

```
tellMe. drawString( getParameter ("the meaning of life is.."), 5, 65);  
tellMe. drawString( getParameter ("the meaning of life is..."), 5, 35);  
tellMe. drawString( getParameter ("the meaning of life is...."), 5, 95);}}
```

CODEDOC REMEDIATED

1st ADA Online Exhibition

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TEXT COLLECTION

TABLE OF CONTENTS:

Introduction..... 3

CODeDOC + CODeDOC II 4

CODeDOC - Curatorial statement by Christiane Paul..... 5

CODeDOC II - Curatorial statement by Christiane Paul..... 9

Assignment and requirements for artists 13

System Recommendations for exhibition 15

Credits..... 15

Artist Bio/List of works 16

Introduction: CODEDOC REMEDIATED – ADA online exhibition

The ARCHIVE of DIGITAL ART launches its first ONLINE EXHIBITION

For over 15 years, the pioneering Archive of Digital Art has contributed to the documentation of Digital Art. Within the very medium that has shaped it, Digital Art explores issues of our cultural moment and possibilities of the digital age, and over the past five decades has become a significant field at the intersection of art, science and technology. With our new feature – an interactive online exhibition based on our research tool “Light Box” – we hope to further support the documentation of Digital Art and connect artists, scholars and beholders in this field. Embedded into our expanded concept of documentation, the artworks and their several documentation methods are displayed and interconnected in the context of an exhibition. To this purpose, we have decided to revisit CODEDOC, commissioned by the Whitney Museum of American Art in 2002 and CODEDOC II, commissioned by Ars Electronica in 2003, which exemplify the processes and practices of digitisation in the arts. Renowned curator and ADA community member Christiane Paul (Whitney Museum, NY) agreed to participate in ADA's “remediation” of the exhibitions through the creation of an archive and documentation.

Digital Art and Preservation

In CODEDOC REMEDIATED, the first online exhibition for the Archive of Digital Art, we exhibit art works that are only ten years old. But within the field of Digital Art, ten years is a lifetime. Due to the rapid obsolescence of digital technologies, you might not be able to interact with works of art as the artist originally intended. Software updates, security installments, and other system upgrades, though necessary developments for optimal technological performance, can limit the continued usability of Digital Art works. While browsing through this exhibition (please see below for system requirements), you may encounter blockings from your web browser or other programs. While making an endeavor to preserve the original functionality of these digital art works as genuinely as possible, we also wanted to keep visible these issues of digital preservation, and, in doing that, highlight the importance of preservation strategies for the documentation of Digital Art and within the archival practices of the digital humanities.

We are excited to revisit the two installments of CODEDOC, and through the Archive of Digital Art chronicle the two exceptional original exhibitions, CODEDOC at the Whitney Museum in New York (2002) and CODEDOC II at Ars Electronica in Linz, Austria (2003). In order to preserve the full range of these artists' expression, and not simply make a record of their artworks, we developed an analytical grid in which essays, images, keywords, and videos can be viewed simultaneously.

Through this extended documentation, you, the viewer of CODEDOC and the visitor to the Archive of Digital Art's inaugural online exhibition, will be able to fully navigate the creation of these Digital Art works from back- to front end, and investigate how these computer-based artworks reveal the challenges of preservation for the Digital Art of our times. **Enjoy!** And feel free to propose more online exhibitions to become an active ADA member by demonstrating and interpreting our recent cultural history.

The ADA Team – Oliver Grau, Wendy Coones, Viola Rühse, Janina Hoth, and Devon Schiller (digitalart.editor@donau-uni.ac.at)

CODEDOC + CODEDOC II – the two installments

The goal of the CODEDOC exhibitions was to explore the relationship between the underlying code of software art and the results it produces. The original exhibition was organized in 2002 for the [artport](#) website of the Whitney Museum of American Art. A dozen American software artists were invited to code a specific assignment—"connect and move three points in space"—in a language of their choice (Java, C, Visual Basic, Lingo, Perl) and were asked to exchange the code with each other for comments. The presentation strategy of CODEDOC was to reverse the way in which viewers usually experience a piece of software art, as executed code. In CODEDOC, the audience encounters a page with the written code first and then can launch its executed results. In 2003 Ars Electronica commissioned a second installment of CODEDOC, featuring mostly European artists, as part of their annual festival, which was devoted to the theme "Code - The Language of Our Time".

