The Routes Toward British Computer Art : Art Schools & The Computer Arts Society

Title	The Routes Toward British Computer Art
Subtitle	Art Schools & The Computer Arts Society
Lead-in / Abstract	The education and support of the British pioneers of computer based arts with particular reference to the major role played by art schools 1960-70 and the prominence of the artist-run Computer Arts Society. The complexity and rarity of computers meant that artforms based around them were specialised and highly dependent upon support and funding to exist.
Participants and speakers	Mason, Catherine (GB)
Short biography of participants	Catherine Mason is the PhD researcher on the CACHe project in the School of History of Art, Film & Visual Media, Birkbeck, University of London. She is currently writing her thesis on the role of cultural institutions and artists' initiatives in the early period of British computer arts (1960 to 1980), funded by the Arts and Humanities Research Board. http://www.bbk.ac.uk/hafvm/cache
Full text	The concept of using computers in art started in a sympathetic social and political climate in the UK. Although in the initial post-World War II period there were no computers available to artists, there was a great wealth of conceptual thinking, informed by cybernetics, which influenced the next generation. With advances in technology and the formation of the polytechnics in the late 1960s, computers became available. In certain institutions, a limited number of artists took up this as a tool, working method or metaphor for practice. Due to these unique issues of access, both artists and persons from a technical or scientific background created work during this pioneering period.

The complexity and rarity of computers at the time meant that any artform based around them was bound to be a specialised branch of art, highly dependent upon support and funding to exist, not least because of the expensive, large-scale nature of much early equipment and the resulting technical expertise required to operate it.

In the face of much official disinterest, the pioneers of computer arts found ways to exist largely outside what may be considered the mainstream artworld of dealer-gallery networks.

This paper is a brief introduction to the role played by British art schools in fostering computer arts activity during the period 1960-1980, and the prominence of the artist-run Computer Arts Society (CAS), founded 1969.

The influence of 'Basic Design', a new type of art education influenced by Bauhaus concepts, can be traced through art schools from its inception in the 1950s, with artists informed by cybernetics, through the 1960s with artists working in programmatic ways, to artists who actually used computers by the 1970s.

Throughout the 1950s and early 1960s, computers were at an early stage in their development, commonly thought of as 'number crunchers' or referred to as 'electric brains'. Not only was it difficult to access this equipment, at this stage it was difficult to perceive of the computer as being an art method or material, let alone one with capacity for interactivity. The new scientific development of cybernetics was to inform the gestation of computer arts. In the 20th-century it was reinvented by the MIT mathematician Norbert Wiener, culminating with his book *Cybernetics, or Control and Communication in the Animal and the Machine* (1948). According to Weiner, at a basic level, cybernetics refers to 'the set of problems centred about communication, control and statistical mechanics, whether in the machine or in living tissue'.[1] Cybernetics, the study of how machine, social, and biological systems behave, offered a means of constructing a framework for art production in which artists could consider new technologies and their impact on life.

In London, the Independent Group - the younger members of the Institute of Contemporary Arts (ICA), became interested in the implications of science, new technology and the mass media for art and society. The Group met officially between 1952 and 1955 and included visual artists, theorists and critics. They informed the next generation's interest, not least through their influence on advanced art educational developments in the 1960s. They were inspired by *Scientific American,* Wiener's writings, Claude Shannon's Information Theory, von Neumann's game theory and D W Thompson's book *On Growth and Form*(1917).[2]

Richard Hamilton, Rayner Banham and others of the Independent Group were involved with the exhibition This is Tomorrow at the Whitechapel Art Gallery, 1956. In the catalogue, these artists cited potential tools and methods of practice. As well as the more traditional such as, 'fingers, arranged in or on hands, operated or produced by body', the authors also list 'punched tape/cards arranged in or on punch card machine, operated or produced by motor and input instructions'. They also acknowledge Edmund C Berkeley and Giant Brains.[3] These artists believed in the power of modern technologies, even emergent ones (like punch cards) for which the exact artistic employment cannot have been fully clear. This ranks as one of the first published allusions to 'the computer' in relation to artistic practice in Britain.

In 1953, Hamilton went to teach under Lawrence Gowing, Professor of Fine Art at King's College, Durham University (at Newcastle upon Tyne). Together with Victor Pasmore, Hamilton set up and ran the 'Basic Design Course', building on the Bauhaus concept of an integrated method of teaching by bridging the gap between the disciplines of the life room and the rigours of basic design. [4] (A similar Basic Course set up at Leeds College of Art by others.[5]) This was a unique concept at this time - no more copying from plaster casts, which had dominated art education since the Royal Academy.

