

ART & TELECOMMUNICATIONS - TEN YEARS ON

-An Australian Perspective

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Abstract

This paper provides an overview of artists' work with telecommunications systems. A brief history of some of the most significant events of the last ten years is presented. The creative development of the medium by artists is described and an emergent new paradigm of interactive work is discussed in terms of cultural theories of communication. The author argues that telecommunications constitutes a new, post-industrial international 'dimension' and that the nature of artists work in this medium differs radically from most earlier art forms.

Artists are both exploring and defining the medium in order to gain a better understanding of its parameters. Although interest has been limited so far by both technical and quality restrictions and the difficulty of accommodating interactive work within a 'conventional' art context to date, the use of telecommunications as an art medium should increase as better visual technologies encourage greater acceptance of the work. However, the tradeoffs inherent between technological sophistication, cost and accessibility are likely to remain problematic.

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Introduction

It has been suggested that there is an urgent necessity for artists to enter into a dialogue with, as well as a critique of, our technological culture.¹ Furthermore,

"To avoid embracing contemporary technology is to opt for voluntary cultural fossilisation; for an art practice that becomes quaint and irrelevant to all but a "cultured" few. To embrace the technology is to live and work in the real world, to grapple with the forces that are shaping our world, perhaps to some productive end."²

This is precisely what some artists have been doing with telecommunications. The involvement of artists in communication networks over the last decade represents a remarkable pioneering effort. After all, even in broadcast television, that most visual of media, despite more than 50 years of development, the presence of artists, or even experimental video/filmmakers is minimal. The impact of the electronic communications environment on the world is enormous and yet most art does not directly explore it, or even acknowledge its existence.

A dispersed community of artists from different countries, connected electronically, is a new phenomenon, which was not economically feasible until the development of sophisticated telecommunication systems. Participation in this activity has been an act of faith on the part of many different artists in the developed countries which has required tremendous goodwill and cooperation. Through their ongoing participation, many artists have confirmed that the experience has been worthwhile.

Whilst much of the significance of the early projects lay in the international exchange of work and opinions and research into modes of operation, some artists developed an alternative, more democratic paradigm of interactive

work, similar to that previously established by the mail art of the 60s and 70s.

The following survey is by no means intended to provide a comprehensive history of art telecommunication, but I believe that it does provide a useful background, encompassing most of the major interactive communication events which have taken place over the last ten years. However, in keeping with the basic hypothesis of this paper, ie that telecommunications is an interactive medium which facilitates collaborative development, I have deliberately omitted most of those events and artists who used the media mainly as an extension of individual work and performances.

A Brief History

For many North American artists, Bill Bartlett's pioneering projects with slo-scan TV (transmission of freeze-frame B&W TV pictures via telephone) from 1978-1980 provided an empirical foundation for creative work with telephone-based communications systems. Bartlett introduced many artists to telecommunications, including Robert Adrian, who developed the I.P.Sharp Artex electronic mail system. The experiments of Bill Bartlett, Liza Bear and others culminated in an international Conference on Artists' Use of Telecommunications organised by Carl Loeffler in 1980,³. However, this event served to demonstrate that the transmission quality and the response speed of the early systems was too limited to hold the attention of passive audiences or active critics.

Nevertheless, such projects manifested an important attribute of this new technology: the metaphysical feeling of "being in touch" with a remote group of people, which transcended normal barriers of space and time. Long-distance communications promoted a sense of freedom to indulge in creative play, an important catalyst in many projects. In order to experience this unique new environment, active participation was necessary and

artists began to realise that telecommunications work required a different approach from earlier forms of art. A workshop situation which could facilitate dynamic interaction and collaboration between groups of involved participants seemed more appropriate than structures within which artists performed in front of an audience. In addition, the concept of producing a specific art "commodity" for appreciation by a passive audience did not appear relevant to interactive work. These evolutionary discoveries implied a basic change in paradigm. Thus, in later telecommunications work, the situation of the individual artist as originator tended to give way to an active collaboration between artist-participants.

The central figures in the development of major projects which embraced this "aesthetic of participation" were Robert Adrian and Roy Ascott. Both artists perceived telecommunications as a dynamic and collaborative process and saw creative activity in the medium as a natural development in art which reflected the shift from a Newtonian to a relativistic view of the world. They also recognised that art networking could be potentially subversive, challenging the notion of centralised, hierarchical power structures in communications, media and art.

Roy Ascott predicted the emergence of a telecommunications art form in 1968⁴. 12 years later, in October 1980 (when the technology had been developed), he initiated the Art Access Conference, linking artists in North America and the U.K. via the Infopad electronic mail system. Again, participants in this project felt that although the medium was well suited to the exchange of ideas, it was too limited to be used as an "art form". However, there was a strong feeling of community within the computerised "communication space".⁵

Like Bartlett and Ascott, Robert Adrian was also interested in promoting a medium which allowed

geographically-isolated artists to form a decentralised community for the exchange and development of ideas. His ambitious event The World in 24 Hours, as part of the 1982 Ars Electronica, represented a serious attempt to facilitate international collaborative work between artists. It was the first large-scale, international, multimedia communications project which emphasised interactive participation. Although most of the projects executed were individually of a modest nature, taken together, they presented a rich texture of experimentation.