CODEDOC - online exhibition commissioned by the Whitney Museum of American Art's artport website, September 2002

Curatorial Statement by Christiane Paul

Participating Artists:

Golan Levin (<http://www.flong.com>)

Mark Napier (<http://www.potatoland.org>)

Brad Paley (<http://www.textarc.org>)

Scott Snibbe (<http://www.snibbe.com/>)

Martin Wattenberg (<http://mw2mw.com>)

Maciej Wisniewski (<http://www.netomat.net>)

John Klima (<http://www.cityarts.com/>)

Camille Utterback (<http://camilleutterback.com>)

Mary Flanagan (<http://www.maryflanagan.com>)

Kevin McCoy (<http://www.mccoyspace.com>)

Sawad Brooks (<http://www.thing.net/~sawad>)

Alexander R. Galloway (<http://cultureandcommunication.org/galloway/>)

<http://whitney.org/Exhibitions/Artport/Commissions/Codedoc>

CODEDOC takes a reverse look at 'software art' projects by focusing on and comparing the 'back end' of the code that drives the artwork's 'front end'—the result of the code, be it visuals or a more abstract communication process. A dozen artists coded a specific assignment in a language of their choice and were asked to exchange the code with each other for comments. The assignment was to 'connect and move three points in space,' which obviously could be interpreted in a literal or abstract way. The 'core' of the code (commonly referred to as the 'main') was not to exceed 8KB, which equals a fairly short text document. The results of the programming are made visible only after the code—what visitors to this site encounter first is a text document of code from which they can launch the front end of the project. The languages in which the code is written are Java, C, Visual Basic, Lingo and Perl. Obviously, this is only a selection of scripting and programming languages. HTML (Hypertext Markup Language), the scripting language on which the World Wide Web is based, and Flash Script were excluded mostly for

pragmatic reasons (the inclusion of these languages probably would have doubled the number of artists, making the project unwieldy). Not all of the artists originally invited were able to participate in CODEDOC due to their busy schedules.

The category of software art, commonly used for artist-written software, is a manifestation of fairly blurry terminology. Software is generally defined as formal instructions that can be executed by a computer. However, there is no digital art that doesn't have a layer of code and algorithms, a procedure of formal instructions that accomplish a 'result' in a finite number of steps. Even if the physical and visual manifestations of digital art distract from the layer of data and code, any 'digital image' has ultimately been produced by instructions and the software that was used to create or manipulate it. It is precisely this layer of 'code' and instructions that constitutes a conceptual level which connects to previous artistic work such as Dada's experiments with formal variations and the conceptual pieces by Duchamp, Cage and Sol LeWitt that are based on the execution of instructions.

What distinguishes software art from other artistic practices is that, unlike any form of visual art, it requires the artist to write a purely verbal description of their work. In traditional art forms, the 'signature' and 'voice' of an artist manifests itself in aesthetics of visuals and execution. Every medium may have its specific language but in digital art, this language has a quite literal rather than figurative manifestation. In software art, the visual results of the artwork are derived from the language of code. Languages are defined by grammar and complex rules and at the same time leave space for individual forms of creative expression. Our identity and the roles we play are expressed in our use of language. One might assume that the aesthetics of artists who write their own source code manifest themselves both in the code itself and its visual results. Artist John F. Simon, Jr. (who wasn't able to participate in the project) has talked about code as a form of creative writing. Code has also been referred to as the medium, the 'paint and canvas,' of the digital artist but it transcends this metaphor in that it even allows artists to write their own tools--to stay with the metaphor, the medium in this case also enables the artist to create the paintbrush and palette.

The projects featured as part of CODEDOC are expressions of distinct artistic signatures: the conceptual approach to the project, the way the code has been written, and the results produced by it reveal a lot about the respective artist. Some of the artists interpret the assignment in a predominantly graphic, visual way; others connect points

in the global network of the Internet; one project explicitly treats the language of code as a narrative connecting 3 'characters'; another one creates a meta-layer for profiling the code itself, collapsing the boundaries between front end and back end; yet another project focuses on 'language abuse' and illegal instructions.

Intrinsic to software art is a procedural element that allows for reconfiguration and extension, and, as way of commenting on the projects, artists started to 'remix' their work, applying their own code to other projects or combining sections of code into a new project.

One does not need to be a programmer and have an in-depth understanding of computer languages to establish a connection between the code and its respective results: even a glance at the artists' source code will reveal certain mathematical functions, and in many cases, the artists' comments on their writing clarify the functionality of a line or section of the code. In some cases, reading the source code will enhance the perception of the work; in other cases, the code doesn't necessarily add to the projects. CODEDOC is an endeavor to take a closer look at the process of this particular artistic practice, and to raise questions about the parameters of artistic creation.

CODEDOC II - online and onsite exhibition commissioned by Ars Electronica for its festival Code: The Language of Our Time, 2003

Curatorial Statement by Christiane Paul

Participating artists:

Ed Burton (<http://soda.co.uk/>)

epidemiC (<http://epidemic.ws>)

Graham Harwood (<http://www.scotoma.org> / <http://www.mongrelx.org>)

Jaromil (<http://korova.dyne.org/>)

Annja Krautgasser & Rainer Mandl (<http://www.vidok.org/>)

Joan Leandre (<http://www.retroyou.org/>)

Antoine Schmitt (<http://www.gratin.org/as/>)

John F. Simon, Jr. (<http://www.numeral.com>)

