2006 • Press

Golan Levin

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ART OF THE DIGITAL AGE

BRUCE WANDS

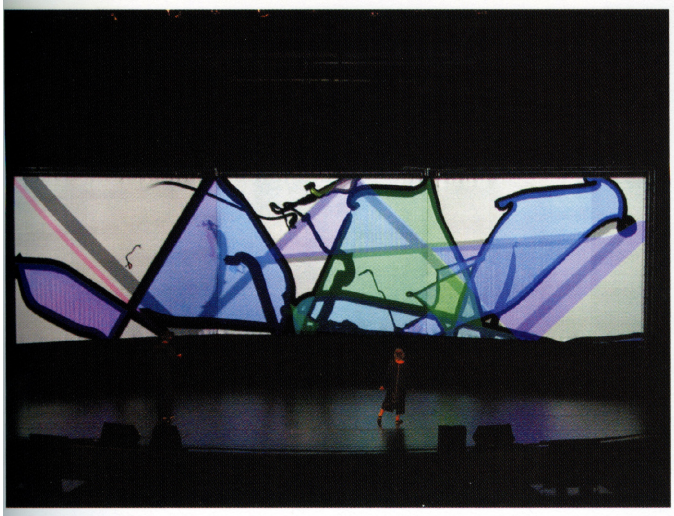
Thames & Hudson

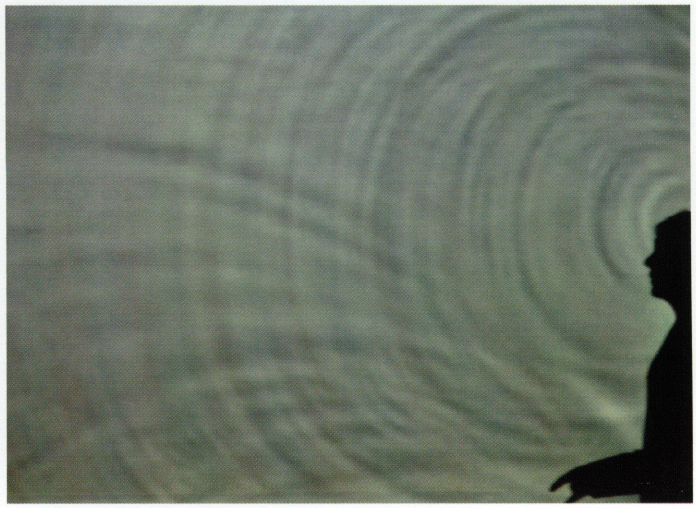
programmes that they can manipulate real-time. Today's digital artists and musicians have indeed benefited from advances in technology, and more importantly are making invaluable contributions to the evolution of digital and contemporary art.

The practitioners

The artists mentioned here come from a broad spectrum of backgrounds. While some have entered via careers in music and art, others started by writing their own custom software. The works that follow reflect different aspects of these disciplines: software-mediated performance, multi-media theatre and performance, visual music, networked performance and collaborative sound art. David Rokeby's *Very Nervous System* (p. 126) is a landmark piece in interactive music, for which he wrote custom software and configured specialized hardware. Stephen Vitiello (pp. 140–41) is a sound artist who bases his work on 'natural' sounds, both urban and rural. Ben Neill invented the 'mutantrumpet' (p. 128), an instrument that not only plays in the traditional way, but also sends MIDI instructions that modify the visual backdrop. Joan La Barbara (p. 133) and Golan Levin create collaborative, real-time performances with their art, and Levin came to work in this field though his background as a software artist (pp. 172–73). Beryl Korot and Steve Reich collaborated on *Three Tales* (p. 127) to create a work of multi-media musical theatre. Emerging artists Leesa and Nicole Abahuni, known as the 'Turbo Twins', bring robotic technology to performance through an interactive experience (p. 134).

The widespread availability of recording software has generated an increased interest among artists to create performance, music and sound artworks. The diversity of venues that now support these artistic genres – from museums, galleries, nightclubs and theatres to distribution via the internet – offers a multitude of choices to audiences.





Above left
JOAN LA BARBARA WITH GOLAN LEVIN, ZACH LIEBERMAN AND JAAP BLONK, *MESSA DI VOCE*, 2003. PERFORMANCE AT ARS ELECTRONICA, LINZ, AUSTRIA

Above right
JOAN LA BARBARA WITH GOLAN LEVIN, ZACH LIEBERMAN AND JAAP BLONK, *MESSA DI VOCE*, 2003. PERFORMANCE AT THE ULTRASOUND FESTIVAL, HUDDERSFIELD, ENGLAND
Joan La Barbara is a composer, performer and sound artist who explores the possibilities of the human voice in a series of ground-breaking works for voices, instruments and interactive technology. Her unique vocabulary of vocal techniques includes circular singing, ululation and glottal clicks.

***MESSA DI VOCE* IS CONCERNED WITH THE POETIC IMPLICATIONS OF MAKING THE HUMAN VOICE VISIBLE. THE CORE TECHNOLOGY THAT MAKES THIS POSSIBLE IS A CUSTOM SOFTWARE SYSTEM THAT INTEGRATES REAL-TIME COMPUTER VISION AND SPEECH ANALYSIS ALGORITHMS. A COMPUTER USES A VIDEO CAMERA TO TRACK THE LOCATIONS OF THE PERFORMERS' HEADS AND ANALYSES THE AUDIO SIGNALS COMING FROM THEIR MICROPHONES. IN RESPONSE, THE COMPUTER DISPLAYS VARIOUS KINDS OF VISUALIZATIONS ON A SCREEN BEHIND THE PERFORMERS. IN SOME OF THE VISUALIZATIONS, GRAPHIC ELEMENTS REPRESENT VOCAL SOUNDS AND ALSO SERVE AS A PLAYABLE INTERACTIVE INTERFACE BY WHICH PERFORMERS CAN RETRIGGER AND MANIPULATE THE SOUNDS.**
JOAN LA BARBARA, GOLAN LEVIN, ZACH LIEBERMAN AND JAAP BLONK

SOFTWARE, DATABASE AND GAME ART

While art forms such as prints, sculpture and even installation evolved from traditional media and techniques, software, database and game art came into existence only when artists started experimenting with computers. There is a fine line between where art that has a primary component of software ends and other categories begin. For example, an artist can write a software programme and then output the artwork as a print or sculpture, or include it in an interactive installation. Every type of digital art makes use of software in some form. For the purposes of this exploration, software art is defined as creative work that finds its origins in programmes written by the artist; database art relies on pre-existing, created or real-time collections of information; and game art uses commercial gaming software or incorporates elements of play and role-playing. Networked games are a hybrid between game art and net art.

Software art finds its primary expression in computer code. Artist and programmer John F. Simon, Jr., likes to refer to programming as a form of creative writing, in which the artist's 'words' exist as lines of code; others have called it the 'paint and canvas' of the digital artist. With *Every Icon* (p. 171), Simon produced an almost endless series of visual images on a 32 x 32 grid, all powered by the algorithms of computer code. While Simon's work is self-generating, Golan Levin's approach to software art in his Audiovisual Environment Suite (pp. 172–73) gives creative control to the user through a minimal interface that produces abstract visual images,

animations and sound in real time. Levin describes his work as an 'attempt to reclaim computation as a personal medium of expression'.

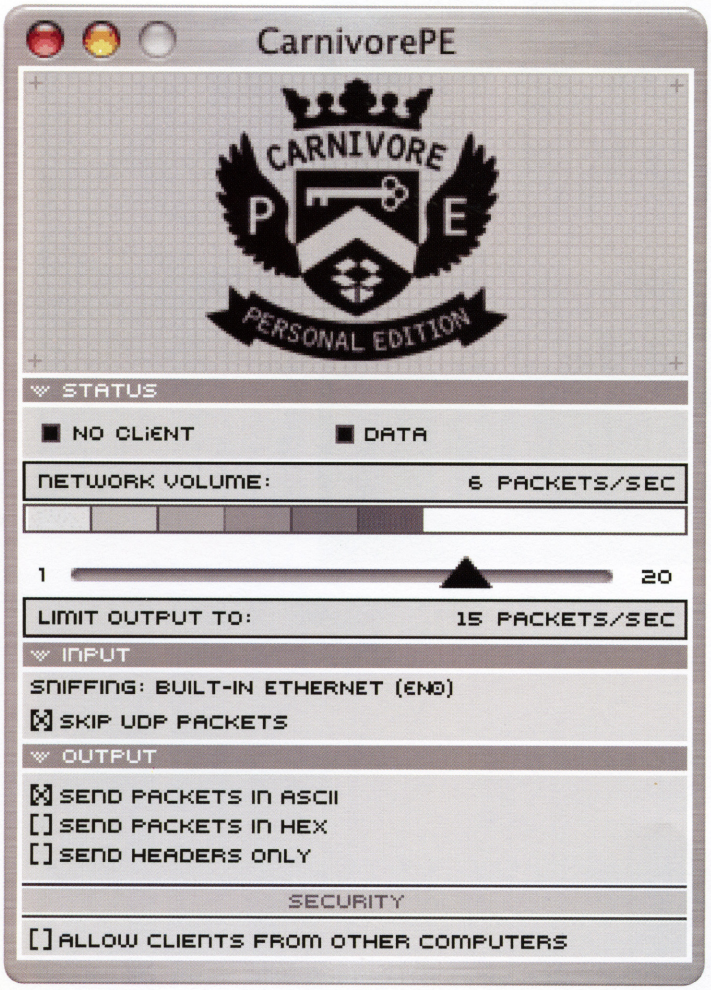
A third type of software art has been employed by Alexander R. Galloway (pp. 168, 202) and the Radical Software Group. Carnivore was originally designed as a multi-purpose surveillance tool for data networks, inspired by software the FBI used under the nickname 'Carnivore' to perform electronic wiretaps. *CarnivorePE* (p. 168) is the resultant software application that monitors all internet traffic (email, web surfing) from a specific local network and then puts this data in a form that can be creatively interpreted in any number of ways by other artists. These interpretations, called 'clients', take the form of image and sound generators, or works that utilize breath interfaces; one work by Golan Levin, *JJ*, translates the emotional meaning of words that travel over a network into facial expressions.

While software art embodies the concept of authorship of the software code, database artists take a more interpretative approach through collections of data that exist on disk, the internet, derive from other sources, or are created by the participants and viewers of the artwork itself. A major concern for artists creating database art is to filter, chart or 'map' the information, to visualize it and make it meaningful for an audience. In *Pockets Full of Memories* (pp. 175–77), George Legrady involves the audience in the creation of the database, inviting them to scan their personal possessions and then to ponder the concept of a communal archive and the way in which collective memory functions. Marek Walczak and Martin Wattenberg's *Apartment* (pp. 178–79) encourages participants to create their own database of words, which the software visualizes with an architectural blueprint.

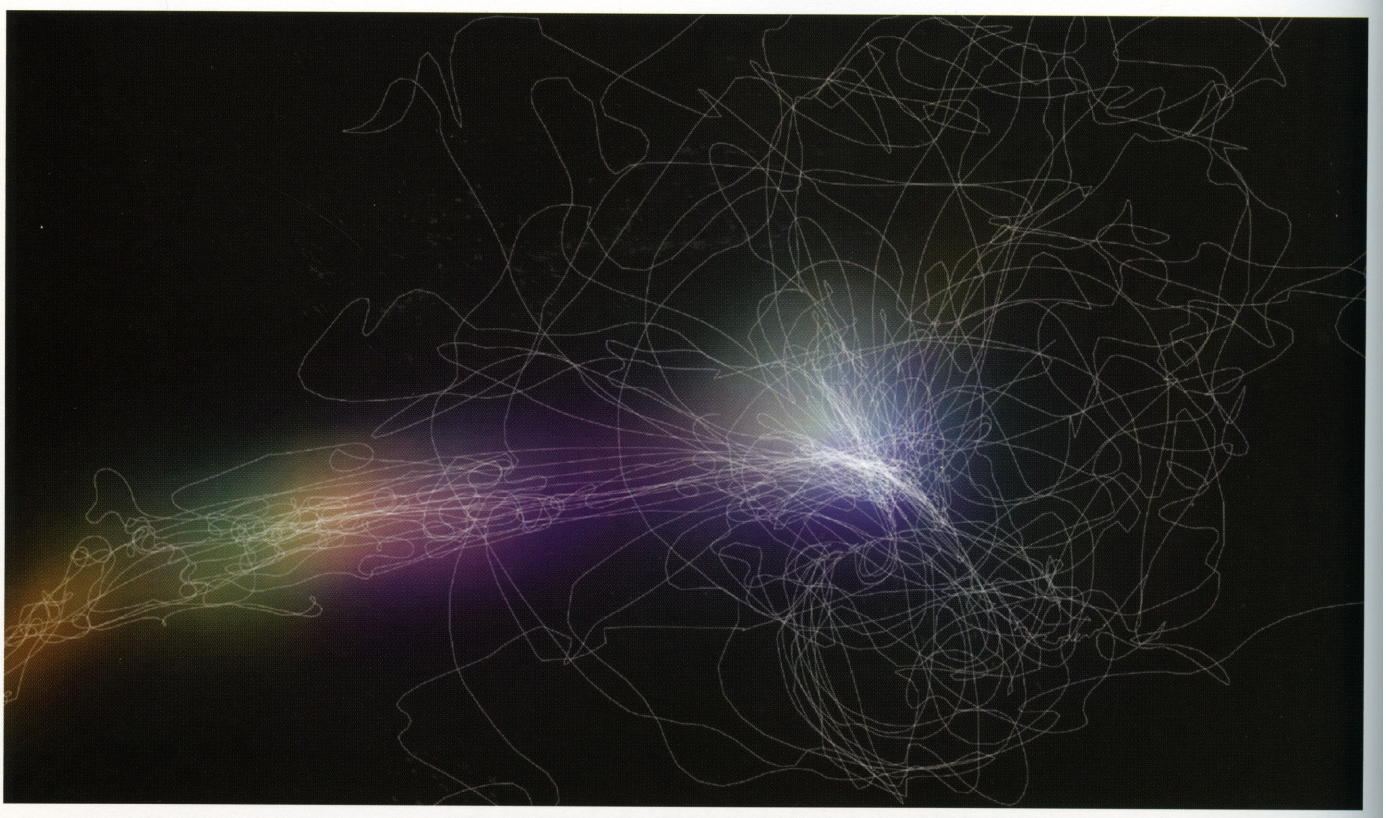
An example of a database artwork that uses real-time stock market data from the internet is Lynn Hershman Leeson's *Synthia* (p. 167). Josh On is similarly concerned with market forces, but in a more people-oriented way: *They Rule* (p. 169) is piece of net art that allows users to trace graphically the relationships between board members of various American corporations. W. Bradford Paley (pp. 182–83) writes software that analyses works of literature and other texts and creates a visual interpretation of patterns hidden within the data. In her works *American Views: Stories of the Landscape* (p. 169) and *NYC Thought Pictures: Memories of Place*, Russet Lederman presents a non-linear collage of the American landscape as seen through the experiences and memories of diverse individuals. These works are accomplished through the development of databases that contain images, sound and text.

