As the practice of digital arts developed in the early 1990s, it provided great potential as an alternative and complementary medium to traditional art forms. Computer graphics, immersive environments and new interfaces promised to change the way that audiences engaged with artwork in the future. Cheap data projectors enabled galleries (and other spaces including outdoor ones) to transform physical spaces into simulated environments that could be interactive if linked to computers. Virtual reality headsets and datagloves seemed set to satisfy our haptic aspirations for art to allow audiences to traverse their way inside the artwork rather than looking at it remotely. Concurrently, the introduction of the Internet beyond the institution gave rise to theories about the future of on-line communities that could be wholly democratic and challenge the status quo of the physical world.

This, of course, does not describe the details of working in digital arts at that time, which were much less utopian. The theory far superseded the reality and everyone had to wait for the technology to catch up. Virtual reality equipment was expensive and could only be accessed by a few people, and most innovative work had to be programmed from scratch. Meanwhile, the Internet was following a very different economic trajectory from the one imagined by some cultural theorists.

There is no one definitive history of media arts during this period – parallel groups and approaches added to the diversity of digital arts. However, there are attempts to describe a definitive history. The difficulty of collecting and archiving, the relative complexity of restaging many works because of the exponential growth and related obsolescence of technology, and the rhizomatic nature of this work make absolute historicisation particularly elusive. Perhaps more interesting is an examination of specific qualities of digital arts, in this case the interface and participation in some selected works mainly shown or made in UK over a fifteen year period. Taking six pieces of work from the 1990s and referencing them to the present day situation, this text will place igloo’s development in the backdrop of British digital arts in relation to the development of the interface.

Multiple user installations

**Toshio Iwai / Resonance of Four / 1994**

This was a four-way multi-user environment based on a midi system for mixing music. Toshio Iwai invited up to four users to manipulate various points on the tonal scale, which were made visible through a projection showing dots on a grid where the participant had chosen to place sound on the scale. The work encouraged participants to make four-way musical compositions collectively. Factored into this work was a default setting ensuring that the piece never sounded discordant. This kind of work had not been experienced before and part of its appeal was its apparent draw on collective creativity. Subsequently, other artists such as AudioRom and more recently Something have updated and appropriated these kinds of collective interfaces in their installations. The immersive quality of sound became increasingly important in the development of installations and continues to be used in gaming culture. Resonance of Four was seminal in its introduction of the potential for multi-user collectively authored environments and the use of sound to cohere the experience.

**Paul Sermon / Telematic Dreaming and Telematic Vision / 1992-3**

Paul Sermon’s pieces asked audiences, telematically linked by video projection at two different sites, to interact with each other through physical gesture and signs only. A telematic projection of participants lying on a bed (Telematic Dreaming) or sitting on a couch (Telematic Vision) encouraged them to ‘touch’ and communicate with their companion projected virtually from the other site. Whilst appealing to the audience’s instincts to communicate and touch each other he
asked them to interface with state of the art technology. The physical distance between the two sites enabled audiences to be much more familiar with each other than if they were really sitting side by side on a couch or a bed in a gallery space.

In the 1990s wave of media artists, Iwai and Sermon were among the first to introduce the idea of collective authoring and to make demands on audiences for the completion and enhancement of the work. Whilst these pieces were shown in the gallery context, they challenged the mores of the gallery and introduced the concept of touching to complete the artwork. Iwai, who worked for SEGA, deliberately added a playful element to all his pieces, which has been a recurrent approach for digital artists into the present day, and Sermon’s work demonstrated a particular interest in the interface of the real and the virtual.

However, a concern with the interstices between the real world and the virtual was short-lived, as concurrently with this artistic concern to engage audiences by using the interface as a phenomenological tool, the basic interactive elements of commercial gaming had already emerged. Joysticks, cursor keys and variations on that theme, that soon became the basics of mainstream games packages, were a means to an end that largely did not address the audience’s physical gesture or presence in an environment. A short period of inquiry into the interface through art and lab environments gave way to familiarity with the navigation tools of gaming which, while being improved, have remained largely the same in their make up.

