



Author

Lanfranco Aceti

Central Saint Martins College of Art and Design, London

Title**Digital Workspace + Digital Creativity = Digital Identity****Key words**

telepistemology, post-human, emergence, digital space, digital creativity and digital identity

‘The parallels between urban space and data space prompt a dramatic reconsideration of our experience of experience itself.’ (Darren Tofts, *Virtuality: Webworld and Cyberspace in Prefiguring Cyberculture: An Intellectual History*, ed. Darren Tofts, Annemarie Jonson and Alessio Cavallaro 108 (Cambridge, Massachusetts: MIT Press, 2002).)

The cyberspace has become a representation of a post –televisual, de-territorialized culture still trying to come to terms with both the social and cultural changes associated with the rapid implementation of computers and information technology.

The space in this context represents a transubstantiation of the abstract into the corporeal, after the dematerialization of the corporeality into the virtual.

In this context the space is the place where phenomena of emergence arise in the attempt to create and re-elaborate the parameters of a matrix, which has escaped human control and is under the influence of engineered ‘autonomous intelligent systems’.

‘In “The Contribution of the Artist to Scientific Visualization,” Vibeke Sorensen describes artists as “organizers of large amount of data”; “people who find unusual relationships between events and images”; and “creative interdisciplinarians”.’ (Stephen Wilson, *Information Arts: Intersections of Art, Science, and Technology* (Cambridge, Massachusetts: MIT Press, 2002) 19.)

The creativity of a combinatory activity in the digital space acquires characteristics linked to the peculiarity of the medium and of the space available, generating a digital creativity which operates within boundaries and parameters prefixed. At the same time this very activity generates phenomena of emergence which create new worlds and unexpected metaphysics.

It is a digital creativity which anticipates further evolutionary stages in the process of becoming informatic. It is a ‘chaosmology’, as Tofts defines it, which can only ingenerate doubts on the future identity of the artists both as art makers and as human beings. The algorithmic combinatory reshuffle of symbols and narratives shapes the culture and more importantly re-designs the interfaces of social interaction.

The ‘ultrahuman’ and ‘post-human’ are terminological representations of a new digital identity, which in an evolutionary and algorithmic development cannot be fixed as anything but a mathematical set of parameters: information data.

‘Rather than automatons blindly repeating orders, “social machines” and toys of the future will express a wide range of behaviors including emotions. Telepistemology may help us to better understand not only what can be conveyed online, but also what is essential to hugs and

handshakes.'

The paper will conclude with the analysis of the new digital identity as a product of digital space and digital creativity: the digital recombinatory formula of information data retrieved from digital space.

Author

Dr. Keith Armstrong

Creative Industries Research and Applications Centre,
Queensland University of Technology, Australia

Title**Fostering Our Imaginings of Ecological Selfhood: Social Dimensions of Creativity and Performative New Media Practice****Key words**

social dimensions of digital creativity, performance, interactive installation, networked practices, digital media, art, design, eco-philosophy, ecology

In my paper I outline the eco-philosophical approaches that drive my practice of collaborative interdisciplinary research; a practice that involves the production of participatory, interactive art works accessible across electronic networks. These works are created in order to establish contexts or catalysts for discussion around ideas of ecological selfhood, and by extension, sustainability.

I argue that a sustainable vision of sustainability can only emerge from an understanding of ecological selfhood: a self that sustains active dialogue between three intertwined conceptions; “me”, “us” and “others”. I argue that Ecological selfhood therefore foregrounds a form of social innovation which requires us being at ease with total otherness; those with whom we have a relationship, regardless of whether we can or are able to recognise that relationship. I suggest how creative practice therefore has the particular power to discuss such complexity, by reconciling familiarity with unknowability/essential otherness.

Performance practices, and hence the body, are central to this approach because the body is the interface through which we experience and act within the world. Hence I explain how evolving interfaces between performance practices and new media installation practice have become crucial within my work.

To illustrate these ideas I present a new interactive installation work in progress, ‘Intimate Transactions’ which I propose as a way of exploring such otherness, such strangeness, such unknowability. Through its collaborative, networked structure I suggest how the work seeks to nurture shared visions and catalyse a collective process that seeks to push the boundaries of the familiar in ways that might then suggest the acceptance of unknowability.

Authors

Paul Atkinson and Derek Hales

School of Design Technology, University of Huddersfield

Title

‘Future Factories’ and ‘QQQ’: Digital Practice-based research at Huddersfield

Key words

Digital Design; Digital Art; Generative Software, Game Modifications, Direct Digital Manufacture; Interactive Installation

Emerging software based processes are challenging the role of the maker as author as well as introducing new areas of practice. Recent developments in digital art and design at the School of Design Technology, University of Huddersfield have included two areas covering the application of digital techniques to the process of making in very different contexts: Product Design and manufacture; and Visual Arts. Much of this work represents a convergence of art and science, aesthetics and technology, and process and production.

These have emerged from two programmes of practice-based research at the University and at the Digital Research Unit – a partnership between the University and The Media Centre, Huddersfield. The first of these is the Designer in Residence programme based in the Design Department, which aims to employ professional designers in order to embed practice-based research activity into the department’s delivery of 3D design pathways. In the second of these the Department of Architecture has been working with the Digital Research Unit to deliver a dynamic and challenging range of work from artists at the forefront of digital media practice, bringing new ideas and working practices to the fore. Together, these programmes occupy a border territory between academia, commercial R&D and the cultural and creative industries.

Through the presentation of two case studies, this paper will explore the implications of these approaches to making from a number of perspectives. The first of these case studies is the Future Factories project by the designer Lionel Theodore Dean, which explores the creation, selection and digital manufacture of randomly generated computer models to produce finished physical artefacts via rapid prototyping technologies. The second case study is the QQQ commission by the artist and programmer Tom Betts, which is an interactive installation constructed from the code of the graphics engine for the computer game ‘Quake’, modified using generative programming techniques.

Both projects utilise real-time networked technologies in their final manifestation and contextualise the shifting relationships between the maker, software processes as tools and the participation of the audience or consumer in the production of the finished environment or artefact.

Authors

Alice Bayliss

School of Performance and Cultural Industries, University of Leeds

Jennifer G Sheridan, Simon Lock

Department of Computing, Lancaster University

Title**Augmenting Expectation in Playful Arena Performances with Ubiquitous Intimate Technologies****Key words**

Performance Triad, playful arenas, intimate technologies, ubiquitous computing, expectation, computing intimacies

The empowerment and facility of new ubiquitous sensor technologies combined with the inherent freedom of playful arenas has led to a new breed of performance. These new performances meld atoms and bits, performer and audience, fantasy and fact to create an intimate connection between our physical and virtual world and to affectively augment our notion of expectation. Low-cost sensing and quick set up allows for more flexible, spontaneous and mobile performances which infiltrate unanticipated performance spaces. Our interest lies in how technology stimulates the desire of the clubber to create and be performative within this space; how the technology promotes dialogue between itself and the user; how the use of such technology may signal new and innovative performance practices.

We perceive the underground club space as an arena where all who contribute to its status as a communal event embrace participation, performance and play. The clubbing environment invites individuals and groups to gather together, to suspend time and to engage in a social activity which allows them to play with and destabilise notions of identity and reality. New possibilities are envisaged through collaborative creativity.

Observable participation encouraged by playful arenas may be planned and intentionally invoked by the performance. Alternatively, participation may be unplanned and proactive on the part of the audience. Performativity infuses a club event throughout and manifests on both formal and informal levels. Clubbers use of costume is often highly imaginative and can be extended further into sustained role-play. Clubbers themselves add to a sense of the theatrical experience by adopting "characters" who interact with the crowd over the course of a night. This intentional shape shifting and willingness to "other" provides us as technologists and performers with a fertile ground for experimentation and innovation.

A significant aspect relating to the use of hi-tech elements in playful arenas is the apparentness of technology in performance that can either impress or intimidate observers. Alternatively, an apparent lack of technology may have a larger impact if the technology is hidden and only the effects of its usage are seen or felt, without being obscured by the edifice of the technology itself. In this paper, we investigate the use of technology in performance, specifically within clubbing environments, and deploy our own pieces in these spaces to expose the technical, conceptual and aesthetic parameters associated with such use.

The increased uptake of technology in performance runs in parallel with the changing nature of performance itself. In a variety of performance environments, such as galleries and theatres, observers are conditioned and engrained with the rigid rules of acceptable behaviour. New environments are rapidly emerging which do not bring with them such preconceived baggage of acceptable behaviour and are particularly conducive to physical engagement and interaction, with their emphasis on play in a spirit of festival and carnival. In these conditions, interaction thrives and participation flourishes from the unfamiliar interplay between audience, performer and technology, often blurring the boundary between observers and observed. Our paper explores how such relationships change our preconceived notions of acceptable behaviour and with it our legacy of expectation.

Author

Chris Bullar
London Institute, London College of Printing
Robert Cohen
Realstreets Ltd

Title

Realstreets

Key words

Postmodernism, digital imaging, architecture, internet, digital art

Realstreets began as a commercial enterprise in 2000, initially funded on a shoe-string budget and then backed by a small group of investors. It is not the archetypal internet business, which went from boom to bust in the almost the blink of an eye.

The Realstreets concept utilises inventive digital imagery within a highly commercial framework. Realstreets is therefore hard to categorise and blurs the boundaries and traditional distinctions between art and commerce. As an internet experience, Realstreets provides an intuitive interface between businesses and stakeholders, retailers and shoppers. The Realstreets website (<http://www.realstreets.info>) will not just consist of a text or map based search engine nor a simple commercial listing. Realstreets will provide users with an exact virtual/photographic representation of the entire city centre around which users can, walk, enter shops, restaurants, hotels - inspect menus and stock, explore local history and interact with communities of users.

The body of work within this project has taken over three years to develop, driven by Robert Cohen and a core team of co-workers. Thousands of images have been digitally corrected, edited and processed to produce a comprehensive, interactive and navigable street-by-street tableau. What has emerged from this development has surprised all of those involved.

Realstreets made its first public appearance within the Brighton Festival in May 2003. The artwork generated by the project has been displayed at over ten sites within Brighton City centre, via conventional printed imagery, large scale projection installations and a dedicated exhibition at the Brighton Artist Gallery. Realstreets images continue to be publicly displayed at numerous locations within the city.

The public and commercial reception of the project has been enthusiastic, interesting and sometimes entertaining. It has led to a very active consideration of the meanings attached to the images, the cultural nature of the project and the theoretical issues raised.

The imagery invites us to acknowledge the city and its architecture and to stand back and adopt different perspectives. In this dimension the work promotes a distinctly postmodern debate - in Realstreets we discover 'simulations' that mimic and idealise the city - that rupture and infuse the everyday. The images encourage a re-engagement with buildings and vistas - familiar and unfamiliar.

Realstreets is a virtual record of businesses large and small - a contemporary doomsday book. It documents in detail the commercial and historical threads that define the material of city life. The presence of this highly localised knowledge within the context of the world wide web

links to an emerging trend - the local-net.

As an idealised cityscape we are encouraged to consider the place of Realstreets within the discourses of aesthetics and art history. As the product of a commercial proposition and digital technology we are prompted to consider its status as art, and situate it within a history of images that have explored the fabric of urban life.

This paper outlines the development of the Realstreets project, its utility and its implications. It seeks to provide a platform to explore, exemplify and provoke, rather than present conclusions.

Author

Hilary Carlisle

Central St Martins College of Art & Design, London

Title**Organic Geometry: Creating non-repeating textile patterns through technology****Key words**

Printed textile design, pattern, handcrafting, machine production, repetition, programming

This paper will document the process of exploration involved in creating non-repeating patterns for printed textiles, with particular reference to the search for methods of creating an organic feel to the pattern using software inherently geometrically precise in its nature.

Traditional hand-printed textile patterns almost always contain some level of variation due to the nature of their construction. In the nineteenth century machine-printed fabric allowed for a level of consistency and precision that was highly valued. In contemporary society, where we expect precision through technology, a handcrafted look is often highly desirable.

In parallel with this, very uniform repeating patterns can often look too orderly to be interesting. As mathematician Ian Stewart states in *Fearful Symmetry*: 'An oddity of the human mind is that it perceives too much symmetry as a bland uniformity rather than a striking pattern...'. So variation, which originally came from inconsistencies in the creation of the textile, can be a desirable quality.

A third observation is that patterns formed in nature are rarely entirely symmetrical, due to environmental conditions that affect their construction. For example, we may imagine a perfect tree to have entirely symmetrical branches on each side, but in reality the tree may lean to one side due to the prevailing winds or be stunted by the surrounding vegetation. Importantly, though it is usually the real tree which holds our attention for longest.