As part of the 'Code' exhibition accompanying this year's festival, Ars Electronica invited me to curate a second installment of the online exhibition CODEDOC that I originally organized for the Whitney Museum of American Art's artport, a website designed as a portal to netart. CODEDOC, which launched in September 2002, was conceived to explore the relationship between the underlying code of software art and its results. A dozen software artists were invited to code a specific assignment—'connect and move three points in space'—in a language of their choice (Java, C, Visual Basic, Lingo, Perl) and were asked to exchange the code with each other for comments. The presentation strategy of CODEDOC deliberately deviates from the ways in which viewers usually experience a piece of software art, which commonly presents itself to the audience as executed code—the results of written instructions. In CODEDOC, the viewing experience is closer to the artist's creation process: what the audience encounters first is a page with the written code, from which they can launch its executed results. Since the assignment imposed substantial restrictions in format and file size, the contributed projects can't necessarily be seen as fully developed works; rather, they are comparable to small studies and sketches that capture an artist's approach.

Many of the prominent international practitioners in the field of software art could not participate in the first version of CODEDOC since the Whitney Museum is, by its mission,

devoted to American artists (citizens and artists living and working in the US). CODEDOC II presents a welcome opportunity to close that gap and broaden the scope of the project. The eight artists / teams who were invited to contribute to the second installment and code the assignment—Ed Burton, epidemiC, Graham Harwood, Jaromil, Annja Krautgasser & Rainer Mandl, Joan Leandre, Antoine Schmitt and John F. Simon, Jr.—are mostly non-American. Some other artists who would have been obvious candidates for this project were not invited because they were already involved in other parts of the Ars Electronica Festival or exhibition. My special thanks go to Andreas Broeckmann for his input and suggestions in the selection process of the artists.

From its inception, CODEDOC was intended as a process-oriented experiment rather than an exhibition meant to make a specific statement or offer a certain point of view. Ideally, I wanted to raise questions about software art as artistic practice, and neither the outcome nor the reception of this project were easily predictable to me. One intent of the project certainly was to demystify the notion of code as a 'mysterious,' hidden driving force and to reveal the code to the viewer. Among the questions that seemed important to address or clarify were the following: does the term software art itself describe a certain form of aesthetics? do 'signature,' 'voice,' and aesthetics of an artist equally manifest themselves in the written code and its executed results? will reading the source code enhance the perception of the work? does it in fact add anything at all or just create an emphasis on 'technicalities' that is unnecessary, alienating, and obscures the work? how exactly could one define the relationship between the back end of code and its results?

The attempt to provide detailed answers to all these questions would be beyond the scope of this introduction, and I just want to make some general comments and leave it up to the CODEDOC II projects themselves, as well as the discussions surrounding them, to offer further perspectives on these issues.

If one explores the body of work that each of the CODEDOC II participants has created over the years, it seems obvious that the label software art is a lowest common denominator for a formal description of their artistic practice rather than a term that describes specific aesthetics. The artists' works themselves cover a broad spectrum of individual approaches. The works of epidemiC, for example—which include AntiMafia, a Windows-based program for the co-ordination of associative actions, as well as the infamous `biennale.py` virus created for the 49th Venice Biennale (in collaboration with

0100101110101101.ORG)—are focused more on activism and the notion of software as cultural production. Ed Burton's *Sodaplay* and *Sodaconstructor*, which by now have achieved cult status, explore the conceptual possibilities of 'handcrafted' virtual robots as well as masses and their kinetic energy. Grahame Harwood's work has ranged from 'pure' Perl poetry to software creation and narrative projects, such as the CD-ROM *Rehearsal of Memory*—which creates its interface out of a collage of the skins of the inmates and staff of Ashworth Hospital Authority—and the Web project *Uncomfortable Proximity*, commissioned by the Tate Museum, which reproduced the Tate website's layout, logos, and design, to tell a 'different' history of the British art system. Compared to the former examples, Antoine Schmitt's works are far more visually oriented studies of the 'behaviours' of forms in time and space.

While one might assume that an artist's approach (and perhaps even 'personality') will manifest itself equally in the written code and its results, the code itself will naturally be more meaningful to other programmers than a general audience that might only get the roughest idea of its 'mechanisms.' Whether the code adds to an understanding of the work also varies substantially from case to case. One might speculate that the emphasis that the artists themselves would put on the importance of their code partly depends on the nature of their respective work: for example, artists whose work focuses on 'raw' code (such as many of Graham Harwood's pieces) might consider the 'written part' of the project more important than artists whose work is an exploration of visual forms, space, and action (such as many of Antoine Schmitt's projects). The presentation format of CODEDOC also seems to have imposed some (unintended) editing on the artists' side: in their comments, both Antoine Schmitt (CODEDOC II) and Camille Utterback (CODEDOC) admitted that they felt compelled to clean up their code before presenting it to the public ("I'm one of those people that clean my bathroom if my friends are coming over," as Camille put it). One of the inherent dangers and certainly unintended effects of CODEDOC could be the misassumption that the quality of software art can be judged according to virtuosity and craftsmanship in the programming of code (that is, by criteria such as correctness, maintainability, lucidity, and readability, which were outlined by Donald Knuth). One of the beauties of art, no matter what form and material it takes, consists in the fact that its success is the result of multiple factors that cannot be objectively defined. A viewer could certainly enjoy the works of Leonardo da Vinci or Picasso on the basis of their outstanding virtuosity and craftsmanship alone (although

they have much more to offer) but applying these standards to Duchamp's urinal or Beuys' 'fat and felt' sculptures will presumably not yield relevant results or major appreciation. As any other art form, software art cannot and should not be reduced to technical criteria, and the code should be seen as more than simply the wheels and gears driving the machine.

