

digital technologies. Animation is one of the genres that is most resistant to classification. It has continuously merged disciplines and techniques and still exists at the border of the entertainment industry and art world. Exactly how far animation can and should be considered an art form remains the topic of debate, but it certainly is now more frequently incorporated in exhibitions. In 2001, the PS1 Contemporary Art Center in New York devoted a whole exhibition, 'Animations', to the form, juxtaposing different techniques and classics of the genre with projects done by established artists. The blurring of the commercial and artistic aspects of animation is perfectly captured in the project *No Ghost Just a Shell* by the French artists Pierre Huyghe and Philippe Parreno, who purchased a *manga* (comic) character, a Japanese figure template created for use in animation and comic books, from one of the major Japanese agencies that specializes in the production of these off-the-shelf characters. The character, Annlee, has few facial attributes – her eyes are dark holes – no history and no life; she is a fictional shell with a copyright, waiting to

99. Philippe Parreno and Pierre Huyghe, *No Ghost, Anywhere Out of the World* from *No Ghost, Just a Shell*, 2000–present



be filled with a story. Parreno and Huyghe both created animations – *Anywhere Out of the World* (2000) and *Two Minutes Out of Time* (2000) – in which Annlee reflects on her absurd and tragic situation. Further questioning the status of copyright and ownership, they also distributed the character to other artists (Liam Gillick and Dominique Gonzalez-Foster), who created additional interpretations of the character. The title of the work, *No Ghost Just a Shell*, alludes to the famous *manga* *Ghost in the Shell* by Masamune Shirow, a science-fiction story that takes place in a world that has been made borderless by the Net and allows augmented humans to live in virtual environments. The secret agent of the future is a non-human entity without physical body that freely travels the information superhighways – until it decides that it is a life-form in its own right and requests physical existence. While we may not yet be ghosts in a shell, the futuristic scenario of Shirow's *manga* and the issues addressed in Parreno's and Huyghe's work point to several of the key questions that have been raised by the Internet and its use as an art medium.

#### *Internet art and nomadic networks*

Digital art found a new form of expression with the advent of the World Wide Web in the mid-1990s. Since its beginnings in the late 1960s, ARPANET had been growing steadily, with a constantly increasing number of nodes. After the National Science Foundation became involved in the network's development in 1984, it advanced at an unprecedented speed (the original ARPANET formally expired in 1987). Among the pioneering arts organizations on the Net was the New York-based The THING (founded by Wolfgang Staehle), which, in 1991, already existed as a bulletin board service – an electronic messaging system – dedicated to contemporary art and cultural theory. The THING now has a much more sophisticated Web presence and nodes in several cities on different continents. The World Wide Web (WWW) as we know it today was conceptualized in the early 1990s by Tim Berners-Lee and CERN (the European Particle Physics Laboratory) with the intention to build a 'distributed collaborative multimedia information system'. The World Wide Web is based on the hypertext transfer protocol (http) that allows one to access documents written in HTML (Hypertext Markup Language), a language that makes it possible to establish links between documents and arbitrary nodes. Just like the Internet, the early WWW was dominated by education and research institutions, a largely unregulated space for free

information sharing. The commercial colonialization of the Internet and the ensuing 'dot com' craze and demise, now commonly associated with the WWW, began only in the late 1990s, and art on the Internet is in many ways characterized by the tension between the philosophy of the free information space and the proximity to a commercial context.