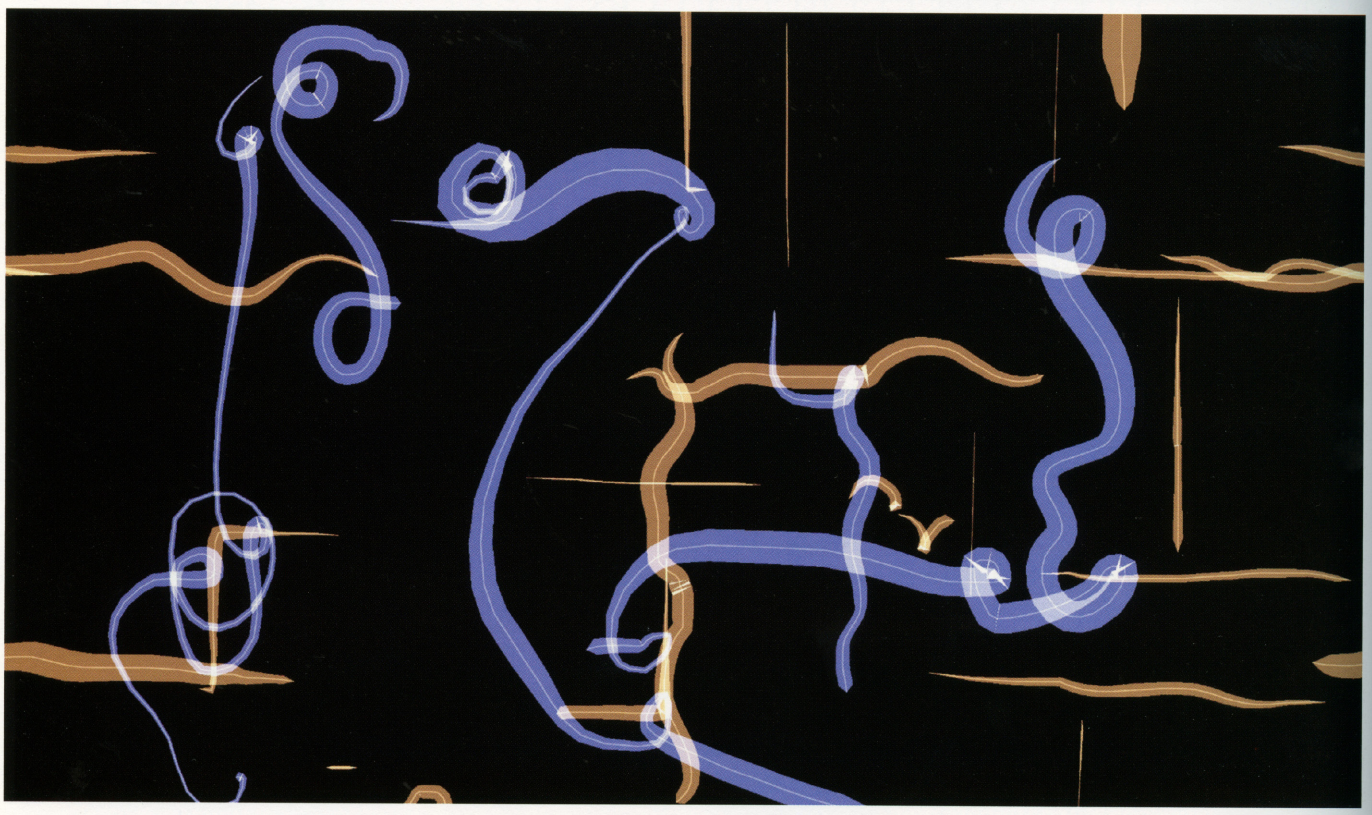
The creative interplay between artists and games came to public prominence in 2001 with 'Game Show', exhibited at the Massachusetts Museum of Contemporary Art. Positioned as the first major exhibition to explore how artists have incorporated game structures and themes in their work, the show was composed of four sections: Games Visitors Play, Games Artists Play, Games Artists Orchestrate and Net Games Now, which was curated by Mark Tribe and Alexander R. Galloway of Rhizome.org. This

THE BIGGEST CULTURAL RAMIFICATION I SEE IS THAT SOFTWARE IS AN ACTION MEDIUM. SOFTWARE DOES STUFF. THIS IS ENTIRELY DIFFERENT FROM LITERATURE, FILM, OR OTHER PREVIOUS MEDIA. FRIEDRICH A. KITTLER HAS SUMMARIZED THIS POINT BY WRITING THAT CODE IS THE FIRST TYPE OF LANGUAGE THAT DOES WHAT IT SAYS. I AGREE WITH HIM. SOFTWARE IS A TYPE OF MACHINE FOR CONVERTING MEANING INTO ACTION.
ALEXANDER R. GALLOWAY



ALEXANDER R. GALLOWAY AND RSG, *CARNIVORE PE*, 2001. SOFTWARE
This is the Macintosh version of the *CarnivorePE* (Personal Edition) interface, which monitors the flow of data over a specific network. The number of packets of data that are output per second can be counted and can vary. The data format can also be defined. It has a security option to allow clients from other computers to connect or prevent them from doing so. The Radical Software Group (RSG) is an international collective of various programmers and artists who write and work with experimental software. Artists who have incorporated RSG's software in their artworks include Jonah Brucker-Cohen, Vuk Cosic, Joshua Davis, Entropy8Zuper!, Golan Levin and Mark Napier.

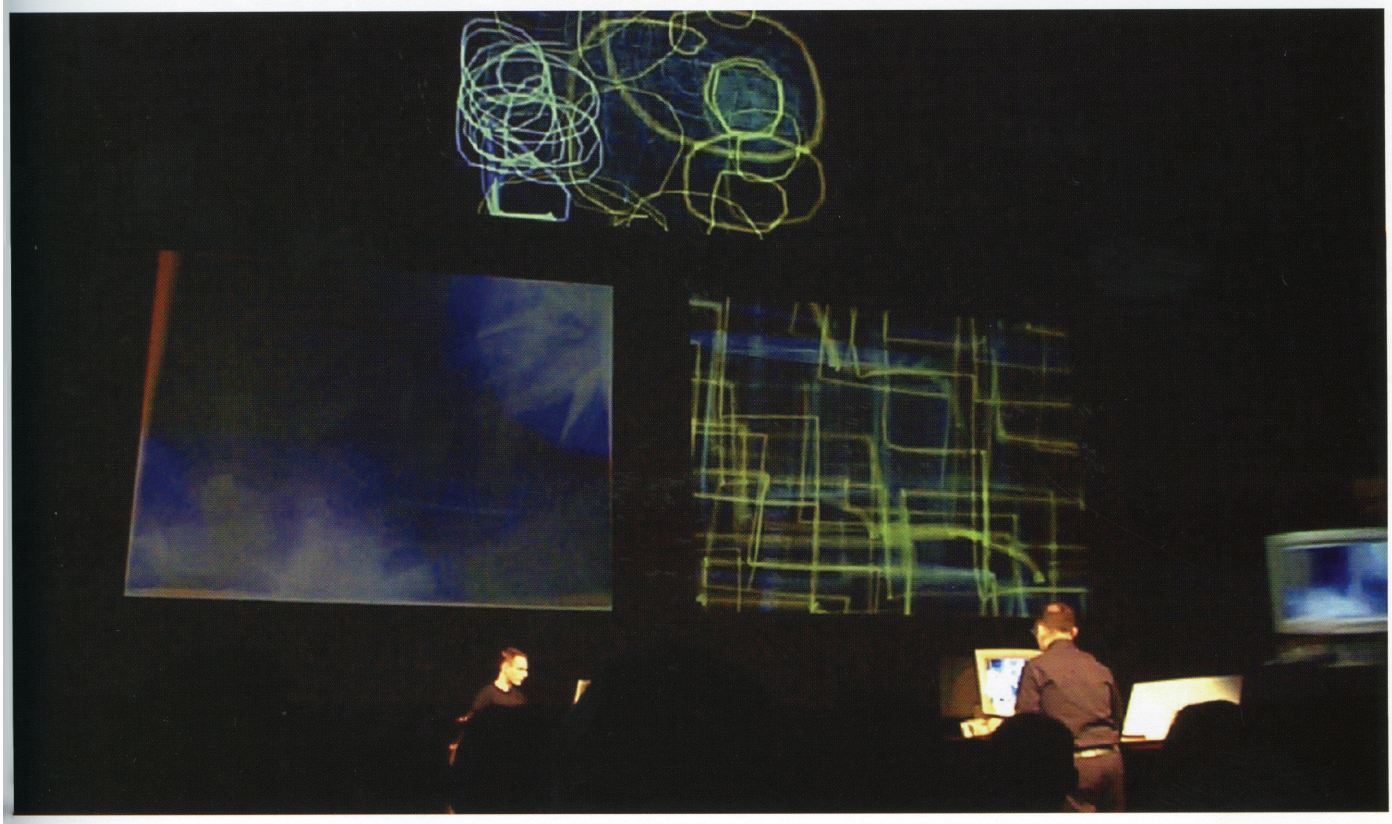




Opposite above and below
GOLAN LEVIN, *FLOCCUS* AND *YELLOWTAIL*, 1999. INTERACTIVE SOFTWARE
Floccus and *Yellowtail* are components of the Audiovisual Environment Suite, a set of interactive software systems designed so that people can create abstract animations and synthetic sounds in real-time. In a typical installation of these works, a pedestal with a computer mouse on top is positioned in the centre of a darkened room, and a video projector displays a large image on one of the walls. The software interface is simple and intuitive, and within a short period of time users are creating a wide variety of abstract visuals and sounds. An interesting aspect of Golan Levin's work is that each person who uses the software ends up with his or her own unique visuals.

Below
GOLAN LEVIN, SCOTT GIBBONS AND GREGORY SHAKAR, *SCRIBBLE*, 2000. NEW MEDIA PERFORMANCE AT ARS ELECTRONICA, LINZ, AUSTRIA
This image shows a concert performance of *Scribble*, also produced through the Audiovisual Environment Suite. The work revives and updates a decades-old tradition of kinetic light performance, featuring tightly coupled sounds and dynamic visuals that are at times carefully scored, and at other times loosely improvized.

IN *FLOCCUS*, DUCTILE FILAMENTS DRAWN BY THE USER SWIRL AROUND A SHIFTING, IMAGINARY DRAIN CENTRED AT THE USER'S CURSOR. THESE FILAMENTS ARE TORN BY CONFLICTING IMPULSES TO SIMULTANEOUSLY PRESERVE THEIR LENGTH, YET ALSO MOVE TOWARDS OR AWAY FROM THE CURSOR. THEY FIND AN EQUILIBRIUM BY FORMING GNARLY, TANGLED MASSES.
GOLAN LEVIN



was that a large percentage of early internet art fell victim to browser and software upgrades. The turnaround time for internet software development during the dot.com era of the mid- to late-1990s was as quick as four to six months. Net art projects became obsolete as newer versions of browsers and plug-ins – as well as hardware upgrades – were no longer capable of supporting them. Many museums, non-profit foundations and artists now keep inventories of old computers and discontinued software so that early works can be preserved. New developments in the software emulation of older operating systems and computers can also help to archive these works.

Nettime, founded by Geert Lovink and Pit Schultz in 1995, was established to promote internet culture and criticism, and artists who aided in its formation include Heath Bunting, Vuk Cosic, Jodi, Olia Lialina and Alexei Shulgin. Jodi, the artistic team of Joan Heemskerk and Dirk Paesmans, were well known partially on account of their unique creative work that questioned the fundamental concept of the browser. Around the same time the New York-based Rhizome.org, founded by Mark Tribe, offered an open forum for discussion on net art and also developed an archive. The Walker Art Center Net Art Initiative, founded by Steve Deitz in Minneapolis, was very influential in supporting net art, hosting an important collection and a series of online exhibitions. A number of museum websites, such as the Whitney Museum of American Art Artport, the Solomon R. Guggenheim Museum and the San Francisco Museum of Modern Art, also became net art advocates.

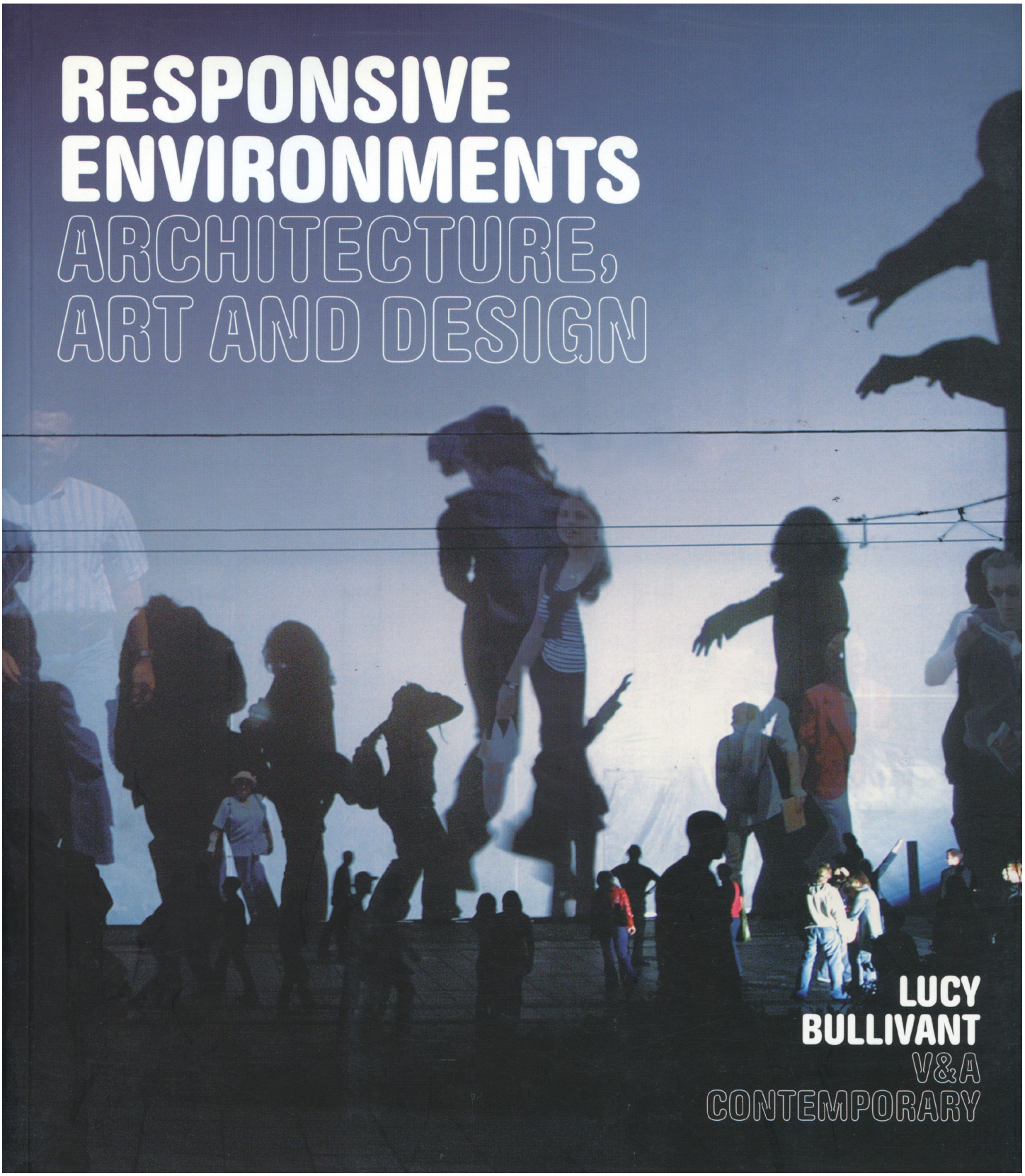
Video-based interaction on the internet began with CUseeMe and MBONE, the video conferencing software that spawned performance-based pieces and other interactive net video works. Since then, video projects – both interactive and linear – have developed rapidly on the web, although they are heavily dependent on ample bandwidth for their success. Currently, organizations such as La Société des Arts Technologiques (SAT) in Montreal and MARCEL, founded by Don Foresta in France, are working with ultra-high bandwidth applications for creative purposes, using networks such as Access Grid (AG), Internet2 and National LambdaRail (NLR).

