit the gamut to only a fraction of colors visible in the real world. Thus, the solution is to use the 1931 CIE XYZ primaries, which allow for positive-valued specification of all visible colors.

## HARDWARE & SOFTWARE

Hardware:  
Linux PCs

Software:  
SPLAT (proprietary particle renderer), proprietary color processing libraries

*Director and Producer*  
**Jeremy Selan**

## CONTRIBUTORS

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## Workin' Progress

France, Animation, 04:19



Good workers never work alone. With teamwork comes efficiency ,,, until one gets mad! Workin' Progress is an urban musical with a frenetic music from the 1950s.

### HARDWARE & SOFTWARE

On PC, 3DS Max, Combustion, Photoshop, Premiere, After Effects

### Director

**Gabriel Garcia**  
**Benjamin Fligans**  
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### Producer

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# World of Warcraft

USA, Computer & Console Games, 03:12



From the frozen peaks of Ironforge to the dusky plains of Orgrimmar, the World of Warcraft intro provides a highly detailed look at the locations and races of Azeroth. This pre-rendered game cinematic combines highly detailed characters, replete with flowing hair, cloth, armor and extremely detailed sets and backgrounds. All computer-generated, using all key-framed animation.

## HARDWARE & SOFTWARE

Created on PCs, using 3ds Max, DeepUV, and Photoshop  
Composited with Discreet Combustion and Adobe After Effects

*Director*

**Matt Samia**

Blizzard Entertainment

*Producer*

**Scott Abeyta**

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**Created by the Blizzard**

**Cinematics team**

# pre-production artwork

## World of WarCraft

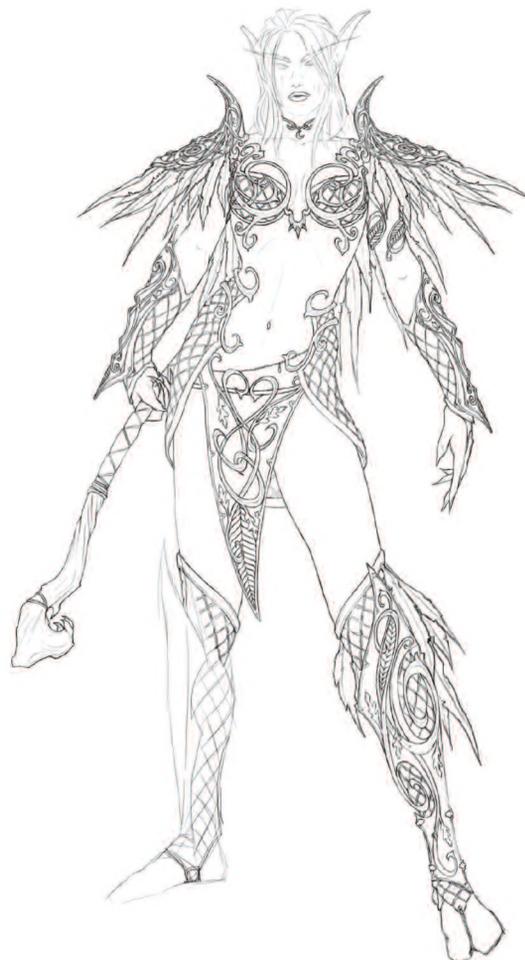


Orc\_NightElf boards show the storyboards and final frames.

**Blizzard Film Dept.**

Pencil and computer

Image Courtesy of Blizzard Entertainment Inc.



This is the concept drawing for the Night Elf model.

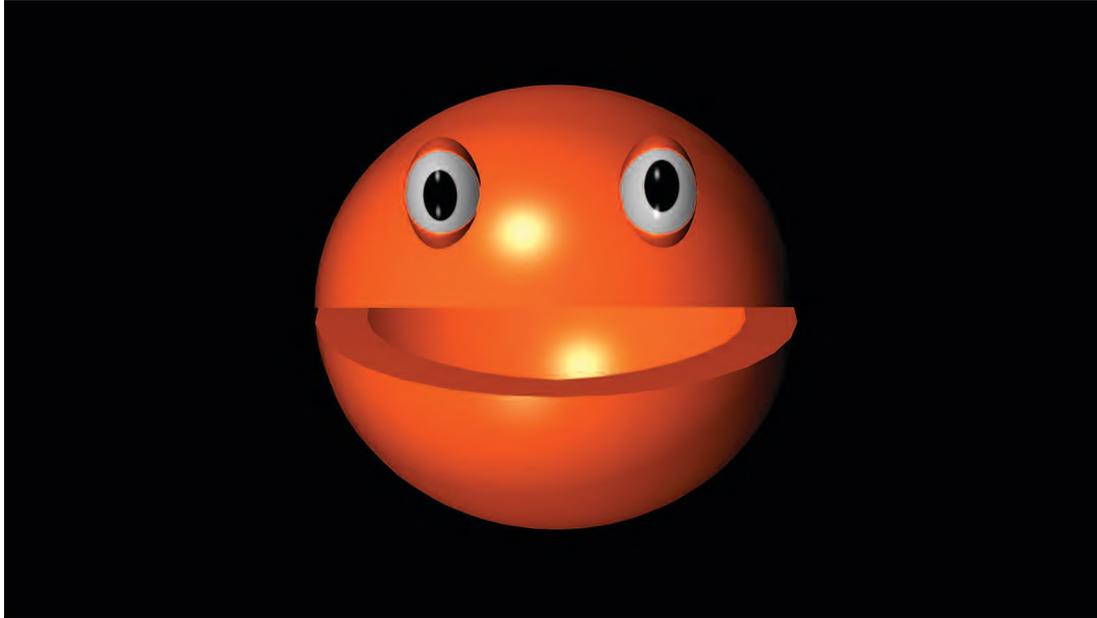
**Blizzard Film Dept.**

Pencil and computer

Image Courtesy of Blizzard Entertainment Inc.

## Bounce

USA, Logo Animation, 00:07



### HARDWARE & SOFTWARE

All of the modeling, animation, and rendering was done using Blender 2.36. Audio was added using QuickTime Pro. All computations were done on a 2.6 GHz Pentium 4 processor.

*Director and Producer*  
**Dino Schweitzer**

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## Construction

Japan, Logo Animation, 00:07



### HARDWARE & SOFTWARE

Hardware: Dell Precision 650

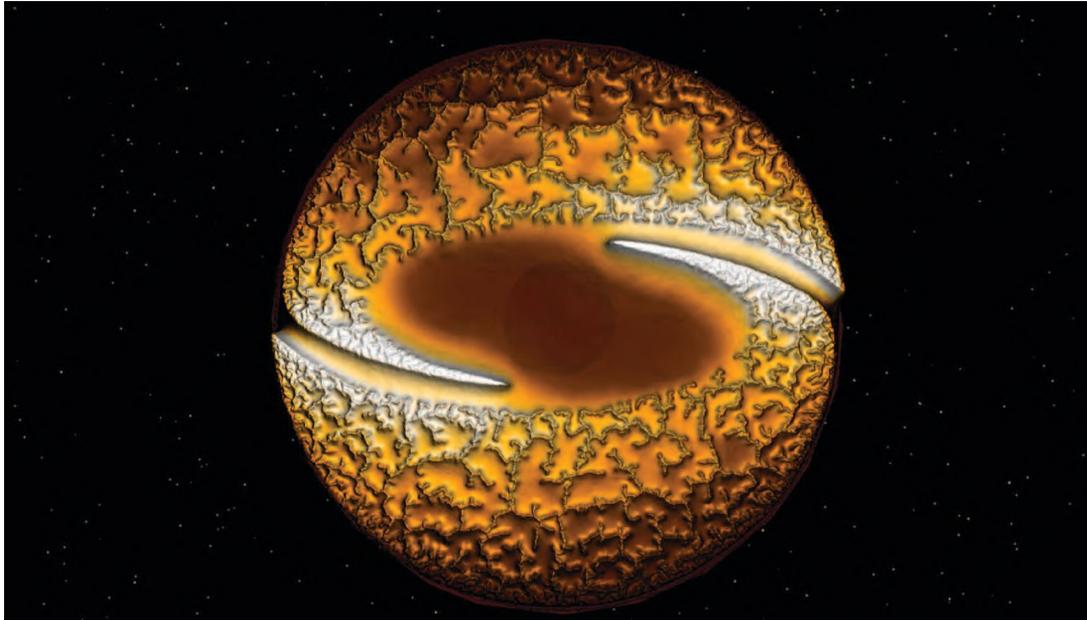
Software: Photoshop 7, Illustrator 10, After Effects 5, 3ds Max 5

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# Green's Fractal Terrain

USA, Logo Animation, 00:07



## HARDWARE & SOFTWARE

The dataset was created with in-house software, and Blender was used to create and texture the heightfield, as well as to animate the camera and render the scene. The whole process was carried out on a 3.2 GHz Pentium 4 processor with 1 GB of memory and an NVIDIA Geforce 4 video card