Roy Ascott, a student of Hamilton's and Pasmore's, was encouraged by the process-driven way of working taught on the Basic Design Course. Inspired by Pasmore's constructivism, Ascott incorporated an interactive element into his work that reflected his interest in communications. In 1961 Ascott created a revolutionary course at Ealing Art School informed by the principles of cybernetics - the 'Ground Course'.[6] This was among the first Foundation Courses to be set up - a result of the radical reform of education in the art and design sector put forward in the First Report (1960) of the National Advisory Council on Art Education, under Sir William Coldstream, eventually paving the way for the introduction of degree-level (BA) fine art courses.[7]

Ascott brought in a number of important artists and theorists, including Gustav Metzger and Gordon Pask to give lectures and demonstrations. This way of teaching art was not based in the traditional 'master and apprentice' system. Instead, behaviour and process were the model for the course. Stressing interdependence, co-operation and adaptability, the tutors set student projects using analogue devises such as calibrators for selecting human characteristics and behavioural alterations in a random but systematic manner.

Metzger was one of the first artists to actually detail the specific use of a 'computer' in relation to his practice. His 1961 manifesto declared his interest in computer controlled cybernetic systems, 'The immediate objective is the creation, with the aid of computers, of works of art whose movements are programmed and include

"self-regulation".' [8] In a lecture at the Architectural Association (1965), Metzger gave details about how computers can be used in sculptures to be auto-destructive. His position countered those who advocated the utopian possibilities of the coming computer age, with sobering details of its origins in military research. He later became the first editor of *PAGE,* journal of the CAS.[9]

This impacted on the next generation - students from the Ground Course included the musician Pete Townsend and artist Stephen Willats. Willats later followed Ascott to Ipswich Civic College at a tutor. There he continued his interest in using informed and up-to-date technological models to produce interactive collective projects, further developed at Trent Polytechnic, Nottingham from 1969.[10] Stroud Cornock, then a sculptor, also met and worked with Ascott at Ipswich during the middle-60s, later moving to the City of Leicester Polytechnic, where he founded 'Media Handling' in 1968. One of the main principles of this course was the belief that any medium had validity for artistic activity.[11] This had obvious relevance for people who wanted to work with computers - Cornock's student Stephen Scrivener was among the first cohort at the 'Department of Experiment' (later known as the Department of Experimental and Electronic Art) set up by systems artist Malcolm Hughes at the Slade School of Fine Art in 1972.[12]

The great interest in cybernetics and art in Britain during the 1960s culminated in the exhibition *Cybernetic Serendipity,* curated by Jasia Reichardt in 1968 and opened at the ICA by Tony Benn, as Minister of Technology in Harold Wilson's 'White Heat' government.[13] It is still considered to be the benchmark 'computer art' exhibition for its influence on many pioneers as well as introducing the subject to a wider audience.

One of the main characteristics of British computer arts of the 1970s, was that it involved artists who either learned to programme and write code themselves or built up a working relationship with scientists, engineers or technicians, at a time when the computer itself was at a formative stage. This was made possible largely by the creation of Polytechnics, which concentrated expensive resources into fewer, but larger multi-disciplinary centres. The first ones were designated in 1967 and many art schools were amalgamated into them.[14] In a few institutions, at least, the result was that artists had the opportunity to access expensive and specialist computer equipment and technical expertise (generally belonging to science or maths departments) for the first time. These provided not only education and training but, in some cases, career incubation, employment, research facilities and networking opportunities. This was a unique feature of British education - as an art student, one could learn to programme.

At Coventry School of Art (in the process of becoming Lanchester Polytechnic), Clive Richards (then a technical illustrator) was able to work with Ron Johnson, Head of Computer Science, on an Elliott 803. Writing in Algol, he produced first a picture of an obelisk in 1969 and, in 1970, *Spinning Gazebo,* the first computer animation done in a British art school, later creating the CACTI (Computer-Aided Construction of Technical Illustrations) package.[15] At the same time, the conceptual art group Art & Language started at Coventry involving Terry Atkinson, Michael Baldwin, Dave Bainbridge and Graham Howard - concepts based on computational methods were approached from a fine art tradition.[16] In this way people from the two backgrounds of design and fine art were able to meet in computing.