The advent of wireless technology now allows net artists creative possibilities using mobile handheld devices such as PDAs and mobile phones. Golan Levin's groundbreaking *DIALTONES (A Telesymphony)* at Ars Electronica in 2001 was a concert performed entirely through the ringing of the audience's mobile phones. The Global Positioning System pinpoints the exact position of the viewer through satellite communications. Art projects that use this technology are GPS Drawing, the C5 Landscape Initiative and the Amsterdam RealTime Project. GPS has expanded the definition of net art beyond wired networks, harkening back to the first wireless technology – radio – while looking forward to the wireless environments of the future.

Many museums now have their own net art websites and also commission works for exhibition. The debate as to whether or not net art can be successfully exhibited in museums and galleries is ongoing. Exhibited works that have received wide critical acclaim are Jodi's gallery installations and Wolfgang Staehle's *Empire 24/7*, a time-based work featuring a

RESPONSIVE ENVIRONMENTS

ARCHITECTURE, ART AND DESIGN



LUCY BULLIVANT

V&A CONTEMPORARY

DIALTONES
Concert with mobile phones
Golan Levin with Scott Gibbons and Gregory Shakar, 2001
Brucknerhaus Auditorium, as part of Ars Electronia Festival, Linz, Austria, 2001; and at Artplage Mobile de Jura as a production of the Swiss National Exhibition, 2002

Installations of this kind often aim to encourage participants to experience a parallel reality of the world. The '**HIDDEN WORLDS OF NOISE AND VOICE**' (2002), an interactive audiovisual installation, allows up to six participants to 'see' each other's voices made visible in the form of coloured, animated graphic figurations that appear to emerge from their mouths when they speak. The shapes relate to the unique qualities of the vocalist's volume, pitch and timbre. To bring about this 'extrasensory perception', they wear special see-through data glasses that register and superimpose 3-D graphics into the real world. The installation was created by artist and composer Golan Levin (born 1972) and Zachary Lieberman in collaboration with the Ars Electronica Futurelab through its Artist in Residence Programme. More than just about surprising each other with silly noises, the views captured through the augmented reality eyepieces show the way in which these forms are superimposed onto physical reality. Levin's work brings whimsicality and provocation to the task of unveiling a parallel reality. His concert '**DIALTONES**' (2001) was wholly performed by the carefully choreographed dialling and ringing of the audience's own mobile phones. A graduate of MIT Media Laboratory, in between degrees he worked simultaneously as an interaction designer and research scientist at Interval Research.

THE PUBLIC
Early concept designs for gallery spaces with balustrade carrying input devices
Ben Kelly Design
(architect: Alsop Architects; visitor interfaces: AllofUs)
2004–5

to create a permanent exhibit infrastructure that independent artists including Blast Theory, Golan Levin and Zachary Lieberman, Tomas Roope with Andrew Allenson, Rolf Gehlhaar and Usman Haque, have been commissioned to make artworks for. They have also developed the digital interfaces for wayfinding and a digital representation of a visitor's data body, as well as two systems essential for the visitor's entire journey through the gallery. One feature that makes the Public unique is a three-minute profiling interface for visitors at the entrance. 'Visitors are profiled so that we have some sense of their own creative direction,' says Nick Cristea. 'They are asked to leave audio samples – a shout, or a secret – visual preferences – colour, texture, movement – take photos of themselves, and leave a simple mark, like carving a tree.' All these elements are then reused by the artists in each of their artworks.

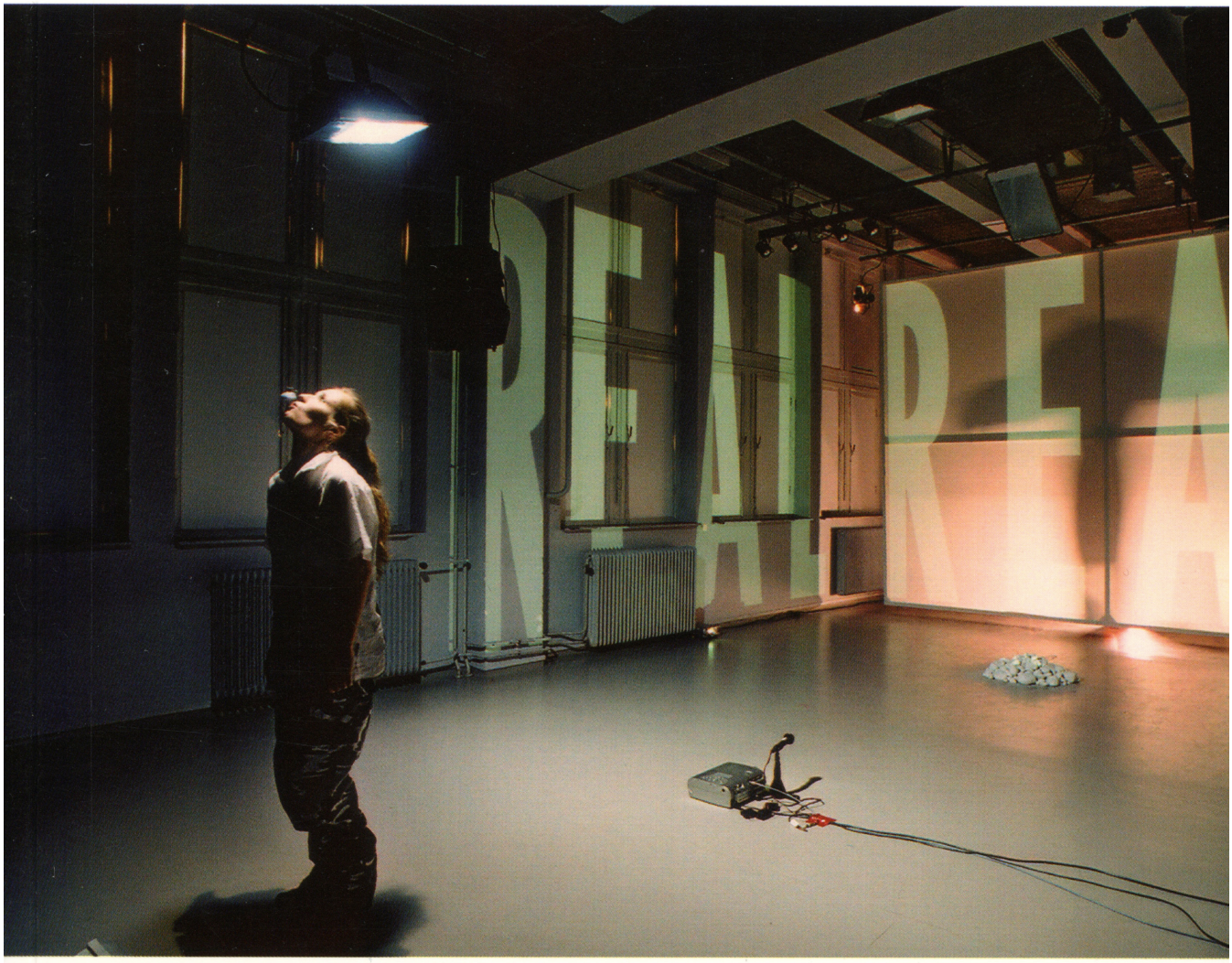
Before they leave, visitors can also use an open-ended editing tool to create new 'assets or products'. By these Cristea means images and sounds captured as people interact with all the artists' exhibits: screen grabs, generated sounds, virtual data translated in abstract patterns, elements that are reused by the artists in each of their artworks. A continuous, resonant exchange occurs between artists, visitors and their respective activities. Such a process would not see the light of day without testing, and groups of visitors have been brought in to test an early prototype of the profiling process, which they found very appealing.

The whole centre is wired up, and when visitors wander around with their data bodies, they are only interacting with their own data. When they do interact with the artworks, the scope of the responsive design is very imaginative and robust. Encountering one exhibit, Usman Haque's **'FLOWER OF MY SECRET'**, they find a wall of drawers of various sizes positioned

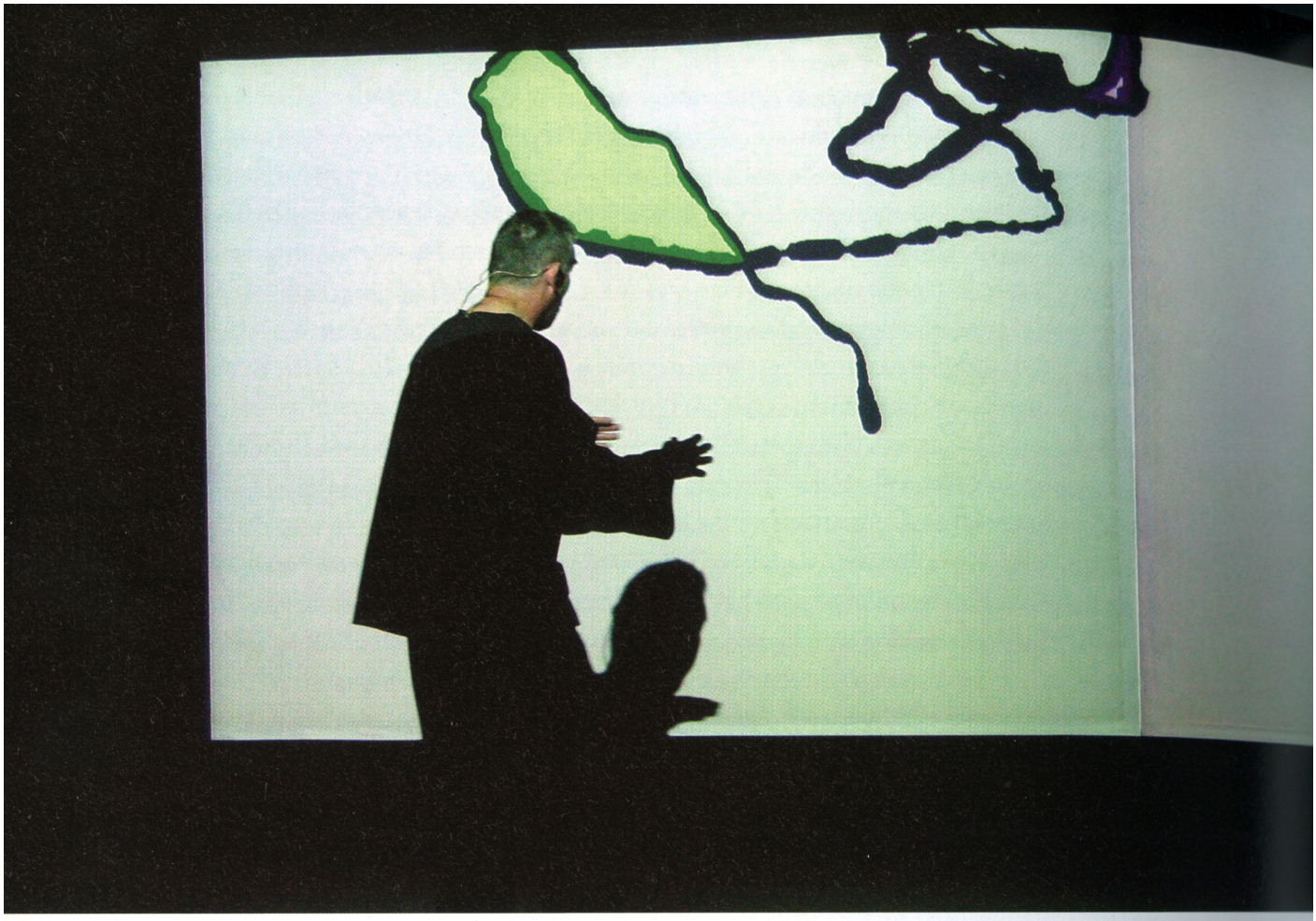
THEY ARE ASKED TO LEAVE AUDIO SAMPLES – A SHOUT, OR A SECRET – VISUAL PREFERENCES – COLOUR, TEXTURE, MOVEMENT – TAKE PHOTOS OF THEMSELVES, AND LEAVE A SIMPLE MARK, LIKE CARVING A TREE.
NICK CRISTEA

Henk Havens
Chiel Kattenbelt
Eric de Ruijter
Kees Vuyk
redactie

THEATER & TECHNOLOGIE



Toneelacademie Maastricht / Theater Instituut Nederland



Audiovisuele performance & installatie voor Stem en Interactieve Media door Golan Levin en Zach Lieberman met Jaap Blonk en Joan La Barbara (2003-2004).

Het plaatsen van de stem

De term *messa di voce* verwijst naar een stemoefening. De ontwerpers Golan Levin en Zachary Lieberman (alias Tmema) lichten toe: "Een noot wordt gezongen in een standvastig crescendo en decrescendo en in piano en forte zonder de toonhoogte te veranderen. Zowel dit als de intonatie en resonantie moeten constant blijven. De moeilijkheid bestaat erin om de toon niet te veranderen bij de aanpassing van de toonkwaliteit" (vertaling Pieter Verstraete, red.). De installatie nodigt uit tot het oefenen van de stem en het zoeken naar ongehoorde manieren van stemgebruik. Het resultaat is een meer primair, woordeloos stemgebruik. De stem is immers altijd eerst geluid voor het taal wordt. Bovendien betekent *messa di voce* letterlijk het plaatsen van de stem. De bewegingssensoren lokaliseren de positie van het hoofd en met die informatie projecteert het systeem de grafische vormen alsof ze uit de mond van de spreker komen, net als tekstballonnetjes in een strip. Hiermee spelen Joan La Barbara en Jaap Blonk. Ze communiceren met elkaar, schrijven naar elkaar via de projecties, terwijl ze volop met hun stem- en articulatiebereik spelen.

De interface maakt het stemmenspel heel muzikaal voor de toeschouwer, die meekijkt en luistert. Die muzikaliteit vertaalt zich in de visuele composities als een

soort spoor, waartussen een mogelijk verband bestaat. De makers verwijzen in dit verband naar het fonetisch symbolisme (fonestesie). Het is aan de toeschouwer om verbanden tussen de klanken en hun grafische weergave te traceren. De hardware is weliswaar onzichtbaar maar de microfoon als interface en de directe toepassing van het systeem laten op hun beurt sporen na in de synesthetische kijk- en luisterervaring van de toeschouwer. De makers van *Messa di Voce* spreken in die zin van een 'speels audiovisueel narratief'. Het heeft iets van poëzie, de technologische multimediaruimte ontpopt zich tot kleurpalet met het eigen stemgeluid als verfmateriaal. Mits enige oefening, kan de microfooninterface dienen als verlengstuk van de stem om te verven en te morsen met geluid.