*Director and Producer*  
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## Scattershot

USA, Logo Animation, 00:07



### HARDWARE & SOFTWARE

Macintosh G4 (OS X), custom software written by director,  
Photoshop CS, Final Cut Pro HD, QuickTime Pro, MaxMsp 4.5,  
T-RacksS 24

*Director and Producer*  
**Gene Greger**

### CONTRIBUTORS

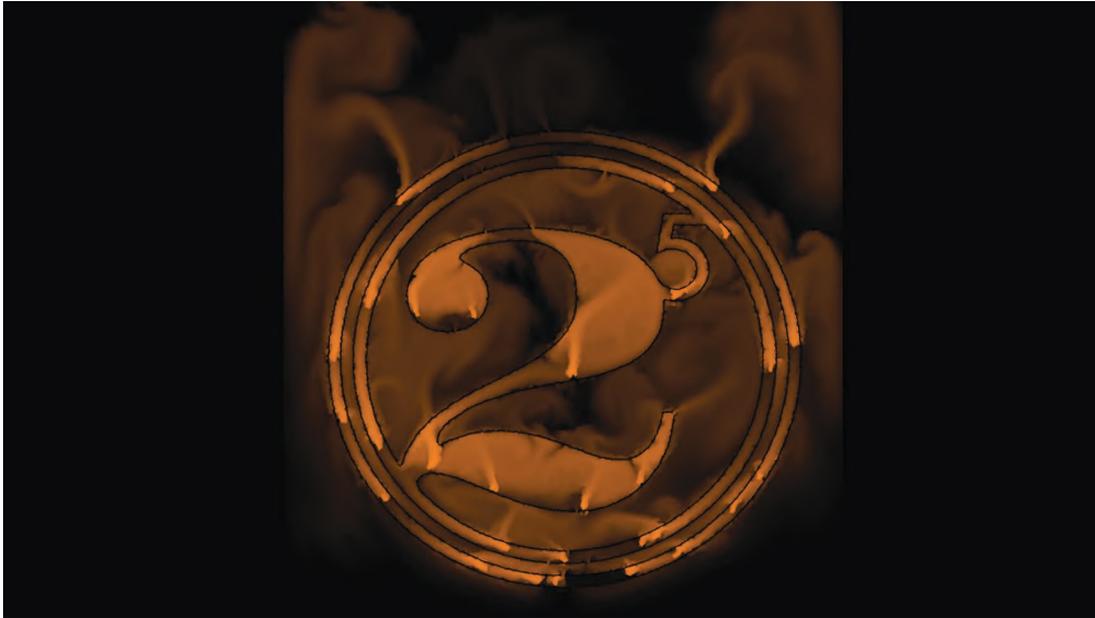
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**Jonathan Marcus**  
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## Smoke Control

USA, Logo Animation, 00:07



### HARDWARE & SOFTWARE

Custom software. Rendering was created in OpenGL, and video was created from frame shots using QuickTime. Hardware: IBM PC Compatible Dell with 3.4 GHz processor, 2 GB of RAM and an NVIDIA GeForce 6800 GTO.

### *Director*

**Jeremy Daniel Wendt**

### *Producer*

**Ming Lin**

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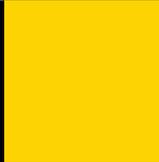
OLM Digital

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# animation theater

DIRECTOR  
**Leo Hourvitz**

# Amfraid

France, Animation, 6:07



Amfraid finds himself alone in the evening at his grandmother's house. He feels fear creeping over him in the old endless stairs. Gradually, his fantasy overwhelms him.

## HARDWARE & SOFTWARE

PC, 3ds Max, Photoshop, Premiere, Painter, Illustrator, After Effects

## Directors

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## Anti-Smoking “Growth”

USA, Broadcast & Commercials, 00:33



Businessmen discuss profit margins in a conference room, when suddenly clone bursts from their chest in an alarming visual-effects feat.

The businessmen continue on about sales, growth, and expansion as clones continue to split from their bodies. The room fills beyond capacity, the windows shatter, and a cloud of men in black suits overtakes the streets.

The spot ends as a camera zooms out to reveal an aerial view of the growing cluster of men and shifts to an X-ray of a pair of lungs with a growing cluster, a metaphor for a growing cancerous tumor. The tag line reads: “As they continue to grow we continue to die.”

Method created the cloning effect by shooting each businessman delivering his lines and then shooting subsequent additional takes of the clone aggressively contorting as if he was being expelled from the businessman’s body.

Method built a body rig consisting of the upper part of the businessman’s chest to mimic the clone’s originating area. The actors stepped through the jacket and shirt, moving buttons and the tie to the side, and contorting their way through the chest cavity, giving the movement a realistic feel after it was combined in post production.

### *Director*

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MJZ

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**Carlos Morales**

#### *Visual Effects Executive Producer*

**Neysa Horsburgh**

#### *Visual Effects Producer*

**Justin Lane**

## Awkward

USA, Animation, 02:43



When boredom strikes three friends with nothing to do and brain cells to kill, the answer arrives in the form of delightful beer. Sadly for our trio, a sudden and unwelcome discovery turns their night of fun, games, and chummy drunkenness into a humiliating fiasco.

### HARDWARE & SOFTWARE

Maya 5.0, Photoshop 7.0, Illustrator CS, After Effects 6.0, Premiere 6.0, Final Cut Pro 3, AMD ATHlon 2100, NVIDIA 4800

### *Director*

**Cesar Kuriyama**  
Pratt Institute/Embrionyc  
Productions

### *Producer*

**Cesar Kuriyama**

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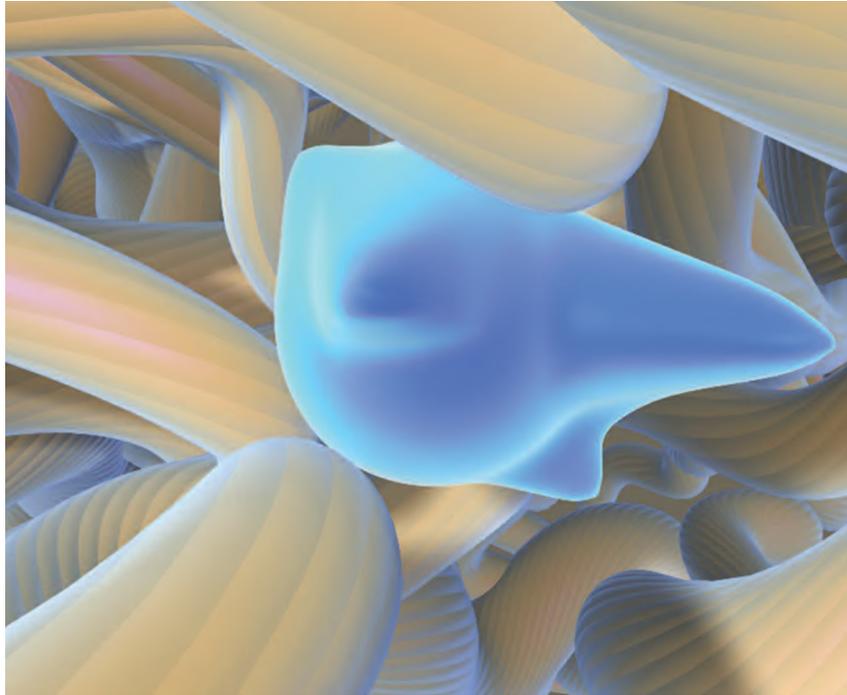
### CONTRIBUTORS

### *Music Composition*

**William Caballero**

# Cell Invasions: Visual Computing, Health, and Cancer

Canada, Scientific Visualization, 04:18



We are developing visual computing tools and simulation models to study the complex behavior of migrating cells in normal 3D tissue development and in major lethal disorders of cell migration such as cancer. Our tissue matrix models are implemented in Maya to leverage the built-in physics engine and MEL language for the simulations. Tissue matrices were grown *in silico* with a nine-state random-walk algorithm to generate positions in 3-space for NURBS fiber axes. NURBS tubes were then extruded along each fiber axis to model the van der Waals contact surface of the fiber. A collision-avoidance procedure minimized fiber intersections. An exponential distribution of waiting times drove cell motion (defined by a multi-state Markov automaton) along their fiber contact points and the displacement between fibers. Migrations were studied at low and high tissue-matrix densities and a range of cell motion rules, in which we varied motion likelihoods on, around, and between the fibers of each 3D mesh. The persistent random-walk paths of the cells compared favorably with real cell behavior for some rule sets, but for others they identified a new class of cells, not yet observed experimentally, with aggressively multiphasic invasive motion.