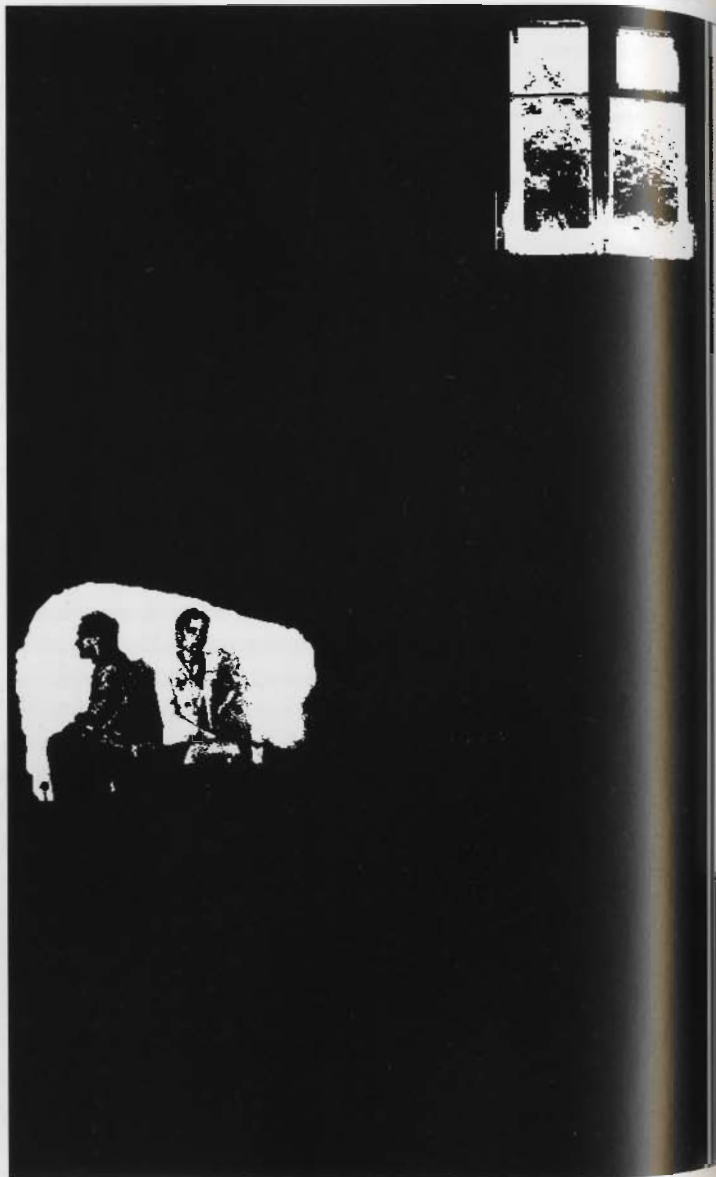
Internet art has existed since the inception of the early World Wide Web, with several 'movements' developing at the same time. Internet art now has become a broad umbrella for numerous forms of artistic articulation that often overlap. There are hypertext projects that experiment with the possibilities of non-linear narrative; there are netactivism projects that use the network and its possibilities of instant distribution and copying of information as a staging platform for interventions, be they support of specific groups or a method of questioning corporate and commercial interests; there are performance and time-based projects that take place as actions within a specific timeframe during which they can be experienced by Web visitors worldwide. Webcams and CUseeMe – desktop videoconferencing software that allows person-to-person video chats using desktop cameras and an Internet connection – have been used for artistic explorations of remote 'presence' and communication.

In Europe, a core group of artists, among them Russian artists Olia Lialina (b. 1971) and Alexei Shulgin (b. 1963), British artist and activist Heath Bunting, Slovenian Vuk Cosic, and the Barcelona-based team jodi (Joan Hemskeerk and Dirk Paesmans), who were connected through the online mailing list nettime – founded by media theorists and critics Geert Lovink and Pit Schultz and devoted to Internet culture and criticism – drew attention to the genre of art on the Net and formed the 'net.art' (with a dot) movement. The term was officially used for the first time when Vuk Cosic organized a small gathering – 'net.art per se' – in Trieste in 1996, and immediately sparked criticism concerning exclusivity. The criticism centred on the question of why one would need to create a subgroup for a genre that was global and still marginalized in the first place. Discussions about the net art genre also took place on Rhizome, a New York-based online forum for new media art founded by Mark Tribe. Though originally devoted to new media art in general, Rhizome over the years developed into a community platform for net art in particular. Net art fairly quickly established its own art world on the Web with online galleries, curators, and critics, among them Tilman Baumgärtel and

Josephine Bosma. Among the early online galleries was Benjamin Weil's äda'web, a digital foundry that featured work by net artists as well as established artists, for instance Jenny Holzer and Julia Scher, who expanded their practice with the new medium. In the early years, funding strategies for net art and online galleries were as experimental as the art itself. After äda'web lost its financial support, the gallery and its 'holdings' were permanently archived by the Walker Art Center in Minneapolis, which early on started exhibiting and supporting net art. The Machida City Museum of Graphic Arts in Tokyo started sponsoring a competition for 'Art on the Net' in 1995, but recognition for net art in the art world at large would remain scarce until the end of the century.