De microfoon is hier een ongewoon of buitengewoon interactiekanaal dat uitnodigt om op een andere manier met elkaar te communiceren. Bovendien geeft het een nieuwe invulling aan de akoesmatische stem: de microfoon als interface rukt de stem uit de context en de noodzaak voor een verbale communicatie. De technologie vertaalt de unieke kwaliteiten van het stemgeluid grafisch in de projectie en plaatst deze terug aan de lippen van de spreker. De afstand tussen stem en projectie staat in functie van een grotere directheid en verbeeldingskracht, een vernieuwde intimiteit met de technologie.

Totaaltheater van stem en geluid

Het ging in dit artikel in de eerste plaats om het dubbele effect van technologie en akoesmatisering op de verbeelding van geluid, naar analogie van het masker: weerstand en mogelijkheid, eenheid en distantie, identiteit en deconstructie, identificatie en ontvreemding, aanwezigheid en afwezigheid, fysieke ervaring en virtualiteit, verbale communicatie en muzikaliteit. *Men in Tribulation* en *Messa di Voce* gaven aanleiding om die tweedelingen te bespreken vanuit het gebruik van de microfoon en de technologie van laptop, versterker en luidspreker. Dat gebruik splitste zich weer op in een dubbele functie: middel/instrument en medium/interface. De interface draagt daarbij ook steeds een tweedeling in zich. Deze verbindt wat voorheen niet te verbinden was.

Laten we ons nu de vraag stellen waar het theater vandaag staat ten opzichte van de moderne technologische ontwikkelingen. *Men in Tribulation* kan je multimediaal muziektheater noemen en *Messa di Voce* een interactieve geluidsinstallatie. Beide tonen de moeilijkheid in het definiëren van performances die met geluidstechnologie experimenteren. Ze bevinden zich op een grensgebied en tornen voortdurend aan de definitie van theater. Technologie doet de grenzen tussen installatie- en podiumkunst eroderen. De interactieve installatie nodigt uit tot een engagement tussen performer (spreker) en toeschouwer (luisteraar). De technologie in het muziektheater past kennelijk in een strategie om zich af te zetten tegen het traditionele muziekdrama en een directer contact met een publiek na te streven. Er bestaat wel het risico dat de technologie de performers gaat overschaduwen. Bij een volledig akoesmatische

toepassing van audiotechnologie valt het theater in haar minimale definitie en als schouwspel of spektakel weg. Theater is dan eerder een multimediaperformance, die spreekt tot een al dan niet audiovisuele en narratieve verbeelding.

De dubbele functie van de microfoon als instrument en interface vraagt om een kritische houding ten opzichte van het esthetische gebruik en de beheersing van de technologie. Geluidstechnologie kan geschikt zijn als middel om (zelf)controle te krijgen over een geënergetiseerde ruimte, met als gevolg dat die ruimte fysiek ervaarbaar wordt maar vaak ook een virtuele ruimte creëert. De laptop kan als multimedia-instrument ingezet worden, en brengt zijn eigen wetmatigheden en compositiepraktijken (zoals mapping, morphing, feedback, enzovoort) met zich mee. Bij livemanipulatie van geluid lopen componeren en uitvoeren voortdurend door elkaar heen, en gaat het vaak meer om de interactie en het muzikaal experiment dan om een eigenlijke betekenis. Een soundscape komt pas tot stand in de uitvoering. De inzet van microfoon en luidspreker als verlengstukken van de menselijke stem legt daarenboven de aandacht op het nu-moment in de intimiteit met de technologie.

De moderne geluidstechnologieën hebben de muzikalisering van de stem nog niet uitgeput, zo blijkt uit *Men in Tribulation* en *Messa di Voce*. En dat is wat technici,

Raf Minten in Men in Tribulation (Muziektheater Transparant, 2004).

performers, geluidsontwerpers, componisten en theatermakers blijft aantrekken in het integreren van technologie in theater: de zoektocht naar andere, non-lineaire, muzikale en interactieve communicatie- en expressiemiddelen. Met de technologie vindt het theater zichzelf steeds opnieuw uit. Het verbeeldt een theater van mogelijkheden en stelt haar technologische conditie steeds weer ter discussie. De verbeelding is de uiteindelijke interface. Verbeelding handelt tussen de grenzen en de mogelijkheden van de technologie die zich op haar beurt als in een feedbackloop laat voortstuwen door verbeelding.

1 Roland Barthes beschreef zijn ervaring met het masker als volgt: "Ik hekel me eraan dat ik me liet gevangen nemen in deze oncomfortabele valkooi – terwijl mijn stem zijn zachte voordracht voortzette, weerstand biedend tegen de dictie die ik het had moeten verlenen" (*Roland Barthes by Roland Barthes*, geciteerd in Scheie 161, mijn vertaling, *PV*).

2 Over de symbiose tussen mens en machine zegt Alan Kay (1989): "Dit is tamelijk angtaanjagend. Het houdt in dat zelfs, gesteld dat mensen de dieren zijn die de instrumenten maken, het de natuur is van de instrumenten en de mens dat het aanleren van de instrumenten ons her-vormt" (in Packer & Jordan, 2001: 124, mijn vertaling, PV).

3 In grote evenementen die een grote ruimte vereisen, zoals popconcerten en groots opgezette musicals, is de inzet van de microfoon met haar virtuele effect daarentegen een noodzaak. Hoewel de microfoon altijd de stem van haar lichaam scheidt en daardoor afwezig maakt, staat de technologie voor die evenementen borg om de stem weer te lokaliseren en te 'kleven' aan een lichaam op het podium.

MARK TRIBE/REENA JANA

New Media Art

TASCHEN

GOLAN LEVIN WITH SCOTT GIBBONS, GREGORY SHAKAR AND YASMIN SOHRAWARDY 2001

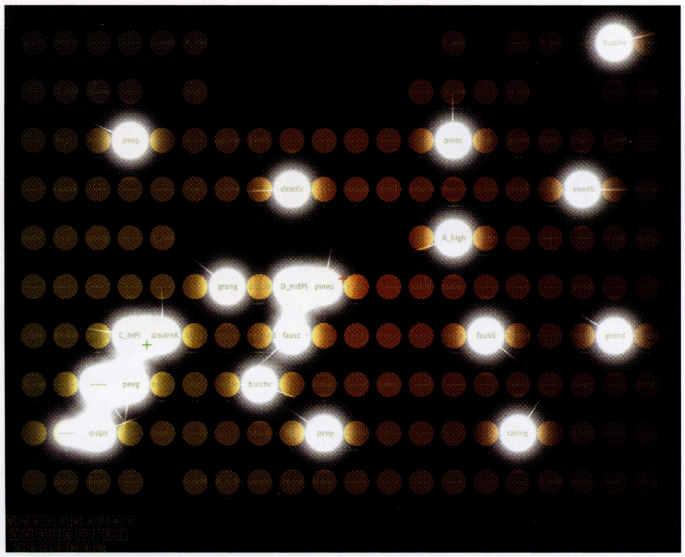
Dialtones: A Telesymphony

ASP, Base Transceiver Stations, E1 ISDN lines, MySQL, Mobile Switching Centers, OpenGL, RTTTL (RingTone Text Transmission Language), SMS, UDP
Keywords: mobile, music, performance, wireless
http://www.flong.com/telesymphony

In the decade between 1994 and 2004, mobile phones became so omnipresent that a new etiquette appeared in movie theatres, concert halls and other performance spaces: the ritual silencing of these ubiquitous devices. Golan Levin and his collaborators Scott Gibbons, Gregory Shakar and Yasmin Sohrawardy invert this social practice in *Dialtones: A Telesymphony*, a musical performance played on the audience's mobile phones, whose rings in public spaces are otherwise considered noise pollution.

Dialtones was first performed in 2001 at the Ars Electronica festival in Linz, Austria. Two hundred audience members joined the telephonic orchestra by registering their mobile phone numbers at secure Web kiosks at the concert site. The artists assigned these participants specific seats and downloaded onto their phones special ringtones for the performance.

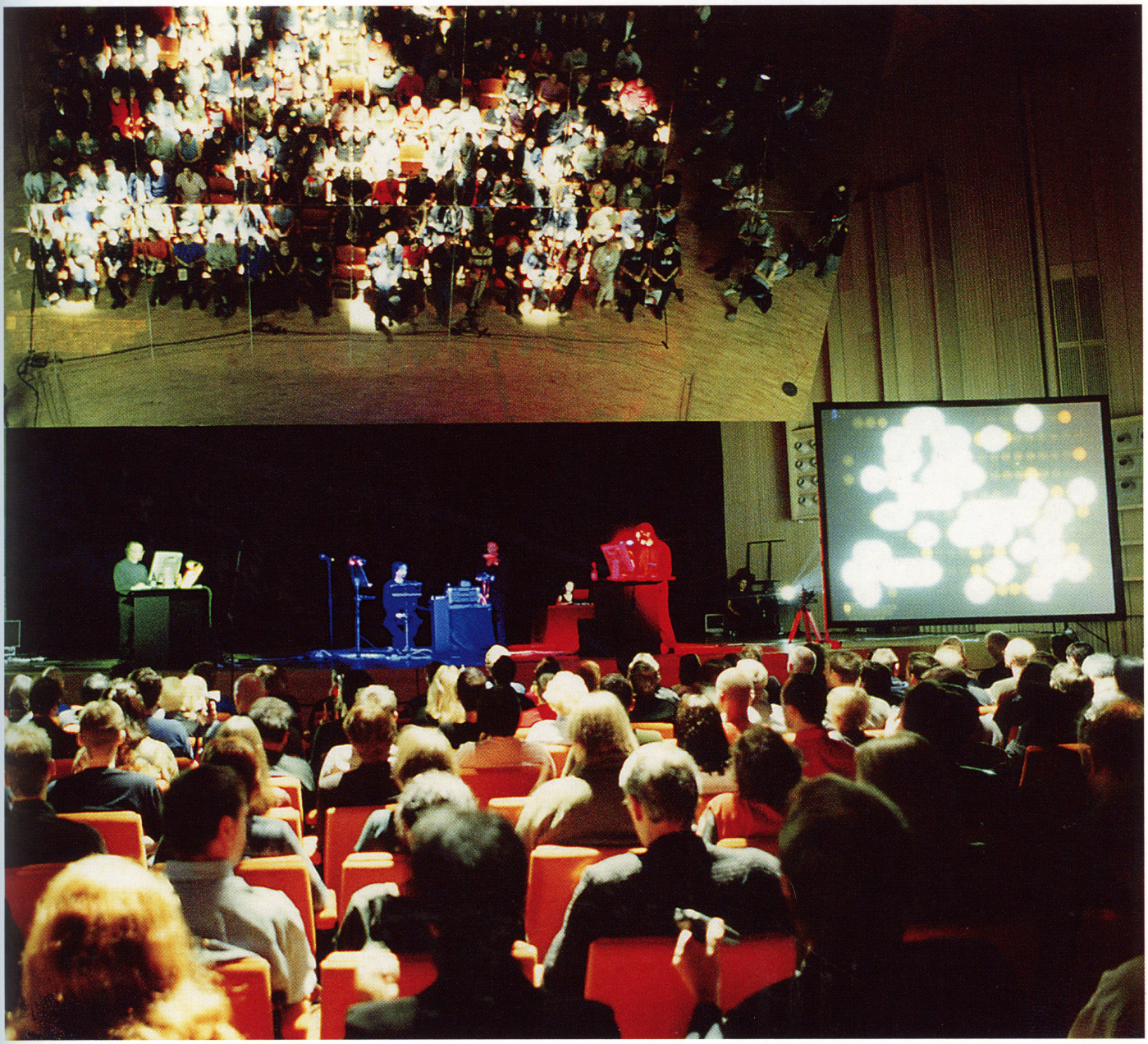
By determining the exact location and tone of each mobile phone in advance, Levin and his team were able to produce diatonic chord progressions, spatially distributed melodies and roving clusters of sound. On-stage performers acted as orchestral conductors, utilizing a "software instrument" to call participants at specific intervals. The composition of ringtone sounds, accompanied by synchronized projections, lasted about thirty minutes and created sonic effects unique to this new medium. The music reached a crescendo when all two hundred mobile phones rang within a span of four seconds. *Dialtones* was also performed a year later at Arteplage Mobile de Jura in Switzerland.

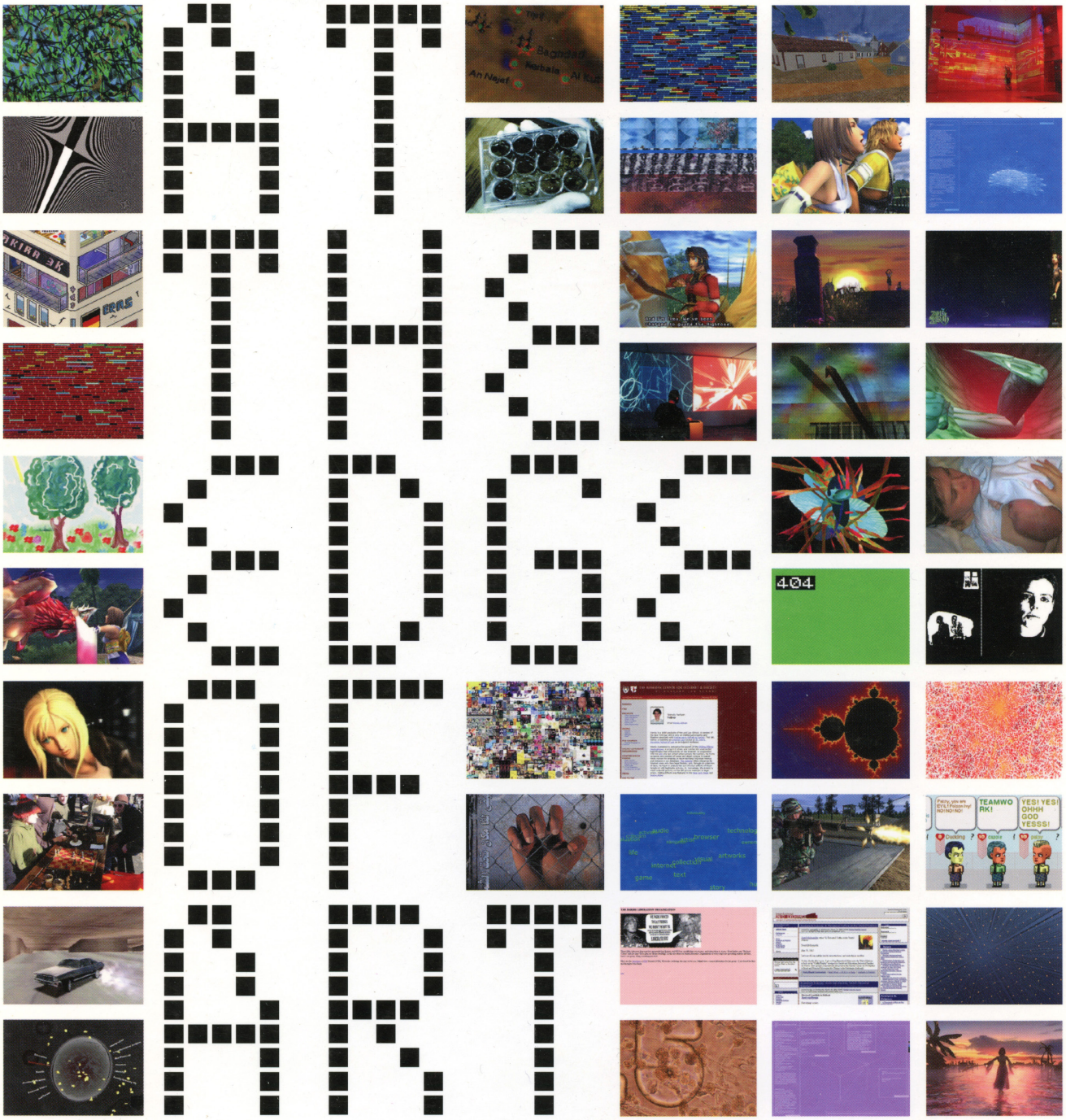


Dialtones: A Telesymphony (screenshot of GUI for triggering phones), 2001

"If our global communications network can be thought of as a single communal organism, then the goal of *Dialtones* is to indelibly transform the way we hear and understand the twittering of this monumental, multicellular being", Levin explains. "By placing every participant at the center of a massive cluster of distributed speakers, *Dialtones* makes the ether of cellular space viscerally perceptible." *Dialtones* calls attention to the new kinds of social relations that have arisen around mobile phones and in doing so transforms this quotidian technology into a platform for artistic experiment.