## HARDWARE & SOFTWARE

Maya 6 on Intel and Athlon Windows XP and Mac G4 systems. Post production via Adobe After Effects.

### Director

**Charles Lumsden**  
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University of Toronto

### Producers

**Charles Lumsden**  
**Nicholas Woolridge**

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## Chohon

South Korea, Animation, 12:46



In 1940, Hyun, a young man serving his nation as a resistor against Japan's occupation of Korea, is injured. Hee, a geisha, helps him, and they fall in love immediately.

One of Hee's geisha colleagues betrays them and reveals Hun's identity. But Hyun is not aware of this, and he blames his lover, then leaves her. Afterward, Hee is killed by a Japanese policeman. Hyun meet's Hee's ghost, and they resolve the misunderstanding and regret.

### HARDWARE & SOFTWARE

Xeon 2GB, Pentium 4, Avid DS  
XSI 2.0, Avid DS, Adobe Photoshop 6.0

### Directors

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**Jung Sun Choi**  
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### Producer

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# City Paradise

United Kingdom, Experimental Animation, 05:15



Tomoko comes from Japan to live in London. When she first arrives, she hardly understands the people who give her directions.

She moves into an apartment overlooking the Thames. Lonely and isolated, she sits in her flat, dressed in her fins and snorkel to protect herself from the London atmosphere.

Out in the streets, she is frightened by the people she passes. Imagining she might find refuge in a swimming pool, she finds one, only to be scared once again. In a panic, she rushes into the pool to find help, but slips and falls into the water. Below the surface, she is caught up by a huge jellyfish that takes her deeper and deeper, until she is dropped in a secret underground world, where little aliens play music and float around under parachutes.

Suddenly, she wakes up at the bottom of the pool, thinking that it was all a dream, until she finds a magical flower still in her hand.

Back at the surface, in the real London again, everything seems to have changed. People no longer seem scary, and she finds herself able to talk easily with them.

## HARDWARE & SOFTWARE

Lightwave, Toonz, Flame, Incite

### Director

**Gaelle Denis**  
Passion Pictures

### Producer

**Erika Forzy**

## CONTRIBUTORS

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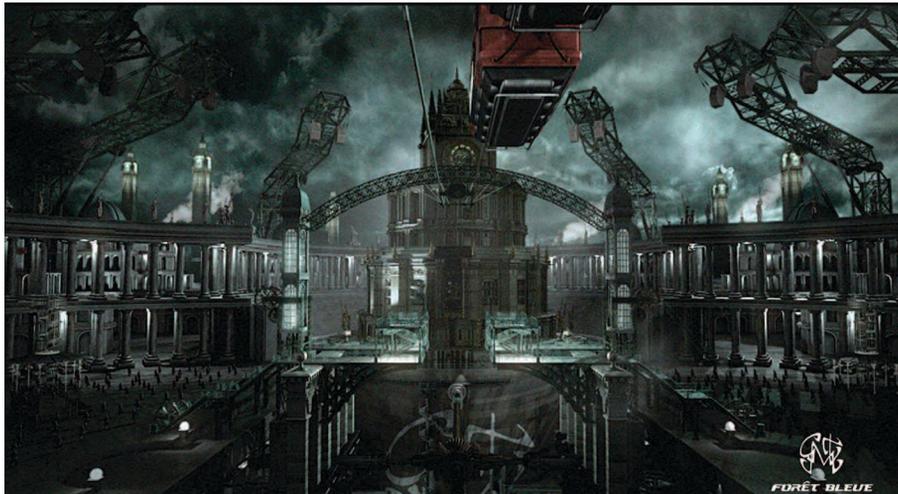
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## La Dernière Minute (full version)

France, Animation, 13:35



The adventures of two almost-identical brothers, one forever early and the other forever late, in a world obsessed with standard time and absolute punctuality.

### HARDWARE & SOFTWARE

Alias Maya, Pixar RenderMan, Discreet Flame, Adobe Photoshop, PC NT, SGI Irix

*Director*

**Nicolas Salis**

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### CONTRIBUTORS

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# The Elbe Flood

Germany, Scientific Visualization, 06:00



In August 2002, Europe experienced the worst flooding in more than a century. A particular weather situation led to extreme rainfall and floods that killed over 100 people and forced tens of thousands to leave their homes. For damage assessment and coordination purposes, disaster organizations needed fast access to up-to-date geo-data. Due to the extent of the disaster and the weather conditions, only satellites were able to provide the required images.

This animation was produced on behalf of the European Space Agency to illustrate the benefit of remote-sensing techniques in catastrophes. The intent was to explain the uncommon weather situation and the potential of remote-sensing satellites to the general public. For this purpose, data from 10 different optical and radar satellites had to be geo-referenced and enhanced before integration. Even the digital elevation models were generated from satellite data. Special interpolation algorithms were used to increase the repetition rate of a meteorological time series from two to 10 frames per hour. The animation was realized as a stereoscopic production to provide real three-dimensional perception, so the producers had to find a way to add spatial depth to a primarily flat incident.

## HARDWARE & SOFTWARE

1 Dual Pentium 2 GHz, 1.5 GB RAM, 5 Dual Pentium 700-933 GHz, 512 MB RAM, Yello Springtime V2, IDL, Terascan (Seaspace Corp.), Erdas Imagine 8.6, 3ds Max 6, Combustion 2, Edit, Adobe Photoshop 7

### *Directors*

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German Aerospace Center

### *Producer*

**Nils Sparwasser**

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## Esuvee “Keep it on all Fours”

United Kingdom, Broadcast & Commercials, 01:01



The action takes place in and around a rodeo, where riders struggle to stay mounted on their “Esuvees” – shaggy-haired, semi-wild beasts that race around the arena like a cross between giant dogs and tigers. We also see the Esuvees out on the road and running in a herd.

Created in Maya, and composited in Inferno, “Keep It On All Fours” was the product of an intense three-month project from R&D to delivery.

The Esuvee’s coat is differentiated, with thick hair and areas of shorter fur. Long hair (and short deadlines) can present problems. Rather than using geometry or curves to get the look, the Framestore CFC team used Paint Effects. The hair was groomed into its rest position using a combination of forces and collisions as well as painstakingly grooming individual hairs by hand. Maya’s hair dynamics were used to drive these curves. Numerous proprietary scripts and plug-ins were created to facilitate the team’s work.

About 80,000 follicles or clumps of hair covered the Esuvee, each containing between 20 and 150 individual hairs. Every shot had to be simulated, and a 75-frame shot (three seconds of screen time) would take up to 20 hours to run.

### HARDWARE & SOFTWARE

Maya, Inferno

*Director*

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Framestore CFC

*Producer*

**Kleinman Productions**  
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for BBH NY (Agency)

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## **(YKK AP Commercial) “Evolution”**

Japan, Broadcast & Commercials, 01:32



The theme is “evolution.”

A simple cubic object transforms into a more complex object, adapting and growing in various environments. The object starts from a simple cube in a room, then moves into the streets of the city. The object is carefully lighted and composited in numerous atmospheric situations.

### HARDWARE & SOFTWARE

Dell workstation 3 Ghz, Windows XP, Discreet 3ds Max 6, Adobe After Effects 5.5

### *Directors*

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**Koichi Iguchi**  
Omnibus Japan

### *Producers*

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**Akito Hirai**

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# Final Fantasy XII

Japan, Computer & Console Games, 03:20



Final Fantasy XII is the latest installment in the Final Fantasy series, a franchise with global sales exceeding 60 million copies. Crowd modeling, massive airships, sprawling cities, realistic cloth simulation, and minute facial animation have all been crafted with careful attention paid to the finest of details.

Our story takes place in a world called Ivalice, in the slums of Rabanastre, capital of the small Kingdom of Dalmasca. A young man named Vaan dreams of sailing the skies in an airship of his own. Vaan meets Ashe, princess and sole surviving heir to the Dalmascan throne, who has been missing since war swept over the land. Their chance encounter is only the beginning.

## HARDWARE & SOFTWARE

Alias Maya, Apple Shake, Adobe Photoshop

## Director and Producer

**Yasumi Matsuno**  
Square Enix Co., Ltd.

## CONTRIBUTORS

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## Food for Thought

USA, Character Animation, 02:00



While out for a stroll, slow-witted Mugtor and his more intelligent acquaintance Nishu become extremely hungry. They find some fruit up in a tree, but it is just too high up for either of them to get at it alone. After some slight communication problems, the two realize they must work together in order to satisfy their craving. The burly Mugtor uses his brawny strength to hurl Nishu into the fruit-laden treetop, but right away the greedy Nishu takes advantage of his unsuspecting and dim-witted partner. First Nishu eats fruit after delicious fruit simply to cure his hunger, but soon he begins to enjoy his new position of power. He taunts the hapless Mugtor, who can only watch helplessly from below, craving the fruit more and more with every passing moment. How long can the imbalance continue before things are set right? Can Mugtor overcome his slow, oafish nature and figure out a way to get the fruit? Perhaps he could even teach Nishu a thing or two!