**Single user environments**

**Jeffrey Shaw** / **Legible City** / 1988-92

*Legible City Figs. 3 & 4* was a seminal work in interactivity and the development of the interface. It remains important in that it, unlike many pieces made at the same time, can be restaged and exhibited. The interface took the form of a bicycle that remained at a fixed point in the gallery space. By pedalling and steering, the participant could move forward, left, right in a virtual city projection mapped by text drawn from literature emanating from the real cities (Manhattan, Amsterdam and Karlsruhe) that the projection represented. This was a polished and impressive piece of interaction acclaimed for its novel approach to the interface. It did however highlight one of the issues with most immersive environments at that time – they could only really be engaged with by one person at a time while others looked on.

**Harwood** / **Rehearsal of Memory** / 1995

This was regarded as one of the best of the numerous CdRoms that were video projected into the gallery as an installation. The piece was made with patients at Ashworth top security Hospital under supervision. Harwood dialogued with the participants in the making of the CdRom to produce moving stories about aspects of the participants’ lives inside and outside of the hospital. Using the layering characteristic of CdRoms *Fig.1*, Harwood encouraged the audience to search into the piece for the hidden texts and stories uncovering the layers of
memory described by the participants/authors of the CdRom. There were issues with the work in terms of exploitation of the participants but the result was more sensitive than a documentary film or photo series. Harwood worked with the texture and characteristic interface of the CdRom to reveal the sensitivity and richness behind the lives of the participants who were often given a much more brutal public face. Like much of the work shown from CdRom, it was hard to see any distinction between the projection in the gallery space and the monitor-bound CdRom in the case of Rehearsal of Memory. Whilst the content of the work was good, this approach to exhibition created confusion about the role of the interface in exhibition. Experiments around phenomenology of interface in relation to space and content began to dwindle.

**Graham Ellard & Stephen Johnstone / Passagen / 1994**

This installation appreciated and exploited the limitations of interface technology in the mid 1990s. The title, taken from Walter Benjamin's essay of the same name, implies an analysis of Baudelaire's concept of the *flaneur*. (Benjamin, 2002) The flaneur is an urbanite who observes life in the city from a detached viewpoint. Ellard and Johnstone deliberately drew from the limitations of point and click at that time – the participant chose a place to go on a central monitor while a spoken narrative drew them into an immersive curved screen environment describing the cities of Berlin, Paris and London at different scales [Fig. 6](#). The audience had limited choices of pathways to take and were forced to observe once they had made those choices. By engaging with the limited interface the audience were put into the role of the flaneur helped by the observations provided visually and through the narrative. As a flaneur, it is possible to engage with society, but never to be fully part of it. Passagen was subsequently produced as a CdRom and unlike Rehearsal of Memory, the CdRom version of the work was less effective than the installation. Passagen, the installation, seamlessly fused an immersive projected city environment with a more closed intimate monitor that allowed the viewer to transport between locations according to limits imposed by the point and click of a mouse. It was the combination of exhibition materials and interfaces that added to the concept of the piece.

**Intelligent interactive systems**

**Tessa Elliott & Jonathan Jones Morris / i= Series / 1994-6**

In UK in 1994-6, Tessa Elliott and Jonathan Jones Morris were developing a body of interactive installations *i= series* which evolved from an earlier piece Emergence, TISEA, Sydney, 1992. This body of work was made as a challenge to the predominance of what they saw as purely reactive systems responding only to detection of movement in a space or the point and click of a mouse. Elliott and Jones Morris coded an intelligent system using neural networks that detected a participant in a space and analysed their movement or gesture. In turn, the system would generate a series of sounds or images based on the gesture it detected or learnt. In order for an audience or participant to experience the piece fully, it was necessary to dialogue with the system or installation by responding to the evolving framework of code, image and sound sequences.