Levin studied drawing, painting and musical composition before teaching himself how to program computers in 1996. *Dialtones* builds on the legacy of John Cage, who used sounds from everyday life in his music, and whose work inspired generations of musicians and artists. However, unlike Cage, who reacted to the rigidity of 20th-century musical compositions by applying chance and variability to his work, Levin and his collaborators attempt to infuse the unpredictable, often incompatible international cellphone network with a sense of symphonic order.





BITS, PIXELS, DATA, ART

Thames & Hudson

Joline Blais & Jon Ippolito

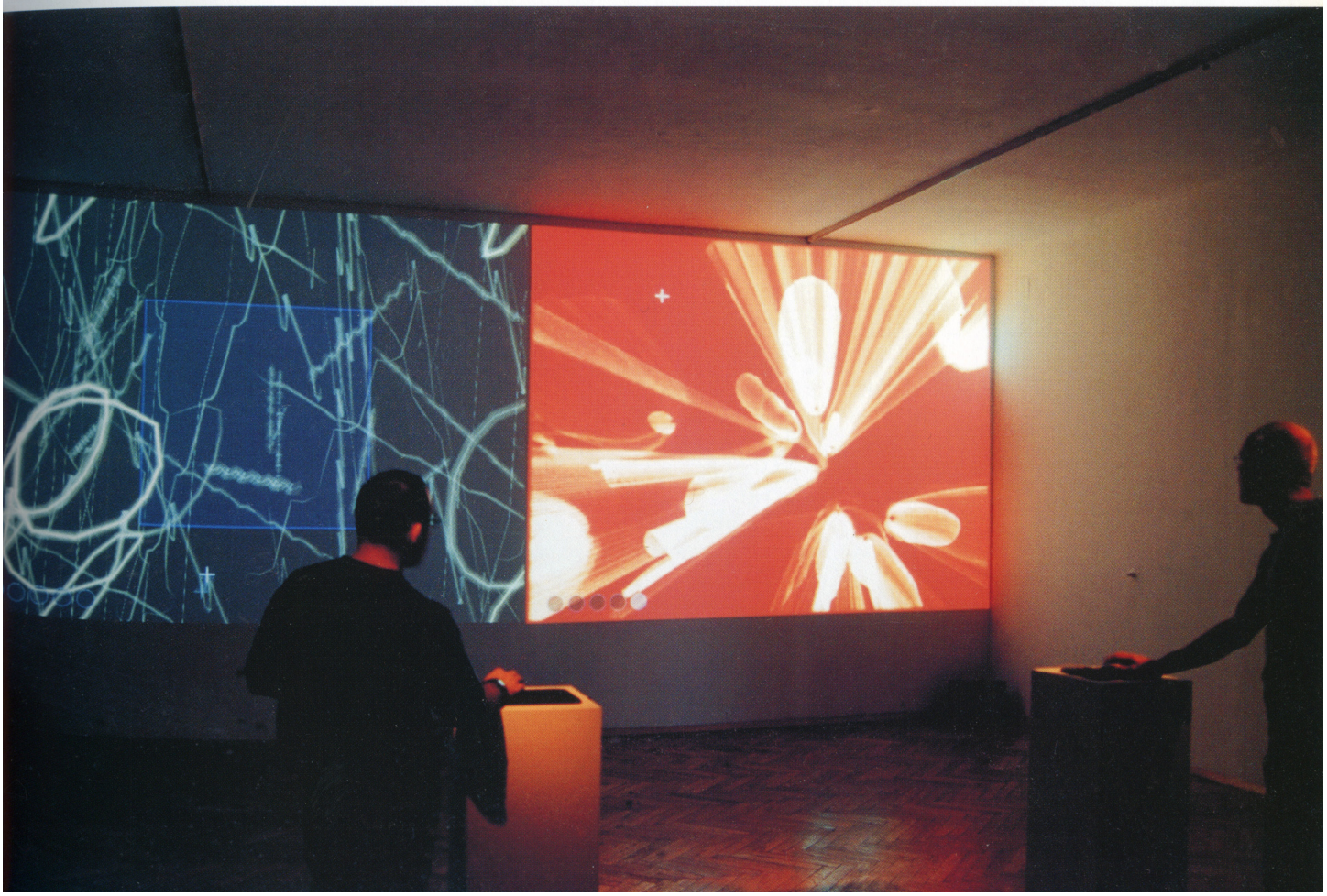
THE MEDIUM IS THE MASSAGE

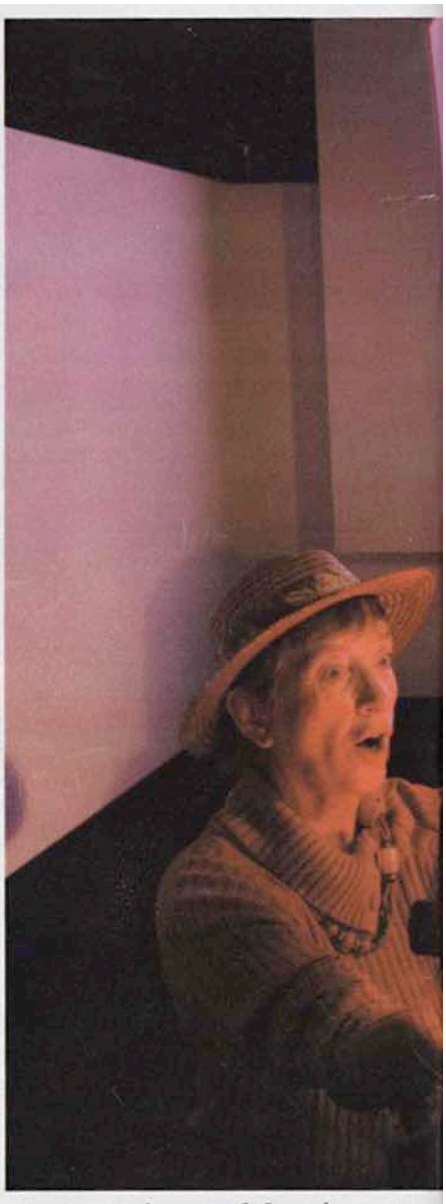
Golan Levin, *AVES*

MIT Media Lab graduate Golan Levin inherited his mentor John Maeda's penchant for perverting the keyboard. By translating the placement and cadence of keystrokes into percussive patterns, Levin's *Dakadaka* reminds us that whenever we are typing, we are also drumming. But Levin parts company with Maeda stylistically, especially in his later works based on **click-and-drag**. Maeda is tight, Levin is loose; where Maeda's geometries tend to be Euclidean, Levin's are organic tendrils and nebulous clouds.

Like Maeda's reactive graphics, Levin's interfaces are more instrument than tool, leaving their user with memories of fleeting sensations rather than 'museum-quality' prints. In no work is this more evident that his *Audiovisual Environment Suite* (*AVES*), a set of five interfaces for producing visual gestures and sounds animated in real time. Each instrument allows its player to deposit a different inexhaustible 'substance' across the screen by clicking and dragging. In *Aurora* this substance appears to be a shimmering cloud that disperses with time; in *Floo* it's soft-edged, growing tendrils; in *Yellowtail* it's brushlike strokes whose placement on the screen becomes a visual score for synthesized music.

Below: Levin's *AVES*.





Creativo come un chip

Sinfonie dai cellulari. Performance di tracciamento oculare. Music box psichedelici. Così l'informatica diventa espressione di fantasia

colloquio con Golan Levin di Pier Andrea Canei

A vederlo sembra un "nerd" della serie tv "Friends", o forse un Woody Allen più giovane. Ma quando sale in cattedra, per un'ora e mezza dà spettacolo. Le sue conferenze fanno spalancare la bocca a cultori e buongustai delle arti multimediali. Perché lui, tra l'altro, è: l'autore della prima sinfonia eseguita con i cellulari di chi sta in sala; il custode di un museo Web interattivo su migliaia di storie d'amore finite male tra teenager; il creatore di software che consentono di trasformare suoni, sillabe, parole in ombre, bolle, stelle, draghi su schermi giganti, o di trasformare un tavolo, su cui vengono apparecchiati oggetti di ogni tipo, in uno spartito musicale. Ombre cinesi multimediali e psichedeliche che affascinano e divertono, ma che rappresentano anche applicazioni altamente tecnologiche.

Perché se per gli appassionati di Ars Electronica, il grande festival multimediale che si tiene ogni anno nella cittadina austriaca di Linz, lui è una vera star della sinestesia multimediale, per gli studenti della Carnegie Mellon University di Pittsburgh è il professore lucidamente matto che, dopo essersi formato al Medialab del Mit, oggi occupa la cattedra di Arti Elettroniche. Ogni sua lezione è una performance, come ogni sua performance contiene insegnamenti. Che vengono anche dal pubblico, sempre coinvolto. "La reazione è il messaggio" è il motto che informa tutto il lavoro di Golan Levin, 34 anni, ingegnere elettronico di formazione e newyorchese di nascita. "L'espresso" lo ha incontrato durante una sua recente trasferta milanese, dove su invito di Netforum, ha tenuto una delle lezioni-performance del ciclo Meet the Media Guru alla Mediateca di Santa Teresa.

Mister Levin, lei non ha un buon biglietto da visita. Il suo sito, www.flong.com, non è aggiorna-

Qui a fianco e nell'altra pagina: due performance di arte elettronica. In basso: Golan Levin

to dal 2004. Che ha combinato nel frattempo?
«Sono sempre troppo indaffarato con il mondo fisico per occuparmi del sito. L'unica parte che aggiorno è il mio curriculum. Negli ultimi due anni sono stato molto impegnato a girare il mondo con le mie performance basate su Scrapple o sulla Ursonata di Kurt Schwitters».

Basate su che, scusi?
«Scrapple è una mia invenzione. Un tavolo lungo un paio di metri e collegato a un sistema di lettura ottica, come uno scanner, collegato a sua volta a un generatore di suoni. Tutto quel che si trova sul tavolo dà vita a un suono: ad esempio gli oggetti ricurvi danno vita a scale ascendenti o discendenti. Gli oggetti geometrici semplici creano una nota semplice. E la scansione ottica di tutto quel che si trova sul tavolo dà vita a un loop sonoro, che posso manipolare di continuo, e che viene visualizzato anche graficamente in modo spettacolare».

E poi?
«Lo spettacolo Ursonography, basato sulla Ursonata del compositore Schwitters, capolavoro di "musique concrète" del XXI secolo: in pratica, è una decostruzione di tutte le particelle di suono che compongono i significati del conversare umano. Il vocalist olandese Jaap Blonk, un virtuoso del genere, vocalizza; e io didascalizzo graficamente, con sottotitoli animati che sono parte integrante dello show».

Ma lei si limita a dare spettacolo o sta facendo anche qualcosa di nuovo?
«Gli spettacoli che porto in giro per il mondo sono basati su ricerche precedenti. Viceversa, le sperimentazioni e gli studi che conduco in università non sono ancora pronti a essere formulati come spettacolo. Ora sto preparando una serie di performance interattive in cui è centrale il ruolo dello sguardo: che succederebbe se le opere d'arte nei musei potessero ricambiare il nostro sguardo?»

Nessuno ascolta più fesserie di un quadro da museo, scrivevano i fratelli Goncourt...
«Qui veramente si tratta di un linguaggio non verbale, una sorta di valanga di effetti grafici e visuali. Uno spettacolo scatenato dallo sguardo dello spettatore. Basato su sensori e tecnologie anche molto sofisticate di rilevamento dei movimenti oculari».

Le tecnologie sofisticate, però, non le crea lei.
«No, io trovo solo applicazioni diverse. Tecnologie come questa vengono dalla ricerca ingegneristica, che però le sviluppa essenzialmente per l'ambito militare. Ma lavorare per conto dei militari è ripetitivo e noioso perfino per gli ingegneri. Poi arrivo io, inizio a fare domande, e gli ingegneri collaborano volentieri con me: sa, le domande di un artista sono un po' diverse da quelle di un militare».

Ma con tutto questo amore per lo spettacolo, perché non si dedica a videogames ed effet- ▸

Negli show si collega il computer a oggetti in movimento, dando vita a sperimentazioni sonore

Net Art da vedere sul pc

The Dumpster
Chi l'ha inventato: Golan Levin
Che cos'è: un database interattivo di vicende sentimentali adolescenziali finite male. Con estratti presi da migliaia di vere pagine di blogger americani, ordinate in maniera dinamica su un interfaccia che visualizza le "parabole" (innamoramento, amore, distacco, separazione) di ogni storia, allineandone i rispettivi passaggi.
Dove si trova: artport.whitney.org/commissions/thedumpster/

The Art of Sleep
Chi l'ha inventato: Il collettivo Hae Chang Heavy Industries
Che cos'è: questo collettivo coreano si diletta di arte multimediale via Web: si tratta di saggi multimediali, basati su giochi tipografici in bianco e nero, raffinate musiche acid-jazz e riflessioni filosofiche. questa meditazione sull'arte contemporanea è stata commissionata il mese scorso dal braccio multimediale della Tate modern di Londra.
Dove si trova: Tate.org. Da vedere anche il sito del collettivo: www.yhchang.com

United we stand
Chi l'ha inventato: Eva e Franco Mattes, un duo di artisti multimediali d'azione italiani, comunemente detti "gli Zerouno.
Che cos'è: "United We Stand. Europe has a mission" è il titolo di un film d'azione a sfondo europeo, con lo stesso tipo di patriottismo che impregna quelli americani. Protagonisti Penelope Cruz e Ewan McGregor. Unico neo: il film è completamente fasullo. L'azione multimediale consiste nel lanciare, in varie città del mondo, una campagna d'affissioni clandestine e marketing virale per questo film inesistente, e vedere - via Internet -l'effetto che fa.
Dove si trova: il sito ufficiale del film: www.unitedwestandmovie.com. Vedere anche www.unitedwestandmovie.com/ per i retroscena. Il sito dei due autori invece è: www.0100101110101101.org

The Battle of Algiers
Chi l'ha inventato: il newyorchese Marc Lafia e il taiwanese Fang-Yu Lin, artisti multimediali.
Che cos'è: decostruzione di scene dal film di Gillo Pontecorvo "La battaglia di Algeri", smontate e ricombinate in base ad algoritmi di calcolo che s'ispirano al tema dell'organizzazione "a cellule" dei movimenti di resistenza proprie del film. Commissionato, come "The Dumpster", per un gemellaggio tra i siti di Net Art del Whitney e dal Tate.
Dove si trova: www.tate.org.uk/netart/battleofalgiers/

Road Movie
Chi l'ha inventato: MobLab, un collettivo di artisti tedeschi e giapponesi.
Che cos'è: la Net Art incontra la tradizionale disciplina nipponica dell'origami. Un bus del collettivo artistico viaggia per il Giappone a bordo di un autobus, scattando foto del panorama. Dal sito si può poi scaricare file pdf. che, piegati a dovere, diventano modellini del bus su cui sono riflessi i paesaggi che man mano attraversa. Vincitore del premio Ars Electronica 2006, categoria "Net Vision".
Dove si trova: Al sito http://exonemo.com/RM/index.html

"Hidden Words", opera digitale interattiva di Golan Levin

ti speciali? Non sarebbe più redditizio?
«Grazie per l'interessamento, ma alla fine del mese ci arrivo lo stesso: le mie opere vengono anche commissionate da musei e grandi aziende. E mi piace restare defilato rispetto all'industria miliardaria dell'entertainment di massa, dove c'è molta meno innovazione. Per i videogames, per esempio, l'età dell'oro, almeno creativamente, sono stati gli anni Ottanta: adesso sono quasi tutte reiterazioni di cose già fatte. I pochi innovatori del settore, però, sono gente che ammiro moltissimo: come Will Wright, genio del videogame prima con "The Sims" e ora con "Spore"».