### HARDWARE & SOFTWARE

HP workstations, Maya 6, Photoshop CS, Premiere

*Director*  
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*Producer*  
**Ringling School of Art  
and Design**

### CONTRIBUTORS

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## Tippett Studio Creates “Hell L.A.” & “Vermin Man” in “Constantine”

USA, Feature Film, 02:56



Guided by senior visual effects supervisor Craig Hayes, Tippett Studio turns modern-day Los Angeles into an imaginative post-nuclear environment of hellish proportions. The fiery urban landscape comes to life with scorched streets and ominous blazing skies. Over 25 shots contain 80 -100 stand-alone elements including procedural fire, cloud, and dust elements, completing the nightmarish digital backdrop. “Realistic” CG demons populate the city of scarred buildings, created by applying textures to 3D geometry, while props like cars and signs are textured to look realistically distressed.

The Vermin Man, a highly complex sequence added late in the show, portrays a fight between John Constantine and a moving body of swarming creatures. Vermin Man’s face and body contain 14 different creatures, including snakes and centipedes for cheekbones and lips, flies for rotting teeth, and spiders and rats for “fillers.” Forty-five hero bugs create the rig, allowing animators to form his facial expressions, and the “fabric” of his coat is woven with 100,000 termites.

Key to animating this character is the proxy particle system created by the effects department. This tool is essential to efficiently block out timing, direction, and volume of smaller swarms created as Constantine strikes Vermin Man.

### HARDWARE & SOFTWARE

Modeling, animation, and dynamics: Maya. Rendering: RenderMan. Compositing: Shake. Custom software: Custom plug-ins, custom Prman shaders, RIB and RIB Archieve generation tools.

Custom AMD workstations, custom AMD render farm, SGI CXFS file servers.

#### *Director*

**Francis Lawrence**

#### *Producers*

**Lauren Shuler Donner**  
**Benjamin Melniker**  
**Michael Uslan**  
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### CONTRIBUTORS

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**David (grue) DeBry**

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**Athena Yvette Portillo**

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# Hernando

France, Animation, 03:35



This musical shows how a crazy conquistado's crew tries to find the hideout of the famous pirate Hernando.

## HARDWARE & SOFTWARE

PC, 3ds Max, Combustion, Photoshop, Premiere

## Director

**Thomas Bernos**  
**Nicolas Lesaffre**  
**Jerome Hauptert**

## Producer

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## Hopeless Romantic

USA, Character Animation, 03:55



A young boy in love with his teenage neighbor tries desperately to attract her attention, with increasingly disastrous results.

### HARDWARE & SOFTWARE

Dell Precision workstation  
Alias Maya, Adobe Photoshop, Adobe Premiere

*Director and Producer*  
**Bill Burg**

### CONTRIBUTORS

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# Image-Based Material Editing

USA, Technical Programs, 02:09



This work showcases a feasibility study on editing the appearance of objects in images. For each frame, the input is a single high-dynamic-range photograph. An alpha matte is created by hand to differentiate the object from its background. In separate automated processes, the object is removed from the background, and the 3D shape of the object is recovered. The background is then blurred, color enhanced, and texture mapped onto the 3D shape, resulting in an object which appears to be made of a different material. The novelty of this work lies in the fact that extensive material changes are possible without manually reconstructing a 3D scene. The success of this approach is assured by carefully exploiting idiosyncrasies of the human visual system. For instance, the refracted pattern of light needs to be consistent with the shape of the object, and its overall tone needs to be consistent with the environment. Otherwise, significant deviations from physical accuracy are tolerated by the human visual system, which relaxes the demands on our material editing algorithms. This, in combination with the recent development of several image-processing techniques, allows objects to be turned into transparent, translucent, and arbitrarily reflective materials.

## HARDWARE & SOFTWARE

All images were acquired with a Nikon D2H photocamera. Camera motion was obtained using a custom-built motion rig. The final editing and titles were generated with Adobe Premiere. All software to create high-dynamic-range images, perform material edits, and tone-map the results is home-grown.

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## Jona/Tomberry (abbreviated version)

Netherlands, Animation, 03:16



Borges meets Murnau in a spinning nightmare. And the baby sings: "No, do not be scared, old bird, to awake and see I am dreaming you."

The use of techniques is always as adventurous as the writing. In this case, we developed an elaborate method of 3D rotoscoping to match the character's faces with live-action torsos. The backgrounds are a combination of 2D and 3D artwork.

"Jona/Tomberry" is a film about mirrors and their infinite meanings. In an awkward way, the film is a selfportrait of Rosto, inside and outside, since the lead characters are his alter egos. But the film is also a mirror to the audience's subconscious. The film is based on and features music as a main ingredient. It could be interpreted as "visual music." The soundtrack was just as elaborate as the visuals. Mixing expressionist and impressionist approaches, creating opposite worlds using traditional tools as well as digital means.

"Jona/Tomberry" is about the conflict of different worlds and realities, but as a film, it blends different techniques, approaches, and narrative elements into an innovative marriage. The making of "Jona/Tomberry" is part of the film's extensive web site: [www.jonatomberry.com](http://www.jonatomberry.com)

"Jona/Tomberry," "Beheaded," and "Anglobility Feverson" conclude a trilogy of "Mind My Gap" shorts: [www.rostoad.com](http://www.rostoad.com)

### HARDWARE & SOFTWARE

Apple Macintosh (G5 2.5 Ghz Dual), Adobe Photoshop, Adobe After Effects, Maxon Cinema 4D

*Director, Writer, Composer*  
**Rosto**

*Producer*  
**Rocketta Film**

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## Journey to the West

USA, Animation, 01:23



This is a short teaser film inspired an ancient Chinese tale. It takes place in a mysterious world, a space within the meditative sphere of the Buddha, where mechanical objects modeled on animals and insects fly about and various Asian spirit monsters ("YOUKAI") freely roam. This unique combination of ancient Eastern wisdom, with a touch of Japanese humor, is depicted with a powerful visual presentation that is only possible in a production that is completely created in CG animation.

### HARDWARE & SOFTWARE

PC, Macintosh, Maya

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# “Life in the Fast Lane” (and The Making of)

USA, Broadcast & Commercials, 03:24



Curious Pictures and director Noble Jones produced a :60 and a :30 TV spot titled “Life in the Fast Lane.” The goal was to make it feel like a real chair was actually driving the actor home through rush-hour traffic. Performance and dynamic live-action sequences took precedence over green-screen fakes and digital effects, and the director was allowed to shoot his vision in camera. There was no motion control, no locked off cameras, just fluidity. This decision did not come lightly, since it required strapping an actor to a variety of rigs, including a go-cart chair and a motorcycle, moving along a highway at 50 mph. The spot was entirely pre-visualized in CG before location shooting in Toronto. After the shoot, the production required copious rig removal, set extensions, and partial and full digital doubles. One of the hardest invisible effects was warming the actor after each take in below-freezing temperatures on the highway.

## HARDWARE & SOFTWARE

Maya, Boujou, HDR Shop 2, After Effects, Commotion, Final Cut Pro

*Director*  
**Noble Jones**

*Producers*  
**Amelie Bruun**  
**Michael Hogan**

## CONTRIBUTORS

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# Lionel

France, Animation, 02:19



A five-year-old schoolboy is interviewed by the director of a documentary.

## HARDWARE & SOFTWARE

Maya 6, Photoshop 7, After Effects 6. Flash (for the 2D animation sequence)

## Directors

**Gabriel Gelade**  
**Medhi Leffad**  
**Anthony Menard**  
**Matthieu Poirey**

## Producer

**Gobelins, l'école de l'image**

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## Love Letters

USA, Character Animation, 04:37



I produced this animation as a way of proposing to my girlfriend. I assembled a team of twenty animators to assist me, including co-workers and students from my 3D character animation class at the Art Institute of California San Francisco. We were able to create approximately four and a half minutes of animation in just over three months. When it was completed, I surprised my girlfriend by bringing her to a local theater where they played the animation on the big screen in front of over 100 of our friends and family. The entire event was filmed for the television show "Perfect Proposal" on TLC.

### HARDWARE & SOFTWARE

Red Hat Linux Computers, various PCs, Power Mac G4s and G5s. Maya 6, Adobe After Effects, Adobe Photoshop, and Adobe Illustrator.

*Director and Producer*  
**Jeff Paul**

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# Lucia

Germany, Character Animation, 07:20



Wandering about the hospital by night, Lucia discovers several X-rays. The image of a skull fires her imagination, and before long, dream and reality begin to blur ...

