prevent catastrophes. The artist as engineer tries to triumph over nature by studying its laws and to liberate man from the domination of nature. In this tradition Peter Fend is looking for a human use of nature in his use of water. He avoids an infantile representative use of water as image (of arbitrary assigned qualities). He is not attributing desirable features of society to nature. Just the opposite. He is shaping nature according to desires of man. He makes productive use of water.

WATER AND SOAP
A PROJECT BY JUAN GALDEANO FOR ATLÁNTICA

Bubbles are the most successful, *the only successes*, yet make the least of an effort. Can a bubble make an effort? Surely not, except (carefully) in the puff which brought it into existence.

One need only inflate it with a steady breath of air, the necessary element of pretense, a movement of the spirit which is both controlled and persistent yet never goes too far — until it is freed almost instantaneously from the stalk.

What is needed is a spiritual presence in the moment of expiration...(*of exhalation*).

Bubbles that make too much of an effort explode and collapse into drops of water. And nothing can put them back together again. There is but one solution: to mix them back into the liquid mass, where they will disappear without any regrets whatsoever.

...All this, it seems to me, is much more than just extended metaphors...

All this, it seems to me, is much more than just extended metaphors. These bubbles are beings beneath all (their) aspects. Incredibly exemplary. They rise up from the earth and take you with them. These are new and unexpected qualities which were unknown until now, joining the known qualities in order to create a perfection and a particularity of a being-in-every-aspect. Hence the symbol Y escapes and the relationship changes. No longer is this a question of utility or of man's service to objects. Instead of serving something, what is at stake here is creation, not an explication. The conclusion holds more than the premise: something has been added to the premise that, mysteriously, curves the sphere, twisting everything, allowing it to be unleashed and to fly.

Seeing this, the spectator feels a surge of happiness that is not false: he feels happy because something has been *gained*.

So, here are some of these bubbles, most of them innocent and unpremeditated.

And thus, while making one's intellectual toilet, one might (in a rather childish and obsolete game) take a *stalk* and *round out* one's literary bubbles.

FROM ANALOGOUS DROPS TO VIRTUAL OCEANS

KARIN OHLENSCHLÄGER

The world is a huge Narcissus in the process of creation, according to Joachim Gasquet. For thousands of years, Narcissus contemplated his ego and his echo, his self and his reflection, beside the water's edge. Water was always his mirror, his means of transport and his communication. Rivers and seas provided the fertile land on which to build whole cultures and civilizations. In the words of Bachelard [1], water was the great and steady eye that absorbed all light and made a world with it.

In the 20th century, new means of communication have lessened the importance of water in everyday life. Contemporary society's strategic and operational centers no longer depend solely on their geographic situation. Instead, they are ruled by the currents and connections of a vast network of media streams, whose shores are the new fertile grounds of prosperity and progress.

This media stream is the new mirror of today's Narcissus, the great eye that absorbs all light and builds an entire world. The changing relationship between self and image (the ego and its echo) has been one of the main themes of electronic art over the last 30 years, from Bill Viola's video self-portraits in a drop of water, in "Migration" [2], to the virtual portraits by Monika Fleischmann and Wolfgang Strauss in "Liquid Views" [3]. Electronic art has witnessed (and promoted) the transformation of the image in this media mirror, sustained by the seductive forces of electromagnetic and digital currents.

Representation of the ego and its echo formed a framework in which artists could experiment with new time/space structures, as well as the changing relationship between our bodies and actions: the action and reaction of the ego when faced with its own echo. Long before sophisticated tools of digital production were developed in the field of electromagnetic technology, the destruction of linear forms had already been provoked using techniques of image superimposition and feedback, or employing mirrors during analogous recording. The artist would deconstruct and reconstruct a portrait in countless audio-visual rehearsals, thereby creating a host of new variations, and a whole new relativity in analogous representation.

Developments in this field have been even greater during the 80's and 90's, with the advance of digital production technologies; the image of our present-day Narcissus is now *simply a simulation of the ego. Reality and fiction overlap*: they interrelate and disintegrate within these new digital compositions. The digitalization of the echo means that its image can be broken down into tiny algorithmic units consisting of 0's and 1's: the so-called bits, which could be compared to molecules. By readjusting its binary components, the echo can rise from this "digital soup" like a Phoenix from the ashes.

The artist can implement a whole range of changes, from slight alterations in the original physical appearance, to a

complete transformation which takes the figure beyond recognition (change of sex. age. etc.). The ego now selects its own echo. from an infinite number of possible identities. Such images go beyond the ego's own physical reality: they are entirely new. transmutable hybrids.

Baudrillard [4] speaks of a Narcissus who no longer strives towards his ideal perfect image. He defines this Narcissus as a fractal subject. who aspires to (and gains pleasure from) being broken down into minuscule replicas of himself.

Swept along by these new digital "currents". the self dissolves into its own reflection. It is able to decontextualize and recontextualize its image. in a complex system of identities and relationships which now belong to the dynamic flow of media currents rather than to the real subject itself.