In contrast to Adrian's eclectic "multimedia" approach, all of Ascott's projects have been structured around associative thinking via telematic systems. His major 1983 project, La Plissure du Texte, involved a large number of collaborators in several countries, in a dynamic work of "layered" storytelling. The project was very successful, and produced a transcendent, interactive "story" which clearly demonstrated a creativity dependent on participation and collaboration, and the layering and association of ideas. According to Carl Loeffler, who later set up the California-based ArtCom Electronic Network (ACEN):

The beauty of such a project (as "La Plissure du Texte") is in its temporary nature. Perhaps the transcendence and feeling of artistic flight is something that can only be maintained for short periods. Then comes the time of wanting to do it again and if...we don't want to invent the system from scratch, we'd better have our utilities (networks) in place and ready to embrace the next moment of flight.

It should be made clear at this point that there were two distinct groups of experimenters: those who used computer-based(telematic) communications and those who didn't. It was clearly easier for those on computer networks to keep in touch and set up the next projects, whereas artists who wished to experiment with slow-scan TV

or fax had to organise contacts by other means, but after the project, there was no ongoing network for follow-up.

Thus, the establishment of an ongoing network of participants became a key factor in the long-term development of international telecommunications art projects. This was facilitated by the evolution of the Artex computer network, under the direction of Robert Adrian, and with considerable support from the Canadian I.P.Sharp company, which runs it. Although computer networks are difficult to use compared with fax, Artex was relatively simple and cheap, and therefore extremely valuable to artists. It gave a number of telecommunication artists in the developed world a relatively cheap and accessible international network, in which to meet, discuss, speculate, plan and execute projects over an extended period. Thus it was possible to co-ordinate projects which utilised other, more "temporary" visual communications links, such as SSTV (slow-scan TV) and fax.

Artex also gave artists the opportunity to experience telematics, i.e. computerised "store and forward" networking and this promoted an awareness of the medium as a new kind of space in which to work, a communication space beyond normal considerations of time and space, in which a geographically dispersed creative community could collaborate to produce new kinds of work. It encouraged a perception of artists' projects with telecommunications as parts of an integrated, ongoing creative activity, whose purpose was an exploration of the medium, not to challenge commercial use, but to survey this new electronic dimension in order to understand its special qualities and participate in its development. Thus an international community of artists formed, which was geographically dispersed, but united by a common interest in promoting an alternative, more democratic model of telecommunications use within a post-industrial, mass-media-dominated society. At the same time, it should be noted that the Artex group constituted a somewhat privileged fellowship

of male "initiates", mostly English-speaking North American and European artists who were based in art institutions.

Norman White's intriguing Hearsay project in 1985 used the Artex computer network to pass a short story around the world (in 24 hours) between groups of artists. Each group had to translate it from one language to another before it was passed on from city to city, until it arrived back at the source, (Toronto, Canada) substantially mutated (or mutilated!):

You might think of the "Hearsay" project as a kind of simple, yet piercing glance at the fundamental ironies of the human condition: language both tie us together and separates us. Misunderstanding is sometimes the source of new understandings. Our best work is often an accident. More sophisticated tools permit more sophisticated mistakes.

Ascott's 1986 Planetary Network project for the Venice Biennale had a much more thematic structure, centring around exchange of news, real and fabricated. The exchanges took place over a 3-month period between about 20 cities in North America, Europe and Australia. The project also allowed for other media such as SSTV and fax to be incorporated as "mini-projects". The total amount of textual information exchanged in the Venice Biennale project (excluding other, peripheral projects such as fax exchanges) ran to a staggering 2000 pages of printout. Sadly, due to various problems, this was never published.

In many ways, Planetary Network was a watershed for the core of artists who had been involved in networking over a long period of time. Although the project initially embraced the "news" brief fairly closely, some fascinating and revealing information emerged during the project, such as alternative news from Nicaragua and a discussion on censorship which included a hoax, to test the level of paranoia amongst participants. Towards the end of the project, the opportunity of a "frank and open" exchange of views was too much to resist, and this led to some

criticism of "Americentrism" and an emerging perception that the real value of the project lay in the direct international exchange of views. Rather than encouraging the conspiratorial view that artists' intervention might influence corporate networking, it was suggested that networking had evolved without a master plan, as simply another aspect of the social/financial/cultural fabric of western society, and that the work of artists was to make its surface visible, in a mutual interaction: "A small system meshing with a much larger and more powerful one".⁸

Many participants felt that the existing use of telecommunications by artists still involved many paradoxes and problems, and that new solutions had to be found.

Most visual artists need some kind of bridge between solitary and truly interactive art. By showing them a way to collaborative in object-based work, it is possible to indicate easier forms of collaboration... If artists...take that ego-solitary approach with them...nothing is changed. . But if we can get (them) to understand truly interactive collaboration, not just active participation, then they will use network media differently.

Artex is a great international network but it isn't visual. Fax, on the other hand, has no network to speak of, but has greater possibilities for simple visual interaction, and appeals to traditionally trained artists.

The big problem for those of us who need government or other support...is that new art forms have no validity with traditional funding organisations. Galleries are (generally) into the passive audience and the whole museo-critical complex is unmoved by the possibilities of technological art forms.

