MEDIASPACE3: FEB 1997.

FOR:
DESIGNERS, PRODUCERS AND USERS OF INTERACTIVE MULTIMEDIA & TELEMATICS.

CONTENTS:

INTERACTIVE:
AUTHORING, SCRIPTING, HUMAN COMPUTER INTERACTION, ARTIFICIAL INTELLIGENCE

EDUCATION:
COURSEWARE DEVELOPMENT, COMPUTER AIDED LEARNING, EDUTAINMENT/ INFOTAINMENT, GAMING,

DESIGN:
METHODOLOGY AND APPLICATIONS, INTERFACE, METAPHOR AND NAVIGATION. DIGITAL IMAGING, ANIMATION, VIDEO, CAD, VIRTUAL ENVIRONMENTS AND VIRTUALITY.

COMMUNICATIONS:
TELEMATICS, NETWORKED AND BROADCAST, THE NET.

CALL FOR:
PAPERS/ARTICLES/ IMAGES/DIAGRAMS/ IDEAS/CONCEPTS/ PROPOSALS.

To:-
Mike Phillips. School of Computing, University of Plymouth, Drake Circus, Plymouth PL4 8AA.

Fax::
01752 232540.

Email:
mikep@soc.plym.ac.uk

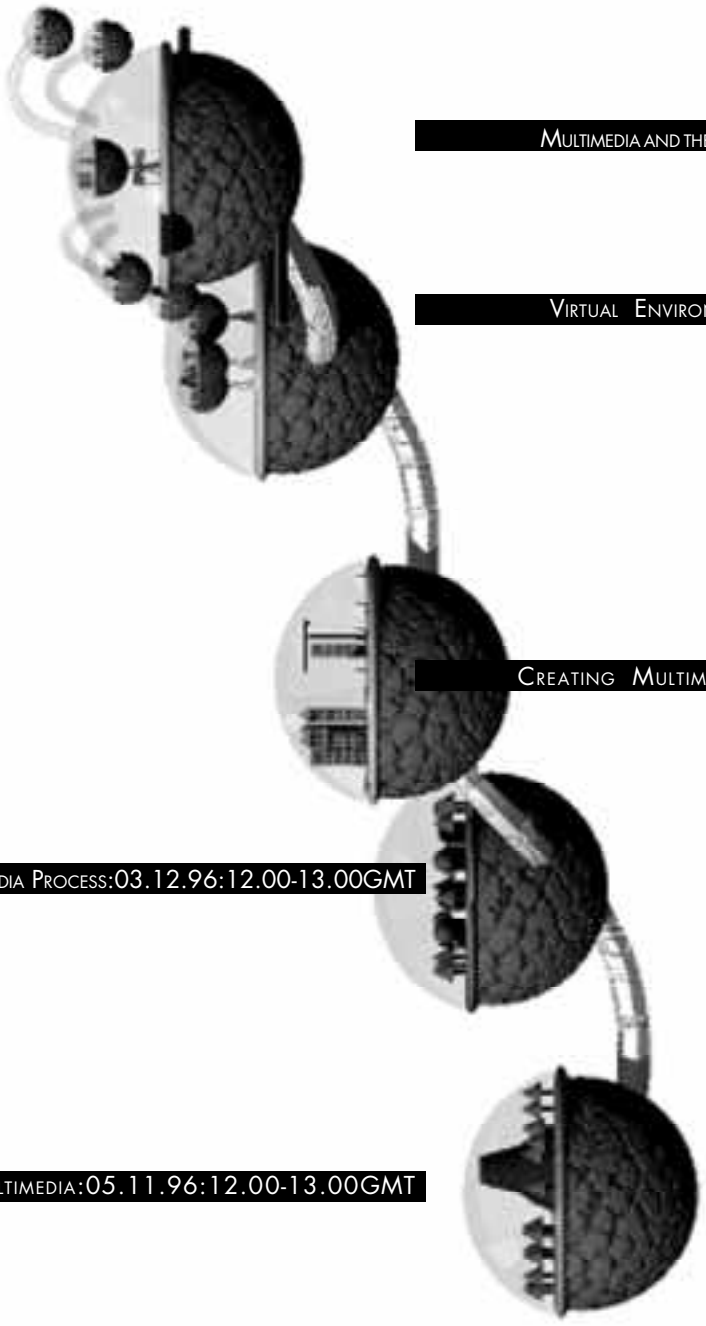
INTELLECT- EDITORIAL OFFICE- PUBLISHING DEPARTMENT- EFAE- UNIVERSITY OF PLYMOUTH- EARL RICHARDS RD NORTH- EXETER- EX2 6AS - TEL / FAX: (01392) 475110

Spectrum Data: 0h 172h 344h 516h 689h 861h 1033h 1205h 1378h 1550h 1722h 1894h 2067h 2239h 2411h 2583h 2756h 2928h 3100h 3273h 3445h 3617h 3789h 3962h 4134h 4306h 4478h 4651h 4823h 4995h 5167h 5340h 5512h 5684h 5857h 6029h 6201h 6373h 6546h 6718h 6890h 7062h 7235h 7407h

I N T R O D U C T I O N

MEDIASPACE is on the air again. This edition reprocesses and focuses some of the material taken from the 5 MEDIASPACE (4 to 8) satellite transmissions, funded by the WIRE (Why ISDN Resources in Education) / MEDIASPACE PROJECT, European Association of Distance Teaching Universities. Thanks to all those who have generated assets and or taken part in the transmissions (in Plymouth and from across Europe). Mediaspace3, the non-digital, digital stuff.

MEDIASPACE Transmission Credits:... Will Bakali for the 3D worlds; The Production Team from the Hoe T.V. Studio; Dan Livingstone, Chris Speed, Adrian Vranch, Culver Epps (& Images in MEDIASPACE3), Sid White, Gill Hunt, Elaine England, Andy Finney, Simon Turley, James Norwood, Dave Flynn, Joe Nash, Jill Mortimer, Tom Rogers, Rob Morrison (& SGI), Mic Cady (& DK), ABAA, CAIIA, for the demos and presentations...



MULTIMEDIA AND THE INTERNET:04.03.97:12.00-13.00GMT

VIRTUAL ENVIRONMENTS:04.02.97:12.00-13.00GMT

CREATING MULTIMEDIA:07.01.97:12.00-13.00GMT

MANAGING THE MULTIMEDIA PROCESS:03.12.96:12.00-13.00GMT

DISCOVERING MULTIMEDIA:05.11.96:12.00-13.00GMT

WIRE / MEDIASPACE:

THE WIRE (WHY ISDN RESOURCES IN EDUCATION) / MEDIASPACE PROJECT, COMPRISES OF 5 INTERACTIVE SATELLITE/ISDN TRANSMISSIONS FUNDED BY THE EUROPEAN ASSOCIATION OF DISTANCE TEACHING UNIVERSITIES. MEDIASPACE 4 - 8 TRANSMISSIONS FOLLOW ON IN THE MEDIASPACE SERIES OF BROADCASTS.

OVERVIEW:

THE WIRE ISDN PROJECT AIMS TO INITIATE AND STRENGTHEN DISTANCE LEARNING NETWORK BASED ACTIVITIES FOR THE PROVISION OF TERTIARY EDUCATION AND TRAINING. SIX TRIALS ARE BEING CONDUCTED INVOLVING LEARNERS, COURSEWARE DEVELOPERS, TECHNICAL SUPPLIERS AND EVALUATORS USING EURO-ISDN BASED TECHNICAL FACILITIES BASED AT EUROSTUDYCENTRES. USING BOTH ISDN-BASED AND NON-ISDN BASED TECHNOLOGIES SUCH AS POINT-TO-POINT AND MULTI-POINT VIDEO CONFERENCING, SATELLITE BROADCASTING AND E-MAIL, A RANGE OF EXPERIMENTS WILL BE PERFORMED INCLUDING: TELE-TUTORING (GROUP AND INDIVIDUAL), ASSESSMENT, DISTRIBUTED JOINT DESIGN AND PRODUCTION OF MULTIMEDIA COURSEWARE, RECRUITMENT AND ADMINISTRATION.

THE WIRE PROJECT WILL CONDUCT THE GROUNDWORK NECESSARY TO ESTABLISHMENT A EUROPEAN TERTIARY DISTANCE EDUCATION NETWORK. THE AIM IS TO PROVIDE GUIDE-LINES AND PRACTICAL INFORMATION FOR THE FULL DEPLOYMENT OF A COMPREHENSIVE NETWORK FOR EUROPE.

COLLABORATORS:

EOUN B.V. / CITCOM (FRANCE TELECOM GROUP) / FINNISH TELECOM LTD. / UNIVERSITY OF PLYMOUTH / DE MONTFORT UNIVERSITY / UNIVERSITY OF SUNDERLAND / ANGLIA POLYTECHNIC UNIVERSITY / UNIVERSITY OF OULU / HELSINKI UNIVERSITY OF TECHNOLOGY / UNIVERSITY OF JYVÄSKYLÄ / UNIVERSITÉ OF FRANCHE COMTÉ / ESC ANTWERPEN / ESC KORTRIJK / ESC LEUVEN

WIRE PARTNERS:

WITHIN THE WIRE PROJECT SIX MAIN TYPES OF ACTIVITY CAN BE DISTINGUISHED: PROJECT MANAGEMENT; COURSE PROVISION AND DELIVERY; FACILITATION OF COURSES; EVALUATION; TECHNICAL SUPPORT; DISSEMINATION. PARTNERS CAN HAVE DIFFERENT ROLES IN THE WIRE PROJECT, SOME OF THEM ARE SOLELY INVOLVED IN ONE TYPE OF ACTIVITIES WHILE OTHERS ARE INVOLVED IN TWO OR MORE TYPES.

SIX INSTITUTES ARE RESPONSIBLE FOR THE PROVISION OF COURSES:
THE UNIVERSITY OF OULU; HELSINKI UNIVERSITY OF TECHNOLOGY; ANGLIA POLYTECHNIC UNIVERSITY; THE UNIVERSITY OF SUNDERLAND; DE MONTFORT UNIVERSITY; THE UNIVERSITY OF PLYMOUTH.

COURSES: EDUCATIONAL TECHNOLOGIES / MEDIASPACE / SEXUAL ASSAULT / RESEARCH / MARKETING

THE SPECIFIC ROLE OF THESE PARTNERS IS TO PROVIDE COURSE MATERIALS AND COURSE SUPPORT IN THE NETWORK OF EUROSTUDYCENTRES.

EUROSTUDYCENTRES:

THE EUROSTUDYCENTRES ARE RESPONSIBLE FOR THE DELIVERY OF COURSES TOWARDS STUDENTS. THEIR MAIN ROLE IS TO OFFER FACILITIES TO STUDENTS. THEY PROMOTE THE COURSES AND RECRUIT STUDENTS THROUGH BROCHURES AND POSTERS ETC. THE EUROSTUDYCENTRES ALSO SUPPORT STUDENTS IN THEIR STUDENT ACTIVITIES FROM ENROLLMENT TO EXAMINATION.

THESE EUROSTUDYCENTRES ARE: EUROSTUDYCENTRE KORTRIJK; EUROSTUDYCENTRE LEUVEN; EUROSTUDYCENTRE ANTWERPEN; DE MONTFORT UNIVERSITY; UNIVERSITY OF SUNDERLAND; ANGLIA POLYTECHNIC UNIVERSITY; UNIVERSITY OF OULU; HELSINKI UNIVERSITY OF TECHNOLOGY; UNIVERSITY OF JYVÄSKYLÄ; UNIVERSITÉ OF FRANCHE COMTÉ.

TECHNOLOGIES:

VIDEO CONFERENCE H320 STANDARD; FIRST CLASS COMPUTER CONFERENCING; WWW BROWSERS LIKE NETSCAPE; SATELLITE RECEPTION

SOURCE: WIRE EADTU FIRSTCLASS SERVER.