The far-reaching influence of these media currents on the world's social and political map is clear. Electronic communication feeds off egos and the feedback of echoes: it generates and recreates collective emotions [5]. Turning on the television or connecting to the Internet is sufficient to see the way that people and events appear. grow and spread, and then shrink and disappear. all within the constant flux of media currents.

Just as gentle and obliging waters can erode hard. obstinate stone (Tao Te King), these media currents have demonstrated their supremacy over matter. Electromagnetic waves are now a concrete reality; they have turned the physical world into a mere reflection of itself. Media currents make real facts and events increasingly ephemeral and prone to manipulation. Their effect is not unlike that of a stone thrown into a pond. While the stone sinks to the water's depths, only the waves of its impact on the surface are visible; these waves expand and, for a moment at least, disturb the water's still surface and distort everything reflected in it. The force of media currents brings down borders, hastens revolutions and dissolves nations. Be it devastating or liberating. this force always involves change. The media's role in the break-up of the USSR. the Rumanian revolution. the collapse of the Berlin wall and the Gulf War is undeniable.

Another important theme in electronic art is the "dynamic" and "incubating" effect of the media on the psychic and psychological state of present-day society.

As far back as the 60's, the work of pioneering video artists warned us of the increasing pollution of the media "shores": the muddy waters of information which are threatening to drown our senses. They began to question the apparent truth and objectivity of televised images. They took apart and analyzed the structures of perception and the mechanisms which underlie the media. as well as the complex (and often distorted) relationship between the communicator. the message. the means of communication and the receiver. Links between meaning and significance were swept away in the audio-visual whirlpool. whose stormy waters churned out absurd floods of unconnected information. revealing the absolute void of meaning inherent in an excess of media currents. This new social "landscape". built on the paradoxes of televised information. is depicted in the work of Antonio Muntadas, Tony Oursler, Nam June Paik and many other contemporary electronic artists.

There have been three different stages in the aesthetic. formal and conceptual development of electronic art over the last few decades. The first involved the analogous transformation of reality. linked to the Heraclitian idea of "constant flow". Time's traditionally "linear" components and the "static" concept of space began to change in this increasingly rapid flow of electromagnetic currents: space and time could expand and evaporate like drops of water.

The formal and conceptual disintegration of homogeneity in discourse has combined with the techniques of multiplication. superimposition and simultaneity. leading to the fragmentation and reintegration of space and time on a non-linear scale. In a matter of seconds. we can leap from the Amazon rain forests to the outskirts of Madrid. While the Pope waves at us from Cuba. we are shown inside the U.S. president's bedroom. and discover evidence of the existence of water on the Moon.

The analogous "flow" of media reality gave way to the "flux" of digital creation. Images no longer consist of the optical and analogous projection of reality. The binary system's number matrix enables hybrid. variable versions of the original image to be created. Space and time are broken down into algorithmic units: rather than being the basis of representation. these units are now the ever-changing building blocks of other possible worlds. In the work of Beriou. Karl Sims and Yoichiro Kawaguchi. reality and fiction overlap in imaginary constructions. within the dynamic abstractions of a constant flow of movement.

Digital creation has led to the third stage: virtual immersion. New information and telecommunication technologies now enable us to interact with these imaginary worlds. and turn them into operational centers which can be put to real use in present-day society.

The interface (point of connection between man and machine) is where the communication and hybridization of reality and virtual reality (atoms and bits) takes place. This tool. which is usually personalized by the artist. is the gateway to creation: it determines the relationship between the spectator/user and the work of art. The artist provides new experiences and knowledge by synthesizing physical reality and virtual possibility. This involves the senses of touch, vision and movement: the spectator's body language is 'received' by the computer through the interface, and becomes part of the virtual architecture. landscape or narrative. The work of art is thus "sustained"; it breathes new "life" and changes with each spectator. This interaction involves a constant flux of signs, sights and sensations. which means that it is virtually impossible to reproduce exactly the same images even if the same spectator/user repeats the process several times.

In Virtual Art. audio-visual flux and binary models are no longer the only raw materials of the artist's work. By means of simulation and interaction. the artist can penetrate the very structure and knowledge of reality. This goes far beyond mere functional use and mathematical potential; it enters the symbolic world of creation.

Virtual Art articulates and intensifies certainty from uncertainty. and records the complexity and variability of contemporary reality. It makes the relationship between man and machine entirely personal. turning it into an experience which can be as poetic and dreamlike as Char Davies's work [7]. or suggestive of a new transverse. collective consciousness, as in Ken Goldberg's virtual installations.

According to the physicist David Bohm [8], "not only is everything changing, but everything is in constant flux. That is, what exists is the creative process itself; all objects, events, bodies, conditions, structures, etc. are forms which can be absorbed by this process". This summarizes the progressive, variable, even dissipative nature of reality from the viewpoint of quantum physics. In his article about reality and knowledge, D. Bohm compares such concepts to currents of water, where the infinite forms of eddies, ripples and waves never exist in isolation; they can only be comprehended as abstractions of a total flux of movement.