During the previous year, the "Lehrkanzel fur Kommunikationstheorie" (Department of Communication Theory) had been established at the Hochschule fur Angewandte Kunst in Vienna to network with art institutions around the world. The founding professor, Roy Ascott and his assistant Zelko Wiener, planned to use a range of telecommunications media to set up various

interactive, international teaching and learning exchanges.

A pilot project of the Lehrkanzel, Digital Body Exchange (DBX), was initiated in mid-1987. I.P.Sharp's Artex electronic mail system was limited to text and therefore lacked visual capability. The DBX proposal was to exchange Macintosh-generated images, using the much more powerful, but much less user-friendly Unix-based European Academic Research Network (EARN) computer network. The project was designed to be a medium-term (6 months) experiment in international exchange of images and text via university computing networks such as Bitnet, Usenet and ACSnet. The intention was to collaborate with artists and students to exchange, compare and then directly modify body images drawn from local cultural representations, the sciences, arts and other sources, stimulating new visual interpretations and analyses. By using the visual editing capabilities of Macintosh computers, the project sought to facilitate a dynamic and continuous process of appropriation, reinterpretation, layering and networking.

I believe that this was the first time that such an exchange of pictures had been attempted internationally via a Unix network and, unfortunately, it proved to be a very difficult and complicated process. One of the participants, Linda Dawson, a tutor at Sydney University finally worked out how to deal with incoming IBM-coded picture files, and we were then able to exchange Macpaint-coded pictures between Sydney University, the Vienna Hochschule, Gwent College in Wales and Carnegie-Mellon University in Pittsburgh.¹⁰ Whilst the project barely rose above an initial experimental exchange, due to the programming hassles of interfacing Unix and Macintosh within the system, it did break new ground in solving network image transmission problems. Nevertheless, an application to the Australia Council's

art & technology fund for a small grant to cover networking costs was repeatedly delayed and finally unsuccessful, which left the Sydney group unable to expand the project and very much dependent on the generosity of Sydney University.

In early 1988, the Digital Art Exchange Group (DAX) at Carnegie-Mellon University in Pittsburgh put forward a proposal for a structured teaching program, the "Ideas of Drawing", based on the same Macintosh-Unix network protocol that had been (painfully) pioneered in the Digital Body Exchange project. By June, a respectable level of activity in text and image exchange had been generated, mainly between Robert Dunn in Pittsburgh and Paul Sermon in Gwent, motivated by Paul's (northern) summer project. The project focused on the relationship between linguistics and the problem of creating meaning through these 'disembodied' images.

These images have no words or names we can use to explain their existence. Would it be useful to give these images names?...Landscape, Portrait, Nude, Still Life and Abstraction, or should we invent new words?

...How does context work to clarify ambiguities? 11

The presence of Zelko Wiener from the Vienna Hochschule in Sydney in August 1988 helped us to get a group of students working on Ideas of Drawing at City Art Institute. Unfortunately, we did not receive a response to the images and messages sent, due in part, no doubt, to the northern summer vacation, and our involvement in Unix networking finally petered out in 1989.

Computer networking has always involved hardware and software complexities which have kept many an artist at bay. The specialised equipment and procedures required has created a technologically elitist situation, which may help to explain the male bias in this field. By comparison, fax is much easier to use. However, those

pioneers who chose to use non-network point-to-point visual media such as fax, SSTV and satellite television did not necessarily maintain contact with the more cohesive international community of telematically-based artists. In this context, the work of Canadian artists Lisa Sellyeh and Peeter Sepp of "Collective Art+Technology"(Toronto) deserves a mention. Sound artist Peeter Sepp initially organised a number of audio teleconference events in 1981 - such as Bell Jam, linking participants in Montreal, Toronto, Quebec and Ottawa; and CANJam, involving Vancouver, Toronto and Helsinki. Lisa Sellyeh and Peeter Sepp began working together around 1982, and in 1984, organised two international telefax exchanges, pARTiciFAX and Electronically Yours.¹² In the latter project, images were exchanged and modified in a collaboration which included artists in Morocco, Vienna, Toronto, San Francisco and Japan. ¹³

Some of the most innovative art telecommunication events have been produced by California-based artists Kit Galloway and Sheri Rabinowicz of "Mobile Image" using hi-tech telecommunications media. In November 1980 they set up Hole in Space, a "communication sculpture" in shopping centres in New York and Los Angeles. For two hours on each of three consecutive evenings, the locations were connected via satellite, with projectors displaying live video, life-size images of people on the opposite coast, who thus appeared to be "watching the watchers". There was no advance publicity and no signs or instructions at the sites. Hole in Space had to be discovered by passers-by who were suddenly "confronted" by people on the screen. ¹⁴

They found themselves in this emerging environment without having been prepared, conditioned or sold. ...We just handed the situation over to the people to acculturate, to humanise.¹⁵

The crowds which were drawn into this "hole" in space/time were able to communicate by image and voice with the opposite group, and because neither group could see

itself, there was little inhibition. Without really thinking about it, the numerous participants utilised video telecommunications and defined a context within which meanings could be exchanged.¹⁶ The resulting interaction evolved from naive playfulness to sophisticated and skilful communication through performance. The curiosity and excitement led to a collective intimacy rarely experienced in public situations.¹⁷

The event was a wild success and has been widely acclaimed by practising telecommunications and video artists. However, since it used live video via satellite, it was also expensive. The whole project cost U.S.\$35,000 in 1980, but at commercial rates, without sponsorship, it could have cost about \$200,000.¹⁸ However, now that optical fibre/ISDN links are becoming available, Hole in Space may provide the model for future projects of a similar nature.