Lei si sente insomma più vocato all'arte. E i suoi studenti?
«Insegno loro a coniugare un approccio creativo alla confidenza con le risorse informatiche. Cerco di trasformarli in veri letterati del software, in grado di leggere un programma, ma anche di scriverlo. In base alle loro idee e ai requisiti del mercato del lavoro. Poi molti finiscono per lavorare alla Pixar o in qualche studio di effetti digitali per il cinema o per i giochi. Io continuo a preferire l'esperienza diretta, la comunicazione e l'interazione che si ottengono scambiandosi sguardi, e condividendo lo stesso spazio».

Ecco perché non aggiorna il sito: Internet le fa praticamente schifo.
«Ma no, non è così... Però che si tratti di una pagina di MySpace o di un blog, di un album fotografico su Flickr o di un clip su YouTube, oggi tende a prevalere la modalità di comunicazione a una via, senza vero scambio. Questo lo trovo francamente poco interessante».

Eppure uno dei suoi lavori più interessanti si trova proprio su Internet: "The Dumpster", una sorta di contenitore interattivo degli amori adolescenziali estinti... Come è nato questo progetto?
«Beh, in realtà non sono molto soddisfatto del risultato finale, per questioni di usabilità. Comunque l'idea mi è venuta parlando con Kamal Nigam, un mio amico che adesso lavora a Google: ai tempi era titolare di IntelliSeek, un'agenzia di data mining per clienti misteriosi, dalla General Motors alla Cia, gente interessata a curiosare tra miliardi di mail e blog. E insomma, questo amico mio viene da me con un hard drive e mi dice: t'interessa? Qui ci sono tutti i blog. E io, come, tutti i blog? E lui: sì, tutti i blog in formato solo testo, occupano 300 Giga di spazio. Li hanno analizzati la General Motors e la Cia e, pensa un po', non sono interessanti per nessuno dei due. Perché i blogger sono adolescenti che non possiedono macchine e non hanno gran potere di acquisto, essenzialmente interessati al sesso. Da qui l'idea di entrare nelle loro storie. Perché ci fosse un vero arco narrativo, era interessante cercare quelle finite male: ci siamo concentrati dunque su termini di ricerca come "mollato" o "mandato a cacare", scusi il linguaggio, e abbiamo subito ottenuto 300 mila diverse voci. Una sterminata serie di vite parallele con i loro pattern comportamentali, le loro analogie linguistiche, la loro storia collettiva. Questo è quel che abbiamo tentato di visualizzare, in modo il più possibile interattivo e modellabile dal visitatore, nella galleria virtuale di net-art del Whitney».

Voyeurismo su vasta scala, a ben pensarci. E che cosa ha imparato sui giovani americani?
«Niente o quasi. I giovani americani non hanno segreti per me: ci lavoro insieme tutti i giorni». ■

Migliaia di blog di teenager con le loro storie d'amore. Per un grande progetto neonarrativo

substance + STYLE

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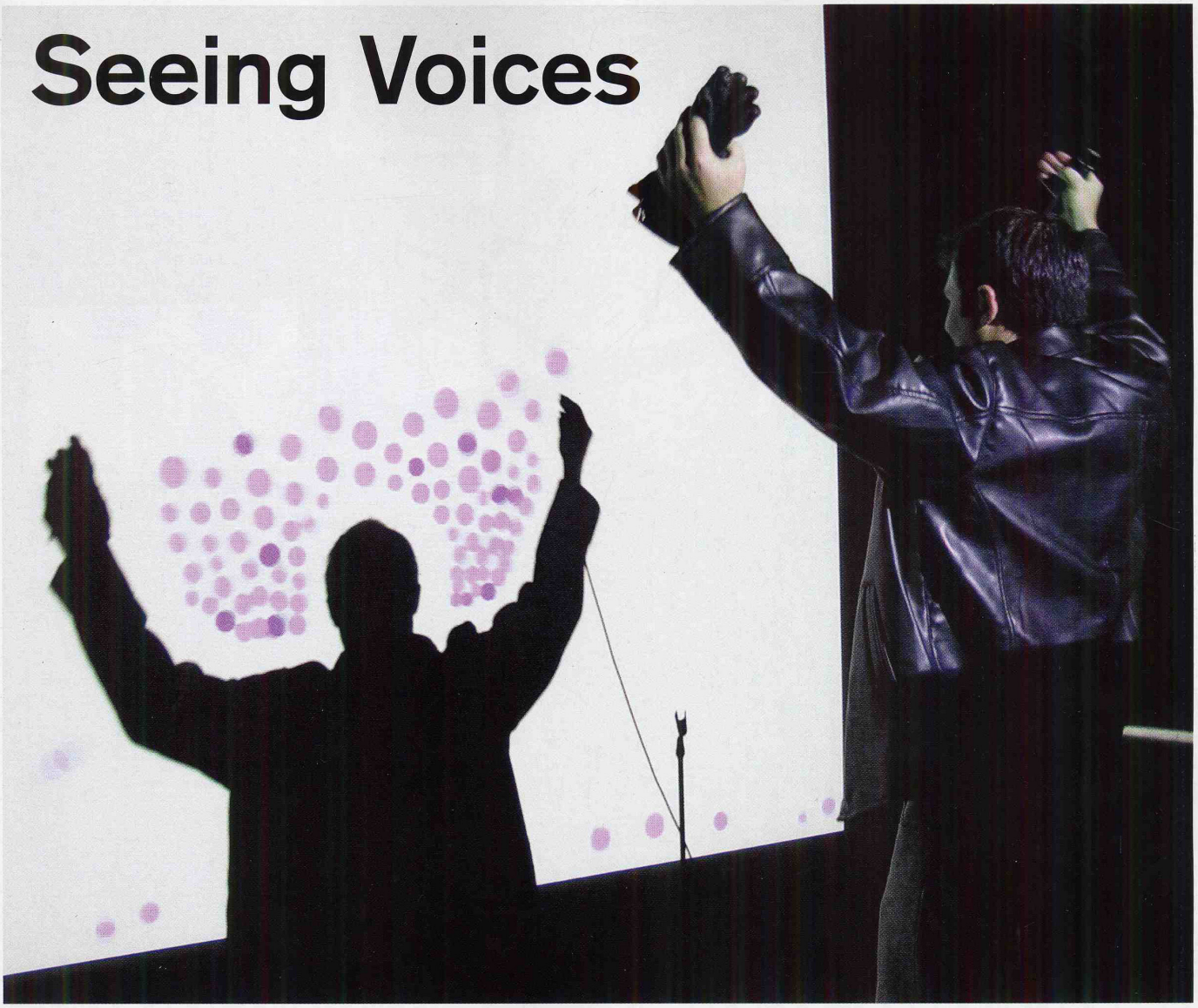
Seeing Voices



Tmema's computer technology enables them to visualize the full spectrum of the human voice

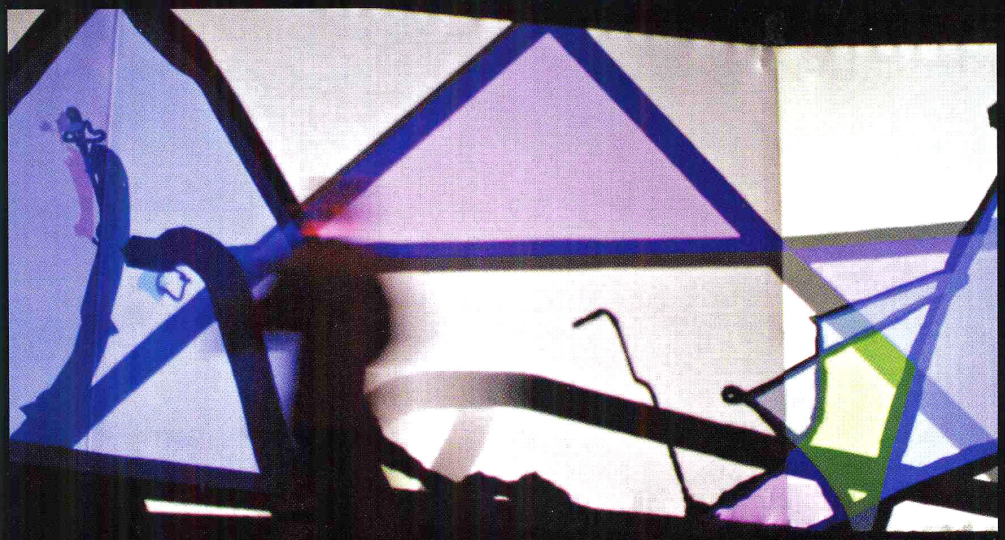
Story PAUL YOUNG

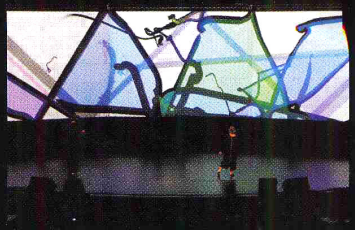
GRAPHIC STATEMENTS: An installation version of *Messa di Voce*, in which several of the performance's modules, such as "Bounce," were presented for public play at Eyebeam Gallery, New York (2003)

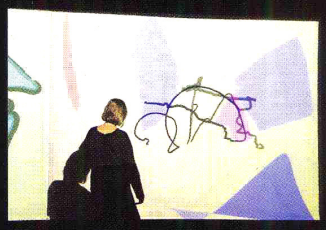
If your voice were a color, what color would it be? Or if it took on shape, what would it look like? Golan Levin and Zachary Lieberman, the two New York artists behind Tmema, have spent the past five years looking for the answer. Their result, *Messa di Voce*, is an amazing live show that has been performed in Great Britain and Austria.

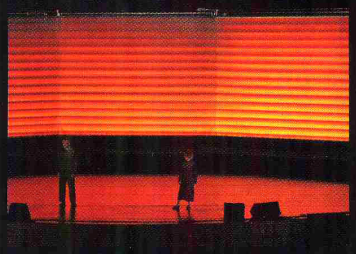
In *Messa*, two vocal maestros, Jaap Blonk and Joan La Barbara, run through a wide range of voice techniques, from clicks and squeaks to operatic arias, while Levin and Lieberman mobilize a series of original software programs, synthesizers and projectors. (For interested comp-sci folks, they code in C++ using OpenGL and various other libraries like Intel's OpenCV.) The result is a sometimes comical, but always spellbinding audio-visual experience, in which the two performers literally throw their voices onto a large, canvas-like screen, creating a range of bold, abstract shapes and watery washes.

"We could have used words or lyrics," explains Lieberman, who was formerly Levin's student at Parsons School of Design. "But we really wanted this to be about communication, not language. It's about feeling and coming to an understanding of how we communicate feeling through sound." >









VISUAL SOUNDSCAPES: Performances from "Pitchpaint" (top grouping), in which performers paint on a canvas through singing, with the thickness and direction of the stroke determined by the loudness and pitch, respectively, of the voices; and "Stripe," (below), in which Jaap Blonk and Joan La Barbara sing a slowly-evolving duet – their pitches and timbres visualized by the softly-changing stripes behind them

In a segment called "Pitchpaint," Blonk and La Barbara manipulate sounds to create live, electric abstract paintings; they alter their vocal techniques to stimulate programmed software cues, which, in turn, create visual patterns and shapes on the onstage screen. A steady baritone produces a weighty, solid line, while a glissando yields delicate filigrees. And there's a kicker: A digital camera tracks the movement of the performers' heads, marrying this movement with the computer-generated imagery, so that no matter where the performers are on stage, the images appear to spill right out of their mouths onto the screen.

What's more, the images are totally malleable, both physically and sonically. In another segment, "Rothko," La Barbara sings a series of tonal phrases that create haunting, cloud-like columns of colored light. But these images are also sound recordings running in continuous loops. That means La Barbara can manipulate the loops at will and build an audio-visual score layer by layer in real time, adding harmonies and counterpoints when needed. "It's really about enabling people," explains Levin, now an associate professor at Carnegie Mellon. He sees technology as a new kind of artist's instrument. "It's about making a totally responsive system that enables people to discover themselves through an interactive medium. To me, that's what it's about. It's not about how it looks or sounds, it's about how responsive it is." Creating a more responsive system has inspired Tmema – which translates to "small works" in Latin – to build on their findings and explore other areas of movement. "Manual Input Sessions," their latest design, does for the human hand what *Messa* does for the voice, while other works, like "Scrapple" and "Drawn," transform objects and line drawings respectively into musical notations. Tmema's new work will debut at the Public Museum in West Bromwich, England, this August, and will allow participants to don a voice-activated "costume" and take them on journeys through virtual landscapes – all shaped by the sounds produced by participants and the artists. Like *Messa*, which can also function as a stand-alone installation, these works are specifically designed for public use so you, too, can create your own audio-visual masterpiece.

"After doing this for a while and having some distance from it," says Lieberman, who now teaches at Parsons, "I can say that what we're doing is making magic, at least as much as magic is making the invisible visible." **PY**

Who are the Progenitors of the Contemporary Synthesis of Software and Art?

C. E. B. REAS

During the last decade there has been a proliferation of artists using software as their primary medium. Like photography and video before, the introduction of a new technology, in this case digital computers, has opened a unique space for contemporary art practice. In the author's opinion, the foundation for this contemporary work is firmly rooted in the 1960s. It's much less clear, however, if other contemporary artists agree and who they acknowledge as their progenitors. The following lists divide a selection of the innovators working in the 1960s into two groups:

List A
Steven Beck,
Harold Cohen,
Charles Csuri,
Kenneth Knowlton,
Ben Laposky,
Manfred Mohr,
Frieder Nake,
Georg Nees,
A. Michael Noll,
Manfred R. Schroeder,
Lillian Schwartz,
Stan Vanderbeek,
John Whitney Sr.