As an artistic medium and practice, software art seems to distinguish itself from other art forms such as painting, sculpture or film / video. As opposed to other forms of visual art, software artists write verbal instructions for their work that can be executed and produce anything from visuals to a more abstract communication process (although the execution of code still requires various steps of interpretation and compiling and the code itself may be mostly a notation of logic). There is a peculiar relationship between the mostly hidden backend of code—which constitutes a convergence of language and mathematics—and the multi-sensory 'display' it can produce: an 'identity' in the sense of a sameness in different instances (code / results), each of which takes a very different form yet, on one level, is one and the same. While every art form may be processed and mediated in one way or another, it usually does not constitute a fusion of fundamentally different 'materialities' (in the broadest sense) as software art does. A painting or sculpture to a large extent reveals the manifestations of its creation process in the finished object—for example, in individual brush strokes or materials—even if the art object amounts to something much larger than the sum of its parts. In software art, the 'materiality' of the written instructions mostly remains hidden. In addition, these instructions and notations can be instantaneously activated, they contain and—further layers of processing aside —*are* the artwork itself. While one might claim that the same holds true for a work of conceptual art that consists of written instructions, this work would still have to be activated as a mental or physical event by the viewer and cannot instantaneously transform, transcend, and generate its own materiality.

In the comments accompanying his contribution to CODEDOC II, Antoine Schmitt points out that it would be a misleading shortcut to propose that the language in which a programmed artwork has been written has anything to do with the 'language of programmed art'—a language relating to the space, time and action of the work. Schmitt makes an important point in that he hints at the multiple layers of 'language' that a discourse about software art entails: there is the programming language itself (I assume that many programmers would argue that the choice of the programming language has a

substantial effect on the outcome of the artwork); there is the language of the written code in the sense of an artistic expression that formulates instructions in an individual way (similar to the use of natural language that, despite a given vocabulary, grammar and rules, functions as a form of personal expression); and there is the aesthetic 'language' of the code's actions, comparable to the language of painting or cinema. At best, CODEDOC can raise some awareness surrounding both the construction and perception of software art, and I hope that the pieces created for this second round of the project will continue to contribute to an ongoing dialogue.

These are the original assignment and requirement rules given to the artists by Christiane Paul and the Whitney Museum:

Assignment and Requirements:

- The code should move and connect three points in space. [This could obviously be interpreted in a visual or more abstract way].
- The code should not exceed 8 KB. 8 KB refers to your "main." The emphasis and focus is on code written by the artist. Obviously it's almost impossible to *not* call any libraries and subroutines but, if possible, you should avoid relying on them too much (if they haven't been written by yourself); meaning, the idea is not that you write one line that calls powerful subroutines and libraries. However, if you can't resist bending the rules, please write a short line explaining what you did (so it becomes a bit more intelligible for anyone who isn't a programmer).
- The code must be compliable / interpretable; it should run in a browser window or be accessible as downloadable executable.
- The "object" is the code itself not what it produces. "Visual beauty" does not have to be the main focus.
- By the deadline, you should deliver your code as a text file + the applet / exe etc.
- The "assignment" will be collected and made available to everyone on a website. You are invited to comment on each other's projects. You do *not* have to comment on every participant's code; you can decide to stick to the artists' code that has been written in the language of your choice (or comment on whatever interests you).
- The 'exhibition' of the project at the artport website will present each artist's code as well as the comments submitted by the other artists. The visuals / process created by the respective code can be launched from each artist's section.

(Tentative) Objectives:

Obviously, this is a more experimental and process-oriented project and it can't be predicted what exactly the outcome will be. You shouldn't just strive to illustrate the potential outcome I'm outlining below. The project could (but does not have to) show:

- *the differences between the respective coding/scripting languages
- *the differences and/or similarities between artists' approaches—be it in how they interpret the assignment or write their code
- *the various relationships between code and its results

System recommendations for the exhibition:

System requirements: Shockwave player, Java. For some works, you need to install Perl.

Perl for [Windows](#)

Perl for [Mac](#)

Browser: We recommend Internet explorer for best display options. Other browsers such as Google Chrome may block Shockwave player or Java.