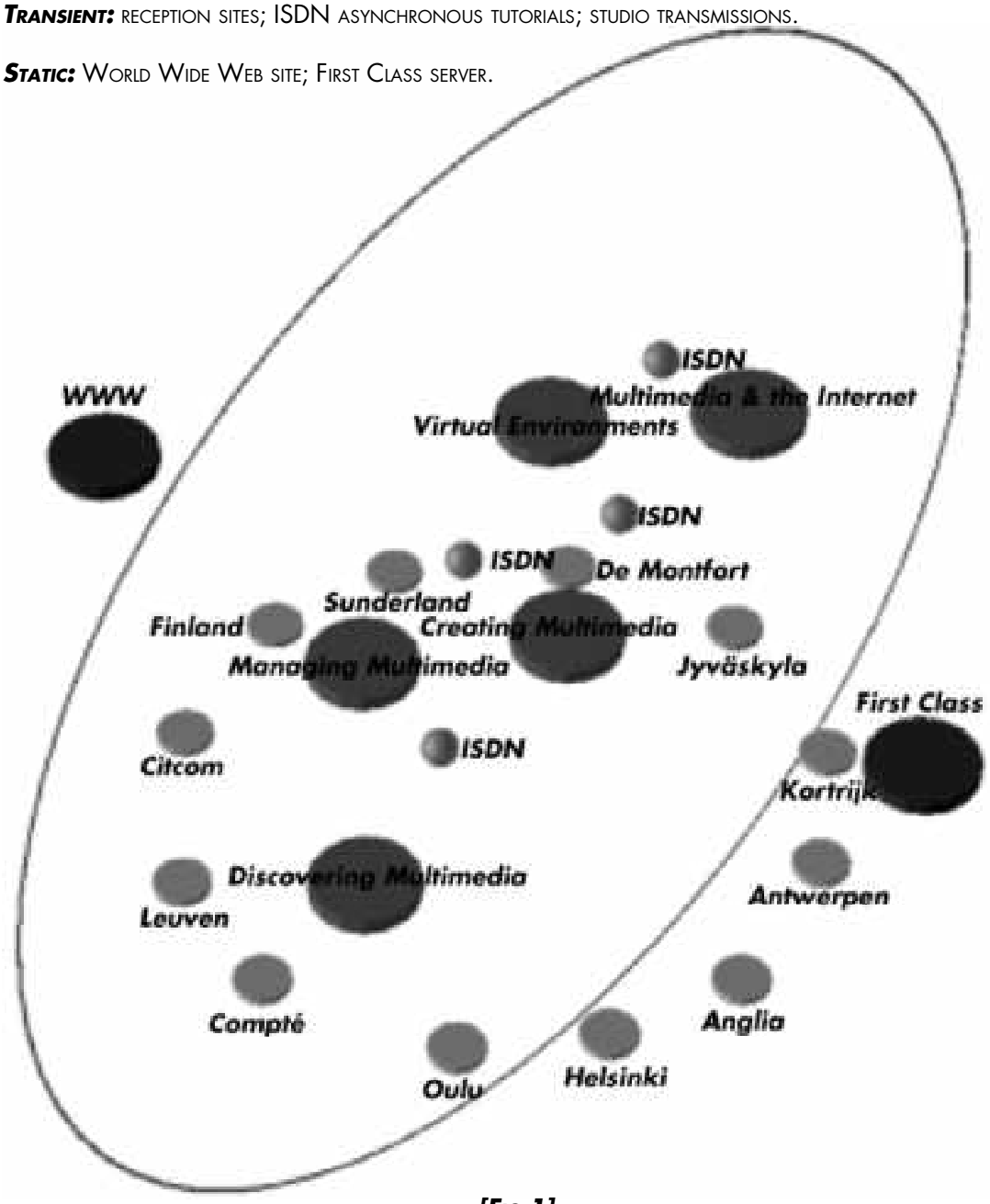
844H 21016H 21188H 21360H 21533H 21705H 21877H 0 PTS 0 5 7 7 5 3 3 3 7 1 3 5 1 1 3 6 2 6 6 1 1 7 3 5 6 2 2 1 6 5 1 1 3 7 3 2 1 1 2 1 3 1 1 1 2 0 1 1 1 1 1 0 3 3 1 2 1 1 0 1 1 5 2 2 3 1 3 0 1 1 3 1 1 1 1 0 3 0 1 1 1 1 1 3 0 2 1 1 1 1 2 1 0 1 2 1 1 3 1 1 1 1 1 1 0 1 1 1 1 1 0 1 3 0 1 1 1 1 1 0 3 0 0 0 1 0 2 1 1 1

MAPS OF MEDIASPACE:

THE PHYSICAL STRUCTURES FORMING THE BROADCAST AND RECEPTION OF THE SATELLITE TRANSMISSIONS HAVE BEEN BROKEN DOWN INTO THE 'TRANSIENT' AND THE 'STATIC'.

TRANSIENT: RECEPTION SITES; ISDN ASYNCHRONOUS TUTORIALS; STUDIO TRANSMISSIONS.

STATIC: WORLD WIDE WEB SITE; FIRST CLASS SERVER.



[FIG 1]

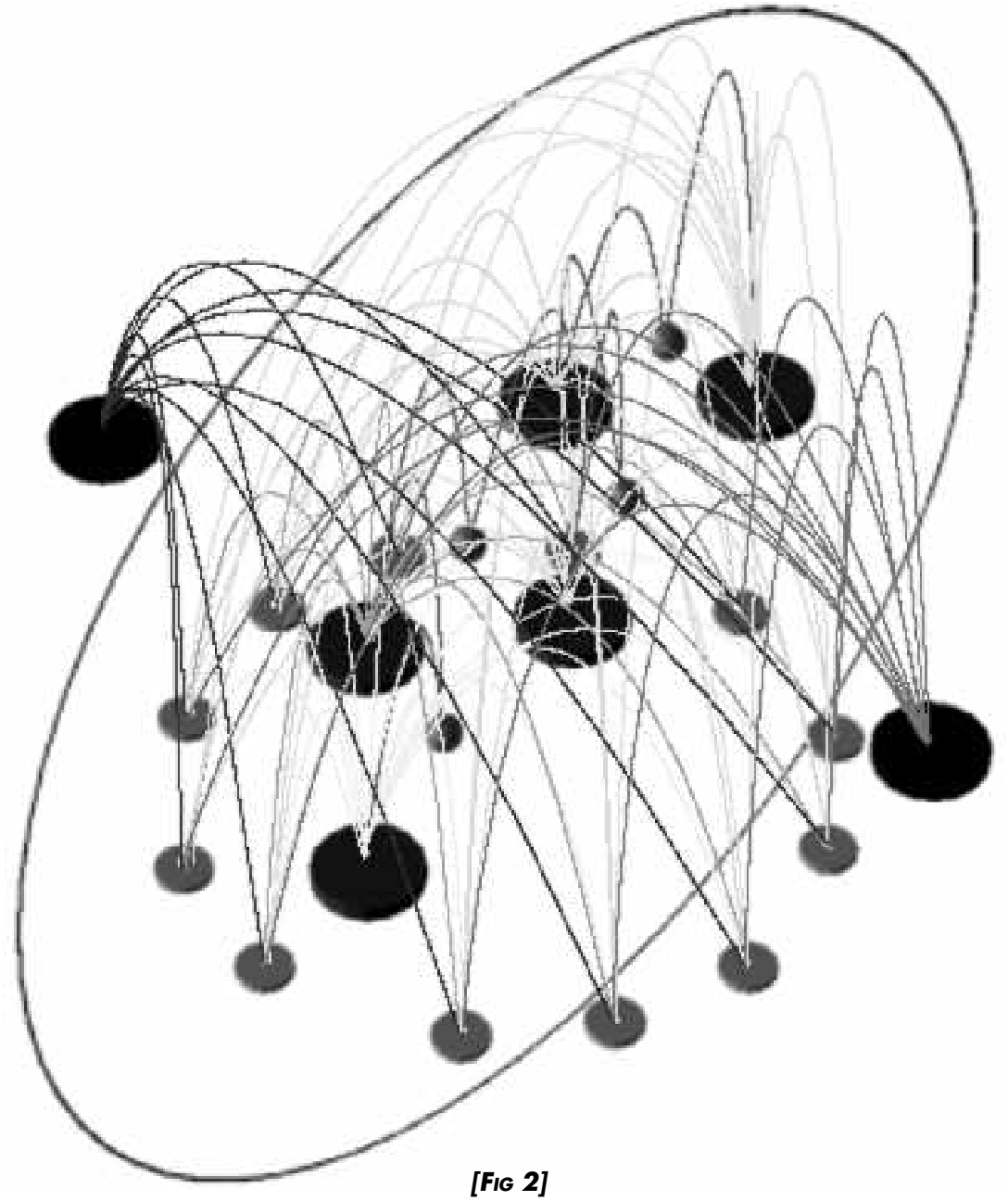
"IN A SOCIAL SITUATION, THE NUMBER OF PEOPLE INVOLVED IN A CONVERSATION OR OTHER SYMBOLIC EXCHANGE IS THE 'SPACE' IN WHICH LEARNING OCCURS."

ROM HARRÉ ET AL, 1985

"A BOUNDARY IS NOT THAT AT WHICH SOMETHING STOPS BUT, AS THE GREEKS RECOGNISED, THE BOUNDARY IS THAT FROM WHICH SOMETHING BEGINS ITS PRESENCING. THAT IS WHY THE CONCEPT IS THAT OF HORISMOS, THAT IS, THE HORIZON, THE BOUNDARY. SPACE IS IN ESSENCE THAT FOR WHICH ROOM HAS BEEN MADE, THAT WHICH IS LET INTO ITS BOUNDS. THAT FOR WHICH ROOM IS MADE IS ALWAYS GRANTED AND HENCE IS JOINED, THAT IS GATHERED, BY VIRTUE OF LOCATION, THAT IS BY SUCH A THING AS THE BRIDGE. ACCORDINGLY SPACES RECEIVED THEIR BEING FROM LOCATIONS AND NOT FROM 'SPACE'."

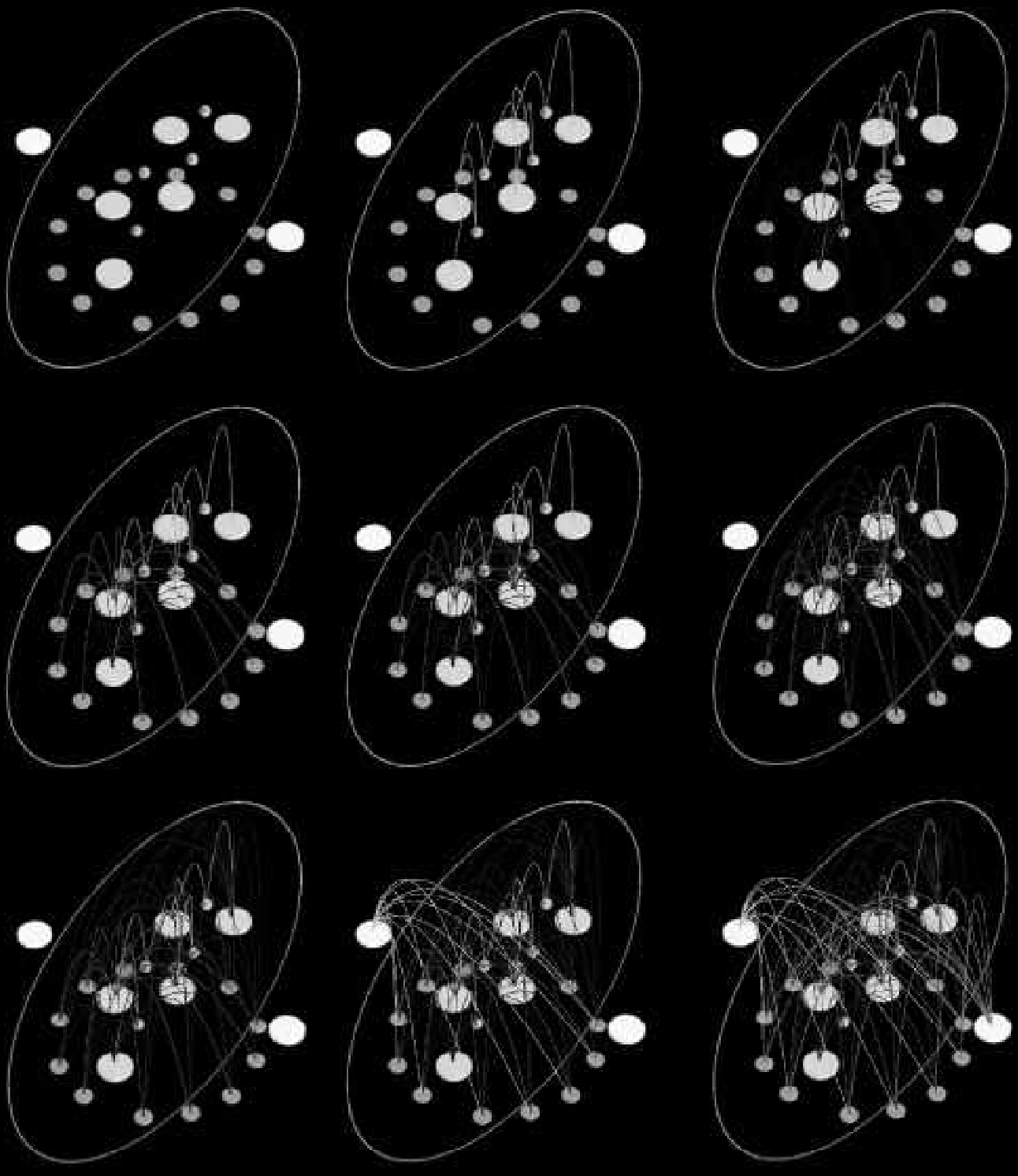
MARTIN HEIDEGGER
'BUILDING DWELLING & THINKING'. 1954

FIGURE 1, 2 & 3 INDICATE EUROPEAN SITES, SATELLITE TRANSMISSIONS, WORLD WIDE WEB, FIRST CLASS SERVER, ISDN CONFERENCES & TUTORIALS.