The early WWW was a largely textual and not very sophisticated medium, and early net artworks were often very conceptual, driven by a sense of community and a spirit of spontaneous interventions. In 1997, Alexei Shulgin arranged the WWWArt Award, which consisted of found sites that were given awards in categories such as 'Research in Touristic Semiotics', which went to a guide for common traffic signs around the world, or 'Flashing' (blinking images were a characteristic of one of the Web's developmental stages); he also organized the Form Art Competition (1997), asking contributors to create art out of formal elements, such as radio buttons, scrollbars, and pull-down menus. Vuk Cosic popularized ASCII art, creating still images and videos that are made entirely out of alphabetic and numeric characters. With Walter van der Crujjsen and Luka Frelih, Cosic made works under the label ASCII Art Ensemble. The duo jodi literally turned the common Web interface and desktop elements inside out: pages of seemingly 'broken' HTML with integrated scroll bars and icons brought the desktop to the foreground of the Web page. Jodi's site was a decidedly low-tech graphics battle – a reminder of the standardization of the interface and the inherent beauty of its form elements and 'sign language'.

Early net art produced some classics of the genre, among them Olia Lialina's *My Boyfriend Came Back from the War* and Heath Bunting's *Read Me (Own, be owned or remain invisible)*. Lialina's piece is a reflection on 'wars' (literally and metaphorically) as well as on the communication and dissemination of information over the Web. Clicking on the black-and-white images, comments, questions, and statements in the frames of the browser window causes a split of the frame (and conversation) into subdivisions of increasing complexity. Bunting's *Read Me*



100. **Olia Lialina**, *My Boyfriend Came Back From the War*, 1996. In this interactive Internet-based work, users move the narrative on by clicking on images and words, which causes the window to split into frames. Lialina expanded the piece into *The Last Real Net Art Museum*, which used the original *My Boyfriend Came Back From the War* as a starting point and then developed into an archive of variations on the work by other artists. The project points to the possibilities for creation and presentation offered by digital networks, such as the infinite reconfiguration of information in an open system, but not accommodated by traditional museums.



**NO  
NEVER**

he was  
my  
neighbour





consists of a short biographical text about the artist, in which every word is linked to its corresponding domain name – the word 'is' links to is.com, for example, 'qualifications' to qualifications.com, etc. – indicating that presence and identity on the Web are a matter of owning domains and 'language', being owned or remaining invisible.

As an informational system that is in constant flux and reorganization, the Internet seems to defy a systematic arrangement of its constituent elements. Links make it possible to connect texts and visuals to the contextual network in which they are embedded, and to visualize a network of references that would normally be separated by physical space. Within this network, information is subject to infinite recycling and reproduction, two concepts that form the basis of a multitude of online art projects. These range from the so-called Web colliders – projects that mix existing information and make it 'collide' into new forms – to experiments with information as an artificial life-form. *The Unreliable Archivist* by Jon Ippolito, Keith Frank, and Janet Cohen, for example, uses the projects featured on the original iDa web site as its raw material and allows visitors to reconfigure them. By adjusting four sliders (language, images, style, layout) to the categories 'plain', 'enigmatic', 'loaded', and 'preposterous', users can select text and visuals from any of the iDa web projects, which are subsequently displayed on the screen in a collage. Authorship and boundaries of the original projects are erased, and the context for understanding the collage is largely set by

subjective categories determined by the Archivist's creators. A different approach to the 'remix' was taken by the British duo Thomson & Craighead (founded in 1994: Jon Thomson and Alison Craighead) in their project *CNN Interactive Just Got More Interactive* (1999), which adds a separate browser window to the CNN site that functions as a kind of 'music box' and allows users to add a variety of soundtracks to the news provided by the site. Mixing fact and fiction, *CNN Interactive* unveils and adds to the information aspect of the economy of news. The technique of the remix – particularly of corporate sources and content – is also frequently used by activist projects, which will be discussed more in depth later.