Middlesex Polytechnic incorporated Hornsey School of Art and Enfield and Hendon Colleges of Technology. In 1968, John Vince, then a programmer, was put in charge of the Honeywell computer and a 'very rare' plotter - the Calcomp model 565. Vince developed one of the first packages for artists, PICASO (Picture Computer Algorithms Sub-routine Orientated), written in Fortran. Artists who worked with John Vince at Hornsey include Darrell Viner and Jullian Sullivan (who later went to the Slade). Later, Vince and his colleagues ran training courses for the television industry, teaching designers who had never seen a computer before how to do animation in a short period of time.[17] In 1985, with a grant from the Thatcher government, Middlesex became the National Centre for Computer Aided Art and Design under Paul Brown, a graduate of the Slade's programme. In 1988, this was headed by John Lansdown (later became The Lansdown Centre).

In addition, activity took place in a number of other academic institutions. The Department of Design Research was involved in Computer Aided Design and systems research at the Royal College of Art from 1967. At the Slade, Malcolm Hughes was instrumental, along with Chris Briscoe, (who later become Head of the Department), in persuading management to fund computing for artists. The Slade department ran until 1981. At the Institute of Computer Science, London, Tony Pritchett created the Flexipede, in 1967 - the first computer animation in Britain,

later exhibited at *Cybernetic Serendipity.*[18] At University College London, Edward Ihnatowicz worked in the Department of Mechanical Engineering, as a researcher into robotics, building his major work the Senster (1971).[19] At Imperial College, with its ties to the Royal College of Art, Kit (Colin) Emmett and Alan Kitching developed Antics animation software starting in 1971-2, using punch cards on the IBM mainframe with the results plotted on the SC4020.[20]

Efforts in educational institutions impacted technological developments in the wider world. As the Polytechnics had the equipment and the practitioners within had the expertise, they took on commercial work for advertising agencies and clients like the BBC. As the decade continued and into the 1980s, the field started to grow commercially. Computer animation techniques in particular were in high demand. Some pioneers migrated from educational institutions to found commercial production houses. Digital Pictures was formed by Brown and Briscoe, initially in partnership with the Slade, as a way of running and maintaining the computer there. System Simulation was founded in 1977 by George Mallen and Lansdown, with others from the CAS and worked on animation projects such as graphic elements within Ridley Scott's *Alien.* Although part of the service industry, such ventures were also important places of research and development while their participants continued to make art and in some cases, teach. Other pioneers were involved with artist-led initiatives and/or held down day jobs in the computing industry. In this way crucial links between the upcoming generation and the latest technological developments were created.

Artist-led projects allowed social and networking opportunities and access to technical expertise and equipment, as these groups often contained participants from a technical or scientific background. Activities included formal and informal networks such the Computer Art Society, the Arts Lab, the FilmMakers Co-operative, the Artists Placement Group and the Centre for Behavioural Art (founded by Willats in 1972).

CAS, perhaps the most prominent of the myriad of artist-led initiatives during this period, was founded by Alan Sutcliffe, then a programmer at ICL, Mallen, who had worked with Pask and Lansdown, a pioneer of computing in architectural design. An offshoot of the British Computer Society, CAS was formed to encourage the creative use of computers and to allow the exchange of information in this area. It played an important role, bringing together an international membership from a wide variety of practices. In spite of limited recognition from the artworld, CAS supported practitioners through a network of meetings, conferences, practical courses, social events, exhibitions, publication of a journal and occasionally, through funding. The inaugural exhibition,*Event One,* March 1969 at the Royal College of Art, was interdisciplinary, incorporating architecture, sculpture, theatre, graphics, music, poetry, film and dance and saw collaborations between artists and programmers. Subsequent exhibitions and conferences include *Interact,* at the Edinburgh Festival, 1973, funded by the Scottish Arts Council. On view were Ihnatowitz's interactive robot *The Bandit,* Willats'*Edinburgh Social Model Construction Project* and performances of computer dances choreographed by Lansdown.

- 1. Weiner quoted in J Burnham, Software, Information Technology, The Jewish Museum, 1970,11
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- 2. A Massey, The Independent Group, Manchester University Press, 1995, 54
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- 3. Alloway, et al, This is Tomorrow, Whitechapel Art Gallery, 1956, Section 12
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- 4. R Hamilton, 'About art teaching, basically', Motif, No 8, Winter 1961,17-23
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- 12. S Scrivener, Author interview 04/11/03

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- 13. J Reichardt, Author interview 13/02/03

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- 15. C Richards, Author interview 22/07/03

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- 16. G Howard, Author interview 22/10/03

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- 19. A Zivanovic, http://www.senster.com

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Related internet addresses   http://www.bbk.ac.uk/hafvm/cache