Mobile Image's Electronic Cafe was commissioned by the Museum of Contemporary Art in Los Angeles for the 1984 Olympic Arts Festival and united five culturally distinct communities of Los Angeles via telecommunications equipment. SSTV, electronic writing tablets, computer terminals, printers, video cameras, screens and noticeboards were installed in each of four cafes and MOCA. Patrons exchanged images of themselves, other people in the cafe, performed in front of the camera, and wrote poetry. After a slow start, and some technical hitches, the project picked up in the third week as familiarity increased. Discussion, debate, jokes and flirtation went on within a network for "creative conversation". It created a gallery without walls for a participatory and public "art communication".^{19,20}

Unfortunately, the use of sophisticated technology capable of producing more aesthetically satisfying images is in direct conflict with artists' aspirations towards global

communication. The severe limitations on technology access in many countries is still a barrier to artists seeking world-wide dialogue. The only generally accessible medium is the telephone. In 1983, the BLIX group, which Adrian set up, pioneered the first serious attempt to network outside the western bloc countries through their subversive Telephone Music projects, which offered a simple way of establishing contact between artists in eastern and western Europe. Although they tended to neglect interactive participation in favour of more conventional transmission of prepared works, perhaps, as Adrian noted, "the content was in the contact".²¹ The underlying importance of the Telephone Music projects lay in their ability to circumvent the normal political restrictions on artists' exchanges between eastern and western Europe and facilitate a collaborative creative exploration.

Theoretical models

Although many artists initially regarded telecommunications as providing an alternative medium for the exchange of work and information, the concept of transmitting a discrete one-way "message" (as described in Shannon's classic technical theory of communication ²²) is perhaps more appropriate to mass media. Communication is neither a one-way process, nor is it concerned with the production of works which rely on referential codes. Whilst the semiotic work of Saussure and others who followed examined the production of meaning within a broader cultural framework and concentrated on linguistic "coding" and interpretation, it still did not address the dynamic and relativistic process of direct interaction between sender and receiver.

The Russian social and literary theorist Mikhail Bakhtin suggested that meaning is not located in a fixed linguistic form, but rather in the use of language in action and communication. He insisted that meanings are

generated and heard as social voices, anticipating and answering one another in "dialogism":

In the use of language in action and communication...(the meaning of) all utterances, including artistic utterances...(is) determined not by the systematicity of codes, but by the ever-changing circumstances of the communication.²³

Gilles Deleuze' work, particularly Dialogues ²⁴ also tends to support the notion that cultural meaning is communicated via dynamic interaction rather than via a one-way medium such as a book.

In communications work, any message which an artist might initially transmit, may be modified and added to in a continuous exchange process. Thus, meaning should also be defined within this dynamic context, which includes sender and receiver as equal partners. Cybernetics and systems theory thus offer more useful, dynamic, holistic models than earlier theories. Everett M. Rogers and D. Lawrence Kincaid have synthesised these concepts into a convergence theory of communications, in which meaning is contextually resolved by negotiation between participants within a larger dynamic framework.²⁵

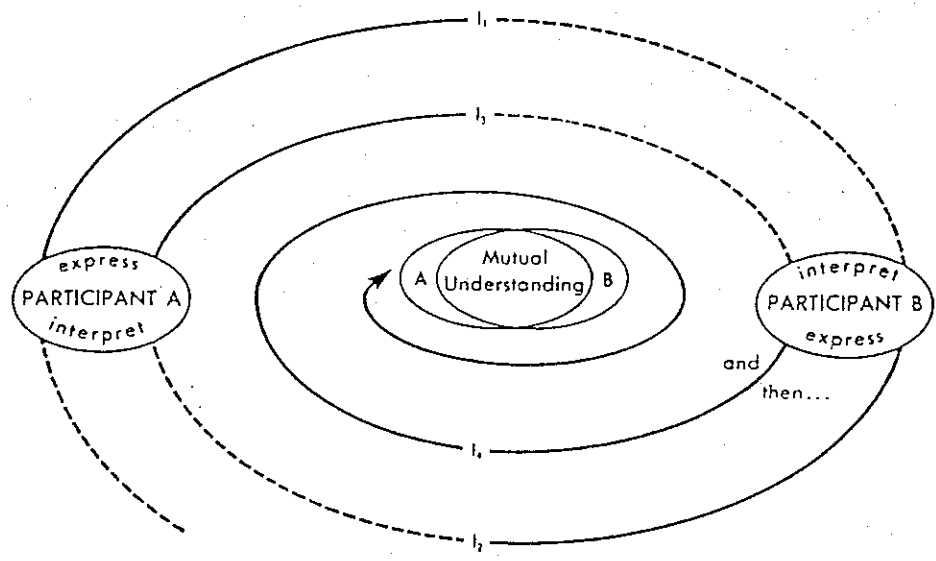


Fig.1 The convergence model of communication, E.M.Rogers and D.L.Kincaid, Communication Networks, (NY.:The Free Press, 1981) 65.