[Fig 2]

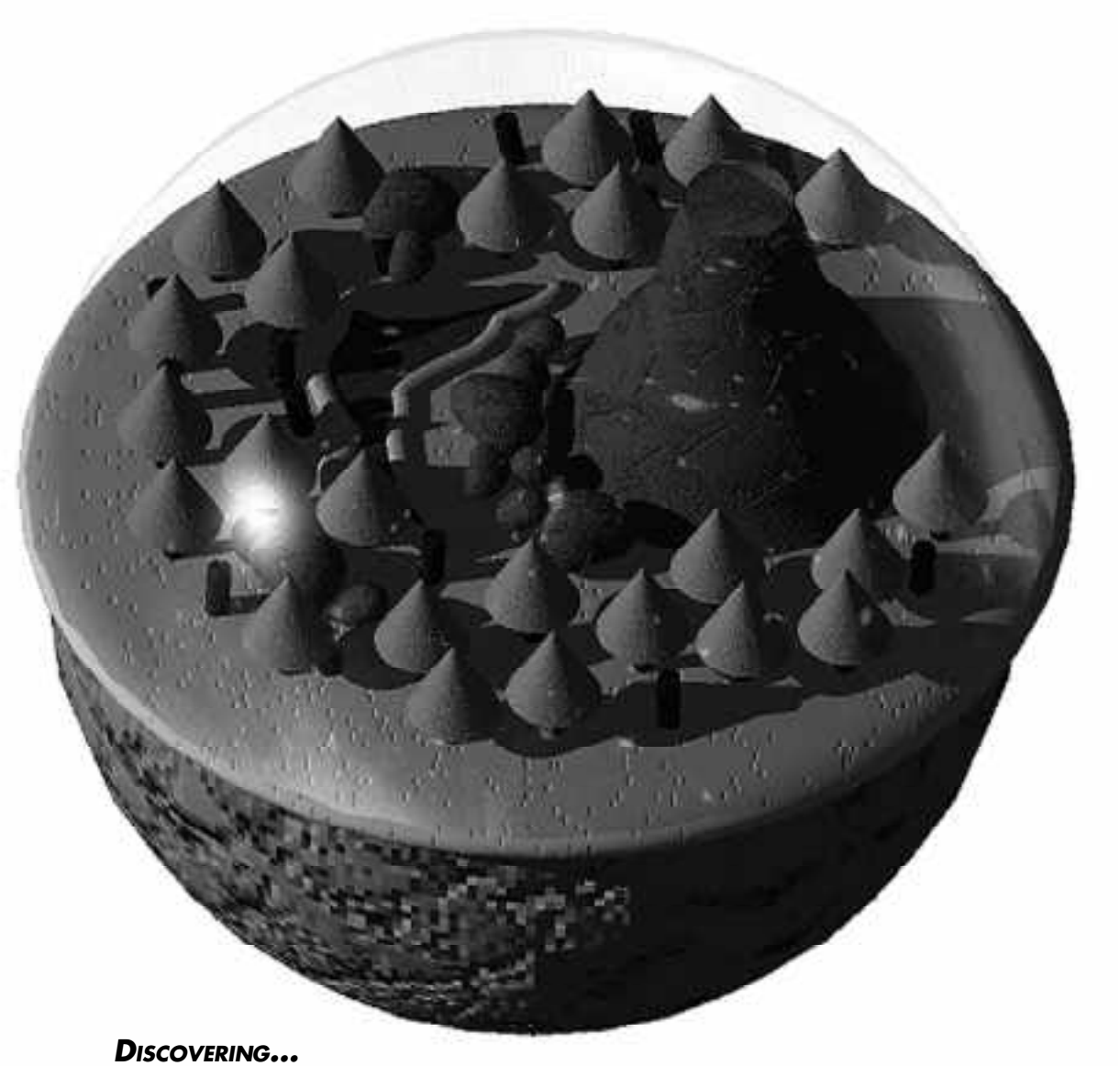
***A** train ticket represents a journey from **A** to **B** whilst at the same time representing a location (the train seat or carriage) for a duration (the time of the journey from beginning to end). In a similar way the **MEDIASPACE** transmissions are a broadcast from **A** to **B**, whilst at the same time evoking an extended location for the duration of each broadcast (stretching out, through networks, across the boundaries defining the space of each site), a new kind of space, a landscape of interactivity (?).*



[Fig 3]

IN DEFINING THE MEDIASPACE FOR THESE SATELLITE/ISDN EXPERIMENTS WE HAVE ATTEMPTED TO DEVELOP A GEOGRAPHICAL METAPHOR AND SENSE OF LOCATION FOR EACH TRANSMISSION. THESE MYTHICAL PLANETS WILL ACT AS A FOCUS FOR DISCUSSION AND AT THE SAME TIME EXTEND THE MEDIASPACE DEFINED BY THE SUM OF THE LOCATIONS, INTO A VIRTUAL/DIGITAL 3D SPACE DEFINED BY A COMPUTER GENERATED MODEL.

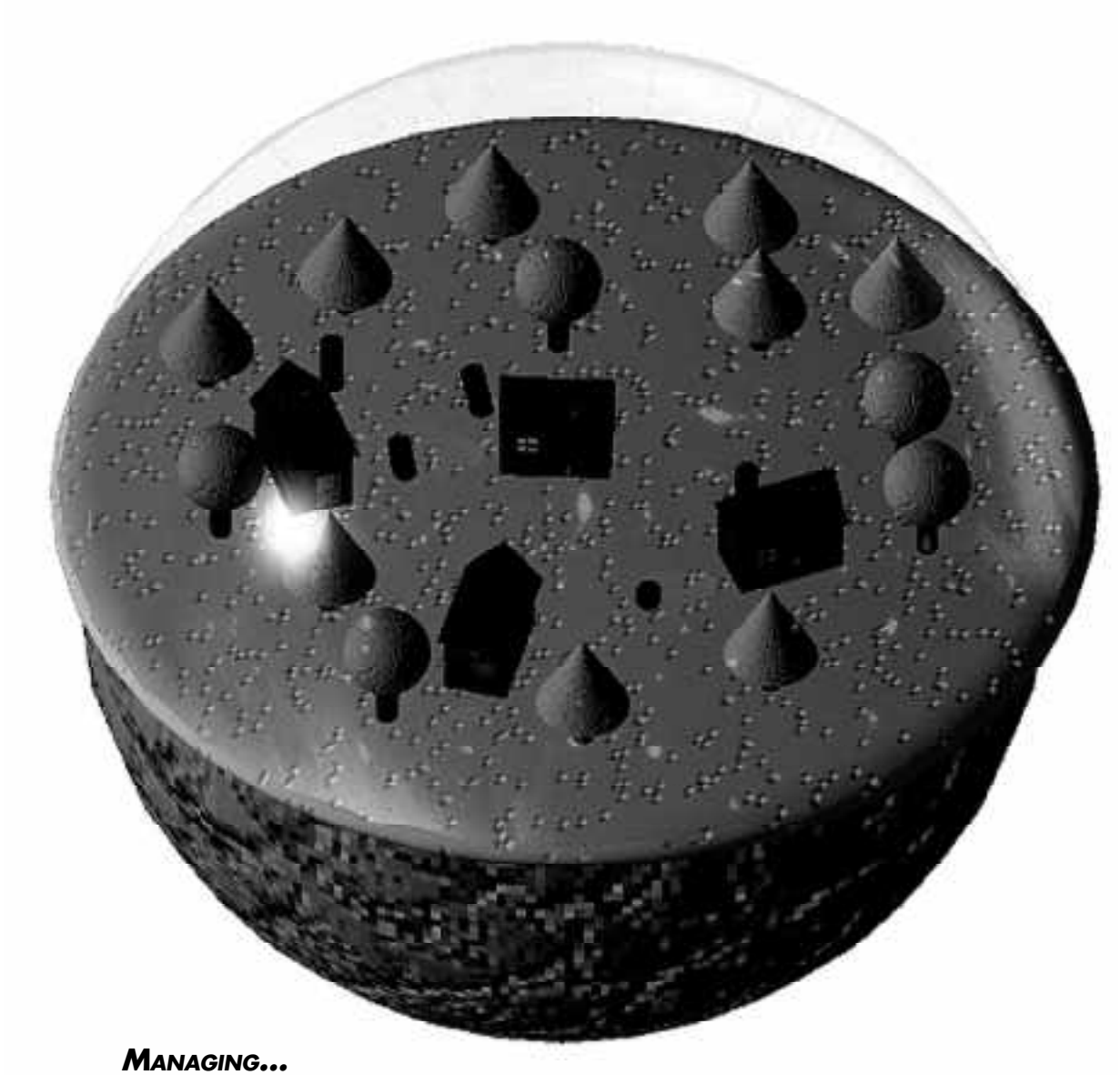
EACH PLANET (OR THE SAME PLANET AT DIFFERENT STAGES OF EVOLUTION) PROVIDES A BACKDROP FOR THE ACTIVITY OF EACH TRANSMISSION.



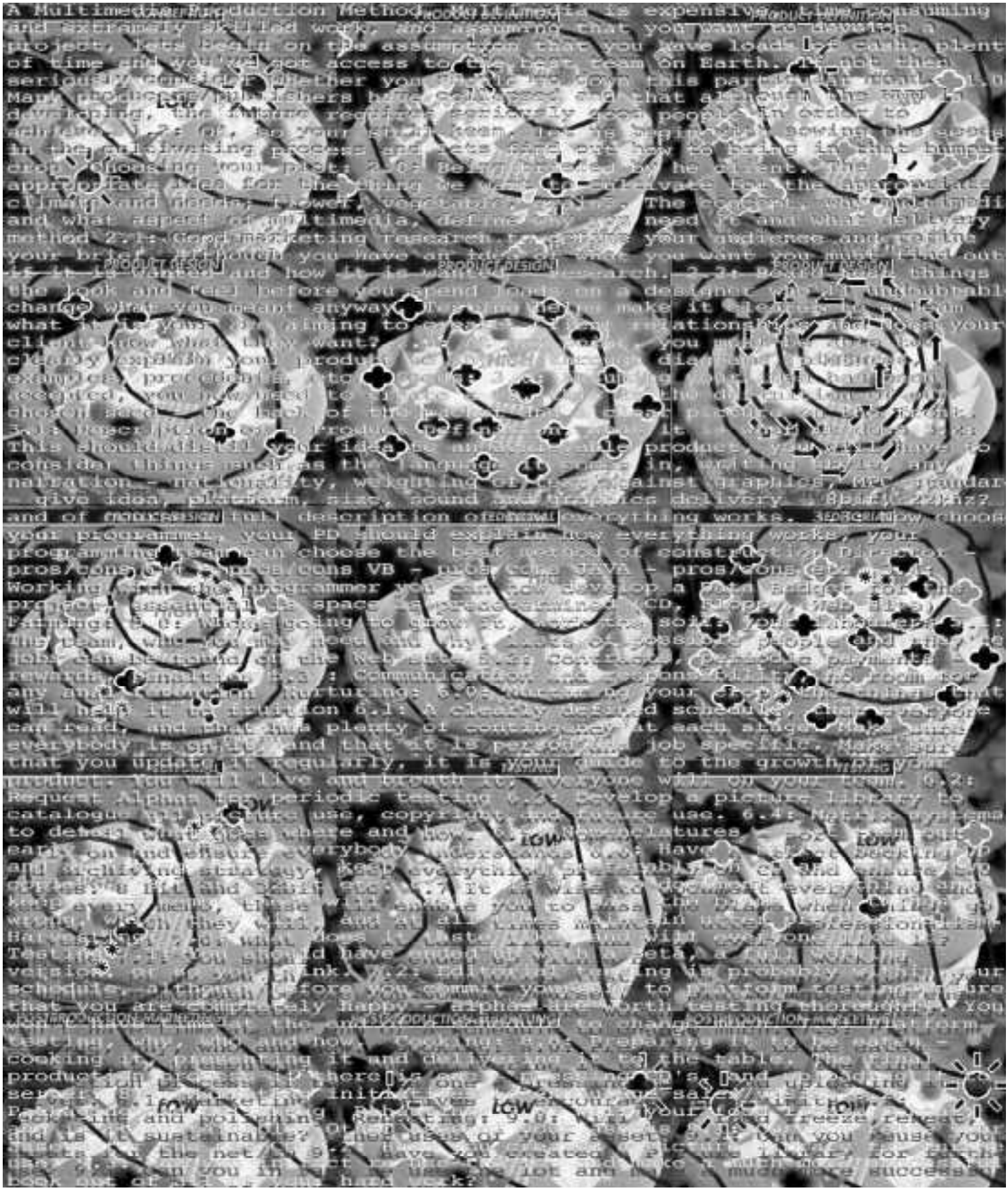
DISCOVERING...


We find ourselves at a significant moment in time, a point of cultural, industrial and technological convergence. This series of satellite transmissions hopes to explore the broad spectrum of this convergence. Rather than trying to offer a flawed definition of what multimedia is (like trying to define the shape of a cloud) the first programme takes a look at where it comes from, how is it being made, and avenues for development.
The "Industry". Is there a multimedia industry, from most perspectives it looks more like a Hi-Tec chimpanzees tea party. We are seeing the convergance of companies who all feel they have a vested interest, and of course, untold commercial opportunities in mastering the domain. However, they are all weighed down with the baggage of their own disciplines, and the convergence of skills, practices and traditions is proving problematic.
The problem for all of these areas is that the desired technologies, skills and mind sets are defused amongst them. For instance, Telecoms companies are trying to master Video on Demand, an activity previously the domain of broadcast and cable T.V. Broadcasting companies are trying to network desktop video, a domain previously defined as computer networking.