List B
Yaacov Agam,
Mel Bochner,
Hans Haacke,
On Kawara,
Les Levine,
Sol LeWitt,
George Maciunas,
Yoko Ono,
Nam June Paik,
Bridget Riley,
Dieter Roth,
Victor Vasarely,
La Monte Young.

The first group of people (List A) were among the first to use software for the production of images in the context of visual art. The second group of people (List B) presents artists working with ideas found in contemporary works created with software, but who did not utilize computers in their work. The people who comprise List B are typically associated with Minimalism, Conceptual Art, Op Art, and Fluxus and the individuals in List A have garnered such little critical attention over the years that they are not associated with a movement and are discussed only in highly specialized books on the topic of art and technology.

Within the last few years, forms of art pioneered in the 1960s have been featured prominently in exhibitions throughout Europe and the United States. Work by the practitioners in List B has been promoted recently in shows such as *Global Conceptualism* at the Queens Museum of Art, *Open Systems* at the Tate Modern in London, *A Minimal Future?* at Los Angeles MOCA, and *Force Fields* at the MACBA in Barcelona, to name a few. Work representative of the practitioners in List A has resurfaced through shows such as *Scratch Code* at the bitforms gallery in New York and the Digital Pioneers section of *Electrohype 2004* at the Malmö Konsthall and [DAM] Berlin. The unique *Die Algorithmische Revolution* exhibition at the ZKM in Karlsruhe, Germany presents the work of both groups together in a continuous narrative. Scholarly research initiatives include 2005's *Refresh! International Conference on the Histories of Media Art, Science and Technology* Conference at the Banff New Media Institute and the recent CACHe project, which researches the origins and histories of British computer arts.

New art forms emerging during the 1960s are clearly being revisited and recontextualized, but what impact has it had on contemporary artists working with software? In the spirit of exploration, I've asked a group of contemporary artists using software as their principle medium the following question:

WHAT IS THE PRECEDENT FOR YOUR WORK? DO YOU ASSOCIATE YOURSELF WITH ANY OF THE ARTISTS MENTIONED ABOVE OR ANY OTHER ARTISTS OR ARTWORKS FROM THE 1960S?

AURIEA HARVEY & MICHAEL SAMYN
In our work, we try to make something that will amuse our audience and we hope to enlighten them and enrich their lives. Expressing personal emotions or experimenting with aesthetics or technology are only means to an end. This is why we do not feel much affinity with most 20th century art.

Despite of the highly technical nature of our medium and the complexity of some of the software we create, we look further in the past, in search of masters. We probably feel most affinity with artists from the 19th century – both the romantics and the classicist Salon painters. We share their admiration for the Flemish Primitives and Renaissance and Baroque art. And, like them, we attempt to create meaningful images that communicate directly with our audience. We hope that our work can be a continuation of an artistic tradition that was violently interrupted by modern art. And we see in interactive media a technology that can advance

this tradition in a similar way as oil painting did 500 years ago. ... Jacques-Louis David, William Bouguereau, Gianlorenzo Bernini, John William Waterhouse, Jean-Leon Jerome, Sandro Botticelli, Jan Van Eyck, Rogier van der Weyden, Caspar David Friedrich, and Gustave Moreau.

MOGENS JACOBSEN

When I was a young teen, I borrowed the book *Expanded Cinema* by Gene Youngblood at the local library. I renewed this loan over and over again. In the 1970s I got access to a computer (or rather to a terminal) and I guess I was supposed to program it to do simple calculations and stuff like that but I preferred to make it draw patterns on endless rows of paper. I had no knowledge of any historical roots in the world of fine art when I started writing my algorithms. But I was very inspired by what I had seen in Youngblood's book. When I had the chance, I always went to art-cinemas and film museums to see the films of Oskar Fischinger, Walter Ruttmann, Viking Eggeling, Norman McLaren and Len Lye.
It all boils down to accessibility: I never knew of "the Algorists" or their likes when I grew up. Seeing their works was something I did twenty years later. Even though I never print anything, Manfred Mohr's *Laserglyphs* are on my personal canon of algorithmic artworks. And even though some of the physical pieces by Hans Haacke continue to surprise me, I spend more time reading about Stanislaw Ulam, than about conceptual art.

GOLAN LEVIN

I used to stare at Vasarely's work for hours when I was a kid. For the past decade, though, the most direct influences on my work have come from artists whose principal medium and subject matter is interactivity itself. I'm particularly indebted to artists who have researched algorithmically-augmented interactivities in the contexts of gestural input and audiovisual output – people like Myron Krueger, Toshio Iwai, Scott Snibbe, and John Maeda.
Many of the artists listed have focused on the use of the computer (or other rule-based systems) to produce mostly static visual forms. Although it's true that their work is a foundation for a great deal of today's digital art (and generative art in particular), I think it's important to recognize how the influences on digital art broadened as the computer became increasingly capable of rendering animated sequences (in the 1970s) and real-time graphics (in the 1980s). For me, the artistic potential of this time-based and responsive new medium could be best appreciated through prior achievements in absolute film (e.g. Oskar Fischinger, Norman McLaren, Stan Brakhage), kinetic art (e.g. John Calder, Len Lye), and audiovisual instrument design (e.g. Thomas Wilfred, Harry Partch). Of the artists mentioned in the above lists, I have drawn the most inspiration from Yaacov Agam, who truly was creating interactive paintings, and John Whitney, for the breadth and courage of his attempts to relate sound and image through computation.

DRIESSENS & VERSTAPPEN

We find precedent in the work of Hans Haacke, Sol LeWitt, Yves Klein, Jean Tinguely, Herman de Vries, Jan Schoonhoven, Peter Struycken (Dutch computer artist), Panamarenko, Joseph Beuys, Guiseppe Penone, James Lee Byars, Donald Judd, and Duane Hanson. Romanticism, Modernism, the works from the 1970s and 80s also have influenced our thoughts and way of working.

In our software applications we describe the laws of an artificial nature that evolves new, limitless, living worlds of phenomena. A program that shows something of the amazing power of creation, has something of the sublime about it. What Romantic painting could only portray figuratively, we can let the observer actually experience with artificial-life techniques. It is also somewhat inherent to algorithmic art and software art that you are looking at (or navigating through) abstract worlds of color. This is acceptable now, because Modernism opened up the abstract domain. Software art explores and realizes this potential further with the new possibilities that computers can offer.

The 1960s artists that we have mentioned, are important because they gave a new impulse to algorithmic art and generative art in general. In their work they used descriptions, recipes, repetitive actions, chance operations, machines, concepts, and mathematical and scientific methods. With their more or less objective and systematic approach, some of them react against the subjectivity of Expressionism while others commented on the production and perception of art in the reality of the consumption society, industrialism, and the mass-media.

TIFFANY HOLMES

My practice is inspired by conceptual artists like Hans Haacke who promoted environmental stewardship through the real-time visualization of ecological systems.

Our buildings breathe data. My recent animations dynamically visualize environmental variables hidden in building automation systems, such as kilowatts consumed per hour. The goal of my work is to raise awareness of resource usage and increase conservation behavior.

Haacke drew attention to water pollution in Krefeld, Germany by creating a system to clean wastewater. In *Rhinewater Purification Plant* (1972), the artist collected effluent from a nearby sewage plant for transformation. Haacke's installation featured a custom pump and filter that purified the tainted water for release into a goldfish tank. Surplus water was discharged to irrigate the museum's gardens. In converting wastewater to water that supported fish, Haacke highlighted the sewage plant's role in degrading the river. Haacke also introduced gray-water reclamation through art. Gray-water reclamation is used to conserve drinking water by recycling runoff from domestic showers and sinks for outdoor use. In designing my own work, I continually think of this piece as an example of the pioneering use of technology to dynamically visualize positive change in the environment.

HANS BERNHARD

Corporate Switzerland, Viennese Actionists and the dotcom boom gave us the tools of corporate identity manuals, the *Aktion*, and business plans to work on a piece of radical corporate software (*etoy*). My main technique is sampling/collage. Influenced by New York rap music from the 1980s, I learned to aggressively copy & paste and to invisibly mix conceptual elements with visuals and philosophy with code. The myth of the pop-star and the construction of a fascist global *über*-corporation was the driving force behind *etoy*. This fusion of drugs and technology was blended with results of our analysis of Andy Warhol, Archigram, Futurism, Michael Milken and contemporary boy groups such as The Backstreet Boys.

Ubermorgen.com's work is unique not because of what we do but because how, when and where we do it. The computer and the network create our art and combine every aspect of it. Ubermorgen.com is metaphysically influenced by Lawrence Weiner and practically enhanced by ever reinventing Madonna, Jean Tinguely, the Nouveaux Réalistes and by the hardcore Viennese Actionists. The unseizable chronological and squashed spacial circuit of conceptual art, drawing, software art, painting, sculpture and digital actionism (media hacking) transformed our brand into one of the uncatchable identities – controversial and iconoclast – of the contemporary European techno-fine art-avantgarde.

Artists of relevance include On Kawara, Joseph Beuys, Mario Merz, Mark Rothko, Richard Serra, Peter Weibel, Andy Warhol, Günther Brus, Rudolf Schwarzkogler, Jean Tinguely, Lawrence Weiner, Michelangelo Pistoletto, Marcel Duchamp, La Monte Young, and Archigram.

JASON SALAVON

In the early 1990s, as an undergrad art student, I got really into hip contemporary stuff, 'ironic sculpture' particularly. I was in love with stuff from the likes of Charles Ray, early Wim Delvoye, and early Tom Friedman. There is an algorithmic quality to that work. Simultaneously, I was taking a ton of computer science, because I liked it and seeing my dad's lack of financial success at art, I was consciously hedging my bets.

It was in 1992 that I started trying to write code to generate or assist with making work. Hans Haacke, and more importantly, Sol LeWitt were obvious reaffirmations of procedural artmaking. Two other 'big boys' that I was struck by were John Cage and, less obviously, Ellsworth Kelly. Early Ellsworth Kelly drawings are heavily into chance, automatic procedures, with relatively clean

April 4, 2006, 8:05PM

ARTS

It's not a traffic jam session

Mitchell Center for the Arts offers first full season of collaborative events

By EILEEN MCCLELLAND

Anyone who's seen the Orange Show Center for Visionary Art's annual Art Car Parade knows art cars are versatile. Some look more like sunflowers, dragons or bugs than transportation. Others make political statements. Still, who would've imagined they could perform a concerto with their horns?

Composer Stephen Montague presents *Horn Concerto for an Orchestra of Automobiles* at 7 p.m. Friday in the Fine Arts Quadrangle of the University of Houston. Taxis have been used for *Horn Concerto*, but never art cars.

"It's really hysterical," says Karen Farber, managing director of the university's Cynthia Woods Mitchell Center for the Arts. "The cars will flash their lights on and off in time with the horns."

Windshield wipers are also expected to keep the beat.

"Anything that makes noise on a car will be used," said Allen Hill, media and marketing coordinator at the Orange Show Center for Visionary Art. "The doors opening and closing, the wipers, turn signals, the radios in the cars being turned on. Art cars ensure that the experience will be as visually stimulating as it will be aurally exciting."

The Art Guys will conduct.

The free event will be followed by *Dark Sun*, an orchestral work in memory of the victims of nuclear weapons. The performance will include 200 amateur musicians, some as young as 12 and many playing a single note. No experience was required for these volunteers.

What's going on at the University of Houston?

The evening of music by Montague is the second event in a series of lively performances that draws on the talents of visiting artists, the local arts community and the university's creative forces: the Creative Writing Program, Blaffer Gallery and the schools of theater, music and art.

It's funded by a $20 million grant from George and Cynthia Woods Mitchell. The endowment also funded remodeling of the building that houses the Wortham Theatre and School of Theatre. The expanded facility has been renamed the Cynthia Woods Mitchell Center for the Arts. Additions include a large lobby, office space and badly needed rehearsal studios.

It's great to have an office to go with the Mitchell Center name, Farber said, but the program goes beyond architecture. Events will take place all over the campus. The Mitchell Center's purpose is to foster collaboration and push the limits of traditional art forms.

When art worlds collide, the fallout is extreme creativity.

"We want to begin to break down people's barriers about what art can be," Farber said. "There's a real contemporary approach to everything we do that will make itself evident. We will be exploring the intersection between performing, visual and literary arts. The result tends to be something truly creative."

Also on the schedule for April:

•A free interactive show by Chicago theater ensemble company the Neo-Futurists, called *Too Much Light Makes the Baby Go Blind*, is an attempt to perform 30 plays in 60 minutes. "You can say this is theater, but when people come to see it, they'll say, 'That was much more than theater; that reached me in a way theater hasn't before,' " Farber predicted.
•Signal Operators, an audiovisual microfestival, partners with Houston's Aurora Picture Show to feature Golan Levin's *Scribble*, a semi-improvisational audiovisual concert featuring computer-generated imagery and sounds. Other featured artists are Scott Arford, Tommy Becker, Sue Costabile, Rick Silva and Tree Wave.
Farber said Houston audiences seem receptive to adventures in the arts.

"I've been so struck by how involved people get in the arts here," Farber said. "There's a fabulous sense of adventure where people are willing to come out to see something they can't put a name to."

These cutting-edge performances, some free and all open to the public, are just the most visible aspect of the program. The Mitchell Center has also launched its inaugural course, Collaboration Among the Arts. It's an opportunity for students throughout the university's arts disciplines to work on projects together and broaden their perspectives about art. Visiting artists who come for performances will stay for weeks to teach in the program.

And what can the audience expect of the art car performance?

"Everyone in the car at least has to be able to read music," Farber said.

eileen.mcclelland@chron.com

DIGICULT (http://www.digicult.it)

TMEMA, AMPLIFIED REALITY AND INTERACTIVE GESTURE

They have developed many software and interactive machine, generally connected with gestures and drawings, expanding reality, with the dialogue between technology and human, but also with fun, of the audience at their shows or art exhibitions.

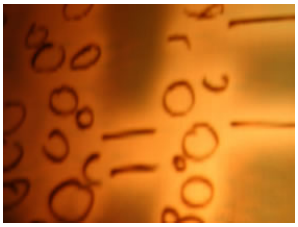
They are Tmema, the artistic duo of Golan Levin and Zach Lieberman, absolutely famous in the new media art world, moving easily between art shows of electonic and modern art and the fake underground scene of the audiovisual contamination festivals. From Messa di Voce to The manual input session, from Drawn or Scrapple and DianItones, all their projects had a high artistic level, but exploring the most complex paths of the machine-human interactivity, devoted to an high aim of audiovisual emotion and research of the non sense.

For this, and also many ather reasons, Golan Levin and his former student Zach Lieberman are considered as two of the most innovative electronic artists from critics, audience and other artists. Two designer-artists that mix this two roles, creating a brand new figure, but also appreciated for its ability and artistic sensibility into the world of communication and industry. I spoke with them at the last RomaEuropaFestival.

Mk: Hi guys, happy to have the chance to speak with you. I had the chance to see your show in Rome a couple of weeks ago; would you like to describe your projects, Scrapple and Drawn?