Java Security Update: Java will block most programmes, since they were programmed in the early 2000s before Java SE7 update 21. Therefore, you will need to go to the security settings of your Java programme and add the addresses of Whitney Artport (<http://whitney.org/Exhibitions/Artport/>) and ADA (<http://www.digitalartarchive.at>) to the list of exceptions. [More information](#)

Credits:

CODEDOC REMEDIATED – ADA online exhibition

Curated by Christiane Paul

Curatorial Assistance by Janina Hoth and Michaela Seiser

Title Image: © Maciej Wisniewski, Excerpt from Code „The meaning of life as expressed in seven lines of code“

The ADA team:

Head: Oliver Grau

Editorial Team: Wendy Coones, Janina Hoth, Viola Rühse, Devon Schiller

Artists Bio/List of Works (at time of creation):

CODeDOC :

Golan Levin

Axis Applet

Golan Levin is an artist, composer, performer and engineer interested in developing artifacts and events which explore supple new modes of reactive expression. His work examines non-verbal communications protocols across a variety of online, installation and performance media, and has included large-scale social visualizations, multiperson augmented realities, and individual systems for the creation, manipulation and performance of responsive image and sound. Levin and his colleagues created *Dialtones* (2001/2002), a concert whose sounds are wholly performed through the carefully choreographed ringing of the audience's own mobile phones. Previously, Levin was granted an Award of Distinction in the Prix Ars Electronica for his *Audiovisual Environment Suite* (2000) interactive software and its accompanying audiovisual performance, *Scribble*. Levin has exhibited, performed and lectured widely in Europe, the United States, and Asia. He resides in New York City and is represented by the Bitforms gallery.

Mark Napier

SpringyDots

Mark Napier, a painter turned digital artist, packed up his paints in 1995 and began to create art work exclusively for the Web. He has produced a wide range of Internet projects, including *The Shredder* (1998), an alternative browser that dematerializes the Web; *Digital Landfill* (1998), an endless archive of digital debris; and "Bots (2000), a tool for building unique pop-culture icons from parts. Napier is noted for his innovative use of the Web as an art medium and for his open-ended evolving projects. He has created commissioned projects for the Guggenheim Museum, SFMOMA (for the exhibition "010101"), the Whitney Museum (for the exhibition "Data Dynamics") and his browser Riot was included in the Whitney Biennial 2002. He has been shown at ZKM (Zentrum für Kunst und Medientechnologie), Karlsruhe, Germany, was awarded honorable mention by Ars Electronica 99, Linz, Austria, and was chosen for the "Art Entertainment Network" exhibition at the Walker Art Center, Minneapolis. Napier lives and works in New York City. His artwork is available on-line at potatoland.org.

W. Bradford Paley

Code Profiles

W. Bradford Paley is an artist and interaction designer whose focus in both worlds is the visual interpretation of patterns hidden in information. His work has three primary goals: to create visual filters which let different subjects express their differences; to make the work readable enough that the viewer can gain specific insights; and to reveal complexity in a way that's matched to human perceptual abilities. His visual representations are inspired by the calm but richly layered information in natural scenes. He tries to build with the simplest filters, as if to say "look how little the filter is doing--the beauty must be in the subject itself."

He did his first photography in 1968, his first computer imagery in 1973, and founded Digital Image Design Incorporated in 1982. He has exhibited at the Museum of Modern Art; he created TextArc.org; and his designs are at work every day in the hands of brokers on the floor of the New York Stock Exchange. He is frequently asked to speak on the subject of interaction

design, and pursues an integrated career where design jobs inspire art and art techniques inform design.

Scott Snibbe

Tripolar

Scott Snibbe explores direct physical perception and the nature of the self using electronic media. His work ranges from large-scale body-centric physical installations to interactive sculpture and screen- and web-based works. His work is noted for being radically interactive - i.e. the artwork consists of experiences that cannot be perceived or understood without direct human interaction. Snibbe's work has been shown internationally at venues including the InterCommunications Center, Tokyo; Ars Electronica, Linz, Austria; Eyebeam, New York City; New Langton Arts, San Francisco; ICA, London; and The Kitchen, New York City. Well known among Snibbe's work are Boundary Functions (1998), a projection of personal space where one realizes that such space is merely a social construction, and Motion Phone (1995), a networked system for abstract visual communication based on human movement. Snibbe's background in technological research has included positions at Adobe Systems, Interval Research, Brown University and UC Berkeley. These experiences have informed his art practice as both cultural production and research activity. Snibbe currently lives and works in San Francisco.

Martin Wattenberg

Connect the Dots

Martin Wattenberg is a digital artist and information designer. His work focuses on visual explorations of information masses: databases, communities, conversations, and other conceptual collections. Recent projects include Idea Line (2001, commissioned by the Whitney Museum of American Art), Apartment (2001, collaboration with Marek Walczak), WonderWalker (2000, collaboration with Marek Walczak), commissioned by the Walker Art Center, Minneapolis; SmartMoney Map of the Market (1998); work on the Rhizome "alt.interface" collection; and "www.bewitched.com" (1997-99). He holds a Ph.D. in mathematics from the University of California, Berkeley (1996).