3 1 2 1 3 1 1 3 1 0 3 1 3 3 2 1 3 1 3 2 3 1 3 3 3 3 1 1 3 1 3 3 1 3 2 3 3 3 3 1 3 3 1 3 0 2 3 3 1 1 2 1 3 1 3 1 1 3 3 2 3 0 3 1 1 3 2 2 1 1 2 0 1 1 768 PTS 13 22 23 127 219 447 381 255 190 63 47 52 63 53 21 24 53 63 61 21 18 3 1 9 0 5 15 7 15 10 6 3 2 2 7 1 3 3 3 1 1 7 1 2 1 3 3 3 0 3 3 0 1 5 1 0 3 1 3



MANAGING...



CREATING...

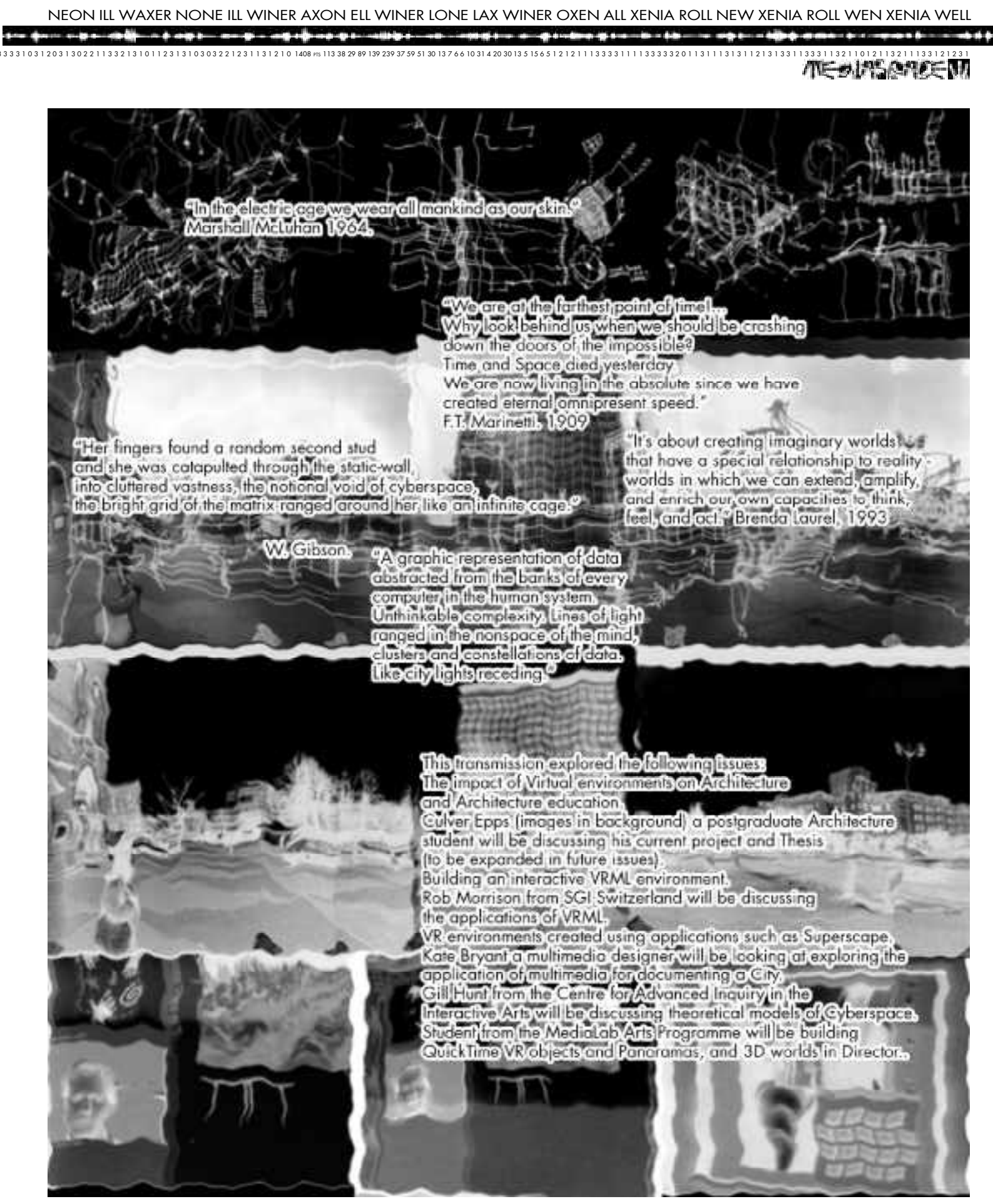
The creation of multimedia requires unique set of skills, the specialist non specialist. Like the convergence within industry (see discovering multimedia). It does not do its potential justice to consider multimedia as being just a collection of media types. A new design paradigm is required to realise the potential of interactive multimedia production.

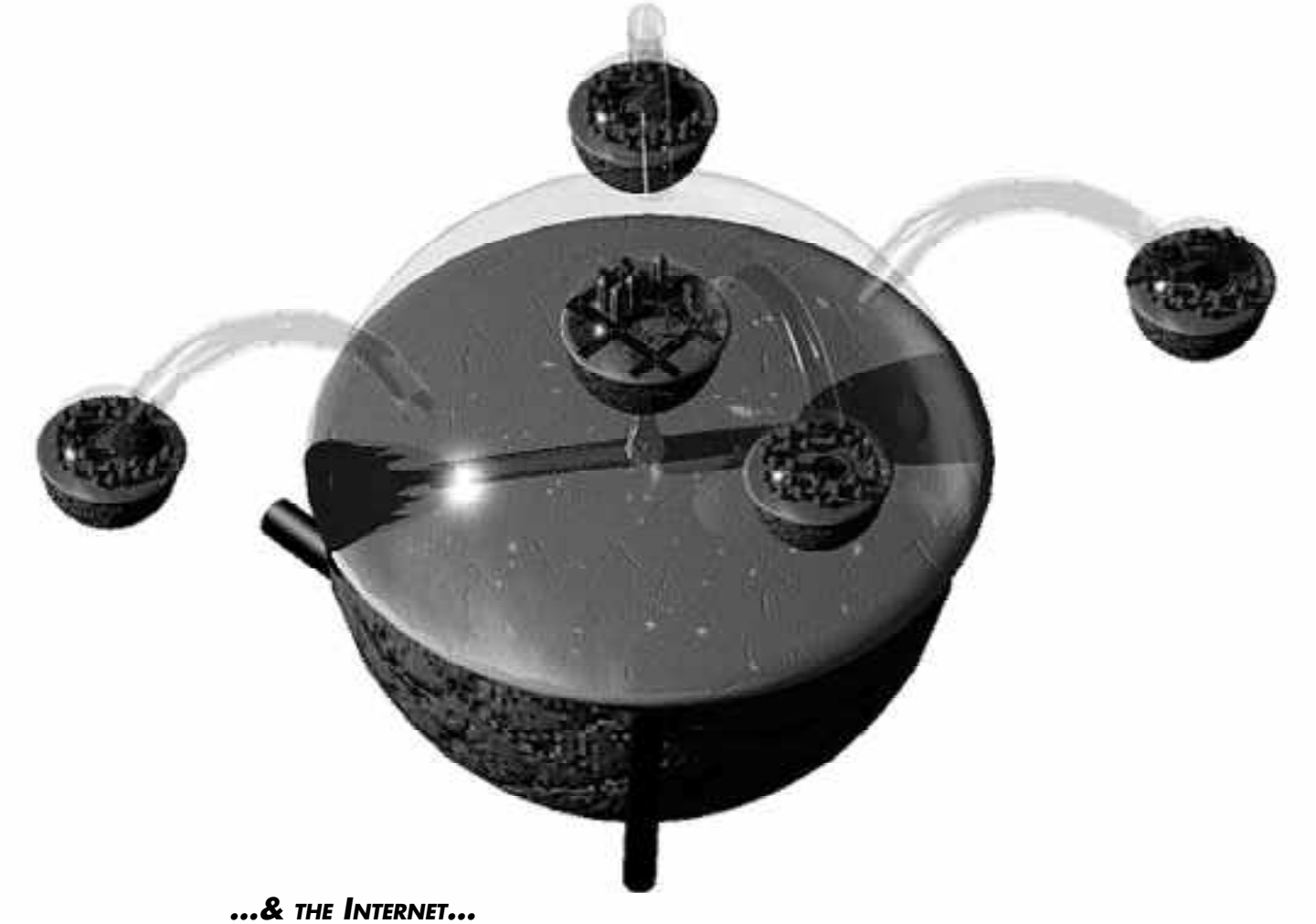
Telematic Performance: Planning, organising and rehearsing. You will need to consider the following: How do you transfer an image from one point in space to another using a collection of simple house hold objects?
Working in groups select an image (A4). Devise a system for transferring the image from one location to another. Each person will mark a stage in the transfer which will require the image to be coded and decoded. Each stage will be different from any other stage in the process. The process should last approximately 5 minutes.
Look at: FAX machines/Modems/T.V./Film & slide projectors.
You can't use any of these. (A slide projector may be used as a light-source but not for projecting slides).
Semaphore/Morse code/shadows/grids. You might want to use some of these.
Think about: Your audience, presentation, genre, style, timing.....

Interactive Drama: Planning, organising and rehearsing.
Robin was killed off by popular demand. A phone in vote decided his fate. A computer dialled the DIE number repeatedly for the duration of the vote. Should Pauline leave Arthur? Should Arthur move in with Christine? How would you vote. Working in groups of 5 devise and enact an interactive drama. Each character should have a number of possible actions. The audience will decide the actions to be carried out at the appropriate time. How many endings will you need?

Scratch Orchestra: Planning, organising and rehearsing.
Working in small groups, using only found objects, none of which should be purpose built musical instruments, create and perform live a short sound piece. The piece should be carefully constructed and scored using the intrinsic qualities of the objects. Consideration should be given to the material construction and of course sound of the object. The purpose of this exercise it to explore the structure (audio and temporal) of sound, its manipulation, construction, and performance.

VIRTUAL ENVIRONMENTS...


"In the electric age we wear all mankind as our skin."
Marshall McLuhan 1964.
"We are at the farthest point of time!...
Why look behind us when we should be crashing
down the doors of the impossible?
Time and Space died yesterday
We are now living in the absolute since we have
created eternal omnipresent speed."
F.T. Marinetti, 1909
"Her fingers found a random second stud
and she was catapulted through the static-wall,
into cluttered vastness, the notional void of cyberspace,
the bright grid of the matrix ranged around her like an infinite cage."
W. Gibson.
"It's about creating imaginary worlds
that have a special relationship to reality -
worlds in which we can extend, amplify,
and enrich our own capacities to think,
feel, and act." Brenda Laurel, 1993
"A graphic representation of data
abstracted from the banks of every
computer in the human system.
Unthinkable complexity. Lines of light
ranged in the nonspace of the mind,
clusters and constellations of data.
Like city lights receding."
This transmission explored the following issues:
The impact of Virtual environments on Architecture
and Architecture education.
Culver Epps (images in background) a postgraduate Architecture
student will be discussing his current project and Thesis
(to be expanded in future issues).
Building an interactive VRML environment.
Rob Morrison from SGI Switzerland will be discussing
the applications of VRML.
VR environments created using applications such as Superscape.
Kate Bryant a multimedia designer will be looking at exploring the
application of multimedia for documenting a City.
Gill Hunt from the Centre for Advanced Inquiry in the
Interactive Arts will be discussing theoretical models of Cyberspace.
Student from the MediaLab Arts Programme will be building
QuickTime VR objects and Panoramas, and 3D worlds in Director.



...& THE INTERNET...