These three suppositions may once have been considered dualities: machine-made vs. handcrafting, order vs. chaos and geometric vs. organic. However, in the postmodern world of fluid boundaries, it is perhaps more appropriate to consider the pairings as the extreme points of three continua.

The inspiration for this project was to explore the possibilities of creating non-repeating patterns that explored the nature of these continua using software written in the programming language Visual C++. The projected idea of the research was that future fabric lengths could be designed and printed directly from computer to ink-jet printer with no repetition along the length. Rather than creating art pieces, the textiles needed to be accessible and desirable for clothing. The challenge at every stage was to produce visually interesting patterns that would not be too alienating for the clothes-wearing public. In other words, the three continua above needed to be balanced to give patterns that showed some of the variations associated with hand-craftedness, some disorder and some organic qualities, while necessarily being produced in a highly technological manner with software that is intrinsically logical, ordered and geometric in its construction. These challenges and the resultant patterns will be discussed in detail in the paper.

Author

Sarawut Chutiwongpeti
Chulalongkorn University, Thailand

Title

**"At the Dawn of the 21st Century: The Role of Contemporary Art in Harmonizing Diversities"
An Installation Art Project**

Key words

Cross cultural visual language, contemporary artworks,
social values

This study is to investigate the possibilities of developing a cross-culturally common conceptual visual language. In particular, this study evaluates whether it is possible to develop Collaborative New Art that will depict simultaneously both the Contemporary Art and the modern Technological Civilization in which we live today. It is a general belief especially in the art community that contemporary art can enhance the distribution of diverse information, foster a profound universality in the human nature, and thus promote cross-cultural collaborations in all walks of lives. However, such a belief has also been questioned due to the overt differences of arts in structures, styles and philosophies perceived by different viewers. In this study, a set of contemporary arts will be evaluated.

The comparative results will be used to discuss four important issues: What are the salient sensations and reactions of the general public to the contemporary artwork? To what extent the contemporary conceptual art could disclose the new trend of social value changes. Whether the contemporary art theory and practice would address and help to solve today's social problems within each society. Whether the contemporary art has a role in harmonizing people with different geopolitical backgrounds and value systems. Finally, several implications will be discussed on the linkage issue between verbal and non-verbal expressions of thoughts and feelings.

Author Professor Paul Coldwell
Camberwell College of Arts, The London Institute

Title **Digital Responses: Integrating the computer**

Key words V&A, Digital Responses, Digital Interventions, Keepthinking Gallery Systems, New Technology, Website, Kiosk, Artpath, Virtual, Real, Christopher Meigh Andrews, Gavin Bailey, Paul Coldwell, Tom Corby, Charlotte Hodes, Barbara Rauch

Digital Responses was a series of digital interventions at the V&A, which I curated between May 2002 and April 2003. The series of events featured twenty one artists presenting new work made specifically for the V&A, using some form of digital technology in response to the collection or the museum including Christopher Meigh Andrews, Tom Corby, Gavin Bailey, Charlotte Hodes and Barbara Rauch. The resulting work ranged from real time projections, through to a cabinet of ceramic vases extensively decorated with digital transfers. Each month there was a new presentation featuring either one or two artists. In addition there was an ongoing website designed and maintained by Gallery Systems/Keepthinking which provided both a way of contextualising each month's presentations within the overall framework of the year long exhibition, and an Artpath whereby the viewer was able to visit the museum and discover key works that had provided inspiration.

This PowerPoint presentation considers in detail some of these presentations in reference to issues raised concerning the role of digital technology within a museum dedicated to artefacts, the differing role of the digital within the individual artist's practice ranging from the all encompassing to the discreet and the attitude towards surface, from the virtual to the real.

Authors	James Coupe, Rob Saunders London South Bank University
Title	I, PROJECT
Key words	Art, intentionality, representation, AI, consciousness

I, Project is an AHRB funded research project to create "an artwork that can think". It begins in October 2003 for an initial period of twelve months. The PixelRaiders conference occurs at an excellent time to present/ discuss findings and future directions for the project.

This project takes a post-Kantian, post-structuralist, philosophical approach to artificial intelligence (AI) and aesthetics. It pursues an aesthetic approach to the practice of AI programming by aiming to produce an artwork that has intentionality. Hosted by existing global computer networks, it will explore the possibility of making an artwork that can reach out, act on its environment and, as a result learn and change within itself. It should have its own desires, make its own decisions and be fully autonomous. Borrowing from artificial intelligence, philosophy and computer science, it is an attempt to create an artwork that knows that it is an artwork.

This project sets out to create an artwork that can act within the world in an independent, autonomous way, so as to display intentionality. This tests the following hypothesis:

In order for an artwork to 'be' it must comprehend itself through its own learned perception of selfhood and not be a mimetic representation of an ideal. This hypothesis is framed by a number of essential presuppositions that will also be tested. If an artwork is to have intentionality and comprehend selfhood then it will:

- a) Be composed of a total system that will need to be self-contained and self-regulatory.
- b) Be able to learn about itself
- c) Be able to make decisions based on its own empirical evidence
- d) Be without isolated parts that do not intrinsically contribute to the holistic self
- e) Be able to detect and feedback information about the world
- f) Be more than the sum of its parts

In borrowing from this range of disciplines, the project aims to expand the way in which digital media can be used to make art, and to properly outline the potential impact of digital culture and technology upon art. It looks to define networks and data systems as valid media for the production of art, and to create work that is pervasive and global rather than restricted to single analogue spaces.

The scope of this project cuts across several disciplines, looking to contribute new perspectives within both art and science. The use of scientific models to create art and of art models to answer scientific questions can be seen as a new way of approaching long-standing problems.

Authors

Patrick Dillon, Dominic Prosser and Tony Howe

The Telematics Centre, School of Education and Lifelong Learning, University of Exeter

Title**Design transactions in educational multimedia****Key words**

V&A, Digital Responses, Digital Interventions, Keepthinking Gallery Systems, New Technology, Website, Kiosk, Artpath, Virtual, Real, Christopher Meigh Andrews, Gavin Bailey, Paul Coldwell, Tom Corby, Charlotte Hodes, Barbara Rauch

This presentation will build on the work of the authors on educational transactions in digital media (Dillon and Prosser, 2003) and conceptualisations of design (Dillon and Howe, 2003).

Multimedia, as combinations of text, images, graphics and sound in both off-line and on-line digital formats, may be analysed in terms of the educational transactions it supports (e.g. exchange of information, application of skill, construction of knowledge, self expression, social interaction). Through instructional design, transactions may be specified to meet educational objectives. But multimedia is also a manifestation of graphic design. Graphic design governs structural and functional matters such as architecture, interface and navigation, and aesthetic matters such as the look and feel of the resource. The interface between graphic design and instructional design in educational multimedia is poorly defined and there may be synergy or tension between the two.

In this presentation the authors will explore some relationships between instructional design and graphic design in educational multimedia by looking at educational transactions and the narrative and contextual parameters in which they operate. The exploration will be through on-line multimedia resources in museum, film and cultural studies developed at the Telematics Centre at the University of Exeter and available at <http://telematics.ex.ac.uk/projects>

Dillon, P. and Howe, T. 2003. Design as narrative: objects, stories and negotiated meaning, *International Journal of Art and Design Education*, 22 (3), 291-298.

Dillon, P. and Prosser, D. 2003. Educational transactions in museum open learning environments, *International Journal on e-Learning*, 2 (1), 14-20.

Author

Vince Dziekan

Faculty of Art & Design, Monash University, Australia

Title**A Present Absence: On Art, and its paradoxical interrelationship with its Physical and Virtual Spaces****Key words**

Digital Aesthetics; Virtuality; Art & Exhibition Practice

Addressing the relationship that connects the artwork, museology and digital technology has recently emerged as an increasingly prescient dialogue within cultural practice.

Reconsidered in the light of new technologies, the museum apparatus (as primary 'technology') and resulting institutional 'infrastructure' are tested and through it a number of associated tenants challenged, such as the constitution of artworks themselves, the role of artefactuality and the site-specificities of the variously mediated species of 'spaces' that art draws upon for its very apperception.

Inspired by Michel de Certeau's detection of the "museum" as a type of institutional "place in which gaps need to be opened for other practices of space", this investigation will outline the general implications of exhibition space on art as well as offer speculation on the issue of designing spaces for an art that, I contend, will increasingly be realized by and through digital technologies --- and just as this situation becomes more ubiquitous, encompassing and normalized, will we paradoxically see a disappearance of art (or at least a distinctive 'bandwidth' from its typology).

As a contribution to the conference's call to comment upon the challenges presented by "hybrid practices that integrate physical, virtual and screen-based making", this paper will offer an opportunity to summarize my ongoing interdisciplinary PhD research project into the implications of virtuality on the art of exhibition.

As a particularly illustrative endeavour, I will case study my most recent curatorial project: *Small Worlds : A Romance*. This exhibition was conceived as operating across both physical and virtual spaces. What these parallel instances of the project demonstrate is an inversion of the properties of the spaces that ground the respective formats of presentation and resulting communication: the physical gallery environment comes to emphasise the contingent, fragile and temporal, whereas the virtual setting of the Web – unstable, loosely-defined, immanent and transmuting - collects together artefacts and accumulates evidence in the form of documents that serve to make the epiphanous manifest in its own particular, no less material form.

As a result, it offers a point of departure for the subsequent theoretical discussion of the question posed: "Should technology and technique become invisible?"

Author Angela Eames
Camberwell College of Arts, The London Institute

Title **What is new work that is inherently out of sight?**

Key words drawing, object/space, figure/ground, real, technology

In the computing environment, the construction of virtual realities is based on the assembly and placement of objects within mathematical space. How unlike our real world; no air, pressure, density, resistance, vacuum, fog, cloud or rain. Drawers are aware of factors such as light, refraction, reflection, shadow, heat, cold, vapour, even the emotional stasis of the drawer. All are given due consideration within the practice of drawing. I am interested in rethinking the position of the viewer and the viewed. What will it be like to see differently? We are all on the outside looking in - we can imagine the unseen but within the virtual environment can we see from the inside, out? This paper asks questions about the nature of new work when operating within the fast-moving technological working environment. Treading an unfamiliar path - this is familiar territory for a drawer! By this, I mean the path, which either the individual or the group tread, deploying eye/hand/foot/brain in response to object-interference (life-forms, buildings, objects; still and moving). We interpret space, time, substance and sound. Constraints in perception are necessary, to operate within the environment since there are aspects of which we are not fully conscious. This is not to say that one remains unconscious of these aspects. They may well reveal themselves at moments when one is less conscious and more receptive. They might not be invisible, but they can remain hidden. As a drawer this is my territory - probing into the unknown to find out what I can see, exploring the relationship between the physical and the virtual and here as a drawer, I deliberate on these issues in relation to my recent work.

Authors

Jeffery Edwards and George Whale

Chelsea College of Art & Design, London

Title**Defining an Alternative Picture Space****Key words**

fine art, drawing, projection systems, perspective, anamorphosis, mixed reality

This article presents an account of the authors' practice-based research, which is an investigation of the 'alternative picture spaces' definable by plane anamorphosis. The account begins with a discussion of the nature of conventional picture space and its separation from real-world space, and the roles of the picture frame or boundary in maintaining that separation. Perceptual depth cues implicated in the viewing of both types of spaces are briefly examined, leading to a consideration of 'hybrid realities' that can emerge when cues are integrated and the frame nullified. The authors describe computer-aided methods for creating anamorphic imagery and displaying it in studio / gallery contexts, and consider the properties and nature of the unconventional pictorial spaces and viewing experiences thus defined. They argue that anamorphic perspectives are effectively 'frameless' and are rich in potential for development by fine artists and other image-makers in a variety of applications and situations.

Despite the diversity of formal and informal 'drawing systems' available to artists and image-makers for representing the three-dimensional world, our visual culture is dominated by drawn, painted, printed, optical and computational variants of linear perspective. The power of perspective to create a compelling illusion of pictorial space and depth has led to its becoming an almost universally accepted language and form of representation, conditioning the viewer's expectation and response to the vast majority of still or moving imagery encountered on a daily basis. Its use has contributed significantly to the 'pictorialization' of vision - the idea that we see in (terms of) pictures - and to our understanding of the visual world.