Maciej Wisniewski

The Meaning of Life as Expressed in Seven Lines of Code

Maciej Wisniewski is an artist and programmer whose work focuses on the underlying social implications of technology and the Internet. netomat™ and his earlier projects-- metaView (1998), Turnstile Part I and II (1998), ScanLink (1998), Jackpot (1996), and Tele-Touch (1996)--have been featured in online and offline exhibitions at Postmasters Gallery, New York; the Whitney Museum of American Art; ZKM Zentrum für Kunst und Medientechnologie Karlsruhe, Germany; Institute of Contemporary Arts, London; Walker Art Center, Minneapolis; Guggenheim Museum SoHo, New York; Johannesburg Biennale; and Benjamin Weil's äda'web. Wisniewski received an MFA from Hunter College, New York, and studied toward a Ph.D. at the Institute for General Linguistics and Computational Linguistics at the University of Stockholm, Sweden.

John Klima

Jack and Jill

Ca. 1980, Brooklyn-based artist John Klima (b. 1965) attempted to code a 3D maze on a TRS-80 with 4k RAM and failed miserably, but has been obsessed with 3D graphics ever since. Contracting for companies such as Microsoft, Turner Broadcasting, and Dun & Bradstreet from 1993 to 1998, Klima honed his programming skills while continuing to make art within the flexible schedule that free-lance programming provided. In 1998, Klima discontinued activities as a commercial programmer to focus solely on the creation of art software.

He has shown frequently in New York, mounting his first solo exhibition in February 2001 at Postmasters Gallery. His work has been shown at European festivals, such as VIPER (Switzerland) and EMAF (Germany). His work *glasbead* was included in the "New Media New Face" exhibit at the ICC in Tokyo, Japan (1999) and received the Golden Lasso Award for Art in the Web3DRoundup at SIGGRAPH 2000 in New Orleans. His work *ecosystem*, commissioned by Zurich Capital Markets, was shown at the Whitney Museum as part of the exhibition *BitStreams* (2001). Klima's work *EARTH*--previewed at the National Library of Medicine on May 21, 2001, and at SIGGRAPH 2001 in Los Angeles--was included in the 2002 Whitney Biennial. In 2002, he received a grant from the Langlois Foundation for his project *Terrain Machine*. Information about his work is available at www.cityarts.com

Camille Utterback

linescape.cpp

Camille Utterback is a pioneering artist and programmer in the field of interactive installation. In 2002, Utterback was one of six artists awarded a Rockefeller Foundation New Media Fellowship. Her work has been exhibited at festivals and galleries internationally including Caren Golden Fine Arts, Cynthia Broan Gallery, and Postmasters Gallery, New York; The NTT InterCommunication Center, Tokyo; The Seoul Metropolitan Museum of Art; The Netherlands Institute for Media Art; The Taipei Museum of Contemporary Art; The Center for Contemporary Art, Kiev, Ukraine; the Ars Electronica Center, Austria. While working as a research fellow at New York University, Utterback developed a video tracking system for which NYU has filed a U.S. patent. She was selected as a member of the "TR100 - the top 100 innovators of the year under 35" by MIT's Technology Review (2002). Utterback holds a BA in Art from Williams College, and a Masters degree from The Interactive Telecommunications Program at NYU's Tisch School of the Arts. In addition to creating her own artwork, Utterback develops installations for commercial and museum settings via her company Creative Nerve, and teaches at the Parsons School of Design. More information about her work can be found at www.camilleutterback.com.

Mary Flanagan

remotion

Mary Flanagan is a media practitioner/theorist who investigates the intersection of art, technology, and gender study through critical writing, artwork, and activism. An award winning media developer and artist, Flanagan has exhibited her work at such venues as the Central Fine Arts Gallery in Soho, the Guggenheim Gallery Online at Chapman University, The Physics Room, turbulence.org, New York Hall of Science, UCR/California Museum of Photography, and the Whitney 2002 Biennial. She is also the creator of >The Adventures of Josie True,< the first web-based adventure game for girls. Her projects have been funded by the National Science Foundation, the Pacific Cultural Foundation, the University of Colorado-Boulder, and the National Endowment for the Arts. www.maryflanagan.com

Kevin McCoy

Circler

Kevin McCoy is an artist living in Brooklyn, New York. His collaborative work made with his partner Jennifer McCoy has been shown widely in the US and Europe. Information about their projects can be found at mccoyspace.com.