The aim of this work is to tell the story through the perspective of the main character. The animation and atmosphere tell the story without words. Lucia overcomes the fear of her illness through her imagination.

The aesthetic of X-ray images and the look of computer-generated pictures were the starting point for the design of this short. Both have artificial and organic elements I could play with. The character design resembles the appearance of puppets. I made this decision to avoid complexity, and I thought it might work because the story is told from the perspective of a child. Fluid effects in Maya helped me to achieve the desired look of smoky forms in the X-ray world.

## HARDWARE & SOFTWARE

Dell Precision workstations, Maya 4.5, Adobe Photoshop 6.0, Adobe Premiere 6.5, After Effects 5.5, Avid

*Director and Producer*

**Felix Gönnert**  
Felix Gönnert Animation  
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*Re-Recording Mix*  
**Matthias Schurz**

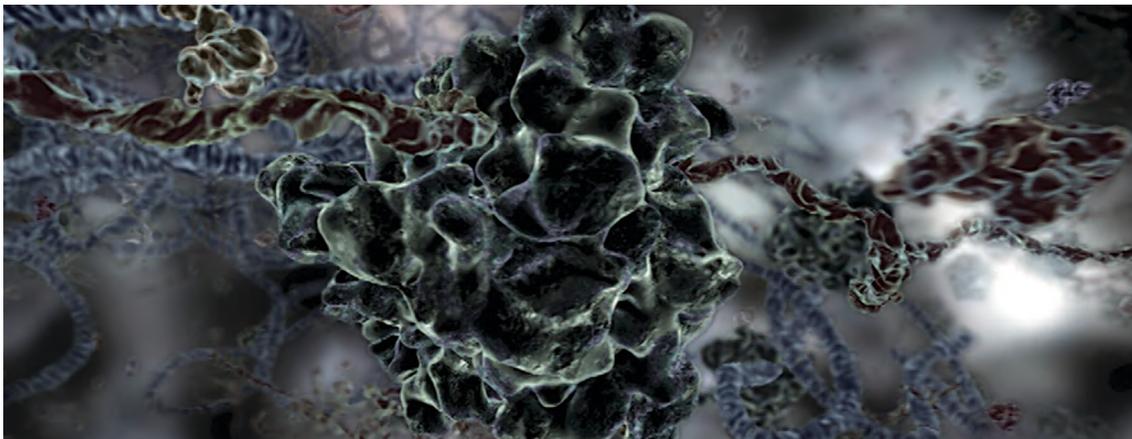
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**Philine Wittur**

*Music Recording Engineer*  
**Ingo Baier**

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# Manufacturing Proteins with Biomolecular Machines

USA, Scientific Visualization, 05:11



All proteins in all cellular organisms arise through the process of translation. In this process, ribosomes (massive molecular machines) convert excerpts of the genetic code (mRNAs) into peptide chains that are subsequently folded into functionally active proteins responsible for executing a wide array of tasks. Past and present research has partially elucidated the complex structure and choreography of the ribosome during translation. We attempt to create a biologically illuminating and visually attractive animation that incorporates current understanding of the protein synthesis process. Using *e. Coli* as our model, we highlight the specific nucleotides and amino acids that participate in or catalyze particular biochemical reactions.

## HARDWARE & SOFTWARE

2 Macintosh G5s with 2 GB RAM and a Linux cluster of five machines with 1 GHz processors and 1 GB RAM, Alias Maya, Adobe After Effects

*Principal Investigator  
and Scientific Coordinator*  
**Chandrajit Bajaj**

*Visual Effects Supervisor*  
**Rick Hankins**

*Storyboard and Direction*  
**Rick Hankins**  
**Katherine Clarridge**

*Animation and Compositing*  
**Rick Hankins**  
**Katherine Clarridge**

*Voice Narration*  
**Katherine Clarridge**

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**John Wiggins**

*Special Thanks*  
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**Erin Macrorie**  
**Jung Lee**  
**Robin Gutell**  
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**Azam Khan**  
Alias Systems Corporation

**Karan Singh**  
University of Toronto

**Stephen Sherman**

**Protein Data Bank**  
<http://www.rcsb.org/pdb/>  
**Scientists whose published  
work on the ribosome we could  
not have done this without.**

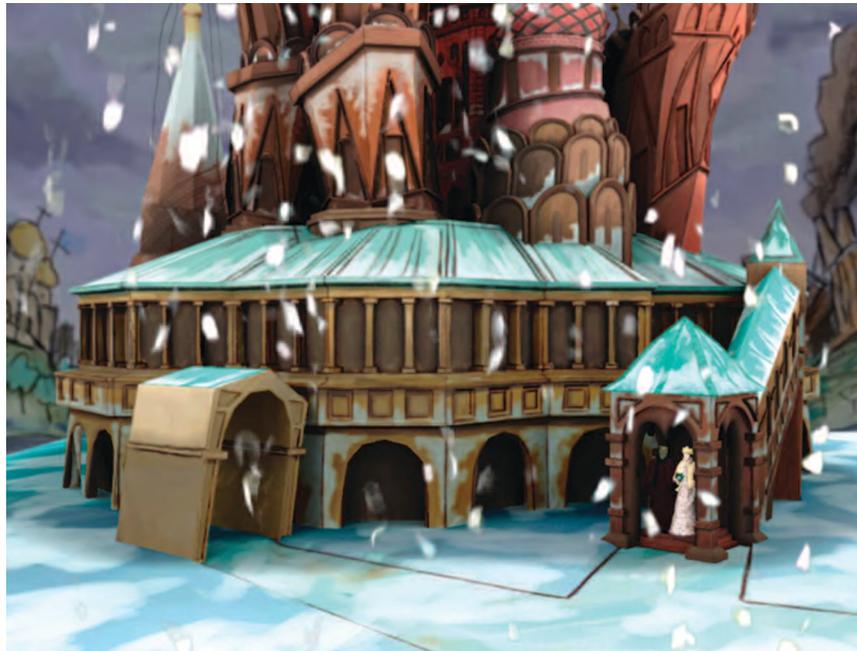
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Radio Television and Film  
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*Supported in part by grants from*  
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**National Institutes of Health**  
**Alias Systems Corporation**

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# Moscow Souvenir

United Kingdom, Animation, 02:39



Travel journal created using Maya and Shake under the Linux OS. The short contains a loose narrative that combines holiday snaps and abstract Kandinsky compositions into an emotive travel journal.

## HARDWARE & SOFTWARE

Dell PCs running Linux OS, 3D modeling and animation using Maya 6.0, and post-processing using Shake 3.0

## Director

**Luke Bailey**  
NCCA Bournemouth University

## Producer

**NCCA Bournemouth University**

## CONTRIBUTORS

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## Nature Sweet "Triage"

United Kingdom, Broadcast & Commercials, 00:33



This commercial features a selection of real Nature Sweet tomatoes in the produce section of a grocery store. The lights go down as the store closes, and the camera pans up to reveal a group of animated tomato characters in what looks like the emergency room of a hospital. It is a scene of carnage. Scores of damaged tomatoes are being treated by a surgeon and some nurses. X-rays reveal that some of the tomatoes have internal injuries. The surgeon exclaims: "Don't these people know you can't tell what a tomato tastes like by squeezing it?" Another doctor is treating a character with a head contusion, who is barking like a dog. "Stop the abuse," says the title. "It's easy to pick a tomato that tastes home grown. Just pick Nature Sweet."

### HARDWARE & SOFTWARE

Maya, MacGuff Ligne proprietary software

### Directors

**Pierre Coffin**  
**Darren Walsh**

### Producer

**Samantha Plaisted**

### CONTRIBUTORS

The Richards Group

**Glenn Dady**  
**Tina Johnson**  
**Ashley Bull**  
**Lynn Louria**  
**Amanda Courria**

Passion Pictures

**Jean Poisson**  
**Alexandre Meliava**  
**Nicolas Trout**  
**Hugo Sands**

**Elisabeth Patte**

**Gael Matchabelli**  
**Lucas Valerie**  
**Jerome Gordon**  
**Mathieu Gros**  
**Xavier de l'Hermuziere**  
**Mathieu Trintzius**  
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## The New Deal

France, Animation, 03:16



"The New Deal" video is a collaborative work by an animation artist, a graffiti artist, a scenarist, and a music composer. The basic idea was to make a modern musical grounded in the roots of hip-hop. The scenario invites us to follow the trajectory of two young underground artists who stand up against the entertainment industry by getting involved in spontaneous creation. Free from any forethought or strategy, their way of reappropriating funk music spawns a whole new cultural movement. Now that the creative phase is over, the team is actively looking for a producer to develop the project into a full-length motion picture.