Comparing linear perspective with other representational systems used through history and across cultures, it is evident that the perspective picture defines a particular type of illusory space and is subject to certain presentational conventions, some of which derive from its confinement within the (vertically orientated) frame. In perspective, the prescribed relationship between the viewer and the picture is fundamentally static and monocular (one-eyed), yet most viewing of pictures is mobile and binocular (two-eyed), diluting the power of the illusion. Moreover, the viewer is distanced from the picture (psychologically speaking) by a frame or boundary that leaves him / her in no doubt as to where the picture ends and real three-dimensional (3-D) space begins.

Our practice-based research is driven by an interest in alternative picture spaces whose relation to real space, hence to the viewer, is of a different character. Though we use modern digital tools, the representational system we have chosen to explore - plane anamorphosis - is as old as perspective itself, in fact it is a variant of it. But in exchanging the binocular for the monocular, and the vertical picture plane for the horizontal, we have encountered a different kind of space which can be inhabited simultaneously by the observer and the

observed. Anamorphic projections to the ground plane, viewed from a particular point in space, have no frame, and the familiar pictorial illusions of space and depth are enhanced by apparently physical attributes of substance, volume and presence. These projections put the viewer in the picture.

Author

Professor Jeremy Gardiner

London College of Music and Media

Title**Purbeck Light Years Project****Key words**

Corfe Castle, painting, drawing, 3D temporal world, interactive installation, modeling, image mapping, polygonal mesh, flocking systems

I am a painter who has been working with digital media for two decades. With the development of the computer, fundamental changes have occurred in the way I communicate, create, and express myself. Through using different means in different contexts I have always maintained a dual purpose. The first objective has been to utilise the convergence and combination of different technologies to produce visually and intellectually challenging works. The second aim has been to extend common notions of narrative, place and identity using cutting edge media.

The desire to create interactive works of art has had many incarnations throughout the 20th century. This wish to transform art audiences into one of the variables in the artwork equation finds examples in the installation art of the 1970s and 1980s, as well as the kinetic art movement and the participatory theatre of the 1960s. But for a long time the significant technical challenges of building a highly interactive artwork got in the way of most ambitious concepts.

The Purbeck Light Years project is an example of a contemporary interactive artwork that manages to create a unique aesthetic experience while taking full advantage of the latest computer graphics technologies. Purbeck Light Years presents a three-dimensional temporal world that can be dynamically viewed from different angles and at different times of day. This world evokes a contemplative atmosphere based on real and abstract elements, but also offers some playful elements such as flocks of birds, the sound of the wind, and other natural sounds. Created with a mixture of techniques that combine painting, drawing, computer animation and immersive virtual reality, this interactive installation recreates the accumulated silent history of Corfe Castle.

Feelings, memories and impressions change with time because we keep in our memory only certain facets of events and ideas. The best-preserved and clearest memories are usually those based on the most significant aspects of a moment. Much of the emotional crispness and aesthetic steadiness of Purbeck Light Years has to do with the elegant simplicity with which the environment and the interactions were conceived and built. The terrain around Corfe Castle was derived from a satellite image of Dorset. The grayscale values of this image were used to displace the vertices on a polygonal mesh with a high number of facets.

The serene three-dimensional objects and environments portrayed in Purbeck Light Years were built with a variety of modeling and image mapping techniques. The rendering of these objects and environments happens in real-time as the viewer moves within the landscape. The resulting shapes and colours in the environment are the result of real-time calculations of how sunlight and ambient light reflect, scatter, and refract through the luminous atmosphere. To add to the mood, simulated

weather systems come and go, night follows day and seasons change in real time. The kind of navigation used is based on the polar coordinate system so that the castle, the focal point of "Purbeck Light Years," always remains in the middle of the scene. Viewers may move in a circle around Corfe Castle: the left and right movements control the angle that the viewer occupies on the circle, and the up and down movements of the joystick control the radius of the circle.

Purbeck Light Years was recently awarded the Peterborough Art Prize, the first time a digital artwork has won. The project will be on exhibition at the Poole Centre for the Arts part of the SCAN network from 9 September – 15 November before touring to Museum and Galleries around the UK.

Author

Héctor Giró

Department of Form and Media Studies, Delft University of Technology, The Netherlands

Title**Building Digital Histories****Key words**

Architectural design visualization, physical and digital models, multimedia, film, storyboard

When simulating the environment, plans and sections are not enough to express ideas and proposals. For conveying the design information, three-dimensional representations are generally indispensable. They help the designer when communicating with him/herself and with the other different participants in the design and realisation process.

Developments in modelling and visualization with the aid of the computer are proceeding rapidly. On the other hand, physical models and hand-drawn images (with a somewhat looser character) have often a more suggestive effect than images created with other (digital) media; and in general are given a higher valuation.

In every case, a reliable presentation with the greatest possible spatial impression of the design and the surroundings is necessary for a timely appreciation of the quality and for a better, more accurate interpretation of the result.

The Department of Form and Media Studies of the Faculty of Architecture at the University of Technology Delft (The Netherlands) began about ten years ago with a multidisciplinary media module. This module teaches students different design and presentation media: computer modelling and rendering, photography, freehand drawing and rendering, form studies, video and endoscopy. They also receive counselling sessions in order to prepare their individual final presentation of a project of their own choice.

When producing this final presentation students are then encouraged to explore the significance and the opportunities to combine all kinds of media, like video film, images of physical models, freehand illustrations, renderings of computer models, and photography.

The starting point for the presentation is the creation of a storyboard. This subject has become a very important and an integral part of the tutoring. Careful work on the storyboard makes it clear which parts of the presentation will demand the most time and energy and oblige the students to determine precisely what they want to include and which account will be told.

While working on the storyboard students become much more involved in their designs, are better aware of the qualities of their plans and the way to communicate these items to others, thus contributing to a better understanding and acceptance of their proposals.

Software makes this process much easier, and even possible. Except for the digital modelling, rendering and manipulating software, the introduction of editing software Adobe Premiere brought about a major change: all sorts of images (of physical objects) could be easily combined with (digital) film or animations and the use of transitions, sound, titles, etc meant that much more professional (hybrids) presentations could be produced. These 'multi-technical' images can be

still images as well, and when presented in sequential series, become a truly multimedia presentation. In this way, filmed or photographed people often appear on images (stills of film) of the physical or digital models, walking in and around buildings. This increases notably the understanding and acceptance of a plan.

This paper documents the experiences and results of this educational application, involving multimedia techniques for eye-level imaging.

Author

Ian Gwilt

University of Technology, Sydney, Australia

Title**Interface as image - image making in mixed reality****Key words**

Hybrid practices, digital image making, augmented realities

This paper will explore the use of the graphical user interface as art - product and inspiration, and will discuss "the impact of the digital workspace on the experience and nature of making". Drawing on my own practice as a digital image-maker, installation artist, and a theoretical investigation of the potential of augmented / mixed realities in art practice.

Referencing details from various graphical user interfaces, my prints and paintings form a series of works that 'abstract' onscreen imagery and reverse the usual input output process - physical to digital, by moving from the digital and making physical. Taking inspiration from the inherently multiple, (digital source material) and remediating this as a physical, one-off or limited edition print - these images address the notion of Walter Benjamin's "aura" of the original and examine the implications for originality and physical representation for artworks in a 'postreal' digital age. [1]

The paper will discuss how a dramatic change in scale and location - computer onscreen, to gallery wall, is another important aspect of artworks that reference digitally sourced imagery. Viewed out of context and away from the usual intimacy of the screen the images can (still) trigger the memory of a familiar, ubiquitous monitor interface. Narratives and distinctively human comments can be constructed by building a dialogue between the digital and physically captured images which, when combined create a transient space that is not quite real, or virtual. As the boundaries and reference points between physically and digitally grounded imagery become less defined the duality of the interplay between the combined image space moves towards a more seamless self-referencing and continuous activity. A visual feedback loop or Mobius strip, where the clues of originality become increasingly hard to differentiate and increasingly irrelevant, a state of "deterritorialisation". [2]

Additionally, some thought will be given to examining the potential for mapping digitally grounded imagery into both 2 and 3 dimensional physical space to create a mixed reality experience. And asks the question - what happens when we extract the 'real world' metaphors from the digital environment and take them back into the physical world?

Notes:

[1] Walter Benjamin, 'The Work of Art in the Age of Mechanical Reproduction' (1935).

[2] This term is used by Pierre Levy when he talks about the "contemporary multiplication of spaces" effecting the way we exist - disenfranchising us from the here and now and making the interface between the real and virtual more fluid. This breakdown in the importance or ability to rely on a sense of place and a move towards a state of multiple senses of place, Levy calls this the process of "deterritorialisation". Pierre Levy 'BECOMING VIRTUAL - Reality in the virtual age', New York: Plenum Trade 1998.

Author

Michael Hohl
Sheffield Hallam University

Title

Examples for transforming data of live real world activities into meaningful visual and sensuous output and vice versa

Key words

Generative web design, innovative sound design, interface design, interactive installation, senses, sensuousness, experience, emotional computing, dynamic logo, evolution of graphical representations, technologies for graphical interaction, graphical annotation, interactions between graphics and other modalities

This paper explores the idea of transforming abstract digital data into sensuous experiences. These raw data turn into information through design and are used to alter the appearance and sound of graphics, web pages or media installation pieces. They may involve, inform or delight individuals in a more sensuous, experiential and graspable manner than charts, graphs or diagrams can achieve. The media-adequate transformation of data into experiences is a crucial point in these explorations. Media adequacy refers to the appropriate medium for the selected data and the communication aim. Some data are presented well in the form of a book, others better as a film or a website. Another aspect of this exploration is the idea to bring "life" and sensuousness into the realm of the digital, proverbial "cold" and "abstract".

Partly this exploration also compares qualities of real world objects to possible properties of computer interfaces. Therefore this paper also encourages multidisciplinary collaborations among people from different backgrounds, artists, musicians, architects, computer specialists, designers and others. It describes four different approaches of use of the Internet beyond traditional World Wide Web projects: Transforming real world actions to the web and vice versa. Mapping real world actions to the real world. Mapping web actions to the real world and transforming web processes back to the web. In general these projects are medially transforming remote activities into animated visuals with additional sensuous (e.g. "musical") output – and vice versa. Mostly they are technically not trivial and require skills from different disciplines such as computer programming, architecture, design, music and the visual arts.

The four documented approaches serve as exemplary cases. Numerous other variations are conceivable. These explorations are serving as the initial conceptual basis that forms part of a practice based inter-disciplinary research program encompassing fine art and human-computer interaction.

Author	Chris Horrocks Kingston University
Title	All Your Base Are Belong To Us!: Meme Culture, Digital Imagery and Connective Creativity on the Web
Key words	meme, montage, de Certeau, Benjamin, Internet

This paper focuses on the structure and process of ‘meme culture’ – the creative (mis-)appropriation of images within a networked environment and their dissemination to others who then also alter and redistribute them. This culture, which has opened new aesthetic possibilities based on modernist and postmodernist principles of montage, bricolage, irony and wit has emerged within the context of technologies that for the first time have combined relatively accessible hardware and software with an extended and, in a qualified sense, collaborative form of artistic practice.

Meme Culture describes the processes, skills and outcomes which pertain to this unique area of digital creativity; namely, the creation, circulation, reception and re-creation of a specific family of digital images and texts which take visual or textual source material and use software to manipulate, montage and redirect images in ways that arguably extend or challenge assumptions about the status of the ‘user’ defined simply as a potential or dedicated artist-designer.

Against this backdrop, I argue that the lexicon of new media has tended to a limited and institutionized sense of what digital practice means. Its account would have it that skill, craft, discipline, education and production take place within prescribed economies and environments – in arenas particular to the artist and designer and their workplaces

While I do not advance the notion that all the world is an artist or designer, the evidence indicates that an informal, ad hoc and non-purposive culture of digital manipulation exists that demonstrates an advanced degree of technical, conceptual and cultural know-how within a dissipated, anonymous but connected (rather than ‘collective’) social body.

This phenomenon challenges many assumptions that we share about the ‘aura’ of the image (pace Benjamin I argue that in the digital environment an image can be ‘re-aura-ed’), the place (office, studio, home, laptop) of the work of digital manipulation, the role of the image in question and its destination.

I will illustrate this phenomenon with reference to several significant examples, including the ‘All Your Base Are Belong to Us!’ images, the ‘Tourist of Death’ montages and the ‘Bert is Evil’ meme.

My intention is to show how, within this particular domain of digital creativity, the role of author, user and archivist/curator (who gathers this memetic creations on websites) amounts to a fertile and informal ground for digital practice based more on de Certeau’s formulation of the social than on more rigid and hierarchical notions currently dominant in digital discourse.