Sawad Brooks

Global City

Sawad Brooks is an internationally shown artist, critic, and award winning designer working with public and information spaces. *DissemiNET* (1998-2001), one of his collaborations with Beth Stryker, is a telematic installation commissioned in part by the Wexner Center for the Arts, The Ohio State University. *DissemiNET* has been shown internationally, including at the Whitney Museum of American Art, New York, and the Museum Boijmans Van Beuningen, Rotterdam, and is part of the Walker Art Center's Digital Arts Studies Collection, as is Brooks' *Bowling Alley* (1995), a collaboration with Beth Stryker, Christa Erickson, and Shu Lea Cheang. *Invertigo* (1997), a telematic video installation created in collaboration with Beth Stryker and Christa Erickson, was shown at The Banff Centre for the Arts, Alberta, Canada. Sawad's work has also been shown at such places as the MIT List Visual Arts Center, Cambridge, Massachusetts; the Johannesburg Biennale; and Postmasters Gallery, New York. He has been invited to speak at numerous locations, including the Museum of Modern Art, New York, and the Banff Centre for the Arts. He is currently working with Warren Sack on >hELLO7734,> a new network protocol art-research project that interrogates >translation,> funded in part by the Arts Technology Center, University of New Mexico, with grants from the Rockefeller Foundation and the NEA. With Goil Amornvivat and generous support from Creative Capital, he is also working on a new line of responsive architecture. Independently, he is working on a series of interactive videos addressing the themes of landscape, public space, and time. He teaches at Brown University's department of Modern Culture and Media.

Alexander R. Galloway

What You See Is What You Get

Alexander R. Galloway is an artist and computer programmer. As the founding member of the Radical Software Group (RSG), he is the creator of *Carnivore*, a networked surveillance tool based on the notorious FBI software of the same name. *Carnivore* has been exhibited internationally and won a Golden Nica at Ars Electronica 2002. Alex's first book, *PROTOCOL, or, How Control Exists After Decentralization*, will be published in 2003 by The MIT Press.

CODeDOC II:

John F. Simon, Jr.

CodeDoc II

John F. Simon, Jr. is an artist who uses programming language as an activated extension of written language. His software programs are displayed on the Web and also on wall-mounted

LCD screens. His software compositions never repeat. The beautiful patterns and movement emerge from Simon's process of considering computer coding as a kind of creative writing.

John Simon's work has been included in the Whitney Museum's Biennial 2000 and Bitstreams (2001). He was selected to receive the Aldrich Museum Trustee's Award for an Emerging Artist in fall 2000. His software panel works have been collected by the Whitney Museum of American Art, the Guggenheim Museum, Los Angeles County Museum of Art and the San Francisco Museum of Modern Art, among others. He holds an MFA degree from the School of Visual Arts in Manhattan and a Masters degree in Earth and Planetary Sciences from Washington University in St. Louis. He lives in New York City with his wife Elizabeth.

Anja Krautgasser with Rainer Mandl

Pedigree

Anja Krautgasser is a media artist and architect who has been teaching architecture, media and the public at the Academy of Arts in Linz and is an assistant at the Technical University in Graz, Austria. In 2000, she founded the studio Vidok, which has produced audio-visual live acts that have been performed at the Museum Quarter Vienna (2000), the Concert House Vienna (2001) and the opening of Ars Electronica (2001). Her CD-ROMs and video works have been shown at venues such as the Chicago and NY Underground Film festival (2001), the Norwegian Short Film festival (Grimstad, 2001), Stuttgarter Filmwinter (2001) and the Helsinki Media Art Festival (2000). Her networked, online projects include mycity (in collaboration with lia, re-p /maia), the Austrian contribution to the international web design exhibition at Centro Cultural Banko do Brazil (2000); citygame <sweet home> (2001); as well as IP-III (in collaboration with Rainer Mandl, Sepp Deinhofer and Michael Aschauer, 2002), which was shown at the Viper, Transmediale and Montreal FCMM festivals in 2002. IP-III consists of an online component and an installation and addresses the multi-dimensional visualization of users' presence. Anja Krautgasser had solo exhibitions at the OK art center in Linz and the Medienturm Graz, and her works have been included in exhibitions at Lothringerhalle 13, Munich, and Galerie im Taxispalais, Innsbruck, among others.

Rainer Mandl is a web and media artist who has been working in film and television since the mid-90s. He hosted his own TV-show on music and contemporary art (together with Amina Handke). Among his artworks are Walzerwürfelspiel, a permanent installation for the House of Music Vienna (2002; collaboration with Elisabeth Wildling, Markus Novak, shaGTT); rgb computer game with cellular automaton (2001; with Sepp Deinhofer); as well as the interactive computer installation timeBox (), shown at Arc Galerie in Vienna (2001). Since 2000, he has done sound productions under the name "finest electrical/digital dilettantism" -- with Nikola Winkler, Michael Aschauer and Daniel Suljic -- that have been performed at concerts in Vienna, Linz and Zagreb.

Antoine Schmitt

Threesome

Heir of cybernetic art, artist and programmer, Antoine Schmitt uses programming as a material to produce installations, CD-ROMs, online exhibitions, and performances in which he confronts

the public or performers with autonomous abstract dynamic systems. This work has received awards at international festivals such as *medi@terra* (1999), *Interférences* (2000), *transmediale.01* (2001), *video-dance* (2002), *Life 5.0* (2002) As a curator, jury member and speaker, he explores the theory and practice of the programmed artwork.