<HTML><HEAD><TITLE>Multimedia and the Internet</TITLE>
<X:SAS:WINDOW TOP=42 BOTTOM=477 LEFT=4 RIGHT=534>
</HEAD><BODY BGCOLOR="#EDF5A3">
<H3 ALIGN "CENTER"><B><FONT COLOR="#00AF00"><A HREF="Multimedia
and the Internet">Multimedia and the Internet</A></FONT></B></H3>
<P><FONT COLOR "#00AF00">With notions of</FONT><FONT
COLOR="#00AF00"><A HREF "discourse">discourse</A></FONT><FONT
COLOR "#00AF00"></FONT><FONT COLOR="#00AF00"><A
HREF="dissemination">dissemination</A></FONT><FONT
COLOR "#00AF00"></FONT><FONT COLOR="#00AF00"><A
HREF="distribution">distribution</A></FONT><FONT COLOR="#00AF00">,
</FONT><FONT COLOR "#00AF00"><A
HREF="dislocation">dislocation</A></FONT><FONT COLOR="#00AF00">
and</FONT><FONT COLOR "#00AF00"><A
HREF="distance">distance</A></FONT><FONT COLOR "#00AF00">
very much in mind the
</FONT><FONT COLOR "#00AF00"><A HREF "Multimedia and the Internet
">Multimedia and the Internet</A></FONT><FONT COLOR "#00AF00">
transmission endeavors to explore the fulfillment of the
</FONT><FONT COLOR="#00AF00"><A HREF "H G Wells">H G
Wells</A></FONT><FONT COLOR "#00AF00">Prophecy of the
</FONT><FONT COLOR "#00AF00"><A HREF "Fundamental Knowledge
System">Fundamental Knowledge System</A></FONT><FONT
COLOR="#00AF00">organization regarding
several distinct activities taking place over the</FONT><FONT
COLOR="#D6D600">WWW</FONT><FONT COLOR "#00AF00">
</FONT><FONT COLOR "#00AF00"><A HREF "Dorling Kindersley's">Dorling
Kindersley's</A></FONT><FONT COLOR "#00AF00">Publishing activity.
The</FONT><FONT COLOR "#00AF00"><A
HREF="ABAA">ABAA</A></FONT><FONT COLOR "#00AF00">
Project</FONT><FONT COLOR "#00AF00"><A
HREF "CAIIA">CAIIA</A></FONT><FONT COLOR="#00AF00">
research activities, and the</FONT><FONT COLOR="#00AF00"><A
HREF="Virtual Advisor Project">Virtual
Advisor Project</A></FONT><FONT COLOR "#00AF00">) the transmission
attempts to contextualise what is possible with practical
</FONT><FONT COLOR "#D6D600">WWW</FONT><FONT
COLOR "#00AF00">
authoring techniques (</FONT><FONT COLOR="#00AF00"><A
HREF="HTML">HTML</A></FONT><FONT COLOR "#00AF00">
</FONT><FONT COLOR "#00AF00"><A
HREF="Shockwave">Shockwave</A></FONT><FONT COLOR="#00AF00">,
</FONT><FONT COLOR "#00AF00"><A
HREF="VRML">VRML</A></FONT><FONT COLOR="#00AF00">,
</FONT><FONT COLOR "#00AF00"><A
HREF="CGI">CGI</A></FONT><FONT COLOR="#00AF00">
etc) </FONT></P><P><FONT COLOR="#00AF00"> </FONT></P>
<P><FONT COLOR="#0000AF">At the time of going to press the
transmission is still several weeks from realization. However,
material generated by this and other transmissions will be
recontextualised and reprocessed in future editions of</FONT></P>
<P><B><FONT COLOR="#AF0000"> MEDIASPACE...</FONT></B></P>
<P><FONT COLOR="#00AF00"> </FONTS></P>
<P> </P></BODY></HTML>
MEDIASPACE @ http://www.tech.plym.ac.uk/soc/medspace/
Elaine England & Andy Finney @ http://www.demon.co.uk/atst/
@ulver Epps/politics & Architecture @ http://dspace.dial.pipex.com/culver/
School of Computing University of Plymouth @ http://www.tech.plym.ac.uk/soc/home.html
CAIIA @ http://caiiamind.nsad.newport.ac.uk/index.html
ABAA (CameraWork/Obsolete) http://www.obsolete.com/baa/home.html
WAAMR (CameraWork/Obsolete) http://www.obsolete.com/work_of_art...html/
Mic Cady Dorling Kindersley http://www.dk.com/dk/hp.html
OnLine EcoCentre Paignton Zoo http://www.tech.plym.ac.uk/soc/zoo/index.html
The AA http://www.theaa.co.uk/theaa/pub001.html
Macromedia http://www.macromedia.com/
Rob Morrison http://www.sgi.ch/~robm/
WIRE

ERGODYNAMICS:

[C20: from Greek ergon work + dunamis power]

Strategies for developing critical creative skills in:

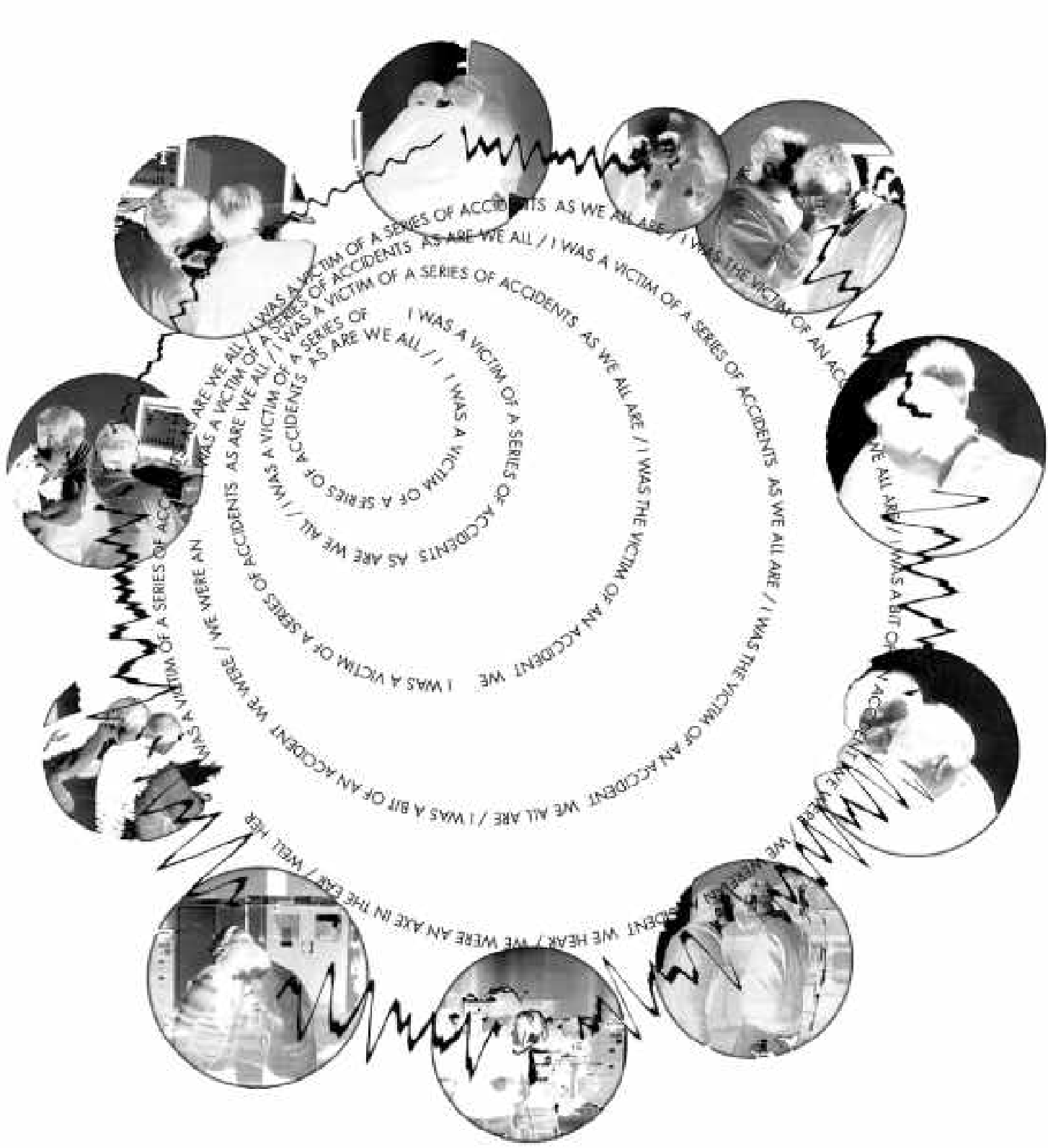
- Group Dynamics: production teamwork...
- Visual Thinking: generating ideas, creative thinking and 'connectionist' thought processes...
- Design & planning: organisation of material and ideas...
- Workbook activity: ideas capture, externalising internal dialogue, the 'Compost Heap Principle'...
- Audio/Visual/Spatial notation: documenting sensation and perception...
- Presentation: justification through dissemination, "ascend their roofs to announce anything to the multitude"...

Uno:
1: ...humming...
2: ...tell part of a story and pass it on.
3: ...Chinese whispers with pictures.

Twice:
4: ...one...thinks of an image...other draws...a process of interrogation...yes and no answers...
5: ...one...blindfolded...draw image in others mind...

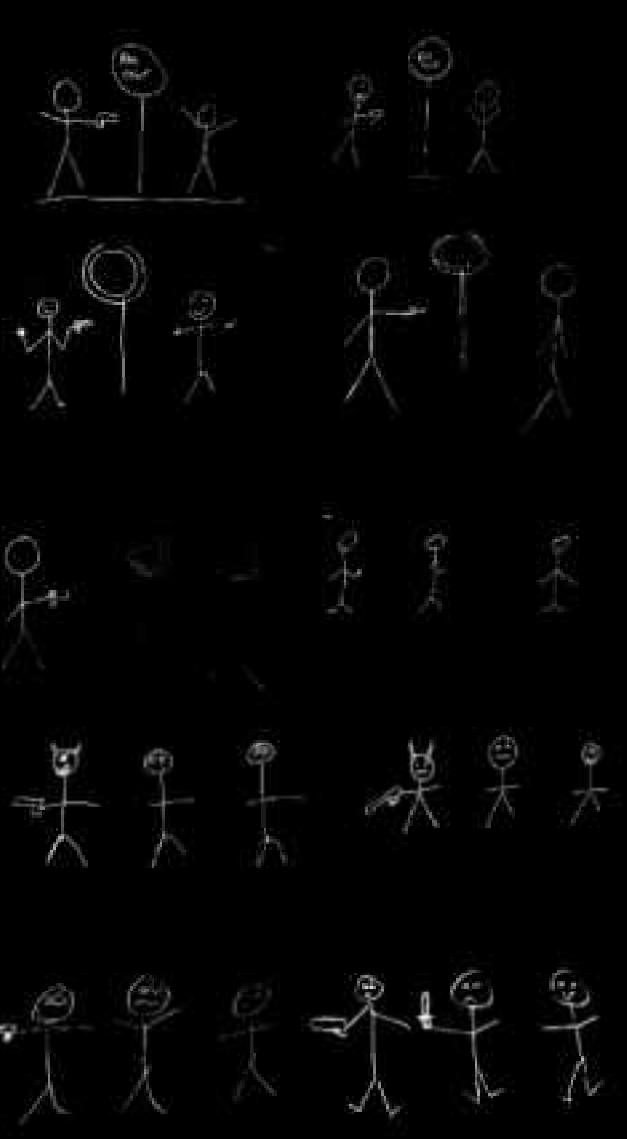
Once:
6: ...d...draw...image...one piece of paper.
7: ...Group Construction. Bondage project.
8: ...Over to you...!

Brain Storming Exercises; Mind Maps, thinking in images.
Remixing audio structures, audio/visual translation, time scores.
Still/Life drawing, negative space, points in space (projected image), icons, signs, and symbols.
Moving images, drawing a figure in motion, Map drawing exercise.



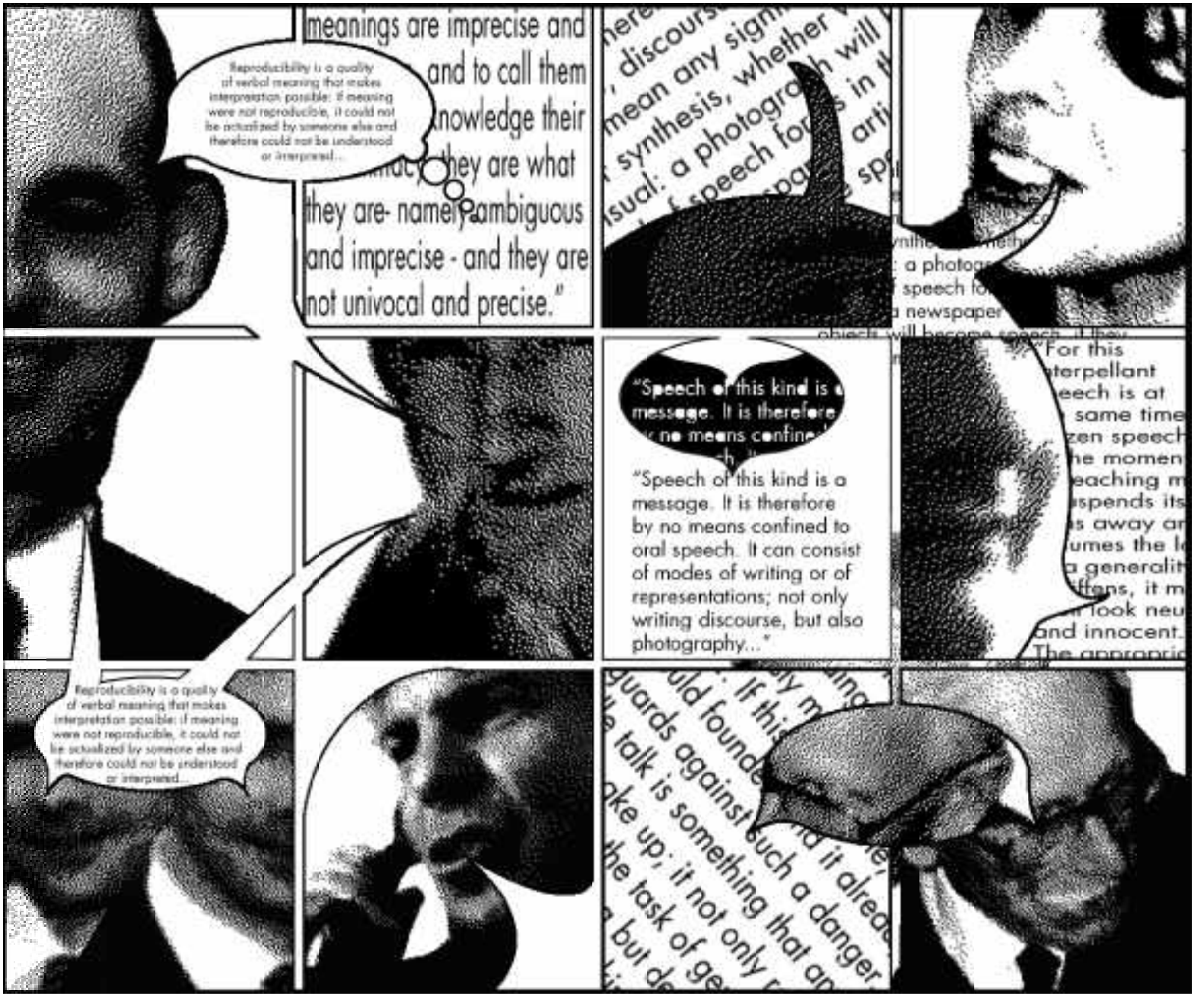
ALL EWE NIX NOR ALL NEE NIX ROW ALL NEW NIX ORE ALL NEW NIX ROE ALL NIX NOR WEE ALL NIX ORE WEN ALL NIX ROE WEN

1 2 1 1 1 2 1 3 2 3 1 1 1 1 2 1 3 1 1 1 3 1 1 3 1 3 3 1 1 1 0 1 2 2 3 1 2048 PTS 80 91 60 382 1007 463 499 503 126 47 11 15 3 14 31 45 21 45 7 27 15 8 7 3 12 7 15 12 5 4 13 9 6 7 3 1 1 1 2 4 7 3 3 3 3 3 3 0 0 2 0 1 2 1 1 1 3 3 0 1 1 1 2 1 3 1 1 3 1 1 3 1 1 3 2 2 1 1 1 3 1 1 1 3 1 1 2 1 1 1 1 1 1 1 0 0 1



A HYPERTOON

LYRICS BY BARTHES, HEIDEGGER & BURKE



In Search of a Production Pathway.

