White Heat Cold Logic

British Computer Art 1960–1980

Edited by Paul Brown, Charlie Gere, Nicholas Lambert, and Catherine Mason

The MIT Press
Cambridge, Massachusetts
London, England

This book was set in Garamond 3 and Bell Gothic on 3B2 by Asco Typesetters, Hong Kong.
Printed and bound in the United States of America.

Library of Congress Cataloging-in-Publication Data

White heat cold logic : British computer art 1960–1980 / edited by Paul Brown . . . [et al.].
p. cm.—(Leonardo books)
Includes bibliographical references and indexes.
ISBN 978-0-262-02653-6 (hardcover : alk. paper) 1. Computer art—Great Britain.
2. Art, British—20th century. I. Brown, Paul, 1947 Oct. 23–
N7433.84.G7W45 2008
776.0941—dc22 2008016997

10 9 8 7 6 5 4 3 2 1

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Introduction

Charlie Gere

As its subtitle suggests, the aim of this book is to recount the history of the digital and computer-based arts in the United Kingdom from their origins to 1980. It also has a rather more polemical intention: to forcefully argue for the importance of such a history, which has otherwise been disregarded. It is our belief that the digital and computer-based arts, both in the United Kingdom and elsewhere, have been woefully neglected by contemporary art galleries and institutions involved in the history of art. This has been to the detriment of our understanding of not only this area of practice, but, more generally, art and culture in the post-war era in Britain. The post-war era was a time of technological optimism and even utopianism, in which Harold Wilson, speaking at the 1963 Labour Party conference, promised that a new Britain would be forged in the white heat of the scientific and technological revolution. The cold logic of computing was a vital component of this white heat, and artists played a central role in enabling cultural understanding and acceptance of new technologies. Even if our technological optimism and utopianism has somewhat abated, the highly technologized and mediated world we now live in owes much to such pioneers, not least for how their work expanded our sense of what we might be able to do with such technologies. We hope and intend that this collection of essays will be part of a process of redressing the marginalization of the pioneering work of these artists and their vital contributions to our contemporary technoculture.

The subtitle proposes a fairly concrete beginning and end to the historical period on which we are focusing. Computing started to become more ubiquitous and, with the emergence of personal computing and graphical user interfaces (GUIs), far more accessible around 1980. This marked the end of the early, heroic, pioneering period of computer art, which required artists to build their own machines, collaborate closely with computer scientists, or learn challenging computer languages. The question of origins or beginnings has deliberately been left vague. As any historian

knows, it is difficult to pinpoint when something can be said to have started, and there are many possible points of origin for British computer art. It would be reasonable, for example, to go back to the early nineteenth century attempts by Charles Babbage to build calculating machines, and colleague Ada Lovelace's perception that such machines might be used for more than mere calculation. Numerous other points of origin could also be cited, including the history of avant-garde involvement with machinery and "new" media such as photography and film. But perhaps the strongest claim for moment of origin can be made for the 1956 exhibition, *This is Tomorrow*, at the Whitechapel Art Gallery in London's East End. This exhibition was a response to advances in technology and developments in communications and media, and took the form of a number of collaborations among artists, architects, and designers.

Many of those involved in *This is Tomorrow* were part of the loose group of artists, architects, designers and theorists known as the Independent Group, which coalesced around the recently founded Institute of Contemporary Arts (ICA). Some of them have since been called fathers of pop art, and are considered the first artists and theorists to celebrate popular culture, particularly as manifested in the United States. They are also known for critiquing the hierarchical understanding of art and culture represented by establishment figures such as Herbert Read.

In fact the Independent Group had a far broader range of interests, including science, non-Aristotelian logic, cybernetics, sociology, and new technologies. This eclecticism was demonstrated in the exhibition, which was divided into twelve sections, each put together by teams composed of various combinations of architect, artist, designer, and theorist. The twelfth and final section of the exhibition was the most directly concerned with theories of systems and communications. In the catalogue a text by Geoffrey Holroyd, Toni del Renzio, and Lawrence Alloway, describes its concerns as follows:

> This section of *This is Tomorrow* represents the basis of collaboration between architect and artist as part of a general human activity rather than as the reconciliation of specialised æsthetic systems. It is communications research which offers a means of talking about human activities (including art and architecture) without dividing them into compartments. Hitherto the conventional definition of the artist and architect has limited their efficacy to narrow mutually exclusive areas. It is this that has made collaboration difficult. Seeing art and architecture in the framework of communications, however, can reduce these difficulties by a new sense of what is important. (Alloway, Banham, and Lewis, 1956, n.p.)

At the bottom of the left-hand page there is a text that states:

> There has always been a variety of channels available for communications but modern technology has increased the scope of communication and the audience has increased in size. This

chart suggests a way to organise this multiplicity of messages by reference to the characteristics of different channels. By its use the visual arts can be set in new relationships, free of the learned responses of composition, experiment and so on. (Ibid.)