A genre specific to the Net is so-called browser art, the creation of alternative browsers, which rewrite the conventions of

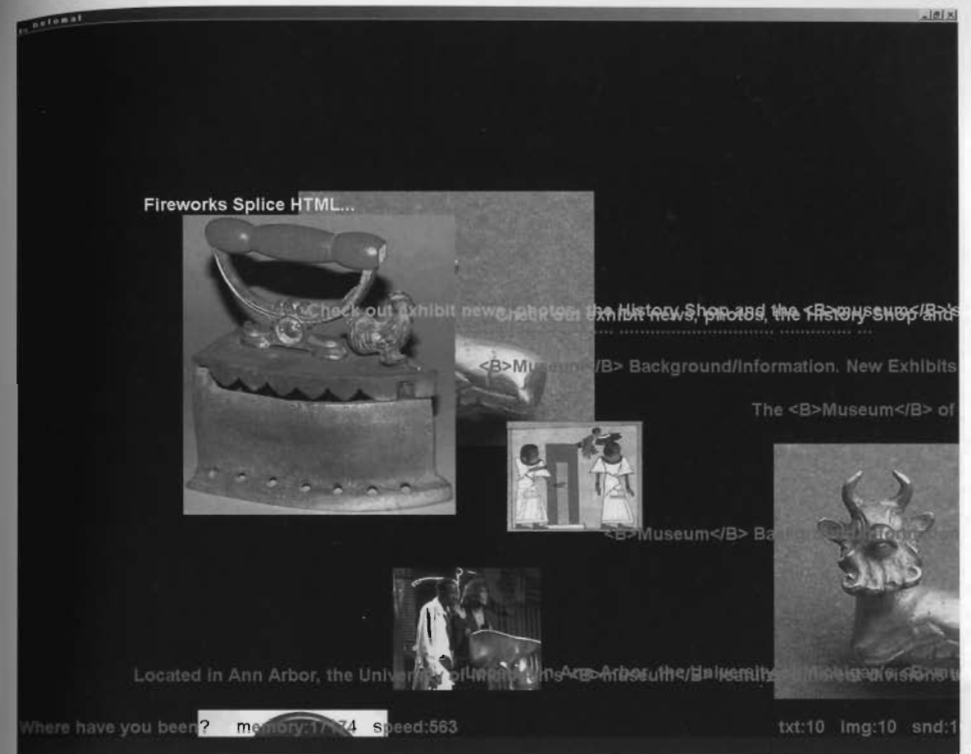
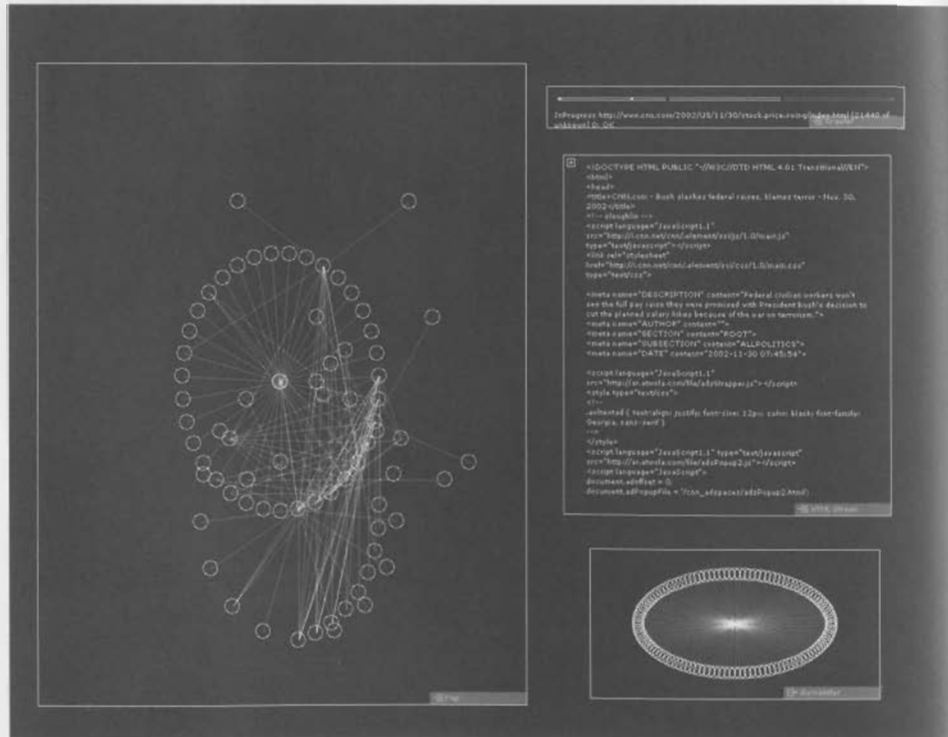