The content for the *i= pieces was provided from one day workshops with special interest groups who also had asked or been invited to work with the interactive system (e.g. architects, school children, dancers and computer scientists), [Fig. 5](#)

What distinguished this work from other similar subsequent systems was its initial desire to put audiences at the centre of the work and to encourage them to move and interact inventively within the space. Whilst Elliott and Jones Morris were interested in audiences, they also wanted to collaborate with
Fig. 2 Paul Sermon Telematic Dreaming, originally linked between Kajaani Art Gallery & Helsinki Tellegalleria, Finland, 1992

Fig. 3, 4 Jeffrey Shaw The Legible City (3 versions - Manhattan, Amsterdam, Karlsruhe), 1988 - 1992

Fig. 5 Tessa Elliott and Jonathan Jones Morris, performed by Rebecca Skelton, i=001.0 from the i= series Lilian Baylis Theater, Sadlers Wells, 1995
practitioners who were able to spend longer familiarising themselves with the system. They worked with a dancer, Rebecca Skelton and a composer, Andrew Deakin, who developed an ongoing ‘relationship’ with the system. Developed at Camerawork Gallery and Middlesex University as \( i=0001; i<1001; i++ \), the exhibition of this work culminated in dancer Rebecca Skelton performing with the system at Sadlers Wells Theatre \( i=0010 \) to a ‘passive’ audience followed by a tour to Chichester and Leeds. Through Elliott and Jones Morris’s ambition for the technology, the intelligent system and the improvisation of the dancer enhanced the content and aesthetic of the piece. Not only did the images and sounds make up the work, but also the sequences of images triggered by diversity of movement, and its analysis by the system, along with the movement itself added to the piece. In this respect, Elliott and Jones Morris were pioneers in interactive systems in media arts.

These pieces and performances that made up the \( i= \) series had an ambition also to work with practitioners and people from different backgrounds; hence their work with schoolchildren, architects, composers, dancers and computer scientists. Jones Morris and Elliott acknowledged that their practice grew from the work of groups such as EAT (Experiments in Art and Technology) and practitioners such as Myron Kreuger of the 1960s. In this backdrop, igloo formed in 1995 and began to develop their body of work. Both Elliott and Jones Morris, and igloo were early adopters of an interdisciplinary approach to making work and it is probably no coincidence that igloo refers to their work as *intermedia* (a term coined in the 1960s).

**Landscapes & atmospheres (igloo)**

A defining quality of igloo’s work is their meticulous understanding of the systems and technology they appropriate (particularly motion capture), which they fuse with references drawn from popular culture and style. The real strength in their practice is that they value gaming, fashion, contemporary music as well as production values in their work, which is based in art, design, movement and inventive reconfiguration of software packages. igloo’s interest in appropriating design shows through all their work where other artists have concentrated on the coding, interface, movement or content. Their work really succeeds when they are able to blend all the elements seamlessly. For example, in the performance *Viking Shoppers* (1999-2001), igloo worked with Sigur Rós on music, Vexed Generation on costume design while they produced a serious piece of dance work combined with stunning interactive elements and visuals.

In contrast to some of their predecessors, igloo has not concentrated on the form of the interface. WarStars (2002) and BackStrikesEmpire (2006) have no interfaces and yet the pieces engage and immerse the viewer by guiding them through the landscape using the performers as a link between audience and environment (Icelandic tundra and Australian desert respectively) Fig. 7. The extreme nature of the terrain means that these landscapes could represent different levels in a game, but they are video images of the real world removed by the presence of the figure(s), dressed in costumes suggestive of science fiction. Costume is as important as movement in these pieces – although made of white layers covering the whole body they never lapse into filmic cliché, which is a conceptual strength of the work. There is a synergy between the visual treatment of the film and the game environment in igloo’s work; the constant is the figure in the landscape.

This concern with landscape and the sublime is evident in igloo’s most recent practice. Summerbranch (2005-07) is perhaps the most literal examination of the landscape and the figure’s role within it. While in residence with ArtSway and SCAN, it was striking how much attention to detail igloo paid to their
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Fig. 6 Graham Ellard and Stephen Johnstone, *Passagen, The City of the Dreadful Night*  
Exhibition Atlantis Gallery, London, November 1994