### HARDWARE & SOFTWARE

Sony Vaio, 3ds Max, Flash, Adobe Premiere

*Director*  
**Baptiste Jaquetmet**

*Producer*  
**Baptiste Jaquetmet**

### CONTRIBUTORS

*Graffiti Writer*  
**123 Klan**

*Music Composer*  
**Junior Market**

*Script Writer*  
**Olivier Janin**

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**Baptiste Jaquetmet**  
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## Piñata

Australia, Animation, 03:49



Piñata is that classic story about a stuffed donkey's search for respect. On the list of bad jobs, getting smacked with sticks by small children who want to get to your insides is right up there. One small, feisty, lolly-stuffed Burro has had enough ... but there's an even smaller, determined little girl who decides his sweets are going to be hers no matter what. Caution; contains hitting, sombreros and papier-maché.

### HARDWARE & SOFTWARE

3ds Max 6, Combustion, PCs and Macintosh G5s

*Director*  
**Mike Hollands**

*Producer*  
**Thomas Schober**

*Contact*  
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## Recapturing the Lost Colors of **BASARA** (abbreviated version)

Japan, Art & Design, 03:02



Experts in archaeology, conservation, pigmentation, laser scanning, and computer graphics collaborated to restore the true colors of the 12 Divine Generals at Shin-Yakushi-ji Temple, Nara, Japan.

After painstaking research, a Nara Period (710-784 AD) statue of the warlord Basara Taisho, a Japanese national treasure made of clay and presently colorless, was restored to its original 8th-century colors (red, blue, and gold). After measuring the outline of the statue through laser scanning, a method commonly used in archaeological research, the collaborators entered the details into computer graphics images. Then they analyzed pigment left on the statue's face and body.

Professionals from many fields collaborated on this project, including Ichiro Nagasawa, former professor of the Faculty of Conservation at Tokyo National University of Fine Arts and Music, and Akihiko Oyama, associate professor of the School of Fine Arts Education at Nara University of Education.

“Object becomes history when it's gone.” says the chief priest of Shin-Yakushiji temple. “It will never be, now.”

The Asahi Shimbun, 17 February 2004

### HARDWARE & SOFTWARE

Hardware: Dell PCs running Windows 2000. Software: PolyWorks 7.0, Maya 6.0, Cinema 4D 8.0, Photoshop 7.0, After Effects 5.5

### Director

**Kazuo Takahashi**

### Executive Producer

**Masayuki Waku**

### Producer

**Yutaka Kusajima**

### Associate Producer

**Naomi Matsuzawa**

### CONTRIBUTORS

#### Shin-Yakushiji Temple

#### General Supervisor

**Ichiro Nagasawa**

#### Color Resotration Supervisor

**Akihiko Oyama**

#### DP

**Kinichi Hoshino**

#### Lighting Director

**Kazumasa Kawamura**

#### Video Engineer

**Nobuyuki Takaya**  
(CROW VISION)

### Digital Archive Supervisor

**Yutaka Takase**

### 3D Visualization

**Osamu Yamada**

### CG Director

**Tadashi Nakamura**

### CG Designers

**Koichi Kasai**

**Kimito Otani**

### PA

**Satoru Hirano**

**Kouki Shimiya**

**Tomoko Nagai**

### Post production

**CROW VISION**

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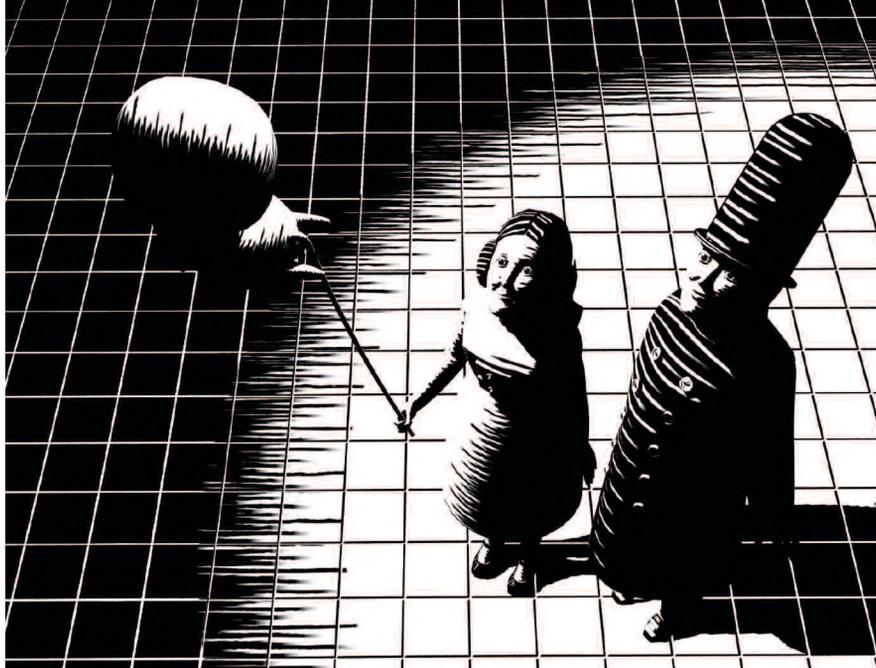
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# The Regulator (Le Régulateur)

(abbreviated version)

France, Animation, 05:05



A couple adopts a child built with many different pieces. But the number of pieces is so huge that the child will not be as perfect as he should be.

## HARDWARE & SOFTWARE

Maya 4.5, Photoshop 6.0, PC (Linux), Premiere 6.0, Sound Forge 5.0, Trukor (internal Mac Guff Ligne software)

*Director*  
**Philippe Grammaticopoulos**

*Producer*  
**Jean-Jacques Bénhamou**

## CONTRIBUTORS

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*3D Team*  
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**Nocolas Combecave**  
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**Philippe Grammaticopoulos**  
**Xavier de l'Hermuzière**  
**David Liébard**  
**Lucas Vallerie**  
**Baptiste Van Opstal**

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**Ivo Malec**

*Sound*  
**Franck Marchal**

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# Sal and the Great Frustration

USA, Character Animation, 02:07



Sal used to be an award-winning professional race car driver. Now, cruel reality forces him to live his drab existence bound to a wheel-chair inside the walls of Sunny Crest retirement home.

## HARDWARE & SOFTWARE

Maya, Adobe Photoshop, Shake, DW Rigging Tools, Syflex

## Director

**Andrew Malesky**

## CONTRIBUTORS

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# Samuroid Zero: Evil Does Not Conquer All

Japan, Animation, 02:34



On an unknown planet, in the distant future, it is a time of war. Four ninjas, including a beautiful but mysterious girl named Kureha, set out on a quest to recover relics that, legend says, will bring peace to the land. Their mission is to seek out a 500-year-old warrior, an invincible samurai who served the last emperor of peace and now guards the Three Holy Relics. Sent by the evil warlord Ieshiro, the ninjas must attempt to destroy the samurai and return with the relics so that Ieshiro can rule the world. As their adventure unfolds, Kureha learns that her past and the samurai's are bound together; to destroy him would be to destroy herself. Fully rendered in 3D and featuring an astounding new anime design, "Samuroid Zero" is the latest feature from the award-winning production house, Polygon Pictures.

## HARDWARE & SOFTWARE

Dell Precision 360, Avid DS version 7.01  
Maya 5.0 Unlimited, After Effects 6.0

*Director*  
**Yuichi Abe**

## CONTRIBUTORS

*Producer*  
**Sumiji Miyake**  
Micott & Basara Inc.

*Producers*  
**Shuzo John Shiota**  
Polygon Pictures Inc.

**Hideyuki Yamakuni**  
Micott & Basara Inc.

*Character Production Design*  
**Tohru Patrick Awa**

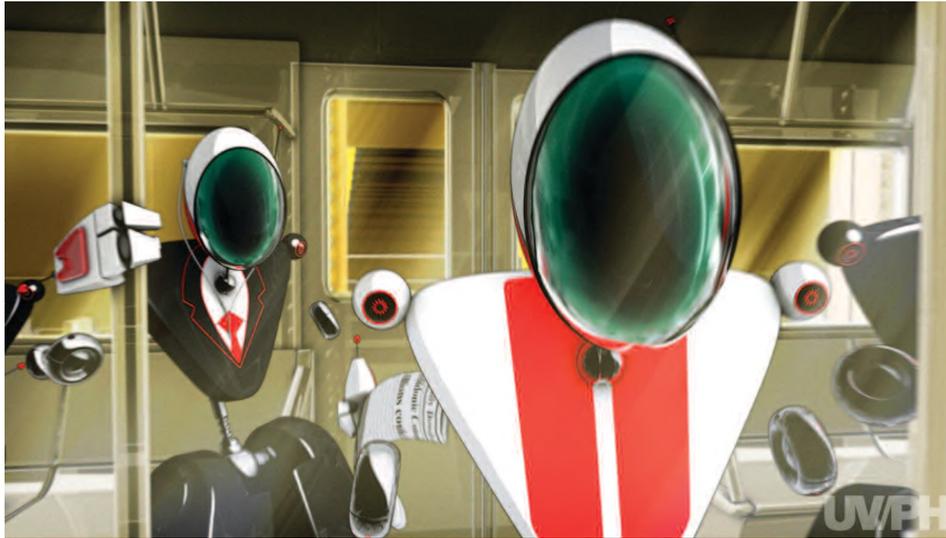
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**Takashi Nagasaki**  
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# Scent of a Robot

USA, Character Animation, 03:51



“Scent of A Robot” is a music video that combines live-action footage with animation to portray a human as he discovers that he is a robot. It is a metaphor for all of us. We can be programmed to live our daily lives.