Authors

Michael Johansson and Per Linde

Malmö University Arts and Communication, Sweden

Title**Fieldasy****Key words**

field working, artistic development, imagination, participation, role-playing, personas, interactive narratives, artefacts, scenarios, physical and virtual space, collaborative creativity

Fieldasy is a process for engaging multiple perspectives in the creation of a world, and the mapping of its virtual space. While the final outcome lies ahead, the process have already produced a series of artistic expressions that drives the overall project forward. Fieldasy refers to the methods of field working and imagination by using physical objects. The objects constitute a shared ground for collaborative creativity, serves as nodes in a complex narrative and as a basis for the creation of the world. In the paper, we describe the process, methods and the artifacts developed in this project. We also show how this approach can host and facilitate artistic development in a complex production environment such as the one of digital media, supported by invited artists, researchers (computer science) and students (interaction design), enabling diverse parties to transfer their knowledge into the project in an ongoing manner.

Three aspects of the project are discussed: The Framework; the city of Abadyl, The Method; fieldasy and The Output; a series of artifacts eventually displayed in a series of exhibitions.

The Framework: Have you ever wanted to build a world of you own? In 1999 we ended an art project called “from an indefinite point in the Cartesian space” that had generated 2000 low-res and 550 high-resolution models of buildings, interiors, objects and exteriors split up in over 50 scenes. Here was a unique possibility to do just that. Therefore, we extracted all of the models from the separated scenes and placed them on top of a superimposed infrastructure of sixteen different formula one tracks. We show how we used personas, role-playing (GURPS) and conceptual mathematical formulas to be able to explore and furniture the world. We named the virtual world “the city of Abadyl”, and made it to the initial venue for the project.

The Method: How do you go about exploring a complex digital space in a setting that suggests participation? We show how a detailed, yet open and complex world can utilize and refine the creation of scenarios, which are handed over to temporary invited co-creators of Abadyl. They then act out the scenarios in an, by themselves chosen, environment that in the end will help them to produce new artifacts. We called this method fieldasy. While the major part of research on interactive narratives has been aimed at the exploration of interactivity in experience of finished art works, fieldasy aims at exploring the perspective of collaboration in production of new media.

The Output: How do you stage involvement and ongoing development? We try to point out the specific qualities that occur when transferring artefacts and scenarios between the physical and virtual space in a series of iterations. We also show how a multi-threaded open work that consists of mixed materials is communicated amongst its participants as a series of exhibitions, and how we recreate and use a furniture like structure as a playground for the participants, as well as the main exhibition gathering the artefacts created.

Authors

Alex Jukes and Carol-Anne Poole
Edge Hill University College, Ormskirk

Title**Creating Digital Realism****Key words**

simulation, representation and presentation

This paper will consider the relationship between photo-realistic CGI representation and our inability to engage with such models on a human level.

One of the central issues raised in the creation of digital images concerns the much-debated relationship between, simulation, representation and presentation.

Traditionally cinema has relied heavily upon realistic visual representation to convey the notion of the real. In adopting digital technology as part of a filmic language the tendency has been to develop and apply the digital in a way that reinforces both pictorial realism and cinematic illusion.

In studying the relationship between the visual realism of film-based CGI and our acceptance of the film as real we believe that a paradox exists, i.e. the closer we get to a CGI photo-realistic quality the more difficult it is to accept the scene, and in particular photo-realistic characters within the scene, as “real” in a cinematic sense.

Could this suggest that to strive towards photo-realistic CGI replication/representation, is a misguided pursuit? Or that realistic representation alone is insufficient to satisfy prolonged exposure to CGI animated (human) characters? Do we require therefore some other element other than a superficial graphical illusion in order to establish an on-screen relationship with CGI characters as personalities?

By looking at the recent work of Vivian Sobchack relating to film and phenomenology, we hope to explore the notion of artistic expression as a key ingredient in creating the visually ‘believable’ within a digital form, the role of perception and the potential of simulation rather than representation in mediating this form of expression.

Also by turning to digital artists such as Grahame Weinbren and Toni Dove as well as digital image theorists such as Friedrich Kittler and William Mitchell we aim to consider the possibility of creating digital realism through the use of ‘embodied’ expression via abstraction, away from the visually photo-realistic and purely representational form.

Author	Alexander Kelly Third Angel, Sheffield
Title	Third Angel & Pleasant Land
Key words	Performance, national identity, interaction, digital art

Makers & Researchers

Third Angel is one of a new breed of British performance companies. Based in Sheffield since 1995, we have made work that has encompassed performance, theatre, live art, installation, film, video art, documentary, photography & website. We have shown work in public toilets, disused swimming baths, office windows and foyers, an infants school hall, theatres, galleries, cinemas, the internet and a damp cellar in Leicester.

The work has continually to combine fact and fantasy, autobiography and fiction. We have examined our own lives, experiences and interests, as well as the world around us. We have looked for the beautiful in the mundane and the surprising in the everyday. We have sought to engage directly with the audience, and to implicate them as conspirators, witnesses and voyeurs.

In recent years we have taken to engaging the audience/public more directly, and using research as part of the work. For *Class of '76* (1999/2000) I attempted to track down the other 34 members of my infants school class and ask them what they'd been up to for 24 years, and we built a performance out of what they told me. *Where Have They Hidden All The Answers?* (2002) is a 10 minute performance/interview of a single audience member at a time, building an installation of collected stories and questionnaire responses.

Pleasant Land Process

We wanted to make a piece of work about contemporary England and Englishness. We wanted to know what other people thought of as England in 2003. We built a website, www.pleasantland.org, in collaboration with designers DED Associates and hosts Windmill. The site is centred around an online Questionnaire which asks the web-public about their experiences of and attitudes to England, Englishness and national identity.

Ask The Audience

Respondents to the questionnaire received monthly e-postcards from us, unique digital artworks generated on our travels around England from April 2003 – March 2004. The responses to the questions also fed into a performance/installation of *Pleasant Land* at LMU Gallery in Leeds in October 2003...

What is Pleasant Land?

Traditionally Third angel has prided itself on being a trailing-edge technology practitioner: we have always used the most basic technology that can do the job. This time we were presented with technology that was more than capable of what we wanted, and could offer more besides...

The project is an interface between both ourselves and the audience, as well as between research, digital imaging, website, email, video,

photography, performance, writing and gallery installation.

So what is it? All of the above. None of the above. A project that utilises all of the above as tools.

Digital Makers, Digital Researchers

The site will remain (at the time of PixelRaiders pleasantland.org will have just been updated for the last time and archived) as a spurious, slanted resources of feedback, thoughts and images. Third Angel will continue, not now as digital artists, but as artists with increased digital/web design and collaboration experience.

Authors

Sarah Kettleby and Michael Smythe
Napier University / Edinburgh College of Art

Title**The Materiality of Wearable Computers - Craft and the Building of Authenticity into User Experience of Personal Computer Products****Key words**

Materiality, authenticity, wearable computers, craft process, expression, familiarity

This paper will present two projects undertaken as part of the author's ongoing doctoral research into Wearable Computers, and the processes for designing personal digital artefacts that exhibit materiality. Materiality is discussed in its associations with the applied arts, and as a means by which tools may cease disappearing in the obsessively rational quest for what Heidegger called readiness-to-hand, and instead become more meaningful for users as objects in interaction. The overall aims of the research are to investigate evidence for the growing desire for authentic experience in everyday life, and to evaluate craft practice for its possible contribution to new design and build processes which can deliver this authenticity. The two projects introduced here are the Comfort Blanket and Expressions of Smart Materials.

The Comfort Blanket used recycled clothes to investigate the effect of familiar materials and traditional textile techniques on user perceptions of intimate technologies, while the Expressions of Smart Materials project will manipulate samples of novel materials, textile or otherwise, as elements to be worn on the body, examining the range of expression that can be achieved with materials designed for a specific functionality through jewellery techniques. Unstructured interviews on the Comfort Blanket are planned with users in their homes during November 2003, and the Smart Materials work will begin in October; methods and interpretations of the results will be presented in the full paper. This work addresses the role of crafts in the development of personal technological products with the aim of creating interesting and viable sustainable design processes. It does not cover the experiences of the maker, but rather concentrates on the experience of the user as a result of the making process.

Authors

Hanna Landin and Linda Worbin

Department of Computing Science, Chalmers University of Technology, Gothenburg, Sweden and PLAY, Interactive Institute, Gothenburg, Sweden

Title**Fabrication by creating dynamic patterns****Key words**

Materiality, authenticity, wearable computers, craft process, expression, familiarity

In this paper we describe our experimental work with dynamic textile patterns. We question how information can create an aesthetic pattern or how an aesthetic pattern can reveal subtle information. We have worked with generating different kinds of textile samples in which dynamic patterns can be used for experiments with aesthetical issues. We have made two concepts 'a bag for the mobile phone' and 'an apron for the PDA'. We use information technology as an active part of the pattern, not only when constructing it, but also during its use.

In the project 'Fabrication' we investigate how information, and computer technology, can be an active part in aesthetic textile patterns. We work with different fabrics as well as different ways of creating dynamic patterns. We are doing this by integrating information technology as an active portion of the fabric, not only when creating a fabric but also during its use. Just as threads build up fabric, information technology is building the pattern upon the fabric. Dynamic patterns, which can change over time, can be used as a tool for communication, they can visualize more and other kinds of information than a technological product itself does, in a more slow and subtle way that takes some time for one to get to know and interpret. The paper describes experimental work of exploring how we today usually create, use and look at aesthetical patterns, and how this might differ when designing dynamic patterns.

Authors

Kresimir Matkovic, Thomas Psik and Ina Wagner

Institute for Design & Assessment of Technology, CSCW & Multidisciplinary Design Group, Vienna, Austria

Andreas Rumpfhuber

Institute for Art and Architecture, Academy of Fine Arts Vienna, Austria

Title

Sampling 'mixed objects' as part of architectural practice

Key words

Architecture, pedagogy, digital process

The Architects design process requires to continuously transform and 're-program' familiar settings – to explore solutions and contexts, to shift perspectives, to carry out experiments, to present and perform, to have time and space for free play and day-dreaming

'Re-programming' is one of the aspects of architectural students' learning that we explored in an extensive field study of design work at the Academy of Fine Arts in Vienna. Part of their training consists in learning 'to see things differently'. This implies changing (strangely) familiar images - altering the city, the landscape, objects of everyday life. Students are encouraged to collect and mobilize inspirational material – which is to do with particular qualities of objects, people, ambience, a place – as this plays an important role in seeing things differently. They may vary the context of an object through simple projections, e.g. place a railway station in the midst of a jungle or igloos in the desert (without having to do complex renderings). They may play with dimensionality, scaling up and scaling down, changing familiar objects and thereby arriving at unexpected uses. They may use visual effects for seeing things differently, such as 'fuzziness' – views that blur, distort, veil and allow things to remain ill-defined, unfocused and indistinct.

One of the tools we designed in support of architects 're-programming' is the texture painter. This is a tool for 'painting' virtual overlays - textures, images or video - on to physical objects such as models in real time. Painting is done with a 'real brush', which is tracked with a video camera. Users can apply (mixtures of) different images on an object, change brush type and size, and transform the images by scaling and rotating them.

The texture painter provides a fast and highly interactive way of experimenting with scale, colour, background, and social use of an object or space. It helps create 'mixed objects', where integration of the physical and the digital happens within one single object.

We will describe experiences of use of the texture painter as part of students' project work at the Academy and analyze its impact on practice. It for example is part of architects' practice to take pictures of such experimental set-ups and to merge them with the other design material. Experience has shown that projecting images onto a haptic surface (and taking pictures) allows to produce a much more direct approach than any 3D visualization.

Author	Ruth Maxwell Gray's School of Art, The Robert Gordon University, Aberdeen
Title	Drawing Out Digital Media: Degrees of Three Dimensionality
Key words	New Technologies, Digital Visualisation, Creative Practice

The Research Cluster: "Drawing Out Digital Media", at Gray's School of Art; explores the application of various digital technologies, integrating and respond to, creative cross departmental practice when mediated by computer aided means of production and reproduction in both 2-D and 3-D forms.

With the increased availability of digital visualisation technologies it would seem the divide between imagined and realisable visual concepts have finally been removed. The computer makes no distinction between a 24bit colour value, a dimensional digital model, or co-ordinates in virtual space. In this sense, the computer is not limited by 2D or 3D visual conventions, but rather has the potential to create radically different spatial realities. A gesture or mark needs to no longer be limited by 2D visual conventions, which have historically relied upon pictorial or photo realistic spatial depth cues like perspective, occlusion, cast shadows or shading, conventions which continue to prevail in most digital drawing and print solutions.