By using telecommunications, individuals are able to transcend normal physical limits of time and space, and national and cultural boundaries in order to exchange, share and develop concepts and ideas on an international basis.

In 1985, the philosopher Jean-Francois Lyotard observed that, through the development of "immaterial" electronic media, earlier concepts of discrete human identity and a separate material world were breaking down. He suggested that interaction with electronic media was softening the division between human and technological domains by emphasizing a shared consciousness, thus weakening the notion of separateness and individual identity. Significantly, he adopted a communications model of creative activity which depended on interaction with "immaterial" media , as the paradigm for an exhibition of postmodern culture, Les Immatériaux, at the Centre Pompidou, Paris.²⁶

In a modified form, Rogers' and Kincaid's theory can provide an appropriate explanation of the interactive

telecommunications process, supporting the hypothesis that the purpose of artists' activities in the medium is to define and understand a shared electronic communication space, instantaneously accessible from all points of the globe. The foundation of a physical structure for this is the web of international telephone networks and a model for a "metaphysical" structure may be constructed by combining elements of the convergence theory and Lyotard's proposition of a general interaction, or merging of consciousness, between human and electronic media:

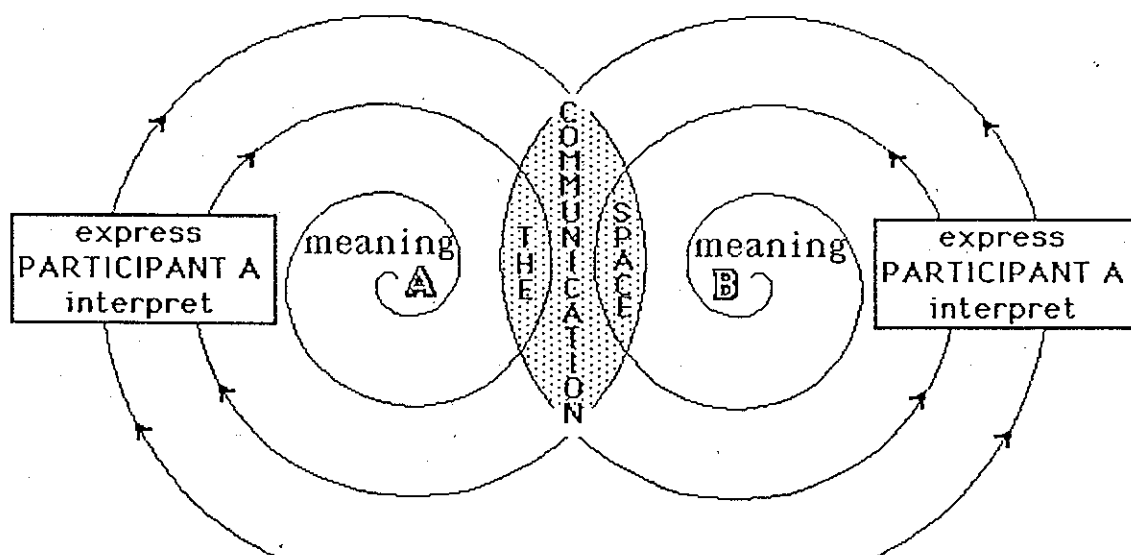


Fig.2 Interactive communication through a shared electronic communication space.

In this model, the interactive field of one participant overlaps with the field of another. Contextualisation and meaning are derived through ongoing negotiation and transformation of "dematerialised" work.

The electronic communication space proposed in the above diagram also contains some unique metaphysical attributes. It defies the normal (Newtonian) laws of space and time. Through this new kind of dimension, geographically distant points can be in immediate contact. Thus the international telephone system may be regarded as an analogue for a

post-Einsteinian world. It describes a global 'surface' in which time and space are collapsed. Although we cannot experience this 'extended topology' directly, art telecommunication can help to make its 'surface' visible.

In Rhizome, Gilles Deleuze and Felix Guattari proposed that there could be established

A-centred networks of infinite automata, where communication occurs between any two neighbours, where channels or links do not pre-exist, where individuals are all interchangeable and are defined only by their state at any given moment, in such a way that local operations are co-ordinated and the final result is synchronised independently of any central authority. ²⁷

This could be regarded as the ultimate objective of telematic art networking, which uses computer communications to enhance the telephone system with stored content. The interactive manipulation and/or augmentation of such stored messages over a period of time has lent a remarkable degree of transcendence to thematic projects such as La Plissure du Texte and Planetary Network. Interactive, associative thinking has created ideas and patterns not possible in any one mind. It has been argued by Roy Ascott ²⁸ that such telematic activity can produce a new electronic "collective consciousness". However, the broader significance of electronic networking is that it allows artists to participate in an ongoing, inclusive dialogue which integrates "utilitarian communication", projects and criticism into a new form of cultural discourse.

The use of non-computer-based media such as fax places severe limitations on the process of intervention and considered response by removing the element of computerised storage and manipulation. It also tends to cost a lot more to network internationally in real time. This is partly compensated by the sensation of being immediately "in touch" with a remote group of people, as a result of the near-simultaneous exchange and the

possibilities for interfacing between international centres and working with local groups in more traditional art modes on paper. Fax can also provide a visual means of exchange which transcends language and cultural barriers, but it is difficult to evolve satisfactory immediate responses if the project is interactive. Access to fax is inherently more democratic than telematics, in that operation is simple, self-contained, and it does not need computer software knowledge or access to a large mainframe system. However, it generally needs international telephone lines, whereas telematics does not. Through local access to "concentrator" mainframe nodes, telematic systems allow for high-density low-cost use of international telephone lines.