102. Thomson & Craighead, *CNN Interactive Just Got More Interactive*, 1999



our ways of exploring the Web through browsers such as Netscape and Internet Explorer. The ways in which we currently experience information on the Internet is based on conventions rather than any inherent characteristic of the medium: we are viewing predesigned websites through the portal of browsers that are ultimately based on the page model of the printed book (or even the ancient format of the scroll). Since the beginnings of the Internet, numerous art projects have questioned these conventions. The British group I/O/D single-handedly established the 'medium' of alternative browsers with their *WebStalker*, an application that allows users to draw 'frames' in a blank window and select information they would like to display in them – for example, a graphical map of the site that presents all its individual pages as little circles and the links between them as lines; the text from a URL and the source code of the HTML page; a 'stash' of URLs users would like to save. Although the *WebStalker* did not display graphics, it expanded the functionality of existing browsers in an aesthetic and creative way that questioned the paradigms of the conventional information display and Internet

103. I/O/D, *WebStalker*, 1997–present. In his essay 'Visceral facades: taking Matta-Clark's crowbar to software', I/O/D's Matthew Fuller established a connection between the *WebStalker*'s approach to information architecture and American artist Gordon Matta-Clark's technique of 'splitting' buildings. Both are formal procedures that reveal the structural properties of their respective media.



104. Maciej Wisniewski, *netomat™*, 1999–present

'architecture'. A different approach to experiencing content on the Web is New York-based Maciej Wisniewski's (b. 1958) *netomat™* (1999–present), which abandons the page format of traditional browsers and treats the Internet as one large database of files. In response to words and phrases typed in by the viewer, *netomat™* dialogues with the Internet to retrieve text, images, and audio, and to flow them simultaneously onto the screen without regard to the display design of the data source. Using an audiovisual language designed specifically to explore the unexplored Internet, *netomat™* reveals how the ever-expanding network interprets and reinterprets cultural concepts and themes and takes visitors for a ride into the Internet's 'subconscious'. *Netomat™* is also notable in that it is a crossover between an artistic and commercial context. Originally an art project, *Netomat™* is now also a company that develops and sells products based on its underlying language. *WebStalker*, *netomat™*, and Andruid Kernc's *Collage Machine* (since 1997), which allows users to collage and modify texts and visuals from selected sites, are just three examples of browser art that redefines the conventions of our network



experience. A project with a more explicitly 'political' twist is American Mark Napier's (b. 1961) *Riot* (1999), a 'cross-content' Web browser that combines in one browser window text, images, and links from the three most recent URLs that *Riot* users worldwide have accessed. The basic functionality of *Riot* is still rooted in traditional browser conventions: users surf the Web by entering a URL into the location bar, or by selecting from bookmarks. However, the project blends different websites – for example those of CNN, the BBC, and Microsoft – and, by collapsing territorial conventions like domains, sites, and pages, illustrates how the Net resists traditional notions of territory, ownership, and authority. What all these projects have in common is that they allow us to experience the network in a way that is radically different from the one provided by preconfigured and corporate portals.

One of the most significant aspects of the Internet is that it has created a global platform for exchange and communities of interest. E-mail and mailing lists early on established possibilities for remote communication and were soon followed by more sophisticated 'chat' environments that allowed multiple users to engage in live conversation. Among the early multi-user envi-

105. Mark Napier, *Riot*, 1999



ronments that developed on the Web were the so-called MUDs – Multiple User Dungeons (or Domains) that were modelled after the early text-based Dungeons and Dragons computer games such as *Zork Zero*. In the original game, players find themselves in a room that is briefly described ('You are in a dark room. You see an exit to the north and the entrance to a passageway leading southwest. There is a candle lying on the floor.') and navigate through the environment by typing in directionals ('N' for North, 'SW' for Southwest); they pick up clues and objects with text commands ('Get candle') and use them to solve the puzzle and win the game. Online MUDs are based on the same principles but allow thousands of players to navigate through the rooms, interact with each other, and engage in role-playing games. MUDs found their extensions in MOOs (Muds Object-Oriented), which are based on more sophisticated object-oriented programming and can be expanded by their users. MOOs lend themselves to the construction of anything from adventure games to conferencing systems, and many universities built MOOs that focused on a specific topic of research to enable students and faculty to engage in ongoing discussions. Chat environments entered a new phase with graphics-based worlds like Time Warner Interactive's *The Palace*, which visually represents its rooms and buildings, as well as their inhabitants, and makes the communication between people visible in cartoon-like speech bubbles. Several virtual worlds have been created in VRML (Virtual Reality Modeling Language), the 3D counterpart of HTML. At the First International Conference on the World Wide Web in 1994, Mark Pesce – commonly credited as the inventor of VRML – and his partner Tony Parisi presented *Labyrinth*, a prototype of a 3D interface to the Web, which created a common awareness of the need for a language capable of specifying descriptions of three-dimensional scenes.