Drawing Out Digital Media asks how might these new technologies lead to new visual /physical/conceptual forms, which question definitions and established practices. Specifically investigating how 3-dimensional digital design and industrial-manufacturing technologies might bring about a paradigm shift within creative practice.

Establishing clearer critical and process driven links between computer-aided-design (CAD), computer-aided-manufacture (CAM) and Rapid Prototyping (RP) technologies, the Drawing Out Digital Media cluster has been helped with a successful AHRB funded project.

Drawing Out Digital Media asks how these new technologies lead to visual, physical, & conceptual forms.

Drawing Out Digital Media offers a forum for critical debate, grounded in practice where the role of the artist / designer might be seen as an agent for change.

Drawing Out Digital Media has developed projects at this interface, which questions definitions and established practices.

Drawing Out Digital Media actively supports collaborations between members and external agencies.

Degrees of Three Dimensionality is an exhibition of work in progress the cluster has created exploring a range of digitally generated/processed work, realised in mediums as diverse as clay, wood, fabric & perspex.

Degrees of Three Dimensionality has recently been exhibited in conjunction with the 3rd Impact International Printmaking Conference in the Jaoa Ferreira Gallery, Cape Town, South Africa during August and September 2003 and previously in Aberdeen Art Gallery, May to July

2003.

Drawing Out Digital Media's philosophy sits at the heart of the issues being raised at Pixel Raiders 2. The Degrees of Three Dimensionality exhibition, in conjunction with an oral presentation of the work and processes involved, would provide a visual stimulus, provoking discussion and further discourse.

The paper will illustrate a number of individual case studies of Design & Fine Art Researchers, drawn from the exhibition of work.

Drawing Out Digital Media cluster are:

Grays School of Art

Ruth Maxwell

Jon Pengelly

David Henderson

Lennox Dunbar

Cameron Ross

Lesley Cullan

Simon Ward

Sarah McKenzie Smith

Michael Agnew

Peacock Visual Arts, Aberdeen

Michael Waight

University of Lincoln, Hull School of Art & Design

Simon Ringe

Author

Mairghread McLundie

Digital Design Studio, Glasgow School of Art

Title**Talking Digital: exploring diversity in practitioners' relationships with digital artefacts****Key words**

artefact, dialogue, dimensions of difference, digital, diversity, design, practice, practitioner, design research, designer-maker

This paper describes elements of the author's Ph.D. research, which concerns the relationship between designers and the artefacts they create and work with in their creative processes, and implications for future digital environments for design.

'Traditional' design research has focused mainly on design-by-drawing and formal design methods, less on other areas of design which do not fit this model. Also, in assuming that there is a single design method to be discovered, most of this research has been blind to individual differences in design practice. Equally, the artificial, experimental methods frequently employed have prevented it from observing the natural diversity in practice, and the dimensions of its variation.

A previous study of designer-makers undertaken by the author, and the author's own experience of practice, suggest that differences in approach can be quite clearly observed between individual practitioners. Preliminary thesis research indicates that these differences concern the relationships which individual practitioners experience with the artefacts they create and work with in their process, and relate to the nature and extent of a dialogue between designer and artefact.

Previous researchers have examined elements of the relationship between designer and artefact, with different focus and scope, but very few have examined differences between individual designers, or diversity in design practice.

Studies in anthropology, writing and epistemology, which propose differences of a similar nature in creative approach (although in different domains), were used to devise a framework within which to examine the diversity of this dialogic relationship. This framework comprises a number of 'dimensions of difference' – different aspects of an individual's practice which can be observed to examine differences in approach. While specific in focus, these are sufficiently generic in application to accommodate different areas of practice.

This framework formed the basis of a comparative study of two groups of student practitioners, one 'material' (Silversmithing and Jewellery), and one 'digital' (Advanced 2D/3D Motion Graphics), undertaking their final year of self-directed study. Differences in approach, broadly along the lines of enquiry, were observed within each group, and a similar spread of approaches was observed within both. A rich range of relationships with the media evident in material practice, from expression to engagement, can also be observed in digital practice.

Focusing on the digital practitioners, this paper describes the diversity of approaches that were observed within the group; the different

relationships that students experienced with the medium; and the variety of roles that the 'digital' played in their creative practice. It discusses how well the conceptual framework described the differences that were observed; and implications of the findings of this study for a variety of audiences.

This research complements practice-based research in Art & Design, by enabling comparisons to be drawn between practitioners, while preserving individual experience of practice.

Author Mark Palmer
University of the West of England, Bristol

Title **Towards New Forms of Practice**

Key words Ethics, Immanence, Creativity, The New

There have been many insights generated through art and design. However the myths that surround these have often stifled this process. The image of the solitary artist struggling to externalise an inner vision fails to recognise the cultural milieu out of which these moments emerge (and are a part), contexts that provide the 'soil' and 'nutrients' for these endeavours. Whereas once these issues would have been solely of academic interest new technology has brought them centre stage. Increased connectivity and the potential for new forms of interaction mean that context is no longer merely that out of which creativity emerges and returns but is its arena.

Faced with this connectivity and involvement but constrained by the myths of artistic practise artists have tended to cast 'users' either as miniature versions of themselves 'mini-me's controlling some aspect of the work's appearance, or as mere witnesses to a technological spectacle. But artists can't be entirely blamed for thinking in this way. The discipline of HCI has subjected the use of computers to a metric based upon achieving particular tasks swiftly and an increasingly technologised media industry has appeared to make spectacle its *raison d'être*.

But if artists examine their working practices and return to the ethos of working with the qualities and limits of their medium we will realise that a new approach is demanded. If we claim to create interactive work we are working with systems that involve people. No longer are 'users' the recipients of an artist's 'vision' they are a part of it, a part of a system and if claim to work creatively with systems it is a necessity that we work with them! It is only through this the assumptions that otherwise obscure creativity become challenged; if we fail to do this the development of 'interactive' work becomes as lively and creative as a game of chess played against one's self.

Indeed within a world where collaboration has become a necessary mode of practise it has become increasingly apparent that the role of an 'artist' is not the provider of a solitary voice but a part of a team. But if the results of these efforts are to be more than they've been, to be more than pat answers to ill fitting paradigms, the demands made are such that we need to challenge the basic language of this discourse. The iterative 'testing' required for the creation of 'interactive' systems provides the context and arena within which this can be rethought such that people become more than merely 'users'. This paper will examine the practical and ethical issues brought forward by these modes of practise through concrete examples of an emergent field of practice, research and development.

Author

Maggie Parker
East Durham & Houghall College

Title**Working with the Community using Digital Manipulation Software****Key words**

Community, Virtual Reality, Hybrid Practices, Digital Culture

New approaches to digital art with the introduction of affordable digital cameras have encouraged people to experiment with new approaches to photography. What do you do with the photographs after taking them if they aren't centred, or have something in the picture, or you would like to restore an old photograph?

The ages of people using the community IT centres is from age 5 – 95, so what do the centres provide when they have delivered all their present courses, and everyone can cut, copy or paste a document or spreadsheet?

Far seeing community IT managers realise they have to move on to the next step in delivering courses to the community to survive, to do this, they have to embrace new software and ideas being developed. It is not good enough now to look at introducing clients to word processing packages only. There needs to be a sea change in attitudes to art and its role in the community, a new approach to art and digital culture. Managers who embrace this new digital culture will survive in the community as more and more grants are becoming unavailable; IT centres are going to have to learn how to keep their clientele. Working as a virtual reality artist with 3d and digital manipulation software lead me to implement and deliver a course in the community.

As a part of this far seeing cultural change, I set up and ran an introduction to digital manipulation course, which was delivered in the community at the local IT centre. I taught them how to scan, how to cut and paste how to move objects from one image to another, and the availability and usage of the software's tools. This has caused an enormous amount of interest and publicity, and has brought disparate parts of our scattered community closer together, forging links with various other groups and encouraging creativity, self esteem and confidence.

At the end of the course, they were so enthusiastic that I was inspired to curate an exhibition which was subsequently titled 'IT doesn't have to make sense', a comment by one of the students that came as a bolt of lightning to her development. This exhibition has led to me being asked to introduce digital manipulation into another community centre, and the general feeling is looking towards the future of digital photography and art as being the next logical step to the future of community interaction.

Ongoing from this exhibition is the possibility of ISIS Arts inflatable portable digital artist's 'BIG M' being brought into the area as a venue for the further dissemination of digital art currently being made at the cutting edge. The self-confidence obtained from my students in seeing their exhibition given credence by their peers means they can then criticise and evaluate the work produced, without being overawed and not understanding what is being said in the work. It will give them even more encouragement to continue their own work.

This can only be to the good of both community centres and also colleges with the relevant software installed, as there would be a natural progression feeding through from the free introductory courses offered in the community, to the longer, certificate led college courses.

Author Alan Peacock
University of Hertfordshire, Faculty of Art and Design

Title **Materiality and The Interactive**

Key words interactivity, materiality, aesthetics, interactive art, discourse, affect

This proposal is for a paper that explores ideas about the materiality of The Interactive, its reception and consumption, and its affect(s). It extends ideas about the aesthetics of The Interactive discussed previously elsewhere*.

Drawing on the work of Katharine Hayles (Writing Machines) and Johanna Drucker (Figuring the Word), and with a long look towards cybernetics, this paper addresses the question 'Is there a particular materiality of The Interactive?', and if so how can it be described and discussed.

Materiality is understood as being integral to the received experience, to the moment of (figurative) consumption and discourse. It is seen as a resonating sign-space where denotation and connotation overlap, where meaning is given form, and form, meanings. While there are established languages for discussing the affect of the visual and the sonic, The Interactive currently lacks a language which directly addresses the experience of interactivity.

Key points in the paper will include

The particular materiality of The Interactive is present in its equivalence of colour, timbre, composition. That is, in the semiotics of (the mouse and other) devices, in movements and actions, display and cursor events, visual and sonic feedback, in the semiotic exchanges of mutually responsive systems.

The difference(for example) between onClick and rollOver is not only in the techne of the codepoet, but more significantly in the meanings present and presented in the sign world of The Interactive artefact(s) at the moments of their reception and consumption. The narrative and semiological distinction between click/decision and rollover/flow is considerable.

The materiality of The Interactive resides in the evanescence of the discourse between mutually responsive systems. This forms a materiality of instances rather than editions, characterised more by pluralities and lacunae than by unities and constancies.

Authors	Dr. Sita Popat, Dr. Melissa Trimmingham, Professor Mick Wallis University of Leeds Dr. Gordon Ramsay Loughborough University
Title	Performance and Robotics: A Phenomenological Dialogue
Key words	Robotics, performance

The Performance Robotics Research Group consists of four researchers from University of Leeds and Loughborough University. We are collaborating with engineers from Shadow Robots Company Ltd in London. Our specialist areas on the performance side are dance, drama, puppetry and performance theory. Our engineering partners have developed the patented 'air muscle' that creates a particularly fluid motion in robotics. Our project is still in its very early stages, and this positional paper presents the understandings and philosophies that underpin our work.

Our project asks questions about the relationship between robots and people. The performance researchers will be investigating new performance vocabularies and exploring the possibilities raised by interaction with the robot as a non-human and 'semi-intelligent' agency. The engineers are concerned with the qualities in robotic design that make robots more approachable and desirable in the home environment. All of us are concerned with combating the conventional, functional, 'clunky' stereotype, and looking at ways to develop 'anti-clunk' robots with which humans can connect.

We will be conducting preliminary research between September 2003 and the end of 2004, including intensive periods where performance researchers and engineers will work side by side in performance studios and engineering workshops. From this research will arise the design protocols for the robots that will be built and used in performances over the following 2 years.

Author	Heather Raikes School of Communications and Theater, Temple University, Philadelphia, USA
Title	The Architecture of the Rheomode
Key words	Performance, digital media, video, sonic arts, communication

The architecture of the rheomode is a template for a digitally-facilitated linguistic evolution, discovered through the laboratory of the live theatrical performance of cosine.

cosine is an interdisciplinary multimedia performance event that was developed at the Temple New Media Performance Laboratory, in collaboration with New York-based production company Harakti Multimedia. The collaborative work involved principal investigators from the disciplines of digital media, architecture, choreography, electronic music, theatrical design, video, photography, visual art, and live performance. It was inspired by and structurally based on ideas derived from math and modern physics.