Present Limitations and Future Possibilities

Although the enthusiastic artists who network via telecommunications have often cited its utopian potential to facilitate a new interactive collaborative art form, after 10 years of continuous development, creative experimentation with telecommunications does not seem to have gained a broad acceptance within art communities. The reasons are many, but I believe that part of the problem has to do with the politics of art.

Much contemporary art practice is still restricted by the "gallery aesthetic", the concept of the individual "star" artist and the individual, preferably saleable work; a bottom line in the international art market which dictates that, despite any postmodernist disclaimers, the artist should always be the identifiable author of his or her unique product, which should, of course, be exhibited in a gallery. (In many ways, these restrictions run parallel to the limitations of late capitalism, where one is free to entrepreneur within, but not to challenge, the underlying economic order.)

Culture, as the site of social differences and contradiction, is deeply involved with power. ²⁹

Most of the early telecommunication projects used systems that were relatively crude and mostly dependent on either an ongoing dialogue via text, or "one-off" projects which relied on an exchange of technically low-grade visual material. However, it is precisely this use of accessible telecommunications media which allows democratic participation in the work. The artist may also provide an interface between various information and cultural systems, but in the process, his or her role becomes transmuted from originator into editor or animateur.

There is then the problem of what constitutes an art form in this new medium. The artwork undergoes a "loss of aura", ³⁰ becoming an ongoing participatory networking activity.

It is precisely this "aura" which has led to commodification. Art should not only be the reproduction or reflection of a given society, it should also be the production of a new consciousness. Most frequently, this...is done with new media which are often, at the beginning, "marginal" to the creative process... The task of art is to destroy the artificial boundaries between life and art. ³¹

Art telecommunications work is attempting to do this. It involves a dynamic, but playful engagement with and exploration of, new technology. As the philosopher Martin Heidegger proposed, art may be a method of finding the true meaning of technology.³² In addition, postmodern art may involve a search for some state or truth which will only later become apparent.³³ Thus artists' involvement in telecommunications is helping to define a new reality. Adrian has suggested that in this electronic dimension, it may be possible to formulate a new, eclectic form of art which can reflect post-industrial society more accurately.³⁴

However, the work is difficult to appreciate as art within existing paradigms by passive observers and critics because it represents a new inclusive form of cultural

dialogue, requiring dynamic intervention, appropriation and modification by involved participants:

The main problem (with art telecommunications)..is in the utter breakdown of the distinction between theory and practice. In this medium everything we are doing amounts to a set of theoretical statements about an electronic space...which exists almost exclusively for large corporations. The³⁵ meaning is here in the work...in the experience.

Furthermore, collaborative projects have seldom found ongoing support from the art world. It may well be that collaboration is not a natural mode for artists within capitalist societies, but one which may need some introductory experience in order to be successful.³⁶ Of course, collaboration also implies a different, alternative world view. According to Dana Moser,

[Although] this "netting" activity comes largely from artists and is very "art-like" at times, what is most important might not ultimately be appreciable in an art context. I like to think of it as building a trans-national³⁷ information-sharing subversive community.

Indeed, it has been suggested by Mikhail Bakhtin that the self is constituted by acquiring the ambient languages and discourses of its world.

The self, in this sense, is a kind of hybrid sum of institutional and discursive practices bearing on family, class, gender, race, generation and locale. Ideological development is generated by an intense and open struggle within us for hegemony among the various available verbal and ideological points of view, directions and values.³⁸

Telecommunications provides a further dimension to this dialogue which extends beyond parochial, or even national boundaries. Many artists are using this medium not only because they want to transcend local situations and concerns but also to explore networking. Rogers and Kincaid have pointed out that the basic purpose of any communication is to achieve a mutual understanding of

"reality" through collective action, so that other human purposes can be achieved;³⁹ and that, in this process, diversity of participants and long-distance contact are important factors.⁴⁰ One of the best demonstrations of this was the 1986 Venice Biennale Planetary Network project, which, sadly, remains unpublished.

However, within the developed world, the telecommunications art community still has a distinct Anglo-American bias, due to the dominance of the English language and good North-American computer access. These therefore become preconditions for participation. Many artists believe that the cultural imbalances in international communications are the most important area for future dialogue:

These problems only surface with people working in different cultural environments speaking to each other about the way they perceive the medium.⁴¹

Unfortunately, whilst artists' telecommunication may provide channels for critical feedback on the media, economic and political systems of developed countries, it is doubtful whether it has much validity in other parts of the world, except as a new form of cultural colonisation, unless it is radically simplified to take account of local conditions. Although telecommunications has great potential for changing the relationship of third-world artists to the culture of the developed world through interactive dialogue, global access to new technology, and in particular telematics, is not economically or politically feasible.