Fig. 7 Igloo BackStrikesEmpire 2006 Watermans Gallery, Node:London
representation of the forest (the New Forest location of ArtSway/SCAN being the source material for the piece). They studied the rendering of trees and worked with a company producing software that differentiates between the appearance and growth of different species of trees. Simultaneously they were studying movement and stillness of the figure experimenting with how camouflage can fuse the body with a landscape. As they progressed the work, there seemed to be parallels with nineteenth century observers such as John Ruskin. Igloo’s rigour in observing the forest had commonality with the painting and drawing of that time. Instead of using the media of painting and drawing to represent nature, Igloo’s tools are drawn from contemporary games, environments and simulations. Summerbranch presents a simulated forest that the viewer can traverse while engaging with camouflaged avatars also moving through the landscape. Fig. 8 Using a joystick and trackball, the viewers can immerse themselves deeper into the system influencing the soundtrack and visual experience. The role of this ‘off the shelf’ interface in relation to content and the viewer experience contributed to Igloo’s interrogation of the figure and the viewer in the landscape.

Although, arguably, challenged by the presence of an edge of the forest, this piece was immaculately observed, underplaying the simulation effect of using an existing games engine and focusing more on the painterly landscape. Although the interface is important in Summerbranch, the presence of the joystick and the trackball in the space seems to detract from the work. Like the video pieces WarStars and BackStrikesEmpire, this piece demands that the viewer immerse himself or herself in the experience. Igloo plan to use alternative interfaces in future editions of Summerbranch in order to offer different experiences to the viewer.

SwanQuake’s fantasy environments emulate the levels of a game, and apart from a few surprise rewards the piece is deliberately goalless. Igloo combine references from art, gaming and film to make their own set of rigorously observed environments. Both Summerbranch and SwanQuake invite the viewer to experience the landscapes that Igloo have crafted. The difference between SwanQuake and Summerbranch is that one enhances the movement and appearance of gaming avatars and environments, while the other attempts to visualise nature. A paramount concern in all Igloo’s work is to make environments atmospheric and beautiful. This distinguishes them from others artists working in this area.

The interface revisited

In 2007, the technology has begun to catch up with the imagination of fifteen years ago. In that time, participation in the arts and social software has changed significantly largely due to the development of new communication tools and interfaces. However, as has been pointed out elsewhere in this book, there still is not really a lexicon of interactivity for us to draw upon. In the early 1990s, attempts were made to think about the interface and its meaning in art work. Of primary concern was the point at which interface contributed to a piece of work rather than being mere gimmick. In many ways, as HCI (Human Computer Interaction) has become subsumed and developed into the mainstream these questions have become overlooked.

The role of collective authoring and knowledge sharing in media arts, reintroduced by artists such as Toshio Iwai and Paul Sermon, is a growing issue and one that Igloo have considered. They bring in teams of invited artists with different skills to help make their work – in that sense the work is collectively created. Currently media arts is as much about making social
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Fig. 8, Splash image Summerbranch virtual environment, igloo 2005
software and tools for the collection of user generated content as it is about the content of the work itself. Groups have formed such as Furtherfield, Hive Network, kurator.org and The Ludic Society all of whom are making work to challenge methods of production and generation of content. In tandem with this, ubiquitous mainstream tools have also elicited an unprecedented response from communities, but the experience can be unchallenging and unrewarding for anyone except those directly involved. As straplines such as ‘interact or die’ are presented, the emphasis is on everyone authoring in an environment. These participative multi-user environments are still maturing and may become much richer although there is a danger that collective authoring could detract from the expertise provided by the dedicated artist or designer.

Ben Rubin and Mark Hansen invert the participative environment in their work Listening Post, 2003. An unwitting community of participants in a chatroom provide content as randomly gathered lines of ‘chat’ are displayed written on monitors in the gallery space and also spoken through a voice simulator. In the gallery space, the audience is passive in the knowledge that as they watch these immaculately presented banks of mini-monitors ticker tape the chatroom fragments, somewhere a community is engaging with the technology. The result is an immersive homage to technology together with an acknowledgement of our daily engagement with online communities. Implicit in the work is an observation of the ability for technology to survey, reinterpret and control. This is a reworking of the interface in an art context – by inverting everyday engagement with technology and diverting it into an art gallery, our intimate interaction through our computers is made visible in a public highly charged arena. Listening Post is not interactive in itself but it uses the tools of participation and interaction along with a good understanding of the audiences who will engage with the work. It is a powerful work precisely because the audience does not interact – it becomes privileged in its voyeurism of the traffic of the Internet.