Ed Burton

Recent events

Ed grew up playing with computer programming, with his first software title being published at the age of 17. Following a degree in Architecture at the University of Liverpool, Ed undertook the MA in Digital Arts at the Middlesex University Centre for Electronic Arts. His MA thesis on computer models of young children's drawing behaviour was subsequently developed into an ongoing PhD research project into artificial intelligence, dynamical systems and developmental psychology. After three years of research and teaching at the Centre for Electronic Arts, Ed joined Soda Creative Technologies Ltd (www.soda.co.uk) as Research and Development Director in 1998 and was the original author of the Java toy *sodaconstructor* (www.sodaplay.com/constructor). His work has been exhibited at venues such as the Künstlerhaus Wien (2003), the NTT InterCommunication Center, Tokyo (2002), and the Sonar Advanced Music and Multimedia Art festival, Barcelona (2001, 2003). *Sodaconstructor* was awarded the BAFTA interactive entertainment award for Interactive Arts in 2001, and *sodaplay* was included in Time Magazine's list of the 50 Best Websites in 2002.

Graham Harwood

war.pl

Harwood started out as an artist during the 1980s. He was involved with publishing initiatives such as the Working Press (books by and about working class culture); Underground newspaper (a London-based free newspaper aimed at promoting and exploiting the uses of new media in culture and society); and books such as *Unnatural - techno theory for a contaminated culture* (theoretical positions on new media). During this time, he produced the first computer-generated graphic novel, *If Comics Mental*, and was widely published in graphic journals in the USA, Canada, Italy and France.

After Harwood had training in new media and learned programming at the end of the 1980s, he was invited to make a piece of work for Video Positive '95 (an international video art festival in Liverpool). He worked at Ashworth maximum security hospital in Liverpool where he produced the installation *Rehearsal of Memory*.

As an educator, he worked on various new media courses at Guildhall University, and advised on numerous other academic new media initiatives. Disappointed with the state of academic education, Harwood was invited to work at Artec (London Arts Technology Centre) where he provided innovative training for the long-term unemployed.

It was here that he received his Arts Council funding to produce, re-author and publish, with Artec and ex-trainees, the CD-ROM version of the *Rehearsal of Memory* installation. Since then, Harwood has exhibited and spoken at numerous events, nationally and internationally, in England, France, Austria, Australia, Germany, Canada, Portugal, Finland, Holland and Norway.

In 1997, Harwood left Artec to form Mongrel, with Matsuko Yokokoji and Richard Pierre-Davis. Mongrel has created collaborative, socially engaged cultural products, including National Heritage and the Natural Selection search engine, which received international acclaim. In 1999, Harwood/Mongrel received two national awards, The Clarks Digital Bursary and the Imaginaria Award from which emerged the software Linker, exhibited at the Institute of Contemporary Art and Watershed Bristol. In April 2001, Harwood took up the first of two artist residences in the Netherlands -- in Amsterdam Zuidoost, Artotec where he built TextFm -- and then moved to a new residence at the Waag Society in September 2001. Here he spent the next 18 months building Nine(9) (launched 03-03-03) at ImagineIC Bijlmer. He and Matsuko have since returned to the UK.

[epidemiC]

Double Blind

[epidemiC] is a network of people working in sectors as diverse as art, computer science, anthropology, communication, history, and economy. [epidemiC] explores the phenomena arising from the intrusion of computer science's cultural behaviors into traditional ones. In 2001, their work VIRII VIRUS VIREN VIRY: The Beauty of the Source Code was exhibited at D-I-N-A (digital_is_not_analog.01) in Bologna, Italy, and their projects HTML.Reality.b.html, Ready-Made Virus and biennale.py (both in collaboration with 0100101110101101.ORG) were included in the Bienal de Valencia, Spain, and the 49th Venice Biennale, respectively. The project downJones sendMail - Is It Viral Marketing? was featured at digital_is_not_analog.02 (Milano), and as part of the exhibition "I love you - computer_viruses_hacker_culture" at the Museum of Applied Arts Frankfurt (MAK), Frankfurt (2002), [epidemiC] released AntiMafia - The Action Sharing, an 'activism productivity tool.' AntiMafia is a Windows-based program for the co-ordination of associative actions and its user interface allows for the creation of social events based upon the co-operation of other peer computers operating the program. The team was also responsible for the exhibition concept of adonnaM.mp3 - File Sharing, the Hidden Revolution in the Internet at MAK, Frankfurt.

Joan Leandre

nostalg2

Joan Leandre has been a member of the 'Unknown Frame Observatory' since 1992 and an 'interpreter' at retroyou.org since 1999. Joan's work has been internationally exhibited at exhibitions and festivals such as Next Five Minutes, Amsterdam (2003), Sonar, Barcelona (2001, 2002 and 2003), "Becomings" at the Museum of Contemporary Art, La Jolla and "<ALT>DigitalMedia" at the American Museum of the Moving Image, New York (2003). Exhibitions in 2002 included Transmediale, Berlin; the Read-Me Festival, Moscow; Obsevatori, Valencia; The Mirror of Balcans, Belgrade; and Art Futura, Barcelona. <http://retroyou.org>