## HARDWARE & SOFTWARE

Softimage Xsi 4.0, Adobe After Effects 6.5, Adobe Illustrator CS, Adobe Photoshop CS, Apple Final Cut Pro 4.5

*Director*  
**UVPHACTORY**

*Producers*  
**Scott Sindorf**  
**Damijan Saccio**  
**Brian Welsh**

## CONTRIBUTORS

*Principals/Co-Founders*  
**Scott Sindorf**  
**Damijan Saccio**

*Creative Director*  
**Alexandre Moors**

*Senior Producer*  
**Brian Welsh**

*Director of Photography*  
**Nick Tramantano**

*Designer*  
**Colin Hess**

*Animators*  
**Jacob Slutsky**  
**Ryan Bradley**  
**Bashir Hamid**

*Actors*  
Himself: **Pete Miser**  
Wife: **Maya Azucena**  
Baby Daughter: **Ananda Sahini**  
Boss: **Tom Reed**  
Secretary: **Lauren Kruse**

*Office Workers:*  
**Joseph Yoon**  
**DJ Blowout**  
**Daryl Reilly**  
**Keita Williams**  
*Subway Commuters:*  
**Ryan Bradley**  
**Damijan Saccio**

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*Music*  
**Pete Miser**

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## Sealed Lips

France, Animation, 01:42



A ventriloquist and his dummy pass an audition in a small theatre.

### HARDWARE & SOFTWARE

Maya 6, Photoshop 7, After Effects 6, Premiere Pro

### *Directors*

**Adrien Soyty Liv**

**Grégory Mougne**

**Coline Veith**

Gobelins, l'école de l'image

### *Producer*

**Gobelins, l'école de l'image**

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## Street Stories - Episode 14: "To Air is Human"

USA, Character Animation, 01:45



"Think it's an easy climb to the peak of rock 'n' roll mountain? Think again." In this episode of Street Stories, we talk with Edgar, a self-professed rock god. Edgar discusses the long hard road he traveled in order to become the best. "As long as I have my trusty six string, there ain't nothing I can't handle."

### HARDWARE & SOFTWARE

HP workstations  
Maya 6, Shake 2.5, Photoshop, Premiere

*Director*  
**Christopher Bancroft**  
Ringling School  
of Art and Design

*Producer*  
**Ringling School  
of Art and Design**

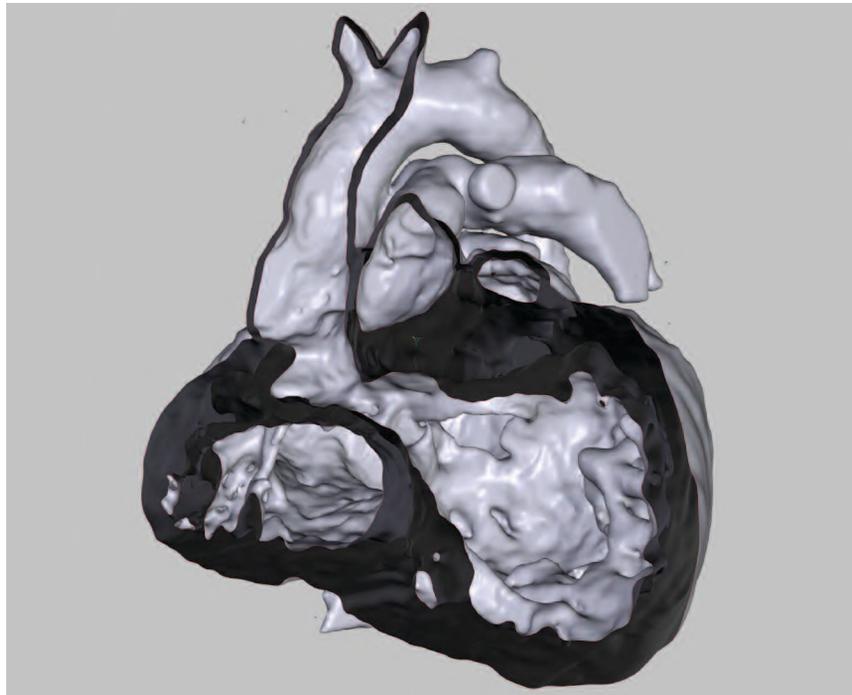
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# Surgical Planning in Congenital Heart Disease by Means of Real-Time Medical Visualisation and Simulation

Denmark, Medical Imaging, 05:52



Pre-operative evaluation of surgical strategies is of utmost importance in many areas of surgery. This is especially true for surgery in congenital heart disease, where the complex morphology varies from individual to individual. This animation shows how interactive, real-time computer graphics is emerging in diagnostics and surgery planning in congenital heart disease.

Using magnetic resonance imaging (MRI), volume rendering, and a GPU-based surgical simulator, we follow the treatment considerations for a 10-year-old girl. From three-dimensional MRI data, a detailed model of the patient-specific anatomy is obtained. A diagnosis is obtained from the MRI data and the reconstructed model.

Surgical strategies are subsequently explored in the simulator. A spring-mass-based physical simulation is resolved entirely on the GPU in real time. For a complex organ like the heart, where a highly detailed model is necessary to accurately understand the anatomical details, real-time convergence could not be achieved by existing CPU implementations. Dedicated software was developed and run on a 3 GHz Pentium 4 PC with an NVIDIA Geforce 6800 Ultra graphics card.

Funding by the Danish Research Agency and the Centre for Advanced Visualisation and Interaction, University of Aarhus, Denmark.

## HARDWARE & SOFTWARE

PC, Pentium 4, 3 GHz, 1 GB RAM, Geforce 6800 Ultra graphics card, Polhemus Fastrak for interaction

Adobe Premier Pro, Adobe After Effects, Adobe Photoshop, Deep Exploration, Virtual Reality Heart by Systematic Software Engineering, custom volume rendering and MRI reformatting software, custom GPU-based surgical simulator

### *Director and Producer*

**Thomas Sangild Sørensen**  
Centre for Advanced Visualisation  
and Interaction  
University of Aarhus

### *Editing*

**Henrik Hovgaard**  
**Ruben Borup**  
**Thomas Sangild Sørensen**

### *Voice*

**Nina Götzsche Thiele**

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### *Manuscript*

**Thomas Sangild Sørensen**

## Surly Squirrel

Canada, Animation, 10:47



A starving squirrel and rat come across a discarded pizza slice. The duo's greed disrupts the natural order of the park. Simultaneously, across the street from the park, a bank heist is taking place in the human world. The two worlds collide in an uproarious escape for both rodents and bank robbers. The story culminates in a full-on car chase with police and park animals in hot pursuit. The pigeons save the day, restoring order to both worlds, for now.

### HARDWARE & SOFTWARE

Alias Systems provided Maya 5.0 to the project.

### Director

**Peter Lepeniotis**

### Producers

**Pranay Patel**  
**Rob Aitchison**  
**Marissa Collyer**

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#### Executive Producers

**Dan Krech**  
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#### Producers

**Rob Aitchison**  
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# pre-production artwork

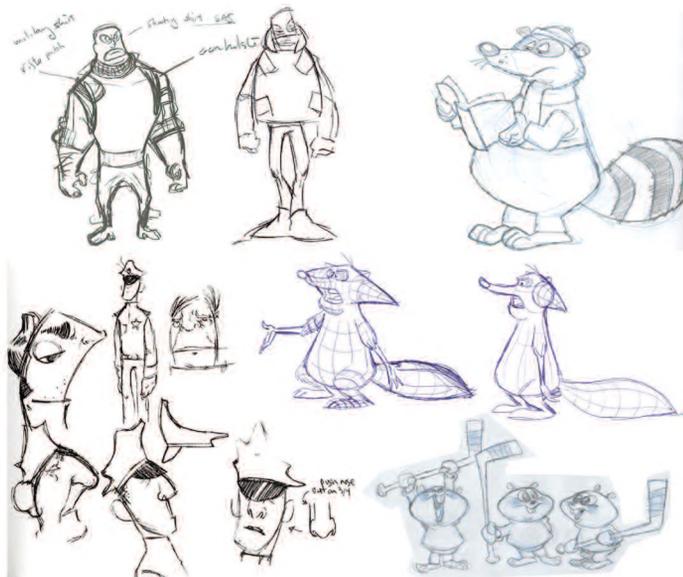
## Surly Squirrel



Color key sample work  
 Peter Lepeniotis & various artists  
 Digital images



Storyboard sample  
 Peter Lepeniotis & various artists



Secondary character concept artwork  
 Peter Lepeniotis & various artists



Lead character design evolution  
 Peter Lepeniotis & various artists

# Tick Animation 1

Germany, Scientific Visualization, 03:56



The film describes how the FSME virus is transmitted from tick to human. A tick waits in the high grass for a new victim. It scents an approaching jogger and is wiped off by one of his legs as he passes through the grass. On the skin of the jogger, the tick searches for a soft and humid place. As the tick finds an appropriate spot, it starts to cut through the skin. The film takes the viewer on a journey through the salivary gland of the tick, where the FSME virus reproduces itself. With the sucking and pumping action of the tick, the saliva is squeezed under the skin of the victim and with it the dangerous FSME virus. At the end, the film shows how to properly remove a tick by grabbing it very close to the head with tweezers and pulling it straight out.