In Greek mythology, it was this "total flux" which sustained the well of memory and the spring of all knowledge, belonging to "Mnemosyne". She was one of the titans, and the first woman in pre-literate history to exist before the division of the earth and heavens. While transporting the dead on their journey to the kingdom of shadows, the river Lethe robbed them of all memories and knowledge, in order to feed the well of Mnemosyne.

Hermes, the titan's adoptive son, led the chosen ones (gods and poets) to this wellspring of memory, where the muses would offer this worthy "liquid", so that they might "drink" the knowledge of others. But when Prometheus gave humanity the gift of writing, this spring of memory ceased to flow, and the muses became trapped in literature [9].

Once more, the media "currents" have been freed, and the muses have returned to Mnemosyne's well of memories. Hermes has retired now, and the spring of memory flows through telecommunication networks which link images, text and sound in new multimedia, polyphonic ways.

Every day, eager to drink the waters of cyberspace, more than 50 million navigators dive into the virtual wells of Mnemosyne, to consume the knowledge and savor the taste of distant memories. At the turn of the millennium, this virtual ocean plays an increasingly important role in our everyday lives, and in the entire structure and organization of society. It is the means of transport, communication and creation par excellence; a breeding ground for egos and echoes of all kinds.

Like the "primeval soup" [10], the evolution and survival of information and communication in the oceans of cyberspace depends to a large extent on the interactive and organizational capacity of its components. The new "molecular" structures of post-biological life are being formed on the Internet's waterways.

And from the "infinite" possibility of combinations, other "species" arise: other forms and contents which grow and group together, as if they were living organisms. They feed, grow, develop and disappear, just like Bohm's waves and whirlpools in the total flux of movement.

NOTES

[1] Bachelard, Gaston. EL AGUA Y LOS SUEÑOS (Fondo de Cultura Economica, Mexico F.D., 1988).

[2] Viola, Bill: (MNCARS catalogue).

[3] Ohlenschlager, Karin: ARTE VIRTUAL - REALIDAD PLURAL (Catalogue of the Monterrey Museum, Monterrey/Mexico, 1997), p. 58-61.

[4] Baudrillard, Jean: "Videowelt und fraktales Subjekt", in PHILOSOPHIE DER NEUEN TECHNOLOGIE (Merve Verlag, Berlin, 1989), p.113.

[5] De Kerckhove, Derrick: "Von der Burokratie zur Telekratie", in VON DER BUROKRATIE ZUR TELEKRATIE: RUMANIEN IM FERNSEHEN (Merve Verlag, Berlin, 1990), p. 61 and p.69.

[6] Couchot, Edmond: "Entre lo real y lo virtual: un arte de la hibridacion", in ARTE EN LA ERA ELECTRONICA (ACC L'Angelot, Barcelona, 1997), p. 79-84.

[7] Ibid (3), Char Davies "OSMOSE", p.62-65.

[8] Bohm, David: LA TOTALIDAD Y EL ORDEN IMPLICADO (Edicion Kairos, Barcelona, 1987), p.80/81.

[9] Illich, Ivan: "El estanque de reflexion de Mnemosine", in H2O Y LAS AGUAS DEL OLVIDO (Catedra, Madrid, 1989), p.61-64.

[10] Montero, Francisco: Sanz, Juan Carlos: Andrade, Miguel Angel: EVOLUCION PREBIOTICA: EL CAMINO HACIA LA VIDA (Edicion Eudema Biologia, Madrid, 1993).

THE CURRENT TREND IN COOPERATION AND DEVELOPMENT

ALBERTO SÁNCHEZ-BAYO

If the blue planet's heat is controlled by means of the major mass of water of which it is comprised, providing an atmosphere suitable for the life of the beings which inhabit it; cooperation must serve as a warm current in the setting into order of the relationships among individuals, social groups and cultures, smoothing over any discrimination involved in living together within a framework of tolerance. Far from seeking a rationally perfect model of individual or society, *cooperation for development* must aim at enriching individuals and cultures through constant contact and communication among them, conveying values and knowledge and respecting the traits of individuality which make up their own identity within this melting pot of races and cultures comprising the geography of mankind. Hence, as water takes on the flavor and aroma of whatever is dissolved in it, our lives must be permeable to those of other individuals and cultures so as to acquire new outlooks and progressively more subtle shades of nuance as part of a process of constant renewal.

FLOWS

BY WALLACE S. BROECKER

A river carrying 100 times more water than the Amazon is difficult to comprehend. Its flow would be 20 million cubic meters of water per second. Only if the daily rainfall for the entire Earth were funneled down a single channel could such a river be created. No such megariver has ever existed, of course, but such a flow does exist in the ocean. We scientists refer to it as the Great Ocean Conveyor. Instead of coal, this Conveyor transports heat from the warm regions of the Atlantic to the region around Iceland and dumps it into the frigid Europe-