D.Goacher, P. Jagodzinski, M. Phillips, C. Speed.

In a effort to provide a route map for the Infobahn, the Automobile Association is currently mapping the digital terrain in search of the Holy Grail of multimedia, a "Production Methodology" that works. This paper maps out some of the initial work being carried out in collaboration with the MultiMedia Group @ the University of Plymouth.

Interactive multimedia is rapidly becoming a competitive force within a variety of industries: communications, entertainment, education, software engineering, broadcasting, and publishing. Due to its novelty and multidisciplinary background, there are currently no established design models and methods formulated specifically for interactive multimedia production and no intrinsic aesthetic identity. Product design and development relies largely on expedient mixtures of traditional practices and methods, which are proving to be inadequate to enable the paradigm shift which should be taking place. Research has shown that these interactive multimedia products generally provide a low level of satisfaction to the user: '*…users find most titles uniformly bland [and] boring…all titles tend to look and feel the same*' (GISTICS 1995). Peter Girardi, of Voyager, interactive multimedia developers, describes the majority of CD-ROMs as '*shovelware*' - '*the result of companies simply spooning their books on to CD-ROM*' (Baglee, 1996).

Given that the CD-ROM market is flooded with this 'shovelware' (Mok 1996), few title publishers are likely to make any profit in products so fundamentally flawed (GISTICS 1995). These problems are compounded by the number of titles available and the cost of development, causing a crisis in the multimedia publishing industry; while the sale of CD-ROM drives and CD-ROMs continues to increase, this is still nowhere large enough to satisfy the many thousands of titles being produced. With the majority of titles being sold coming from the games sector, it is the home reference and edutainment markets where the problems lie; these titles are very expensive to produce and developers are unlikely to recoup these costs from the average sales figures per title.

> *'A half-way decent title can cost as much as £500,000…the average sale of each title in the UK is no more than 2,000 copies, of the 10-12,000 titles now available…To recoup the costs of a £500,000 title, a publisher needs to sell well over 20,000 copies.*
>
> (Edward Forward of Durlacher Multimedia, Independent on Sunday 20/10/96).

The effect of this has been seen recently in the latter half of 1996 amongst leading UK multimedia producers: First Information Group axed most of its staff, Dorling Kindersley (DK) reduced their multimedia department by 50 freelance staff, and Penguin, Harper Collins and Marshall Cavendish have all withdrawn from CD-ROM publishing. However, DK have diversified their electronic publishing by creating an on-line division. This has set up a web site containing information on DK products and web links to enhance their CD-ROM titles enabling buyers of their products to access updates and additional information. Current work at DK is focusing on an on-line magazine for the site and an exploration of the potential for on-line products to generate revenue (Cady 1996). Whilst many publishers now have their own web sites, the majority are used as a marketing tool and advertising space rather than as a distribution mechanism for dedicated on-line products. Increased interest in the internet as a mechanism for distribution and communication has enabled a large number of small companies to compete successfully in the electronic publishing arena, e.g. Obsolete, Pure Dimensions, AMX Digital, Nash Media, and AL Digital.

This general movement towards on-line media illustrates the complexity of the paradigm shift in publishing. Given this crisis, and the rapidly changing delivery environment it is necessary to reassess the design constraints and practices of the old technologies, in order to improve the design and production of products so that they can exploit the full potential of non-linear environments.

Towards this end, research is currently underway at the University of Plymouth in collaboration with AA Publishing. The aim of the research is to examine the changing world of publishing as it moves from book to electronic media forms, and from fixed to live and dynamic media. This paper attempts to identify the problems found in existing methods used for interactive multimedia production, with a particular focus on the production pathway.

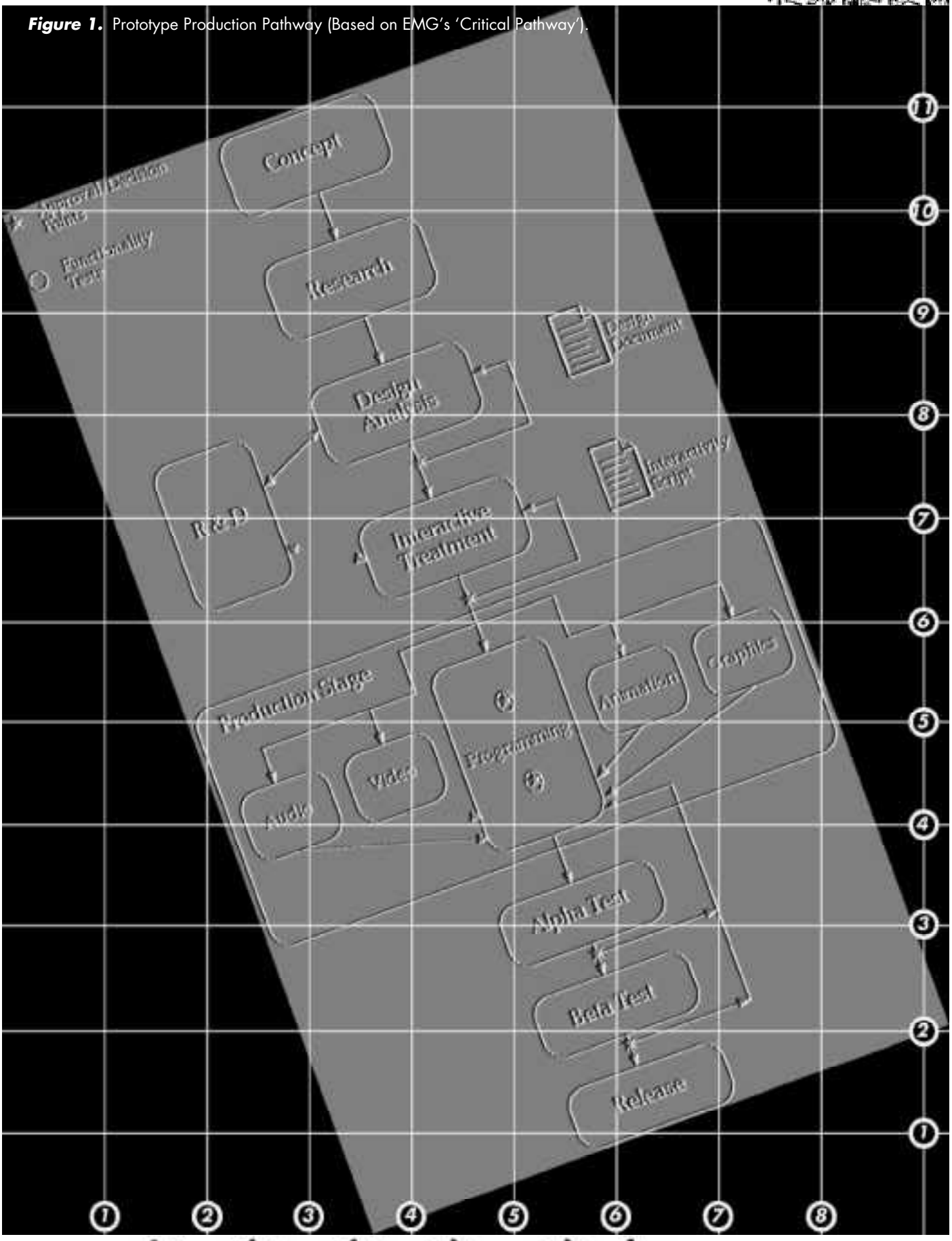


Figure 1. Prototype Production Pathway (Based on EMG's 'Critical Pathway').

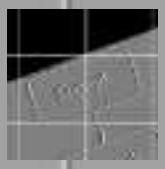
Research Methods:

The purpose of the work reported here has been that of a familiarity study in order to map out the territory of the relevant research methods for further work. The methods used provide a picture of both the social and technical activity detected in the design and production of interactive multimedia products. This is achieved by combining theoretical models with systems analysis techniques and ethnographic methods as has been successfully used by Sommerville et al (1992) and Jagodzinski et al (1996).

- Systems analysis: documenting the information flow between processes, and between people, using data flow diagrams - a graphical technique that depicts information flow and the transformations that are applied as data moves from input to output (Clifton 1990); task analysis of the human activities to identify and understand the tasks required (Pressman 1992); examination of departmental, project team, and individuals' documentation, notes, and records.

- Ethnographic analysis: utilises a set of methods for studying human systems under natural conditions bringing no preconceived notions or structures in order to understand the social context in which activity takes place. This includes: observation, interviews about work and working practices, and generally collecting whatever data is availabe (Hammersley & Atkinson 1995). This provides an overall picture of the functioning of a department and project teams, and identifies the issues and obstacles to effective management and creative design and development.

Mind Set:



At the time of the research taking place there was perceived to be a significant imbalance, relative to recommended practice (Vaughan 1994, Eubank 1996, England and Finney 1996, and Mok 1996) in the range of expertise within many multimedia production departments. Most multimedia production companies have their roots in one of the following 'industries': Video production; Publishing; Learning Technologies / courseware production. Given these different origins it is not surprising to find a concentration of specific skills: editorial/illustration from publishing; digital video / script writing from video / broadcast T.V.; programming and educational requirements from CAL. It is now widely acknowledged that the complexity of interactive media products requires the interaction of multiple areas of expertise for their design and production. Mok 1996 reports that a firm grasp on a variety of disciplines and media are required for success in this new hybrid industry:

'Interactivity and information design are interdependent disciplines in the design process; other design disciplines - identity, publication, graphic, broadcast, advertising, software engineering, and strategic planning - can also be components of the design equation in structuring information and interactivity design.'

Knowledge and Expertise:

Recent research (GISTICS 1995) has shown that buyers are bored with the majority of CD-ROM titles currently available. It is not so much the depth of content which fails to satisfy them, but the lack of creative treatment and interactive richness, coupled with ever increasing market expectations.

'The majority of multimedia titles released so far still tend to suffer from a lack of imagination and the creativity gap, which separates technology's capabilities from the ability of the content providers to create engaging, high value titles. Developers should consider the qualities and potential of the new medium if excellent product and high quality brand image is to be achieved.' (Thorn, 1994).

Most multimedia production companies are keen to produce a richer and more engaging experience for the user and to take full advantage of the creative and communicative potential offered by an interactive environment. However, the current imbalance of skills within departments, creates an imbalance in the attention to content, and the attention to treatment and interactivity. More fundamentally, the core of the problem is the lack of a robust visual vocabulary and language for interactive multimedia. It is the inheritance of practice and mindset from traditional media design and production which needs to be addressed in order to bring these ideals to fruition.

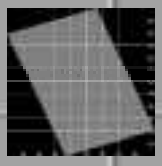
Project Management:

The continuous day to day management of projects is reported by many (Campbell and Sherrin 1992, Thomsett 1992, Hobbs 1993, and England and Finney 1996) to be the most important and the most difficult aspect of interactive multimedia production. One experienced developer describes the role of multimedia project management, thus:

'Project management is needed each day throughout the life of the project...experience suggests that most projects that fail, do so because of inadequate project management rather than lack of technology or insurmountable technical problems.' (Canale and Wills 1995).

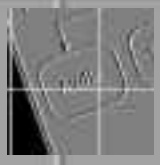
Projects often run a somewhat uncontrolled and unproductive 'evolve-constrain' life-cycle, where project management vacillates between periods of clearly focused control and times where managerial input is minimal.