Paradoxically, the early development of art telecommunications was plagued by difficulties and frustrations due to the lack of technological sophistication, and in particular the inaccessibility of real-time, high quality, visual networking. The general absence of a satisfying visual product, coupled with the technological complexities of networking, meant that only

an enthusiastic handful of artists were able to maintain a continuous long-term involvement. For example, although recent attempts to network computer graphics images (Roy Ascott's Digital Body Exchange Project, later developed further by Carnegie Mellon University as the International Drawing Program project) illustrated the visual possibilities of computer networks, they were so hampered by the complexities of Unix network programming and the bandwidth required for graphics that any spontaneity of exchange was lost.

Nevertheless, the impact of technological development is such that the ground is continuously changing.⁴² One medium in particular, fax, is now so widespread in developed countries that artists are bound to experiment more and more with this user-friendly system of visual exchange. For example, the recent Australia/U.K. Mondo Faxo ("Wall Lords of the 20th Century") event by Tony Coleing and Adrian Hall, used this technology. During October 1989, "Projects U.K." in Newcastle, England, and a number of international centres in Ireland, Scotland, Italy, France, W.Germany, Brazil, Hong Kong, Japan and New York, linked up with a fax installation/exhibition at "Artspace" gallery in Sydney. About 500 faxes were received in Australia over two weeks on the contemporary theme of "bringing down the walls of fear and oppression" and these were displayed on the North, South, East or West walls of the gallery as appropriate (see photograph). In order to explore the meaning of the images through dialogue, some were modified, or otherwise responded to and retransmitted by the group of students and artists in Sydney. (Perhaps the most remarkable was a newsletter faxed from Long Bay Jail in Sydney). Whilst real-time international line costs were an inhibiting factor,

...the gesture of the human hand or the expression of human feeling...managed to survive the process of being photographed, digitalised, transmitted and recomposed by a series of machines.⁴³

As an intermediate communications technology, fax has a number of advantages. It is simple to operate and readily produces a hard-copy image on paper, thus partially satisfying the criterion of object production. It also accepts traditionally produced artworks on paper, in quantity. It can therefore be operated as part of a conventional exhibition by a group of artists working in a gallery/studio, unlike computer terminals, which tend to be operated in a much more one-to-one manner. Both media, however, lend themselves to decentralised use. On the "down-side", fax is relatively expensive to use because of its real-time demands on international telephone lines. It cannot be networked. It is a point-to-point medium. Computer text or image transmissions, on the other hand, can be stored in a central location, modified and retransmitted relatively economically using high rates of data transfer, and without an intermediate stage of traditional paper output. Herein lies the challenge to conventional modes of art exhibition. Through telecommunications there is a real possibility for a "paperless" and "location-independent" art medium to emerge.

The emergence of sophisticated and relatively cheap and accessible colour copier and computer graphics technologies has also attracted a wide range of visual artists to experiment and explore these new media. Colour copiers and fax machines should soon be able to accept a direct input from personal computer graphics terminals. Artists may now be able to consider the possibilities of polyphony⁴⁴ offered by a range of telecommunications and new media (but within a context which is increasingly technology-driven).

ISDN, the Integrated Services Digital (telephone) Network, and its associated technology of broadband optical fibre is likely to bring a whole new range of possibilities into play. With the implementation of optical fibre ISDN throughout the developed world by the mid-1990s, it should

be possible to send high quality colour faxes or to network colour graphics between personal computers. It will also be possible to videoconference between multiple destinations. This new technology should provide an infrastructure for more artists to explore live interactive video and multimedia projects such as those pioneered by "Mobile Image".

However, the development of visual computer networking, whilst much more interactive than faxing and cheaper than live video, will still remain dependent on the user-friendliness of the big international computer networks. The cheapest of those is the universities cooperative networks, ie EARN/BITNET/USENET/ACSNET etc but being Unix-based, they are complicated to use. There is a clear need for further work on visual networking systems.

Conclusions

Artists' work with telecommunications represents a joint exploration of a contemporary technological medium. Individuals are thus able to transcend normal physical limits of time and space, and national boundaries in order to network concepts and work. Such associative thinking can bring forth ideas and patterns not possible in any one mind. Networking theories support the concept that cultural meaning is communicated via dynamic interaction. Thus, compared to traditional forms, telecommunications offers artists a unique interactive contextual framework. It also provides an insight into a relatively invisible, but nonetheless significant, aspect of post-industrial society.

Whilst early projects demonstrated the inherent potential of telecommunications, the trade-offs between quality and accessibility and the nature of interactive work judged in terms of conventional art criticism emerged as problematic. Artists' work with telecommunications operates in a different context from more traditional

work. There is no definite final product, and much of the work has constituted an ongoing exploration to find out more about the significance and meaning of networking. It may require a new interdisciplinary theory based as much on communications as on art and a new criticism based on close and dynamic involvement with the process.

However, whilst art telecommunications has great potential as a creative, contemporary mode of working and thinking, many paradoxes still remain. Communications access cannot be isolated from the its financial, social and cultural determinants, although fax and telephone are generally more accessible than computer networks.

Although much of artists' telecommunication work has relied more on textual exchange in the past, visual forms are developing. Some of the major projects which have taken place may provide a useful 'modus operandi' for future experiments. As new technologies such as optical fibre ISDN facilitate more sophisticated visual exchanges, it is likely that artists' interest and involvement in the medium will develop further. A totally electronic, online, paperless, decentralised art medium may even emerge.