In these multi-user environments, people commonly create visual representations and assumed identities for themselves, so-called avatars. The term 'avatar', which has become common language in cyberspace, originates from Hinduism and means 'descent', most commonly the descent of a deity to Earth in an incarnate form (although definitions tend to vary depending on the source). While it may be difficult to trace exactly how the term entered cyberspace vernacular, it is at least interesting to note its connotations in the context of identity and community on the Internet and the upload and download (descent) of information to and from the server.



By now there are numerous artworks that create their own multi-user worlds, be they text or graphics based, and some projects have also built their own MOOs or incorporated existing environments. In their project *Desktop Theater* (1997–present), Adriene Jenik and Lisa Brenneis 'invade' *The Palace* chat environment and use their avatars to stage performances, such as an adaptation of Samuel Beckett's *Waiting for Godot*. The theatrical interventions (in which anyone can take part) become experimental investigations of the construction of online identity where forms of expression are compressed into two dimensions.

Network technologies have become all-pervasive and it would be wrong to understand the Internet and networks as a separate virtual territory that has no connection with our physical environment or that is mainly accessible through a computer in our homes and offices. We are also becoming increasingly networked through mobile networks and the use of 'nomadic devices', for example cellphones and PDAs (personal digital assistants, such as Palm Pilots), which are also increasingly used for art projects. These projects are a continuation of previous artistic experiments involving telecommunication devices such

106. **Adriene Jenik and Lisa Brenneis**, *Desktop Theater*, 1997–present. The crude graphics of the environment and the spontaneous and puzzled reactions of people who happen to stumble into the choreographed performance add a humorous aspect to the work, and at the same time reflect on the contextual parameters of performance, be it the role-play of theatre or that of life.



as the telephone or fax. Several art projects have made use of the SMS (Secure Message System) text messaging functionality of mobile phones, which is used in wide parts of the world. Among these projects was *Speakers Corner* by Jaap de Jonge, a commission organized by media theorist and curator Matt Locke. The physical *Speakers Corner* of the project was a 15-metre-long interactive LED text display on the outside of The Media Centre in Huddersfield, northern England. Participants could interact with the system by sending messages either through their mobile phone, via a phone outside the centre that would convert speech to text, or through a website. Other artists have also contributed to expanding the possibilities of SMS for networked communication: during a residency at the Waag Society in Amsterdam, Graham Harwood (a member of the London-based artists' group Mongrel), in collaboration with Matthew Fuller, developed *TextFM*, a program that uses the SMS functionality to turn text into speech and thus allows spoken messages to be transmitted at specific locations.

Another networked technology that has been used for the creation of art is the Global Positioning System (GPS), now also increasingly available in cars to help drivers find their way. The GPS is a network of satellites that can pinpoint the precise location on Earth of anyone or anything carrying a signal-emitting device. In their project *alpha 3.0*, the Singapore-based artists' collective *tsunami.net* tracked and captured their movements in physical space with a GPS device, which in turn triggered browsing activity on the Internet, establishing a synchronicity between motions and communities in real and virtual space. For *alpha 3.1* (2002), which was part of Documenta XI in Kassel, central Germany, in 2002, the artists continued this investigation by physically and virtually walking from the Documenta exhibition space, the Binding Brauerei in Kassel, to the Documenta's website, that is, the website's server – the computer on which it is located – in the city of Kiel in northern Germany. The Web browsing was made possible by a program developed by *tsunami.net* called *webwalker 2.2*, which requires its user to walk to the web page's server.