A Production Pathway:

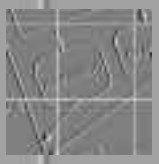


Exploratory and prototyping methods of system design. Exploratory programming is a recognised method of system production, used when a detailed system specification is difficult to establish. Typically, producing systems where adequacy is a more relevant factor than correctness (Sommerville 1992). Prototyping has many similarities except the prototype system is built and evaluated in order to construct a detailed specification for the full system. Any method used requires considerable planning in order to adequately anticipate problems which may arise throughout the project life-cycle (Vaughan 1994, Canale and Wills 1995, Mok 1996). Using an appropriate and clearly defined production pathway, denoting optimal decision points for change, could greatly increase the effectiveness of product development. Mok 1996 describes his DADI: Definition, Architecture, Design, Implementation process as one such method for creating a suitable framework on which to plan the development of interactive multimedia products. This framework:

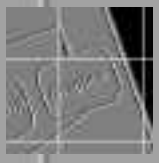
1. *Defines a project;*
2. *Creates an architecture that explains the process and, if necessary, the technology platform;*
3. *Defines who does what;*
4. *Defines the time frame and budget;*
5. *Establishes efficient communication among all the players.*



According to idealised models (Vertelney and Booker 1990, Attica 1995, Namuren 1996, England and Finney 1996) this should be performed early on in the project and used to: identify major technical problems, test key aspects of the functionality, and clarify the overall look and feel of the product.



A well defined production pathway is an essential component of any project as complex as multimedia production. If correctly adhered to, the production pathway will optimise the creation and delivery of the product, without compromising artistic integrity. Indeed, it is hoped that it will strengthen it, by facilitating the realisation of creative ideas. However, it is important that the pathway used is appropriate for the type of product being created and for the environment in which it is being produced. In such a rapidly changing technological environment as interactive multimedia, it is also essential that any pathway is flexible enough to meet unforeseen circumstances and events.

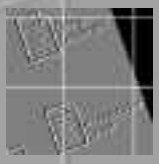


At present, there is no recognised 'best practice' critical pathway for multimedia production. Producer companies tend to follow their traditional production models, with incremental changes being made as and when problems arise. However, these models for design and production are fundamentally constrained by the capabilities and limitations of different and often redundant, technologies and products. This not only affects the efficiency of production but it can also influence the style of products created:

> *'It is noticeable that most multimedia products bear clearly the fingerprints of the particular trades which have produced them - of television, of book publishing, of database design, etc. - failing often to establish any new aesthetic.'*
> *(Boyd Davis 1995).*

Whilst we see the convergence of a variety of technologies, we also see the inheritance of practice. However, many argue that what is required, is the ability to respond to these changes and encompass different styles of working, contributing, and communicating, appropriate to the new medium (Oren 1990, Blattner and Dannenberg 1992, Boyd Davis 1995).

Preliminary findings have been used to construct a prototype production pathway. This is largely based on the pathway used by EMG. The prototype is shown in figure 1, highlighting: key stages of design and production, pertinent decision/ approval points, and the relevant documentation used.



Perhaps one of the most important aids to successful team working is the strict control and correct use of relevant documentation (Namuren 1996). The correct version of a detailed product definition can help prevent costly and time consuming mistakes being made. In order for these documents to be useful, there must be sufficient information within them, without being so detailed as to be unmanageable. Frequent (but realistic) updates are also desirable as this maintains accuracy and relevance (Sommerville 1992). Documentation is not only a method for disseminating quantities of complex instructions, guidelines, and information for use on a daily basis, it is also invaluable as a record for future projects, upgrades, platform or language versions, or simply a change in project personnel.

Innovation:

Innovative products greatly increase the level of risk inherent in a project, but creative and innovative work is required for high quality multimedia production. Controlled and targeted innovation in projects may be an appropriate way of managing risk whilst consistently improving quality.

In order to achieve and maintain market leader status it is essential to understand the technologies used and their liability to change (Mok 1996). Being able to anticipate and design for the changes before they take place will enable companies to consistently produce high quality products:

> *'Designs that anticipate technological changes before they arrive allow for the seamless integration of new technologies as they emerge. These solutions are "designed forward". Over time, such designs are more consistent for users and more cost effective ...'*
> *(Zolli, 1996).*

The search continues...

References

Attica (1995). 'Corfield-Wright Project', unpublished.

Beardon, C., (1995). 'Digital Creativity: breaking down barriers', in Proceedings of the 1st Conference on Computers in Art & Design Education CADE 95, University of Brighton, pp.3-8.

Blattner, M., and Dannenberg, R., (1992). (eds.), Multimedia Interface Design, ACM Press/Addison-Wesley.

Boyd Davis, S., (1995). 'Developing courses in multimedia: is an art school the right place?', in Proceedings of the 1st Conference on Computers in Art & Design Education CADE 95, University of Brighton, pp.144-149.

Campbell, P., and Sherrin, C., (1992). 'Making Money from Multimedia: Some Commercial Realities', in Conference Proceedings ITTE 92, Information Technology in Training & Education, Brisbane, pp.219-227.

Canale, R., and Wills, S., (1995). 'Producing professional interactive multimedia: project management issues', in British Journal of Educational Technology, Vol.26, No.2, pp.84-93.

Edmonds, E.A., Candy, L., Jones, R., and Soufi, B., (1994). 'Support for Collaborative Design: Agents and Emergence', in Communications of the ACM, Vol.37, No.7, pp.41-47.

England, E., and Finney, A., (1996). 'Managing Multimedia, Cambridge: Addison-Wesley.

Eubank, D., (1996). Executive Producer, BBC Multimedia Centre. Talk at Conference: Windows on the digital future, London.

Freeth, M., (1996). Head of BBC Multimedia Centre. Talk at Conference: Windows on the digital future, London.

Galegher, J., and Kraut, R., (1990). 'Computer-mediated communication for intellectual teamwork', ACM 1990 Conference on Computer Supported Cooperative Work, Los Angeles, CA.

GISTICS, (1995). 1996 Survival guide for the interactive telemedia & multimedia developer, Carronade Group: LA, USA.

Hobbs, P., (1993). 'Project Management - Methods and Case Study', presented at Conference on Learning Technology in Higher Education, Coventry, UK.

Hoffos, S., Sharpless, G., Smith, P., and Lewis, N., (1992). CD-I Designers Guide, McGraw-Hill, Maidenhead, UK.

Jagodzinski, A.P., Burningham, C., Culverhouse, P.F., Evans, J., Parsons, R., and Reid, F., (1995). 'The management and control of design in electronics engineering: a review of industry problems and practice' Submitted for publication in Design Studies.

Kim, S., (1990). 'Interdisciplinary Collaboration', in Laurel, B., (ed.), The Art of Human -Computer Interface Design, Addison-Wesley, pp.31-45.

Lawson, B., (1980). How Designers Think, The Architectural Press Ltd: London.

Mok, C., (1996). Designing Business. Multiple Media, Multiple Disciplines, Adobe Press: California.

Namuren, A., (1996). pers. comm. Multimedia Producer, EMG Ltd., Brighton.
Oren, T., (1990). 'Designing a new medium', in Laurel, B., (ed.), The Art of Human -Computer Interface Design, Addison-Wesley, pp.467-480.

Sidner, C. L., (1994). 'Negotiation in collaborative activity: a discourse analysis' in Knowledge-Based Systems, Vol.7, No.4, pp.265267.

Sommerville, I., (1992). Software Engineering, (4th ed.), Addison-Wesley.

Thomsett, R., (1992). Third Wave Project Management: Managing Information Systems Projects in the 1990's, Prentice Hall: NY.

Vaughan, T., (1994). Multimedia: Making it work,(2nd ed), Osbourne McGraw-Hill.

Vertelney, L., and Booker, S., (1990). 'Designing the Whole-Product User Interface', in Laurel, B., (ed.), The Art of Human -Computer Interface Design, Addison-Wesley, pp.57-65.

Vertelney, L., Arent, M., and Lieberman, H., (1990). 'Two Disciplines in Search of an Interface', in Laurel, B., (ed.), The Art of Human -Computer Interface Design, Addison-Wesley, pp.45-56.

Zolli, A., (1996). 'Modelling change in interactive technology', presented at Designing the Internet Conference, 5 July 1996, Design Agenda, Central St Martins: London.

Designing for Audience Response: Simon Turley...

Audiences are the preoccupation of those engaged in creating theatre: how do you get them to pay, and, (in both senses of the word) to attend? What are they thinking during the performance? What are they feeling? What is their experience? What, if anything, is universal in the experience of the individuals who make up one particular audience witnessing one particular performance of one particular play?

If this sounds like a litany for control freaks, then I should point out, now, that I don't believe water-tight answers to any of these questions exist. The exploration of these issues, however, has been a legitimate source of endeavour and consideration, always implicit and sometimes explicit, in the work of theatre practitioners for centuries. The user of any interactive, multi-media material is its audience. When the nature of that material is consciously educative, its creators are particularly concerned with audience response. What I hope to explore, here, is the way in which some theatre paradigms might instructively be applied to the design of such material.

The Realism Paradigm

The realism paradigm demands that when the fourth wall, (that's the one traditionally found between the stage and the proscenium arch), is removed, the audience witness, indeed *experience,* real action in sections of real time occurring between real characters. These characters wear real clothes, they sit on real chairs, they eat (if they are required to eat) real food. Above all, they experience real emotions, and the audience, in that sympathy which is either natural, or else so deeply culturally transmitted as to be virtually natural, catch a comet-tail glint of every emotion, too. So it is that we weigh General Gabler's pistols in our hands, just as Hedda does, prior to leaving the parlour in order to blow her brains all over the grand piano next door.

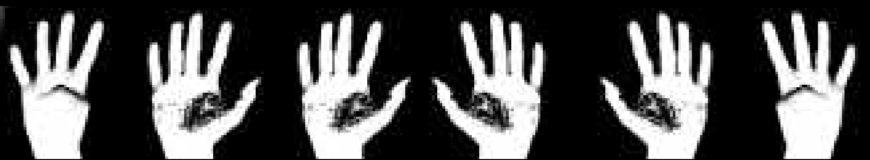
This paradigm is so much the staple of theatrical, and filmic, and televisual endeavour, that it is possible to lose sight of its effectiveness. It should not be doubted that sometimes the audience gets very close to the comet-head of the emotion - even though on rather more occasions it is left far back, thinking in the dark. Constantin Stanislavski[1], in many ways the leader of a way of working in theatre that sought (and still seeks) to transfix audiences to the glowing fireball of the emotion-comet, strove always to make the audience feel, rather than to think. This he achieved by the device of ensuring that actors felt those emotions on the stage[2] rather than simply demonstrating them.

The fourth wall has an obvious concomitant in the monitor. I must point out, however, that Stanislavskian acting and production techniques work in other forms of staging, too. When the focus of the actor is, as Stanislavski demanded, directed at the action on the stage, the audience's focus will almost invariably be there, too. This will be true whether there is a proscenium frame to that action, or whether, the stage is set centrally, with audience on three sides, or indeed completely surrounding the action. I mention this only to demonstrate how powerful our propensity to suspend our disbelief can be.

Ancient staging techniques, predating Stanislavski's work, such as those employed by the Greek drama of the Fifth century B.C., still seem to have traded in the realism paradigm. Even though masks were worn, and even though action was presented in a variety of forms, audience belief in the truth of the action (to borrow a Stanislavskian term) was strong. The fact that these dramas used a split stage, [with dance and chanting from the Chorus operating in the circular "Orchestra", and dialogue and monologue from the two or three actors on the raised, rectangular "Skene"], did not dilute belief in that truth[3]. Aristotle's observation of audiences experiencing "catharsis" in response to watching tragedy confirms this[4]. The co-mixture of fear and pity which he identified argues that, at least in part, the audience identified with the sufferings of the protagonist - they knew that they had not murdered their fathers, enjoyed sexual relations with their mothers, and blinded themselves on the discovery of those pungent truths, and yet they had edged up close to the emotions involved - they had felt the unthinkable - they had been singed in the comet-tail.

[1] Constantin Stanislavski, (1863 - 1938), Russian actor and director, formulated a system for actors, published principally in his books An Actor Prepares, Building a Character, and Creating a Role. Aspects of his theories of acting form the root of the "method" school of acting, which has dominated the training of actors, particularly film actors, in America, (cf. Lee Strasberg, A Dream of Passion).

[2] This aspect of Stanislavski's work is popularly remembered as the concept of "emotion memory", whereby, the actor, having determined through a lengthy process of exploration of text and character what emotion their character is experiencing at a given moment of the play, then trawls through their own experience for an equivalent emotion. The actor then superimposes this "emotion memory" upon that moment during the performance.



The Objectivity Paradigm

For some theatre practitioners, feeling is not enough. More than anyone else, it is Bertolt Brecht, (1898 - 1956) who challenged the adequacy of sensibility. "Stop that romantic staring", proclaimed banners in the auditorium to the audience of his early play, *Drums in the Night*. No more would watching and empathising be enough, Brecht aimed to create conditions in which audiences would witness theatre in a state of sentient objectivity If audiences could be taught to watch and to think, then theatre might be something which changed the world rather than simply representing it.

The construction of Brecht's plays consciously fended off any conventional expectations of what theatre was like. His stories rejected any concept of tightly controlled form - no beginning/middle/end stuff. He created a style he termed "Epic theatre" in counterblast to the "Dramatic theatre" that had so far prevailed. In Epic theatre, each scene stands stark and clear; it resists the organic inclination of Dramatic theatre, where one scene leads to another. A disciple of Eisenstein, and, frankly, a fan of Hollywood film to boot, Brecht found theatrical adaptation of montage a source of energy in his Epic. Scenes often were subtitled - rather in the way that 18th century picaresque novels, such as the work of Fielding, let you know in advance exactly what it is that you are to witness. This is a conscious rejection of dramatic tension - the will she/won't she - that motors an audience's focus. With the tension of what might or might not happen removed, audiences were edged closer to thought, rather than feeling in response to the action.