Finally, an optimistic view of the future has been suggested by the Pittsburgh DAX group:

The art of any era is impenetrable while it is occurring. But the world of information transfer and storage may link artistic quality with intent in a way which reawakens dormant areas in the human psyche.

To our brother and sister collaborators we say, "Speak! We found a new place to play".⁴⁵

Endnotes

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2. Simon Penny, "Consumer Electronics and Cultural Redundancy", Poetechnica/Irrelevant Ethics exhibition cat., Performance Space, Sydney, 1988, 10.
3. The Conference on Artists' Use of Telecommunications was held at San Francisco Museum of Modern Art in February 1980.
4. Roy Ascott, "The Cybernetic Stance: my process and purpose", Leonardo, vol.1, no.2, 1968, 105.
5. Julian Ascott, "Report on the Development and Use of Computer-Mediated Telecommunication Networks by Artists", unpublished paper, Bristol, U.K., March 1983, 9.
6. Carl Loeffler, Artex (Email) message to Planetary Network, Venice Biennale, 24 July 1986.
7. Norman White, Artex message, Hearsay project, 2 Dec. 1985.
8. Robert Adrian, Artex message, Planetary Network, Venice Biennale, 5 Aug.1986.
9. Jan Birmingham, Artex message, Planetary Network, Venice Biennale, 26 Aug.1986.
10. In hindsight, it would have been really useful to have a scanner to input pictures, but in Sydney, artist Jacqui Evers worked very hard to produce and modify Macpaint images.
11. Paul Sermon, "Echoes of Ambiguity", Ideas of Drawing Unix computer image exchange project, June 13, 1988.
12. Carl Loeffler, "We want to communicate with aliens and you can help", Artcom, San Francisco, vol.7, no.25, 1984, 1.
13. "Fax to the Max", (anon.) Artcom, San Francisco, vol.7, no.25, 1984, 4.
14. Gene Youngblood, "Virtual Space: The Electronic Environments of Mobile Image", exh.cat. for Electronic Cafe, MOCA, Los Angeles, 1984, 13.
15. Kit Galloway, quoted in G.Youngblood, op.cit.
16. L.Lewis, Artweek, Los Angeles, vol.2, no.44, 27 Dec.1980, 5.
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22. Claude E.Shannon and Warren Weaver, The Mathematical Theory of Communication, (Urbana: University of Illinois Press, 1949), 34.
23. Robert Stam, "Mikhail Bakhtin and Left Cultural Critique", Postmodernism and Its Discontents, ed. E.A.Kaplan, (New York:Verso, 1988), 121.
24. Gilles Deleuze & Claire Parnet, Dialogues, trans. H.Tomlinson, (N.Y.: Columbia University Press, 1987).
25. Everett M.Rogers & D.Lawrence Kincaid, Communication Networks - Toward a new paradigm for research, New York, The Free Press, 1981, 61-65.
26. Jean-Francois Lyotard, "Les Imateriaux", trans. Paul Smith, Art & Text, no.17, April 1985, 49.
27. Gilles Deleuze and Felix Guattari, Rhizome (Semiotexte). N.Y., 1983, 1, being the first chapter of Mille Plateaux (Minuit: Paris, 1980).
28. Roy Ascott, "Art & Telematics", Art Telecommunication, ed.Heidi Grundmann, (Vienna: BLIX, 1984) 55.
29. Robert Stam, [21] 120.
30. For a definition and discussion of "aura", see Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction", orig.written in 1936, trans. Hannah Arendt in Illuminations, (London:Collins, 1973), 223-245.
31. Ken Friedman and George M.Gugelberger, "The Stamp and Stamp Art", Correspondence Art, ed. Micheal Crane and Mary Stofflet, (San Francisco:Contemporary Arts Press, 1984), 418.
- 32.? Martin Heidegger, The Question Concerning Technology and Other Essays, trans. William Lovitt, (N.Y.:Harper & Row, 1977)
33. Jean Francois Lyotard, The Postmodern Condition: A Report on Knowledge, trans. Bennington and Massumi, Manchester, U.K., Manchester University Press, 1984, 79-81.

34. Robert Adrian, interview with author, Vienna, 16 Sept.1984.
35. Robert Adrian, Artex message, Planetary Network, Venice Biennale, 28 July 1986.
36. Jan Birmingham, Artex message, Planetary Network, Venice Biennale, 26 Aug.1986.
37. Dana Moser, Artex message, Planetary Network, Venice Biennale, 16 July 1986.
38. Robert Stam, "Mikhail Bakhtin and Left Cultural Critique", Postmodernism and Its Discontents, ed. E.A.Kaplan, (New York:Verso, 1988), 120.
39. E.M.Rogers & D.L.Kincaid, op.cit., 63.
40. ibid., 344.
41. Robert Adrian, Artex message, Planetary Network, Venice Biennale, 2 Aug.1986.
42. Simon Penny, op.cit., 8.
43. Christopher Allen, "On a search for meaning", gallery review, Sydney Morning Herald, 20 Oct.1989, 40.
44. "Mikhail Bakhtin's original concept of 'polyphony' referred to the coexistence of a plurality of 'voices' which existed on different registers and generated dialogical dynamism among themselves." R.Stam, op.cit., 128.
45. Digital Art Exchange (DAX) group, Pittsburgh, Artex message, Planetary Network, Venice Biennale, 15 July, 1986.