Nomadic devices such as Palm Pilots and Game Boys are still a very limited development environment when it comes to visuals but have already gained popularity as a mobile network that allows people to download artwork from the Internet or beaming stations, take it with them, and exchange it with other people. James Buckhouse's (b. 1972) project *Tap* (2002) creates a dance

107. **tsunami.net**, *alpha 3.4*, 2002. In the Documenta XI exhibition space, several screens documented different aspects of the walker's journey, including the addresses of the websites he accessed on the trip, a satellite map of his geographical position, and his movements as GPS coordinates.







108. James Buckhouse (in collaboration with Holly Brubach), *Tap*, 2002.

Users can choose from a variety of tap-dance steps that they want their character to practice (the dancers initially make mistakes) and can choreograph whole dances. The routines can either be performed on their own Palm Pilots or beamed to other people, whose dancers in turn can learn from the new dance and incorporate its steps into their moves. *Tap* translates the concepts of learning through exchange and spreading of ideas into a simple, visual format, and can be seen as a microcosm of the Internet as a communication network.

school for animated characters that can be downloaded onto Palm Pilots, take lessons, practice, give recitals, and learn from each other. Lynn Hershmann also uses Palm Pilots for the distribution of her autonomous character *Agent Ruby* (2002), which makes use of the principles of artificial intelligence and can engage in exchanges with users. Networked art of the future will exist on various platforms and will probably fluidly travel from the Internet to such nomadic devices.

#### Software art

The category of so-called 'software art' is another manifestation of blurry terminology. Software is generally defined as formal instructions that can be executed by a computer. However, every form of digital art employs code and algorithms at some level. Many of the previously mentioned installations are based on custom software, even if their physical and visual manifestations distract from the underlying layer of data and code. Any visual, digital image, from print to video, has ultimately been produced by instructions and the software that was used to create or manipulate it. However, the term 'software art' is usually applied to projects that have been written from scratch by artists and run locally on a computer – with or without incorporating live data from a network – or that can be downloaded from the Internet to be installed on a local machine. Both I/O/D's *WebStalker* and Maciej Wisniewski's *netomat*<sup>TM</sup> are ultimately (networked) software art. Further examples would be British software artist Adrian Ward's (b. 1976) *Auto-Illustrator*, a graphic design application that allows users to play with a variety of procedural techniques in the production of their own graphic designs, and British artist Alex McLean's *forkbomb.pl*, a script written in the language Perl that creates an artistic impression of the user's computer system under pressure (by repeatedly creating new processes at such a speed that the system comes to a halt).

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. In software art, the visual results of the artwork are derived from the language of code. The aesthetics and signature of artists who write their own source code manifest themselves both in the code itself and its visual results. John F. Simon, Jr talks 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 enables the artist to create the paintbrush and palette.

#### Virtual reality and augmented reality

Like the word 'cyberspace', the term 'virtual reality' (VR) is now commonly used for any space created by or accessible through computers, ranging from the 3D world of a game to the Internet as an alternate 'virtual' reality constructed by a vast networked communication space. The original meaning of VR, however, referred to a reality that fully immersed its users in a three-dimensional world generated by a computer and allowed them an interaction with the virtual objects that comprise that world. The term was coined by Jaron Lanier, whose company VPL Research, founded in 1982, was the first to commercially introduce immersive virtual reality products. Among these products were a glove device for interaction with virtual worlds (1984), head-mounted displays that enabled users to enter 3D worlds (1987), and a networked virtual world system (1989). VR is the most radical form of insertion of a user into a virtual environment (or vice versa), since it puts the screen right in front of the viewer's eyes through a headset or glasses, immersing the user in an artificial world and eliminating or augmenting the physical one. Full immersion into a simulated world that allows users to interact with every aspect of it is still more of a dream than a reality, although the technology has made considerable advances. Entertainment parks with elaborate gaming scenarios that make use of force-feedback devices – which translate phenomena and actions in the virtual world into a physical sensation for the user – are among the most advanced experiments in this direction. On one level, this form of virtual reality constitutes a psychology of disincarnation, since it ultimately promises the possibility of leaving the obsolete body behind, and inhabiting the datascape as a cyborg. From this point of view, virtual reality is the manifestation and continuation of a flight from the body that has its origins in the fifteenth-century invention of linear perspective vision. However, the concept of disembodiment radically denies the physicality of our bodies and the reality of our interaction with computers, which still very much is a physical process that in many ways forces us to conform to the set-up of a machine (e.g., wear a headset).

Issues of embodiment vs. disembodiment and the perception of space obviously play a central role in the artistic explorations