The work asked: What happens when architectural structure and kinesthetic communication come into direct relationship with one another? What type of resonating plurality can the senses perceive between simultaneous multiple tracks of visual imagery? What do we hear when confronted with a 24 layer collage of sound spiraling around an environment in 360 degrees? What is the threshold of our sensory perception and what happens when we push that envelope?

How is our context for understanding communication and codifying meaning affected by a frame that is neither fixed nor singular, but continuously changing and dynamically recontextualizing itself and its contents? How are our minds, bodies, and senses reconfigured by Einstein's pivotal discovery that the speed of light is the only universal constant, and by a communications technology infrastructure that is exponentially accelerating our cultural language toward this end? If Newtonian physics and corresponding notions of space and time provided the groundwork upon which the prevailing paradigms of the 19th and 20th centuries were constructed, what are the tenets of an Einsteinian paradigm that can give rise to 21st century modes of communication and understanding?

A common ground that unites all of these questions is their relationship to the digital medium and its medium-message implications.

cosine drew many of the underlying principles of the digital medium out of the box of the computer and explored them in physical space, with physical bodies and a physical structure, in order to provide a substantially more visceral and multi-dimensional opportunity to examine and experience them with our senses. Specifically, the work examined composited imagery, multi-layered sound, hyper-text, iconographic metaphor, virtual architectures, and electrical communication.

Manifesting and realizing these various elements derived from the digital medium in physical space and performative context resulted in something that was, surprisingly, arguably a kind of architecture. When the communicative building blocks of the digital medium – composited

imagery, layered sound, dynamic structure, textual elements, paths of momentum, metaphor, and symbolic communication meet in physical space, the sum of their parts becomes a multi-dimensional structure that can only be appropriately contained and described by an expression of space and dimension as well as communicative form. Language, when truly expanded into multiple media, becomes three dimensional, becomes a temporal-spatial dialogue of signifiers and stimuli in a dynamic, interactive, 3 dimensional environment. Structure becomes a transparent vessel for synthesis and a crucible that contains and orchestrates a vast, symphonic collage of individual voices and communicative elements. Form becomes a dialogue between concepts, symbols, and multi-sensory stimuli. The result is a dynamic architecture made of composited language. And at the same moment that language becomes an architecture, architectural expression becomes mobile and fluid, dynamically responding to the fluctuations of language. This liminal synthesis of media and architecture I have termed “the architecture of the rheomode.”

The “rheomode,” a term coined by physicist David Bohm, translates literally into the “flowing mode” or “flowing language”. The rheomode is an experiment in language in which representation is defined in relation to movement rather than stasis, energy rather than matter, the wave rather than the particle. Toward a discovery of “the language of modern physics,” the rheomode communicates the interconnected flux of wholeness rather than fixed, finite, fragmented parts.

Author

Michaela Reiser
London Metropolitan University

Title**Repetition without Representation - bridging Performance and Digital Media****Key words**

performance, digital media art, practice based research

I am currently engaged in research for my PhD entitled 'Visions and Spaces - an exploration of non-linear time events in cyber-arts'. I am interested in altered states of consciousness and paradoxical encounters. My methodology uses gallery and literature research as well as experience gained through my practice in digital art installations. My work combines objects, live and pre-recorded interactions with these objects, and virtual reality spaces integrating and repeating both. In my work I am exploring distance and immediacy, performative actions, repetition, the paradox.

In my submission I will respond to the conference theme by reporting from a artist-maker perspective who is evaluating recent changes in her digital media practice after a period of interdisciplinary collaboration.

After briefly sketching a framework around the experience of altered states of consciousness, I will draw up some links to Merleau-Ponty's embodiment theory, Deleuze's 'Difference and Repetition' and Peggy Phelan's 'Unmarked'. These are the core theoreticians informing my current thinking, and crucial influences to my interpretation of authorial subjectivity.

The main part of the paper follows a recent change in my practice that has been encouraged by a collaboration with a group of experimental performers in London. Although embodied experience has been the focus of my digital media installations in the past, exploring the richness of body language and non-verbal communication in experimental choreography has let me to move my practice further towards a performance-based approach. Live performance and digital media differ greatly in regards to the role of the body, immediacy and repetition, and their ideological underpinnings. However it is in the combination of the two that the possibility of creating a new approach to digital art practice arises. A careful balance has to be struck in the making of the work to achieve repetition without representation within the piece. Defying the futuristic expectations embedded within digital technology allows for the development of a different interaction context and a different dialogue to develop, including the discussion of the social dimensions of digital art making.

'Live' digital art blurs the boundaries between the virtual and the real, challenges our concept of time, and re-opens questions of identity. Referring back to Deleuze, this artform is a starting point to re-think some of the fundamental assumptions of Western philosophy. The potential to challenge habitual perception, to enable intersubjectivity as 'real' interaction, and the performative role of the audience are all marks of the live component within such a new approach. It might point to an alternative way of developing Virtual Realities in the future. I will conclude by outlining the differences in the process of art making I have documented in my practice.

Authors

Jon Rogers and Rory Hamilton
University of Dundee and Royal College of Art, London

Title

Pixels on the brain

Key words

Visual perception, digital environments, collaborative practice

The physical environment we live in contains an infinite amount of information. Our brains have evolved to operate within this environment with our senses to guide us. In particular our complex visual system has within it neural mechanisms to interpret visual data as useful qualities of the real world in some meaningful way. Digital, computer-screen, environments have been developed to exploit this. New screen-based world's can accurately mimic the real world, but they can also provide new worlds – world's that use inherent cognitive processes to create shadows, ghosts and memories of the real world. This paper describes the collaborative research project 'Art and Visual Perception' that uses the science of visual perception as a basis for creating new art and design techniques where the mental world governs the making process.

Author	Kevin Rowe Central Saint Martins College of Art & Design, London
Title	Acting to Animate; a Cartoon Method
Key words	Visual perception, digital environments, collaborative practice

Animation, particularly in the UK has become highly stylised and decidedly self referential. The early animators, in the beginning of Disney Studios read Stanislavski, looked to Chaplin, (who based much of his clown work on traditional European forms) and studied dancer's movements. From this they built a repertoire of gestural gags that have become established as grammar for animators.

This grammar, having formed the foundation of animation practice, has become a primary mode of production, resulting in a predominantly mannered expression. By returning animation to its source, human performance, it can be revitalised matching the human advance of animation with the speed of the technological changes impacting on the art and industry of animation.

I recently did a provisional research project into acting for animators. This will map out the territory I want to explore in greater depth. Having identified key acting techniques emerging in the 20th Century, two have dominated. Stanislavski's System concerning inner motivation and emphasizing naturalistic action, and Laban's Movement Theory regarding external form and expressionistic movement. There numerous other forms of performance, ranging from renaissance mask work to post-modernist body art and dance which will form valuable source material.

I conducted the research at the London Animation Studio at Central Saint Martin's. This included my attending method acting classes run by Drama Centre tutors and some Laban movement workshops. I initiated a core unit in acting on The Post-Graduate Diploma in Animation at Central Saint Martin's using Lee Strasbourg's Method which evolved out Stanislavski's system. I also studied texts by Stanislavski in addition to Laban Movement Theory and related texts on performance.

This provisional research enabled me to practice various acting techniques and then apply that experience to both my own and to student's animation practice. The essential outcome of this research has been the discovery that by practising one art form, in this instance acting, and then practising a second art form, animation, the intuitive bodily experience gained translates into an innate understanding by a traditionally experienced animator of how to animate character gesture. This is correlated by Stanislavski's assertion that by learning to experience directly a character's feelings, as one's own, an actor knows how a character will behave. Despite animation being very different in form to physical acting, in that it consists of small hand gestures using a pencil or a mouse and it is not conducted in real time but executed over a longer period than the action it depicts the art of animation is dramatically enhanced by this getting of the feeling of a character, method acting provides. Method acting is a naturalistic style, and is not in itself appropriate to the exaggerated of animation. We combined method acting with mask work, finding the character through method then expanding that character with the exaggerated movements of mask work.

Interestingly the respective acting tutors had never combined their styles and both saw potential for further exploration for their own practice as well as in animation. Additionally, Drama Centre are incorporating cartoon acting into their syllabus and have invited me to attend those classes with a view to developing classes in animating for actors, an interesting possibility for unexpected feedback.

Author	Michael Schwab Royal College of Art, London
Title	The Digital Image: Photography and Photographics
Key words	Photography, Photographics, Digital Image, Photomontage, Computer Graphics

The proposed paper traces the changed position of photography since the rise of digital imaging technology. This change is understood as a paradigmatic shift from the recorded image of traditional photography to the constructed image of contemporary 'photographics'. This shift is seen as affecting both, the working method of the photographer as well as the socio-cultural status of the photograph. In our culture that has been dominated by photography and its related media since decades it is of some urgency to analyse the transformations that have taken place as the photograph has moved into the digital sphere.

The changed status of the photograph will be discussed by examining Tate Modern's recent show 'Cruel and Tender'. 'Cruel and Tender' does not only "signal[] Tate's acknowledgement that photography is a key component of contemporary visual culture"(Tate prospectus), it also signals a shift in the understanding of what a photograph is. By placing Walker Evans's 'documentary style' photographs next to Andreas Gursky's digital images, it is not so much that Gursky's images are art historically grounded in the tradition of photography, but rather that the history of especially documentary photography is redefined from our contemporary digital perspective. In *Snap to Grid: A User's Guide to Digital Arts, Media, and Cultures* Peter Lunenfeld has called this redefinition of photography the "subsumption of the 'photo' to the computer 'graphic'" (p. 57). Taking this lead, it is apparent that Gursky's images cannot only be "compared to paintings in their sensuous visual impact" (Tate prospectus) but that they have merged photographic and painterly qualities in the new form of 'photographics', a form that the organisers of the exhibition did obviously not realise as such.

Digital images are characterised by the technology that constitutes them. In the history of computing the traditional vector based computer graphics have been replaced by raster 1 graphics since the 1980s. These paired with image processing and paint programs redefined the image as just another canvas to work on. The subsequent digitalisation of the photograph has profoundly changed the photographer's workspace. The derivative and to a certain degree subversive forms of photographic manipulation and montage have taken central stage. The actual 'taking' of the photograph is replaced by the gathering of information as material for the construction of images.

'Photographics' can be seen as conflating the distinction Roland Barthes has established between photography and painting in *Camera Lucida*. Barthes describes photography as the medium that guarantees the (past) existence of a depicted object. 'Photographics' inherit exactly this confirmation of reality from photography without its historical implications, that is, without the necessity of the object to have existed. The resulting image, therefore, is neither a photograph nor a painting. It can be described as a photograph out of which history has deflated or as a painting in disguise of a photograph. Fundamentally, it has to be thought of not as a hybrid of past terms, but as a medium in its own right,

which has been changing our reality over the last 20 years and will continue to do so.

Authors

Ann Marie Shillito, David Gauldie

Edinburgh College of Art

Dr Mark Wright

Edinburgh Virtual Environment Centre, University of
Edinburgh

Title

The TACITUS experience: a new spatial, multi-sensory digital interface supporting creativity.

Key words

haptics, 3-dimensions, designers, applied artists, experiential, germinal phase, creative process, interface, conceptual

Computers could theoretically improve the practice of applied artists and designers, and creative people are more likely to engage with new digital technology when systems enhance and support them in their practice.

At present they encounter cognitive difficulties in adapting to counterintuitive computer interfaces and menu driven computer aided design (CAD) programmes.

This paper comes at the end of a 3 year project funded by the Arts and Humanities Research Board and presents our motivation for developing a prototype for computer supported conceptualization (CSC) software. It outlines the primary research goals of the Tacitus project. These are to devise a novel interface, a multi-modal virtual environment, which exploits spatial input, haptic (touch) force-feedback and stereovision for a system capable of meeting the needs of applied artists, craftsmen and designers. Therefore we also examine the potential advantage offered by digital media for the germinal phase of the design process where the generation of ideas has a central role.

We summarize a study that compares a traditional WIMP (Window Icon Menu Pointer) modeller to a prototype of a novel system with a '6 degrees of freedom' haptic feedback device, stereovision and co-located display, both in quantitative and qualitative terms. Experimental results confirm the fundamental role of spatial input for 3D modelling and the significant contribution of haptics and stereovision to improved performance and to the quality of the experience.

We examine theoretical implications and experimental results obtained from studies of a prototype for modelling in three dimensions (3D), with the focus on qualitative evaluation. The underlying principle of the 3D modelling prototype is to support creativity by merging those qualities typically offered by sketching and modeling with the advantages of digital interfaces.