## HARDWARE & SOFTWARE

Maya, Lightwave, Photoshop, Bodypaint, Digital Fusion, After Effects  
Dell workstation, Windows XP, NVIDIA

## Directors

**Sven Dreesbach**  
**Matthias Zeller**

## Producer

**Filmakademie**  
**Baden-Württemberg**

## CONTRIBUTORS

## Script, Director of Photography, Animation

**Sven Dreesbach**  
**Matthias Zeller**

## Script

**Joerg Wolf**

## Storyboard

**Gunter Grossholz**

## Scientific Consultant

**Martin Komorek**  
Baxter Deutschland  
GmbH Bioscience

## Music

**Ilja Polach**

## Producer

**Klaus Riech**  
Filmakademie Baden-Württemberg

## Narrator

**Hans-Peter Boegel**

## CG Artists

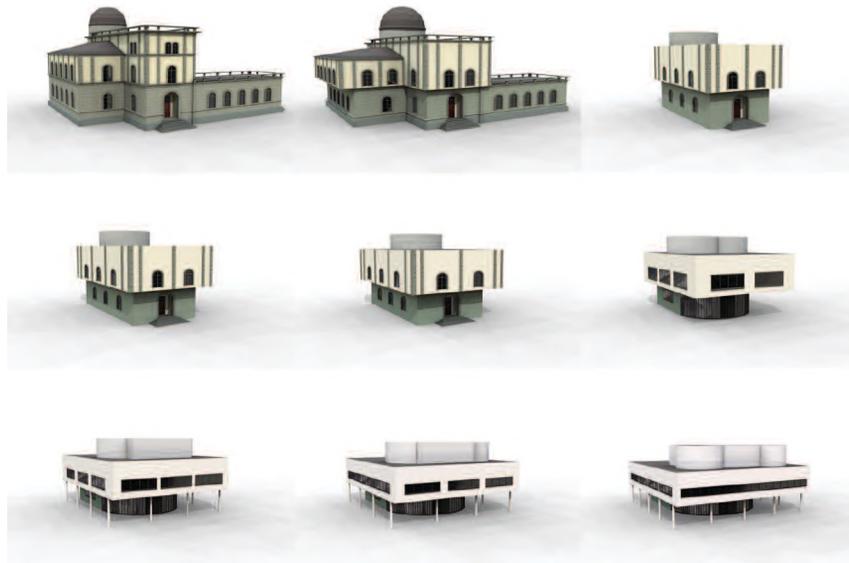
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**Markus Plinke**  
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**Florian Waldenmaier**  
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# Transformations in Architectural Design

Switzerland, Architectural, 01:16



This animation demonstrates transformations of architectural design. The video shows buildings designed by two great architects, Gottfried Semper and Le Corbusier, and the emergence of new designs using a novel modeling system to compute design transformations. The modeling system, based on design grammars, captures the essence of architectural styles and computes their transformation.

## HARDWARE & SOFTWARE

The building models were created with the CityEngine (proprietary software) on a Linux PC. Rendering was done using Maya 6 on a cluster of 8 Linux PCs. Post-processing with After Effects 6.

## Director

**Pascal Mueller**  
Eidgenössische Technische  
Hochschule Zürich

## Producer

**Luc Van Gool**  
Eidgenössische Technische  
Hochschule Zürich

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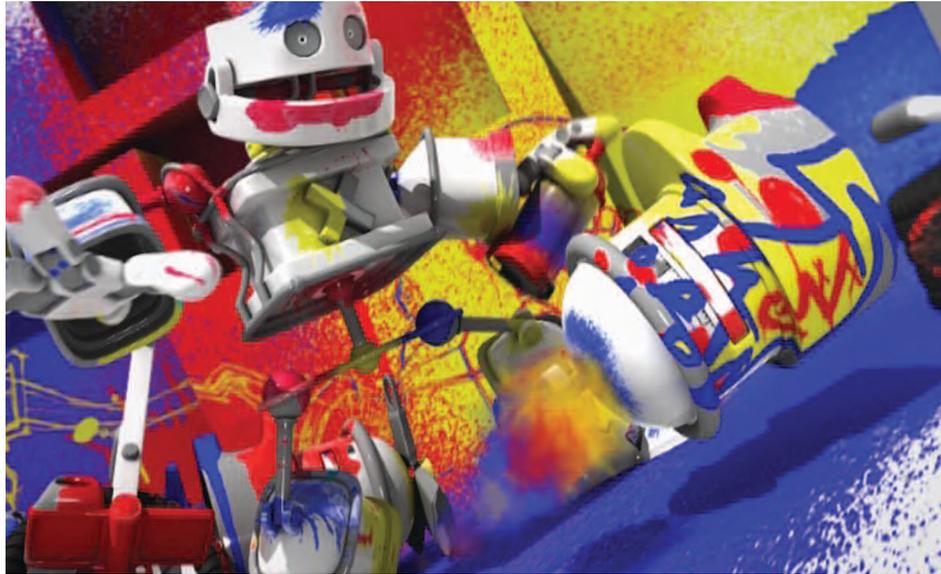
## CONTRIBUTORS

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**Peter Wonka**  
Arizona State University

## True Color

France, Animation, 06:47



Each day, robots drive bikes through a white world and repeatedly spread dirt. Dummies fill gas tanks by day and clean streets and buildings at night until a handling error makes colors appear.

### HARDWARE & SOFTWARE

3ds Max, After Effects, Combustion, Premiere

### *Directors*

**Pierre Ducos**  
**Bertrand Bey**  
Supinfocom Arles

### *Producer*

**Supinfocom Arles**

### *Contact*

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### CONTRIBUTORS

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# Twisted City

United Kingdom, Animation, 01:20



This short animation was created using Maya and Shake under the Linux OS. It presents London's twisted cityscape using a well-tuned space-twisting algorithm developed by the directors.

## HARDWARE & SOFTWARE

Dell PCs running Linux OS, 3D modelling and animation using Maya 6.0, and post-processing using Shake 3.0

## Directors

**Dominic Halford**  
**Sam Meisels**  
**Guy Newbery**  
NCCA Bournemouth University

## Producer

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## CONTRIBUTORS

**Bournemouth Media School,**  
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## Music

**Daniel Halford**  
supervised by **Susan Sloan**

## Venice Beach

South Korea, Animation, 04:28



Two crabs are exercising in their gym, when a stranger appears in front of them. The new crab creates an absurd situation. How they cope with this situation ...

### HARDWARE & SOFTWARE

PC/Intel P4 single 2 GHz CPU, 1 GB RAM

Modeling, animation, texturing, and rendering: 3ds Max 5.1  
Compositing: After Effects 6.0  
Additional software: Premiere 6.5, Photoshop, Character Studio,  
OS: Windows 2000

*Director and Producer*

**Jung-Ho Kim**  
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## by invitation

### The Zit

USA, Character Animation, 03:53



Timmy, a young boy preparing for the big school dance, is forced to deal with his first pimple problem, and what a problem it is! Every attempt he makes to rid himself of the ever-growing dilemma only succeeds in making the situation worse. Timmy hatches an ingenious plan to rectify his situation but can't anticipate the surprising consequences of his actions. And neither will the audience.

#### HARDWARE & SOFTWARE

HP Linux computers, SGI Octanes, Maya 5.0, Houdini, Photoshop, StudioPaint, RenderMan, Shake, Avid, lots of proprietary software

*Writer/Producer/Director*  
**Mike Blum**

#### CONTRIBUTORS

*Storyboards*  
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*Editor*  
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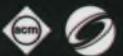
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