Brecht consciously rejected the theatre-technology of illusion. He favoured non-naturalistic lighting and makeup. He was interested in forms of popular theatre, e.g. fairground shows, which took place in daylight; which set no boundaries around an audience who were free to come and go as they pleased. He also employed devices such as narration, half-mask, and song, specifically to nudge the audience out of any tendency to suspend their disbelief. Song might allow direct address from character (singer) to audience.

Verfremdungseffekt, is the term Brecht used to express his ideal. Popularly known as the A effect , or alienation, it might be better translated as the effect of distancing - of shifting the audience's focus on the action so that they recognise that they are watching a play, not reality. Freed of the burden of believing in the truth of the action on the stage, they could consider the arguments the play contained. Actors, similarly, had to be trained not to identify with characters they played. If the actor presented the character as an entity outside him/herself, he/she forced the audience to re-evaluate the character, too. Actors were to use "geste", meaning both gist and gesture, in the presentation of the character, rather than trying to inhabit the skin of the character. The actor, as John Willett has observed, was "to make himself observed standing between the audience and the text".[5]

There are many attractive notions in this paradigm for interactive multi-media material[6]. If the material is to be educative, then it is surely right that the user should be invited to think about the issues as the interaction occurs. Distancing and reflection must be a desirable result.
Like Stanislavski, Brecht has been a major influence upon theatre and film. His ideal, to create a theatre that was popularised and didactic, to find ways of unleashing theatre's potential to be a factor that shaped the world, has been taken up by many theatre practitioners - particularly, perhaps, those working in theatre-in-education (TIE).

The Spect-actor Paradigm

This paradigm is a contemporary development in theatre[7] - again, one which has been enthusiastically adopted by TIE practitioners. I believe that it has the most acute application for the production of multi-media material - it presents an ideal to which educative interactive programs might profitably aspire.

The term, "spect-actor", is one coined by the Brazilian theatre practitioner, Augusto Boal. Boal's work, like Brecht's, is motored by an impulse for social and political change. Unlike Brecht, through Invisible Theatre and, more particularly, Forum Theatre[8], he has developed new theatrical forms in which members of the audience cross, ultimately *consciously* cross the boundary between watching and taking part in the action.

In Forum Theatre, Boal's method is as follows. With a company of actors, he explores the life of a particular community: he identifies a source of social tension, or "oppression". Having done so, the company then devise a piece of theatre to present to that community, which finds a way of showing one character, the "protagonist", experiencing that element of "oppression".

[3] The split stage dynamic of classical Greek theatre offers a parallel with multi-media screen design.

After the piece has been performed once, with the protagonist inevitably no further forward in their attempt to break the oppression, the company then offer the audience the opportunity to change the outcome. The piece is performed a second time. On this occasion, any member of the audience can at any time approach the acting area and shout "stop". The action stops and the member of the audience, a "spect-actor", can replace the actor playing the "protagonist" and attempt to break the oppression. The other actors, well-schooled in the business of maintaining the status quo, will respond with new improvised dialogue and actions which will probably manage to defeat the "spectactor's" attempt. At any point other "spect-actors" can intervene, by shouting "stop", and attempt to apply their own solutions.

If any means of breaking the "oppression" is discovered by the audience, then it may be that the oppressed in that community will have learnt strategies for changing their lives. As the Forum continues, spect-actors may take the opportunity to replace other characters in the piece. In doing so they will be able to experience the power of their "oppressors"; perhaps more importantly, they may devise new strategies of "oppression" missed by the company, which might be experienced in reality.

Even if it does not succeed in breaking the oppression presented in the piece, an audience may well still have made invaluable progress towards learning strategies for minimising its effects. At the very least, a community which has taken part in a piece of Forum Theatre will have had its consciousness raised.

To illustrate this abstract account, I offer one of the examples Boal records of his Forum work in his book, *Games for Actors and Non-Actors, (Routledge, 1992)*. His company visited the small community of Godrano in Sicily. As one might expect, life in this rural community is over-shadowed by the ultimate "oppression" of the Mafia, however, Boal notes that while "everyone was unhappy in Godrano … among the unhappiest were the women and the girls. Everyone was oppressed, but the most oppressed were the women who were married or soon to be married"[9].

In response, despite the objections of the police, and with only the syrupy blessing of the Sindaco (leader of the council and mayor) to encourage them, the company devised a Forum piece exploring the oppression of women in Godrano.

The piece concerned a young woman, Giuseppina, whose wish to go out to supper was referred by her mother to her father. Giuseppina's father refuses her permission, unless one of her brothers accompanies her. Her eldest brother is of the opinion that "a woman's place is in the home, and that the stupider and more ignorant she is, the better she is"[10]. A second brother merely exploits the situation as an opportunity to betray Giuseppina's misdemeanours. Her youngest brother appears to take her part, but only if she behaves in a way of which he approves. The piece ends with Giuseppina refused permission even to go out for a walk while each of her brothers leaves to pursue their own leisure.

Following the first presentation of the piece, Boal records two male members of the audience "ordered their wives" home. The women refused and the Forum began. Young women from Godrano tried but failed to achieve a different outcome to Giuseppina's story, until one "showed what was for her the only solution: force … she went out for her walk". This was accepted as a solution to the immediate oppression.

The second phase of the Forum proceeded, with spect-actors taking the roles of other characters in the piece. This precipitated more lively debate, as male members of the community adopted the "oppressor"-roles that they were identified with in reality by the female villagers of Godrano. By contrast, a male spect-actor's adoption of Giuseppina's role drew a chilly response from the women. Boal notes that:

> *the male actor (even if he was a spectator at the beginning) was still, as far as the women were concerned, a male actor; the woman spect-actor on the other hand was one of them, a woman on stage, standing there in the name of other women.*[11]

From this experience Boal makes a discovery which I think is crucial to our concerns here:

> *… when an actor carries out an act of liberation, he or she does it in place of the spectator, and thus is, for the latter, a catharsis. But when a spect-actor carries out the same act on stage, he or she does it in the name of all the other spectators, and is thus for them not a catharsis but a dynamisation.* [12]

This, I believe, perfectly describes an ideal interactive experience for the multi-media audience. The element of game, of unreality, which Boal throws around his Forum theatre permits freedom of expression for the audience.

[4] For a thorough discussion of Aristotle's Poetics as they might be applied to multi-media design, see Brenda Laurel, Computers as Theatre, (Addison-Wesley, 1991)

While the Forum is in operation, there are ground rules which promote absolute safety for the audience; the index of their security is their willingness to cross the line from spectator to spect-actor, (their desire to straddle the hyphen). At the same time, a dynamic of realism is also in operation. Identification with the action - with the oppressor, or more probably the oppressed - gives urgency to their willingness to become directly involved in the action.

The spect-actor paradigm established in Boal's work, as I have hinted in the above paragraph, seems to offer a very satisfying synthesis of the other paradigms I have outlined. It moves effortlessly between belief and reflection; between feeling and thought. It makes available to its audience a rich variety of forms of learning: learning through observation; learning through empathy; learning through distanced consideration; learning through repetition and variation; learning through (safe) direct experience.

The challenge for those involved in the production of multi-media interactive material is, I believe, to meet Boal's ideal: something which this author, for one, has so far signally failed to do.

[5] John Willett, The Theatre of Bertolt Brecht, (Methuen, 1993. P.174)

[6] The dynamics of Brecht's theatre, with it's adoption of montage, its use of music, of text to be read rather than hear - often displayed in the form of banners in early productions - has parallels with multi-media screen design.

[7] So contemporary that it necessarily escaped Brenda Laurel's attention.

[8] Boal offers a comprehensive account of his practice in Games for Actors and Non-Actors, (Routledge, 1992)

[9] Boal, A. Games for Actors and Non-Actors, p. 31 (Routledge, 1992)

[10] Ibid. p. 34
[11] Ibid p. 35
[12] Ibid. p. 35

Multi-Narrative: Some early problems encountered

The species of theory, outlined above, was very far from my mind when I was first asked to write some dramatic scenes for the Childbirth Project. I was presented with character profiles and a selection of situations in which to place those characters. This I did. I was asked to give these characters and situations different treatments; this I also did. I believe that my first error, however, was a stylistic one. I wrote as though for television. The scenes then, almost inevitably, acquired the argot of the lowest common denominator of television - the soap opera.

As a writer, there were aspects of the work which I found technically interesting, indeed demanding. To have three separate versions of the same scene proved curious to me. Tom Rogers requested one strand of each scene to have a negative outcome, another strand to be neutral in outcome, and a third strand to have a positive outcome. The rationale for the existence of these different strands was that a user would be enabled to witness, and, vicariously, to rehearse, a situation which might be equivalent to an aspect of their own, real-life experience. Any writer, especially a writer of drama and theatre, will instinctively look to gathering points of tension and conflict in order to make a scene work. Conflict is the raw fuel of drama, and tension is the engine. If, then, you have to write a positive out-come to a scene which you have already worked through in a way that seemed to be dramatic, the experience can be, for the writer, enervating.

We focused, for example, upon the character of Denise. Aged 16 or 17, the profile stated Denise to be "in a failing relationship with her boyfriend", and to be living at home with parents who are "less than happy with news of the baby". Tom asked that I write a scene that followed Denise's initial pre-natal visit. She would return home and the question of whether she should keep the baby at all would be discussed.





[13] Images from the scenes can be seen above and below.

[14] This is not to say, of course, that the dramatic content of the Childbirth Project was the only aspect available for interaction. It would, of course, only be a small part of the picture as a whole: it would only ever occupy a portion of the screen.

[15] I recognise that the word "oppression" has, perhaps, an unhelpful, colourful meaning here. And if it comes to that, Doctors, Midwives, Health Visitors, and Nurses are themselves the victims of the "oppression" of time, and market forces.


The "negative" scene was relatively easy to write. Denise was frosty with her mother, the only other person in the house on her arrival; they interrupted one another, they did not really hear what one another was saying, and, generally, miscommunicated. David, Denise's boyfriend, interrupted the action with a series of botched attempts to phone her; not to ask her about the ante-natal appointment, only to harass her about some academic work which he wished to filch from her. Denise's father's arrival only made matters worse. He entered the scene a man with a mission - determined that Denise should abort the baby. The scene ended with Denise storming out of the house. It was fun to write. A positive version of the scene proved much more difficult to accomplish, mainly because my shoulders ached with cringing. There were more resolutions per square yard than on Princes Street during Hogmanay. I am still not very satisfied with my final draft, which seems to lack only mid-western inflections to belong in an episode of the Waltons. And yet it was interesting to discover how little sometimes had to be changed, in order for the intention of a character, or, indeed, the direction of the scene, to be radically altered[13].

The aim of the Childbirth Project was only to produce a tiny fragment of the material: to demonstrate that the technological and artistic demands of such a programme could be met. It struck me, almost immediately, how labour intensive the writing would be, in order to script the programme as a whole. With a full range of character profiles, designed to offer as wide a usership as possible the chance to benefit from the material, and the number of scenes one might want the piece to deliver dramatically, a massive writing undertaking would be required. When one adds to that the business of offering different versions of each scene, the writing demandss multiplies by three - always assuming that three different outcomes are sufficient. It might well be necessary to employ a team of writers in order to generate sufficient material. Following on from this, anything that was written would also need to be produced, directed and of course acted. I believe that the full-production costs of the programme, were it to be undertaken this way, would be huge.

The scenes which I wrote were designed to be watched. Interactivity was not my primary purpose: a user could do little more than select, at junction points, different outcomes to the scene[14]. The paradigm adopted was the realism paradigm. However close to their own situation the scene depicted portrayed, I must regretfully state here that I doubt that the suspension of a user's disbelief would survive the operation of the mouse to make a choice. I am currently considering a fresh look at the writing of these scenes - adopting various aspects of the different paradigms outlined at the start of this article. I feel that the use of interior monologues - where the user could access the internal thoughts of a character would generate layers of drama, meaning and learning, thus enriching the material. It may also to possible to adopt Brecht's performance technique of "geste", where a character is demonstrated to the audience, rather than represented to them by an actor who is inhabiting the role: there would be minimal movement requirements for long periods of time if geste and tableau were employed, this would allow stills to be used, speeding up production and saving memory.

And what of Boal and the Forum? I would define any kind of state of unknowingness as a state of oppression. For the potential user of the Childbirth Project, ignorance of the minutiae of child-bearing might be exacerbated by "oppression" at the hands of professionals they encounter in the course of their pregnancy[15].

My colleagues are not yet convinced of the existence of the kind of technology which could generate the spect-actor paradigm. The programme would have to be able to provide text in an aliatoric way: it would have to maintain the "oppression" in a flexible and organic form in response to attempts to break that oppression which could not all be anticipated. I do, however, believe that this is only a matter of time.

As, I think, is clear from the tone of this essay, I believe the work is but begun.

Simon Turley is a Playwright and Head of Drama @ Eggbuckland Community College. He has been collaborating with the Multimedia Group on a Multimedia Learning Environment (MLE), the "Child Birth Project". The aim of the research is to explore the use of interactive drama in MLEs as a means to broaden and extend cultural, social and emotional perceptions. The Child Birth MLE aims to empower expectant families with a real sense of what is in store throughout pregnancy. The Child Birth MLE is being developed by Tom Rogers.