Igloo have an interest in participative multi-user environments and future works will be likely to engage with these given their interest in gaming and mainstream culture. Fused with these concerns is their attention to the relationship of their work with art history. At the centre of their practice is a desire to make beautiful environments that engage and immerse the viewer. The concerns that artists had in the 90s with the interface and its role in the meaning of a work within a space has been largely abandoned by igloo and their contemporaries (eg. Rubin and Hansen’s interface inversion just mentioned).

But the introduction of commercial systems such as the Wii suggests an imminent return to experiments with the interface and its meaning.

Research around haptics in Art and Design is beginning to revisit the role of phenomenology and conceptual meaning of the interface. Touch is important in describing space and researchers are revealing new concepts and metaphors of the interface through touch that go way beyond the Wii or the phantom haptic device. From 2000, ‘tangible interfaces’ research that attempts to fuse the real and the virtual through multimodal sensing (not just touch), and ‘embodied interaction’, which looks at the social implications of HCI has facilitated this approach. It is timely that artists revisit some of the early works of the 1990s with these new developments in interface research in mind. It may be that artists such as igloo who bring a unique understanding of how to make work beautiful and poetic from a truly interdisciplinary perspective, have the potential to develop the interface creatively and conceptually in the future.
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Notes

1. Among the extensive writing on the democratising potential of new technology see Sadie Plant, 1997
2. The most renowned VR piece is Osmose / Char Davies / 1995 which was supported by the company SoftImage
3. There are a whole number of survey texts available eg. Stephen Wilson, 2001 / Charlie Gere, 2002 / Lev Manovitch, 2001 / Frank Popper, 1993 / Rachel Greene, 2004 / Lucy Kimbell (ed.), 2004. The diversity of content in these and other texts reflects some of the changes in publishing that have been facilitated by technology. There is no one authoritative body describing media arts and as a consequence there are a whole variety of approaches to the area of practice and research. Media arts represents differing approaches and theoretical stances as well as interdisciplinarity – it is important to highlight and recognise this. It is this uncertainty in media arts that allows such rich experimentation and presentation of new ideas.
4. See Audiorom’s soundscape work and CDROM, 1998 and the work of Someth:ng, an artist group originating from Ravensbourne College formed in 2004
6. See DEAF07 (Dutch Electronic Arts Festival)
7. See DEAF07 (Dutch Electronic Arts Festival)
8. Although Paul Sermon and Toshio Iwai were taking advantage of new technology in the 1990s, they were not the first to introduce collective works in Twentieth Century. Artists such as Stephen Willats with MetaFilter (1973-5) and John Lansdown with Ecogame (1969-70) introduced collective works in the 1960s and 1970s through technology, and at the same time low tech projects such as Fluxus relied on collective participation in some cases.
10. See Audiorom’s soundscape work and CDROM, 1998 and the work of Someth:ng, an artist group originating from Ravensbourne College formed in 2004
11. Martin Rieser (2002) looks at the poetics of interactivity from the perspective of content rather than through a formal analysis of the interface.
12. See DEAF07 (Dutch Electronic Arts Festival)
13. Mark Paterson, University of Bristol; Kristina Andersen, Tinything.com; and Simone Gumtau, University of Portsmouth are researching and practising in this area
14. See the work of the Tangible Media Group, MIT
15. FACT are restaging works from their Video-Positive Festival 1989-97 in 2007

References

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All links: www.swanquake.com/usermanual/HelenSloan

Biography

Helen Sloan has worked as a curator, researcher, writer, editor and producer in media arts and culture since late 1980s. She was appointed as Director of SCAN in 2003, a networked organisation and creative development agency for media arts in the South of England working on media arts projects and strategic initiatives with artists, arts organisations, academic institutions and broader aspects of the public realm. Helen has worked both freelance and as a curator at organisations such as Camerawork, FACT, ICA and Site Gallery as well as directing festivals such as Across Two Cultures in Newcastle 1996 (an early conference on the overlapping practice of creative thinking in arts and science) and Metapod, Birmingham 2001-2. Current areas of interest and curatorial work include the points of intersection of science and culture, immersive environments, assistive technologies, and wearable and soft technologies.