Golan Levin: Scrapple is a performance in which objects placed on a table are interpreted as sound-producing marks in a musical score. Put another way, the Scrapple software scans a table surface as if it were a kind of music notation, producing music in real-time from any objects lying there. The system uses a variety of playful objects, such as windup childrens toys in order to produce constantly-changing rhythms.

Zach Lieberman: Drawn is a performance which presents the myth of ink, which is painted on a page, coming to life and interacting with the outside world. It's one part audio-visual performance and one part magic show.



Mk: Why, with the Tmema projects, are you interested in audiovisual live performance starting from drawings or live paintings, more than computer graphics or digital animation? Which kind of research are you following in the last 5-10 years?

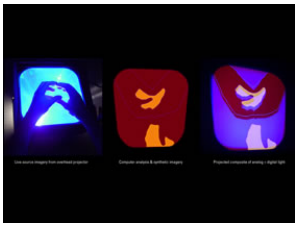
Zach Lieberman: I think one important starting point for the Tmema projects is examining the boundary between the real world, with all of imperfections and dirt, and synthesized computer imagery, with its pixel cleanliness. We like the tension created by mixing the two, to create essentially "augmented reality" works. We start with the mark or the hand or the voice and we find playful ways to extend and enhance them, and in doing so, make the implausible plausible.

Golan Levin: Gesture is the common starting point for music, painting and dance. Our core intuition has been that an audiovisual performance ought to be able to use a single gesture to create both image and sound.

Mk: How much the concept of “interaction” is important, in order to make a link between performer-people-technology? I’m speaking about your last projects, but also projects like Dialtones for example, or Messa di Voce, or others I’m forgetting now…

Golan Levin: I would say that the concept of “interaction” is absolutely central to our work, since this is the kernel which defines the character of the energy flowing between the instruments we make and the people who use them. I like a certain quote by Myron Krueger, who was one of the first people to make interactive artworks back in the early 1970s, when he said that “response is the medium” — meaning, it’s not about the image or the sound per se, but about the way that these factors respond to a person in an interactive setting. Actually I think our Dialtones concert — this was the performance made through the ringing of the audience’s own mobile phones — might be an exception to this, though, since the interactivity with the audience was much more subtle, and diffused across several hundred people.

Zach Lieberman: And an important point about interaction, which is elementary, is this: it has to be fun for us. If the project is fun for us – and we know this because we will find our selves spending hours playing and tooling around – than that spirit will be conveyed to the audience in the performance. For an interaction to be fun, it often has to be expressive and malleable, or just engage you in some unique, peculiar way.



Mk: How important is the concept of “real-time” and “simultaneous action of image and sounds”? Why is so much importance and attention given today to real-time actions insted of pre-recorded images and sounds? It’s seems we have now understand which are the real possibilities of the machines and we need to “humanize it”, to consider again the performer as a prime actor of his performances.

Golan Levin: This may be something of an over-generalization, but I think that the use of pre-recorded materials on the computer is a throwback to an older way of thinking about media, a way of thinking which comes from the era of film, video tape, and vinyl records. There are tons of great movies and songs out there, but when we play them on the computer, we’re really just treating the computer like a fancy kind of VCR or CD-player, when it can be so much more than that. The real contrast to this point of view can be seen with computer games, especially very simple ones like Tetris, which are always changing in response to the user’s actions. The idea that a person’s experience can be constructed in real-time is a very powerful new paradigm for media. There are lots of well-known examples of this now in gaming, but too few which encompass more poetic ideas.

Zach Lieberman: I actually disagree with Golan about pre-recorded media and its potential, and I think that there are many projects that could take this idea of the computer as a type of VCR and turn it on its head, to great effect. One of the motivations in creating Drawn, was to examine how live video could be manipulated and synthesized in real-time. I think there are radical things that could be done with pre-recorded media as well, it just that often the work places too heavy an emphasis on the act of filtering (ala photoshop) and operations which are not specific to the material, instead of developing custom solutions for custom content. This is, I think, more a limitation of the tools, and not the content. Some people are doing great work with pre-recorded media, two of my favorites are Dietmar Offenhuber (http://residence.aec.at/didi/) and Sue Costabile (www.orthlorng.com/ sue/).

Mk: Why, in your opinion, you are still famous in audiovisual performance meetings and in the same time in galleries and museums with you generative art paintings an works? Do you separate your work and your "creativity" in front of different situations, and how do you decide to work together or separately at some projects?

Golan Levin: Our process is very organic and depends on the specific idea and situation. Both of us are artists as well as designers, which means that sometimes we prefer to work on our own ideas, and sometimes we enjoy the challenge of designing interactive projects for interesting clients. Many new-media artworks can only be developed in teams because of their scale and complexity, but it's also fun and important to make projects as individual creators, because it helps us stay in touch with our own curiosities.

Zach Lieberman: We now also try to aim even higher and lower on the spectrum. Some of the projects and performances we enjoy the most are for small crowds where we are totally unknown, while at other times, we enjoy working on completely over the top, large scale installations with huge budgets (such as http://www.aec.at/sap_web/de/index.htm (http://www.aec.at/sap_web/de/index.htm)). I think as creators, this mixture of extremes is good for kee pi ng flexible, and kee pi ng flexible is the key to staying creative.

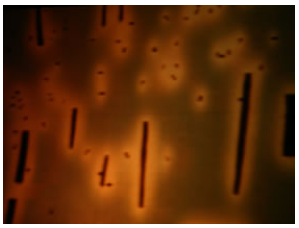
Mk: Do you think that generative art could be a link (more than other electronic disciplines) with the world of contemporary art today? Something more comprehensive for institutions, something similar to a modern art product and, for this reason, easier to push in the art market? How is your experience with Whitney Artport for example?

Golan Levin: Casey Reas has been exploring this idea very explicitly. He's been researching the swirl of ideas regarding generativity that spread through the art world in the late 1960's, ideas that were shared between the Conceptual/Minimal/Fluxus artists, like Sol LeWitt and On Kawara, and the early computer artists, like Kenneth Knowlton and Manfred Mohr. Many of the early computer artists are just now being 'rediscovered' and accorded recognition in the so-called contemporary art world. Christiane Paul, who curates the Whitney Artport, has been an important champion of their work, and also of the newer generation of artists who are indebted to them. I think it remains to be seen how commercial galleries will accommodate generative art and other new media, but it's probably inevitable. Steve Sacks, from the Bitforms gallery, is one of the first people to test these waters.

Mk: What is an artist for you today? The man using a software to create sething beautiful or the man working on code/softwares and machines? There are some differences in your approches?

Zach Lieberman: Artistic expression for me is research and design into the human experience. We get asked a lot about software, but I actually think the most important software are the concepts and ideas which underlie the artworks, not the technical tools that were used to make the pi eces themselves. I often respond that we need to talk about the word Program with a capital "P" meaning the overall system of ideas behind projects, not just the instruction sets for a computer to follow.

Golan Levin: There are all kinds of artists and many of the best and most sensible ones don't use computers at all. One of my favorite artists is Bill Dan, who just stacks rocks in a pile. Bill Dan (www.rock-on-rock-on.com/)



Mk: And, how do you consider yourself and your work in front of a what is consider today as “the aesthetic of the machines”? Do you think, in other words, that “the digital could really express itself” like something similar to an artificial intelligence artist?

Golan Levin: Currently I think the loudest voices defining today’s media art are the corporate agendas of companies like Adobe and Macromedia. It’s challenging to make something personal with such impersonal and brittle materials. Some artists have begun to search for solutions in the recently forgotten past, like Cory Archangel and Jacob Ciocci, who have rediscovered the beauty in “obsolete” computer technologies. Of those artists working with the latest techniques in generative software algorithms, it seems to me that very few have been able to twist the medium into a significantly personal form, though Karl Sims, Jason Salavon, Casey Reas and Marius Watz are important exceptions who have succeeded at this in different ways. But if you’re asking whether an artificially intelligent pi ece of software could, up on its own, develop a unique artistic viewpoint, well — I think this is still several years away.

Zach Lieberman: Or may never come at all! In my opinion, it starts and ends with people. People have been using machines to express themselves from day one, and will continue to do so in the future.

Mk: And, in conclusion, which could be the next development of art and aesthetic of new media in the next future, in your opinion? Do you think that it could be a real revolution (like that of this years of computer and internet art) starting from the machines directly, like a artificial intelligence scenario?

Zach Lieberman: I think the best thing that will happen to new media, in the near term, is the addition of new voices and approaches, and what this may bring to the field. As universities and institutions embrace more so the practice, newer voices emerge and add to the overall dialogue. Because there are more voices, discussions and arguments, the overall work improves. As the overall work improves, the work grows more accepted by these institutions. I think this won’t happen in the form of revolution, but I do think we are in the midst of this type of transformation period, and I eagerly welcome it with my whole heart.

Golan Levin: You seem really keen on artificial intelligence! I hope that humanity can somehow just get back in touch with our own.

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www.tmema.org/ (http://www.tmema.org/)

MARCO MANCUSO (HTTP://WWW.DIGICULT.IT/AUTHOR/MARCO-MANCUSO/)

CRITIC AND CURATOR

Marco Mancuso is an indipendent art critic, curator, lecturer and publisher. He focuses his research on the impact of technologies and science on art, design and contemporary culture. Founder and director from 2005 at Digicult, Digimag Journal and Digicult Editions publishing house, he teaches at NABA and IED in Milano, Accademia di Belle Arti Carrara in Bergamo and is visiting lecturer at RUFA in Rome. He researches and curates exhibitions and projects on art-technology and partnered with many of the most important institutions in the field. He lectures and takes part in round tables and meetings. He is actually consultant for media culture at IF! Italians Festival.

(http://www.marcomancuso.net) (//www.twitter.com/digicult)

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PARTITURE

NUMERO RIVISTA N° 22/2006

Golan Levin, 2005-2006

by Bertram Niessen

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Bertram Niessen: First of all I'ld like to ask you something about your relationship with collective work. You have collaborated with different kinds of artists/programmers (Lieberman, Blonk, La Barbara, Gibbons, Shakar and others); more generally speaking, some of your projects require a staff of technicians. How do you interact with all this people in the project phase and in the performing phase?
Golan Levin: The production of a large-scale electronic media artwork often requires a lot of people, and in particular, a lot of different professionals with highly developed specializations. In this sense, producing media art can have more in common with film-making, than with the old Romantic notion of artistic activity, like a tormented painter isolated in a garret. Every artist who works in electronic media must find his or her own solution to this demanding problem. I know some artists who have essentially become conceptualizers and project managers — all of the engineering and construction is then conducted by people whom they employ. Some other artists only take on projects where they can control every aspect of the work; these artists have to accept the limitation in the scale of what they can accomplish on their own.

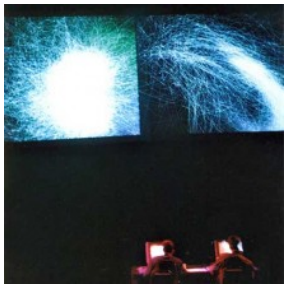
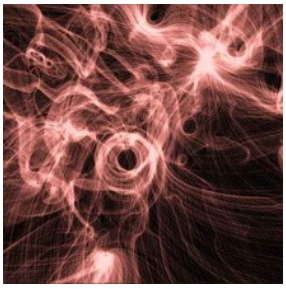
I share the philosophy of my former professor, John Maeda, who feels that a media artist should also be a completely self-sufficient engineer. This attitude is absolutely essential in teaching students to become self-sufficient. But unfortunately it's just not practical for artists who want to make larger projects, and so it becomes important to learn how to divide work among several people. Ultimately I try to strike a balance that keeps me involved in the technical and artistic details, so most of my projects have been collaborations with small numbers of people. I especially enjoy working with artist/programmers whose skills are similar to mine; Zach Lieberman is a significant example. When this happens, it's possible to really share in both the vision and also the implementation of a project. Of course, sometimes one really does need to secure the collaboration of people with entirely different skill-sets. Our "Messa di Voce" performance, for example, was conceived around the idea that we would create software to complement the voices of two experimental vocalists — Joan La Barbara and Jaap Blonk. Their voices and compositional ideas were the core of the project.

B.N.: Here in Italy we don't have big computer business. So there aren't laboratories who investigate things like links beetwen performing art & computers. Most of the research and innovation in this field is carried on by small indipendent art collectives related to the political and artistic underground scene, often to the hacker's one. Do you have any relationship or interest in this area? (Axis seems to suggest a positive response…)
G.L.: You have great new-media artists in Italy . The Bolognese group 0100101110101101.org is an example. Yes, they are a small collective from the underground scene; it's true. But their projects are nevertheless quite technologically sophisticated — consider their Vopos project in which they arranged to have themselves tracked by satellites for a year. Most importantly, however, their projects are ideologically and tactically sophisticated. Artwork with that degree of significance never comes out of research laboratories. The 01's do not have the luxury to rely on some fancy research-lab wizardry to make their projects seem "cool", so they have to succeed by the strength of their concepts. Likewise, in the area of performance, consider the Societas Raffaelo Sanzio from Cisena. Once again, their projects are technically sophisticated. But they succeed by the strength of their incredibly rigorous aesthetics. These artists prove that a new-media artist does not need to be supported by a research laboratory, or born in one.

B.N.: In your MS thesis you talk about "the idea of an inexhaustible, infinitely variable, time-based, audiovisual "substance" which can be gesturally created, deposited, manipulated and deleted in a free-form, non-diagrammatic image space." I found this metaphor really intersting because it seems related to an hyper-uranical vision of art; is it intentional or not?
G.L. Yes, my ultimate objective was to create a hypothetical substance which could assume the form of any sound and any image simultaneously. Such a meta-substance would be a morphological wonder in the extreme. In a sense this medium already exists, in the pixels and bytes of digital imagery and audio produced by computers. The significant question is how to expressively control such a substance in real-time. This question has been at the core of my research and to study it I have considered interfaces based on the mouse, the hand, the voice, the whole body, and soon, the eyes and face.

B.N.: More generally speaking, software based art is probably the kind of art more strictly related to metaphors. what about your work by this point of view?
G.L.: I consider my work abstract, non-allegorical, and non-metaphoric. I try to create impressions which are perceived and appreciated entirely within the sensorium. If the interactant or observer of my work conceives of their experience in narrative or symbolic terms, that's their business, and they are certainly welcome to do so, but I don't encourage it. To make work which satisfies the sensorium, I must rely on a vocabulary of fundamental impressions which conform well to our pre-existing perceptual experiences and embodied cognition. For this Nature is the greatest master. When I do copy from Nature, I prefer to copy its behaviors and logics of response rather than its visual appearances.

B.N.:In other interviews you talk about the fear that you feel going to perform on stage for the first time: "will everithing be ok?", "will my computer crash?"… but what about the positive feelings related to the live performance?
G.L.: Wondering "will my computer crash" is not simply fear. It also contains the thrill of gambling. That feeling is both positive and negative combined.

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In this issue

In The News

Honors and Accolades

Levin Named WTN Fellow... Golan Levin, assistant professor of electronic time-based media in the School of Art, was named a World Technology Network (WTN) Fellow for the Arts. Voted by their peers in 20 categories like biotechnology, ethics, entertainment and space, the top individuals in each category win the distinction of WTN fellow. The WTN is a global meeting ground, a virtual think tank and an elite club whose members are focused on the business and science of bringing emerging technologies into reality.