The project adopts user-centered methodologies which emphasize understanding human attributes and real practice. Issues and concerns arising within the specific context of conceptualization in the design process are integrated into a pragmatic and empirical approach. These are employed to adapt and exploit technology to overcome the limitations of traditional interaction techniques and devices when dealing with three-dimensions.

Our goal is not to imitate the working practices and environment of

applied artists and designers, but to create a generic virtual environment that can be applied to a variety of 3D creative disciplines, in which the applied artist feels comfortable and uninhibited by the novel synthetic environment and yet can bring their experience and knowledge to extend their levels of creativity more fluidly using a new digital medium.

At the end of this project a body of knowledge and insights have been attained in how best to create a virtual haptic tool to aid applied artists and designers. A working demonstrator has been created embodying these insights. Future work includes more research on virtual interaction and dissemination through commercialization.

Author

Mark Smalley
University of Salford

Title**Telepresence and the Extension of Embodied Consciousness****Key words**

Telepresence, consciousness, perception, virtual, reality, telematic

Since the emergence of telecommunications technology artists have been researching the impact and implications of our engagement with the infrastructure and culture of new media.

The convergence of communication technologies and the explosion in internet usage has engendered a growing critical and artistic concern with the effects of engagement with digital technology on our consciousness and self-perception. Artists such as Kit Galloway and Sherrie Rabinovitz, Roy Ascott, Masaki Fujihata and Paul Sermon have been at the forefront of the experimentation in telematic art, an area of practice which has placed the issue of telepresence at the centre of it concerns. Early on, such artists sensed that telecommunications technologies have the potential to transform humankind's perceptual and sensorial faculties by allowing their extension into remote and virtual environments. Moreover the telematic artist may be in a position to create forms of communication which enrich our sense of presence or even conflate our senses such that sight becomes touch, for example (Wilson, 2002). Since telepresent art problematises our experience of time, reality and physical space it also questions our conceptualisation of consciousness and perception.

This paper evaluates the potential of generative, virtual environments to provide telematic arenas within which interaction via a telepresent body may enable the extension of what Pepperell (1995) refers to as the "cognitive medium" beyond normal spatio-temporal reality. It questions traditional philosophical and scientific assumptions concerning the boundaries of human sensorial and perceptual experience and argues that the emergence of digital communication technologies may facilitate the extension of consciousness into and through telepresent bodies fused with the data-driven, telematic spectacle.

The motivation for this paper stems from the author's practice-based research into the perceptual experiences of participants who perform within interactive, telematic installations. The discussion represents, in part, an attempt to contextualise the author's own work whilst furthering a deeper understanding of the central concerns of artists investigating the issue of telepresence. The paper considers the ways in which tectonic shifts in the techno-cultural environment are continuously re-shaping our view of consciousness and how new visions of human connectivity are being reflected in and refracted through the experimental work of virtual and telematic artists.

By reviewing the work of theoreticians and artists who are actively challenging traditional notions of the body, consciousness and perception, the author seeks to provoke a robust, cross-disciplinary discourse on the topic of telepresent interaction and its effects on the human psyche. As well as forming thematic linkages between the work of theorists such as Baudrillard, Lacan and Virilio and the approaches adopted by telematic

artists, the paper synthesizes some of the conceptual threads linking art works which deal with telepresence and considers the role of the artist in tapping into transformative potential of telepresent technologies. Ultimately the main aim of this paper is not to provide clear answers but to stimulate potential questions which digital artists may seek to address in exploring the phenomenon of telepresence.

Author

Tarka Sissu
Central St Martins College, London

Title

functional screens + the anti/authorial

Key words

digital animation performative practice research

This is an abstract for a presentation suggesting a 'performative talk' within my research process, demonstrating aspects of animation -'the dynamic state of image'- that informs both my theoretical and practical investigation. Given that the focus of PixelRaiders2 is about negotiations and inter-change between diverse practices I want to take the opportunity to introduce one of my recent digital works in relation to a relevant aspect emerging in another artist's work.

The situation of the presentation that this requires parallels the 'hybrid journey' that practice researchers and their 'audience' undertake. (e.g. by presenting interactivity)

Wicked is object-based. Viewer/user/You put the CD into the CD-drive of your computer! Autostart enables an un-interrupted start.

Nothing seems to happen. We have programmed a doubling of your actual screen. The image that appears is a double of your actual screen, a 'direct-image'. The cursor looks strange though. It is a tool that invites you to make formal changes of/on the surface. We want you to distort your screen, to use it as a plane to with which to interact ... It is almost like a painting, or sculptural dimension that the image possibly becomes, is able to contain - depending on your personal pre-existing screen (image). A time-code limits the interaction, it must be limited in order for the piece to be effective.

You might be astonished or shocked that your screen - by touch - loses its contour, that you loose control over your interface ... After 30 seconds a message appears: ... Contact your system administrator etc. Then, the image is replaced by a black screen, which lasts a few seconds before the movie ends.

The piece is about:

1. paranoia: the viewer/user is confronted with a likely virus or something that 'destroys' her/his very computer/hardware. conspiracy stuff.
2. doubling.
3. the change-ability of image; the physicality of the screen.
4. use of time (the 'moment' in relation to 'narrative').
5. losing authorship (role of distribution, no control over the piece, the use).
6. the 'black screen'.

Potentially, the physicality of the digital 'screen' and the announcement of the artist/audience relationship recall attempts by 'body art' (Amelia Jones) arising in the late 60ies/early 70ies.

For instance, Wicked poses both aesthetic and sociopolitical problems first raised by Vito Acconci in his early videowork based on the 'inter-subjective' (e.g. Pryings, 1971, Claim, 1971) and the mutual constitution of the 'artistic' (direct or mediated participation) in works such as Seedbed, 1972, or Command Performance, 1974.

Out of the desire to come home Acconci's use of the body as

performative is explicit: 'I separated myself into subject and object'. He voices a form of being viewed and simultaneously blurring the visual field gaining definition by 'failing' to 'attain the seemingly self-evident authenticity of the modernist figure of genius' (Amelia Jones).

Further, through the 'grain' and visual 'corrections' the screen is recognised as physical in the sense of constructing the very limit of representing body.

In contrast to Acconci -as I want to demonstrate with my piece-, we now might be left with an ambiguous, incomplete image, that reveals the visuality of the embodied as not conditional, and therefore always already 'outside' the visual field: Embodiment constructing the site from which it is 'excluded'. Interactivity with the computer/video screen has perhaps been displaced by a new detachment that puts into question the very notion of being 'embodied', the way this has drastically opened up the image/self being consumed - hence our relation to the screen challenging the (exchangeable) physicality it claims to represent.

Author	Axel Stockburger London College of Printing, The London Institute
Title	GAMEPADS IN THE GALLERY: Tracing the relationship between video and computer games and contemporary fine art practice
Key words	Computer games, fine art practice

In recent years we have seen a growing number of art exhibitions, such as Reload (Berlin), Synworld, playwork:hyperspace (Vienna), Game Over (Zurich), and just recently Game On (London), which have presented artworks related to video and computer games along with the games. The cultural phenomenon of video and computer games has gained a central position in contemporary entertainment and it has started to influence a range of other media, such as film and TV. At the same time their impact on artistic strategies and productions has grown steadily.

The aim of this paper is to trace the relation between video and computer games and contemporary fine art practice as well as to reveal the possible benefits for fine art practice emerging from the interest in games. In this context it is necessary to clarify the different methods of production, distribution and consumption.

While the discourse is gradually coming to terms with the new medium in the discipline of game studies, it could be beneficial to use artistic practice as a sort of magnifying glass to expose some of the qualities inherent to digital games. Artists appropriating the aesthetics and functions of those games for their work have the advantage of a different economical background and can thus develop a more flexible and experimental approach than companies.

However, the relation is not one-directional, and game developers are tapping the sources of more traditional art forms, such as architecture and painting, to enrich the worlds they are producing. Interactive installations and immersive environments share a lot of ground with contemporary computer games. Although game and play have been important sources of inspiration throughout the history of art, this paper concentrates on artistic production from the 1970's to the present day.

It is possible to identify three different general methods; the first one is an appropriation of general aesthetics, which stays on the visible surface of things. Milos Manetas and Stefan Altenburger are taking this approach. The modification and patching of existing games to produce novel and unique works of art is taking one step further into dealing with the functions inherent to digital games, namely user participation and interaction as well as new methods of narration.

The works of artists such as Jodi, Sylvia Eckermann and Matthias Fuchs as well as konsum.org and Anne Marie Schleiner can be seen in this light. The third approach can be understood as the production of entirely new and unique games in the art context. Here, Blast Theory and Invader have to be mentioned. They are expanding user participation into the real world and the public sphere.

On the one hand, the presentation will show works of contemporary

fine artists, on the other it will also present details from various games which are appropriating elements from traditional fine art. A good example for the latter strategy is the use of famous paintings in the game "Clive Barker's Undying".

Author Katherine Townsend
Nottingham Trent University

Title **Transforming Shape: Hybrid practice as a group activity**

Key words 3D, body, cloth, collaborative, digitally craft, engineered, integrated CAD, simultaneous, printed textiles

Printed textile and garment design are generally taught and practised as separate disciplines. Integrated CAD software enables textile and clothing designers to envisage printed garments by assimilating graphic imagery with 2D garment shapes, and 3D visualisations. Digital printing can be employed to transpose print-filled garment shapes directly onto cloth. During recently completed practice-led research (1998-2003) I combined new CAD technology with textile and garment modelling methods to create a hybrid method of synthesising prints with garment shapes. The merging of physical and screen based making afforded me a 3D simultaneous approach to the body, cloth and print that challenged conventional 2D practice.

My research recognised the form as a positive influence within the design equation, whereby modelled fabric shapes determined mark making. The aim of the practice, to create printed garment designs from a simultaneous perspective, was facilitated by a novel 3D method of image capture, resulting in printed toiles, or cyanofoms, that formed the basis of engineer-printed garments. Integrated CAD software provided the interface between manual modelling, design development and realisation, where draping software was employed to digitally craft 3D textiles. The practical and aesthetic characteristics of digital printing were tested through the printing of photographic-style, integrated garment prototypes.

In 2001, this hybrid design approach provided the catalyst for a collaborative textile research project at the Nottingham Trent University. The group included surface, shape and multimedia designers. The key group aim was to explore the transforming effects of surface design through dialogues between 2 and 3 dimensions: a visual investigation of images, patterns, and 2D and 3D fabric forms. In parallel with my own practice, surface print and embroidery were considered from a 3D starting point through the relating of geometric cloth shapes to the form. With this visual information in mind, each designer took an idiosyncratic approach with regard to the method in which imagery was chosen and integrated with the shapes. The novel consideration of the configuration of the (final) modelled textile at the outset of the designing process influenced each designer in different ways, leading to a collection of contrasting, original outcomes.

The pieces were displayed in the exhibition Transforming Shape. The exhibition demonstrated the design opportunities (and limitations) of new and existing technologies, specifically the relationship between innovative textile imagery and three-dimensional form. The placing of the strategically printed cloth shapes on transparent mannequins illustrated the premise that surface designs can be engineered through different pattern shapes and that engineer-printed shapes transform the body. A video installation highlighted the visual links between technology and technique as the pieces evolved in a hybrid form. The impact of the

digital workplace was evidenced through the process of creating and exhibiting designs within a collaborative context.

Author

Cathy Treadaway

School of Art and Design, University of Wales Institute
Cardiff

Title

Digital reflection – the integration of digital imaging technology in the creative practice of textile and surface pattern design for printed surface.

Key words

digital imaging, surface, printed textile, design, research, pattern, colour

Early phenomenological research into the impact of digital imaging on the creative practice of artists and designers of textiles and surface pattern indicates three key areas in which its deployment is instigating change in printed textile and surface design. These include the development of a new visual language of pattern, the evolving of new processes and craft techniques in the elaboration of surface and the use of digital communication, Internet and email as an integral resource in the generation and dissemination of work.

This paper seeks to explore issues fundamental to the changing nature of practice that arise from the integration of digital technology. New material sourced from case study research, informal recorded interviews, meetings, and emails illustrates the way in which a selected group of individual innovatory artists and textile practitioners are using digital technology in their working practice. Reflection upon the creative strategies deployed and the visual outcomes produced indicates several emergent issues. These include the implications of working in virtual rather than physical space, the difficulties posed by the lack of global true colour fidelity, and the way in which the digital workspace is impacting on creative practice. The digital functions of cut and paste, layering and the ability to record and iterate the actions that build the surface are influencing the visual nature of the work created. This along with the rapid production of virtual surfaces is stimulating new methods and processes in their physical elaboration.

Historically, technological innovation has been instrumental in changing the visual dynamics of the final textile or surface outcome. Digital technology is likely to prove no exception. The paper indicates issues that are currently being explored through the integration of the new technology in the dialogue with the physical surface. Problems, difficulties and concerns that are highlighted indicate areas of current and likely future research in this field.

Author	Professor Frans Vogelaar Academy of Media Arts Cologne, Germany
Title	Processing Hybrid Space
Key words	Hybrid space

My lecture will be centered on the presentation of the research and development work of the Department of “Hybrid Space” at the Academy of Media Arts Cologne. This department was established in 1998 as the first of its kind worldwide and is embedded in the Academy of Media Arts Cologne, an interdisciplinary environment combining media arts, design, theory, film and television.

Within the “Hybrid Space”-department designers, architects, urbanists and media artists collaborate with soft- and hardware engineers in the development of projects for combined analog and digital, design, architectural, urban and media spaces. The scope of our projects ranges from 1:1 industrial design applications and wearables to architectural interiors and urban- and mobility-networks.

We combine a highly conceptual approach and an experimental artistic practice with technological innovation. For example, in this year’s seminar on “transit_bags” we worked on wearables as tools for a mobile culture and developed projects for the objects, the spaces, the services, the users of the mobility networks.

Parallel, within the “no-end technology” seminar, we developed “endless, recyclable, low cost, non-hierarchical, ‘open-source’, ‘do-it-yourself’ technology” in the form of low-cost, do-it-yourself robots. Goal was the “weaving into our worlds non-hierarchical and non-controllable communication systems”.

Other seminars concentrate on architectural applications as, for example, the seminar on “SUPERFICIAL_SURFACE”. Within this seminar concepts and prototypes for networked architectural parasites as “temporary additional elements to existing buildings expanding, informing, inverting and deforming space” were developed.

The scale of the urban and the scale of the mobility networks has for years been a field for our development practice. For example, in 1999 a boat named “ReBoot” spent a week voyaging down the Rhine from Cologne to Rotterdam and Amsterdam as a floating media-laboratory, linking traditional translocal networks (the Rhine) with new “glocal” media networks (Internet/TV). An example for our research on urban networks is the survey on “the use of space in the information-communication age” that we conducted within the framework of Infodrome, a think-tank for the Dutch government (1999-2002).

The “PixelRaiders” lecture will focus on our development of design projects. Nevertheless, this development work on the scale of the human body is embedded in a larger and larger-scale investigation on the urban and the scale of the mobility networks.

This enables to embed our design research activities in a broader framework of reflection on issues as, for example, the interconnection of analog material objects to media networks or the relation of analog and digital design working methods.

The Department of "Hybrid Space" presents an innovative environment for design research and development. One of its main working methods is the model of artistic and speculative research and development. Research in design is powered by a programmatic approach of developing general speculative scenario-frameworks. This formulation of conceptual working hypotheses enables the generation of market-forcing visions and market-creating projects. Enhancing the visionary elements of design strengthens the role of the designer in the process of shaping of our environment.

Author Axel Vogelsang
Central St Martins College of Art & Design, London

Title **The Art Audience as User**

Key words Digital art, usability, ergonomics, interactivity

Our paper will discuss the relationship between digital art and the "user" of this art. How do artists relate to aspects of ergonomics and usability in their work? Do digital artists consider their audience as users? And if they do so, how does this influence their work? As a result we are looking at how the relationship of the digital artist to her viewer can be related to the usability discussion that takes place in the design of commercial applications.

In the recent years a lot of arguments about the role of the user of software and digital augmented devices have been related to usability issues. Usability engineering, software ergonomics and extensive user testing is seen as standard practice in big software developments. Even small webprojects have to be designed according to basic usability standards. This has influenced the role of the webdesigner/interactive designer in the recent years: Rather than creating new and exciting interaction concepts and surfaces she has to fulfill ergonomic requirements.

But recently the discussion about usability in interface design has shifted. Back in July 2000 the "usability guru" Jacob Nielsen declared the "End of Web Design": "Websites must tone down their individual appearance and distinct design in all ways" (1). Two years later he writes about "User Empowerment and the Fun Factor"(2). Donald Norman, another expert on software ergonomics writes: "... ugly is out, beauty is in. [...] Usability? Yeah, that matters, but beauty, pleasure, and fun – those are truly important." (3) This empowers the designer to again play a more creative and artistic role, hopefully on the basis of a new understanding of the user.

How does art relate to this discussion? In digital and interactive art the technical literacy of the viewer/user/experiencer can be as important as her cultural literacy. Projects, such as Txoom by FoAM (4) or Remote Home by Tobi Schneider (5) evolve around the user. Plainly screen based work such as "When my boyfriend came back from war" by Olga Lialina can be accessed in the internet with basic knowledge and software. On the opposite the work of Jodi can be hardly decrypted by more than a small group of expert users.

It will be interesting to see what the state of the discussion in digital and interactive art surrounding ergonomic and usability related issues is and how this relates to the same discussion in interface design. Especially the mentioned recent shift in paradigms from standardization to fun factors in software design will add to the intersections between both disciplines.

Hopefully this paper will enrich the dialogue about how digital artists and designer see and understand their audience.

Authors

Jayne Wallace and Professor Mike Press
Art & Design Research Centre, Sheffield Hallam University

Title**All This Useless Beauty: finding beauty through craft in digital technology****Key words**

Beauty, Aesthetics, Enchantment, Experience, Digital Jewellery, Craft Practice

How should the relationship between beauty and digital technology be described? In a climate where digital technology is increasingly prominent in our everyday lives the role of beauty is seen frequently as an extravagance. As digital technologies extend their reach, the power we have to change and expand our potential for engagement with technology grows accordingly. To regard beauty as a stylistic afterthought is a flawed strategy.

This paper draws on practice centred research combining craft practice and digital technology to illuminate the role of beauty in facilitating the engagement with digital complexity. The phenomenon of human-digital technology interaction raises the potential for captivation, enchantment and fascination or frustration, distrust and doubt. We interact with technology and modes of digital communication initially through our senses, they are the first line in human-technology relationships.

Here we explore the ways beauty can create accessibility to the complexities inherent in much technology drawing on examples from the applied arts. We state the case for the relevance of craft to the design of digital systems and three-dimensional digital devices focusing on the role of research and method in this process. We define beauty in this context as a form of enchantment drawing from perspectives from philosophy, human-computer interaction, and the applied arts. This paper draws from research, which illustrates the role of beauty and enchantment in the conception of digital jewellery, how people respond to enchantment and beauty and how this acts as a key to a personally meaningful engagement with digital technology. Personal subjectivity and criteria for beauty are explored and responded to through the two-stage process of making objects, which aim to enchant and linking this with an equally significant mode of communication. The results present a reflective view of the role of beauty and craft knowledge in the conception and design of digital devices and interfaces.

Authors

Peter Walters, Professor Mike Press, Professor Paul Chamberlain, Professor Anne Tomes

Art & Design Research Centre, Sheffield Hallam University

Title**Designing by numbers? keeping the human in human-centred design****Key words**

Virtual Prototyping, Multisensory Design, Physical Interaction, Hands

'The feel of the physical about us is being lost due to the intervention of computerised equipment and work is becoming an abstraction from the real world... knowledge has been abstracted away from the labour process and has been rarefied into mathematical functions... In my view, profound problems face us in the coming years due to this process.'

Cooley (1980)

Virtual reality technologies play an increasingly significant role within new product development processes. Advocates of these rapidly emerging technologies claim that computer-based product simulations provide significant benefits, including shorter development times and a reduction in the number of prototype iterations required to get a product concept off the virtual drawing board and onto the production line.

This paper argues that physical prototyping should be retained as an essential element of the human-centred design strategy. Designing for physical action requires both the designer and the end-user to develop an intimate understanding of the task in hand, experienced through all five of the human senses. This highlights the multi-dimensional nature of design, where opportunities for innovation are revealed through discovery-oriented physical prototyping.

Case studies are presented from the field of medical and healthcare product design. These demonstrate the effective use of multiple prototyping methods in parallel; designers used a combination of hands-on physical prototyping, alongside virtual and rapid prototyping techniques, to develop and communicate the multisensory qualities of products.

The paper highlights the complex, evolutionary nature of the design activity, and the role of physical prototyping within human-centred design practice.

Cooley (1980) *Architect or Bee? The Human/Technology Relationship*
Hand and Brain Publishers, Slough, England

Authors	Jenny Wolmark and Eleanor Gates-Stuart Hull School of Art & Design, Lincoln University and Australian Centre of Art & Technology, Australian National University, Canberra, Australia
Title	Digital technologies and post disciplinary practice
Key words	post disciplinarity; cultural hybrids; situated knowledge

Discipline boundaries are currently undergoing considerable redefinition, and the process of forging new frontiers results in both theoretical and practical challenges that require exploration. New and hybrid forms of interdisciplinary research not only test existing disciplinary limits, but also produce new objects for study which, in turn, require new methodologies.

This paper is interested in exploring the impact on current research cultures of the blurring of discipline boundaries and the emergence of cultural hybrids. One of the key arguments in the paper is that the capacity to move reflexively between cultural practices and across discipline boundaries is central to development of a more expansive research culture.

As boundaries continue to erode, the post-disciplinary practices that are tentatively emerging are porous, fuzzy edged and indeterminate. Post-disciplinary practices are cultural hybrids, and as such they are well placed to refuse to accept hierarchies of knowledge that are offered as repositories of universal values. As cultural hybrids, post-disciplinary practices retain knowledge of the specificities of disciplines and of their histories, but they are also inherently transgressive and capable of operating outside the limitations imposed by them. Feminist theory has already pointed out that, if the disciplinary space is defined as autonomous and ahistorical, then the social relations of power and dominance that are inherent in that space remain unacknowledged. Feminist theorists such as Donna Haraway have argued for a concept of situated knowledge and this paper would argue that post disciplinarity is emerging in the context of an evolving cultural narrative in which the significance of situated knowledge is increasingly recognised.

Digital technologies make a particular contribution to the erosion of discipline boundaries, and practitioners in new media are often ahead of the thinking in the disciplines themselves. While this can produce a fluid and intellectually exciting environment for research, it doesn't necessarily generate a shared and commonly accepted critical language. As far as recognition of, and funding for, research is concerned, this is a situation that can create real difficulties for academics and students alike. Since an increasing amount of research is also collaborative, there are also unresolved issues to do with authorship and ownership. The gap between accepted and familiar boundaries of research territories and the emergence of new conceptual boundaries and territories clearly affects the development of future research agendas. The paper will discuss some of the implications of an evolving post-disciplinary and digitised environment for research practices in art & design, in the context of the on-going tension between the objectification of knowledge on the one hand, and innovation and creativity on the other.

Authors

Martin Woolner and Peter Davis
The University of Plymouth, Exeter

Title

Otherwise Unavailable

Key words

Communication, manufacturing, spatial relationships, culture

There has always been huge potential, as history has shown, for advances in the knowledge and understanding of creative practice, through the production of artefacts, which have been born out of new processes. As we enter the 21st Century, the impact through the application of digital communication and its output, in new manufacturing techniques, will naturally effect the relationship, not only of the maker, to technique but also to idea, result and end user.

So creative activity has exploited available technologies to fulfil or redefine the requirements of the maker. Recently there has been increasing debate on how in fact these development tools are being filtered into the making process and how the activity could become changed by it.

The paper will be in two parts and will explore a recently completed research project, which investigated the practice and theory of contemporary making with a focus on the nature of physical objects and the processes by which they are produced. The project involved a number of practitioners who integrated a wide range of computer-based method in the development of the craft artefact and its approaches to multi-production. This part of the paper considers the impact of a new form generation and issues pertinent to future new directions and definitions of crafts in the 21st Century.

The second strand of the paper will seek to speculate on the differing theoretical positions one can locate within digital making and their relationship to space, content, context and culture.

Visual spatial experiences cannot be separated from touch as they are so interwoven that they cannot be separated. George Braque noted in one of his diaries that, tactile space separates the viewer from objects, while visual space separates objects from each other. He emphasised that the difference between these two types of space and their relationship to the experience of space, giving rise to the idea that perspective is really a bad trick, which makes it impossible for the artist to convey the full experiences of space.

This postulates an area of research, but fails to take into account digital rendition in all its forms. One of the chief intentions of this strand would be to add some body to this theory. By describing a journey of an object through a virtual and cultural space, to physical form and through this journey encountering all the usual applied rules of boundary, while visiting the extraordinary possibility of a new inter-relationship between a technology, space, content and context.