This is accompanied by a table of three columns, showing the variety of different surfaces and means of making things on those surfaces, ranging from marks made by sticks on sand, through making colored painting by paints and brushes on cave or canvas. The final forms of operation are punched card machines producing punched card tapes by motor and input instructions, and, at the very bottom, magnetic surfaces, wire tape, and disk being produced on machinery by motor and input instructions. In this diagram, there is to be found one of the first statements, in the English language at least, about the computer and other computing machinery as potential means of making art—as good a point as any to mark the beginnings of computer art in Britain.

Though most members of the Independent Group did not, either then or later, use computers to make art, their interest in technology and technological discourses helped make British computer art possible. Their influence was both direct and diffuse. They created a general context in which such work might be taken seriously; and they directly fostered the careers of practitioners such as Roy Ascott (as described in "Creative Cybernetics: The Emergence of an Art Based on Interaction, Process, and System" (chapter 2). Ascott was taken on as a student and subsequently into the Basic Design course implemented by Richard Hamilton and Victor Pasmore at Kings College (in Newcastle upon Tyne, but then part of University of Durham). Ascott would in turn go on to teach and employ important figures such as Stephen Willats, which Adrian Glew describes in "Transmitting Art Triggers: The Early Interactive Work of Stephen Willats" (chapter 3).

Section Two of *This is Tomorrow* featured architect Cedric Price's cybernetics-influenced *Fun Palace*, as described in John Hamilton Frazer's "Interactive Architecture" (chapter 4), which also deals with Price's later work, the *Generator*. Though Price was an architect rather than an artist, as is true of Frazer himself, their experiences in trying to use computers in the period between the 1950s and the early 1980s are representative of the more general set of problems and promises that was typical of early computer art in the United Kingdom. As the chapter also makes clear, cybernetics was of great interest to members of the Independent Group, and at least a few of them had read Norbert Wiener's book *Cybernetics or Control and Communication in the Animal World* (1948) and *The Human Use of Human Beings* (1950). In these books, Wiener formulated the idea of information and feedback as the bases of a paradigm for understanding biological, machinic, and social processes. Cybernetics was extremely important for the development of British computer art, not just for the Independent Group but also for the work of British cyberneticians such as

Stafford Beer and Gordon Pask. As María Fernández's "'Aesthetically Potent Environments', or How Gordon Pask Detourned Instrumental Cybernetics" (chapter 5) shows, Pask was highly influential for those interested in applying cybernetics and computing to making art, and was involved in various computer art projects.

Pask was one of the exhibitors at *Cybernetic Serendipity*, the seminal exhibition of "the computer and the arts" held at the Institute of Contemporary Arts in 1968, which is examined in "In the Beginning . . ." (chapter 6) by Jasia Reichardt, then deputy director of the ICA, who curated the show, and in Brent MacGregor's "*Cybernetic Serendipity* Revisited" (chapter 7). *Cybernetic Serendipity* was a highly important factor in the development of British computer art, as well as an indication of the importance of cybernetics. Among the most notable exhibits was *Sound Activated Mobile* (*SAM*), a cybernetic sculpture by the polymath artist/engineer Edward Ihnatowicz, which moved in response to sounds made by the viewer. *SAM* and Ihnatowicz's later piece, *Senster*, made for the electronics company Phillips's *Evoluon* pavilion in the Netherlands, are among the most startling and, for the time, most technologically sophisticated works of art made in the area of cybernetic art. Ihnatowicz has been unjustifiably neglected, partly because he was and remains hard to categorize. It is hoped that the two chapters in this book about him, roboticist Aleksandar Zivanovic's "The Technologies of Edward Ihnatowicz" (chapter 8) and "Forty Is a Dangerous Age: A Memoir of Edward Ihnatowicz" (chapter 9) by his son Richard, might help to bring his work the recognition it richly deserves.

Along with its debt to cybernetics, computer art also owed much to the constructivist movement, the subject of Richard Wright's "From System to Software: Computer Programming and the Death of Constructivist Art" (chapter 10). Though neither the constructivists, nor the later Systems Group, founded in 1970 by artists Malcolm Hughes and Jeffrey Steele to explore the possibilition of geometric abstraction, were greatly interested in using computers, their procedural and logical sensibility made the application of computers to art possible, and artists with an interest in the possibilities of systems thinking, such as Harold Cohen and Tony Longson, investigated the possibilities of the computer for art practice. Cohen developed AARON, an artificial intelligence drawing program, the evolution of which he recounts in "Reconfiguring" (chapter 11); Longson also became a keen programmer, as he describes in "Reconstruction" (chapter 12).

While teaching at Ealing School of Art, Roy Ascott invited the artist Gustav Metzger to discuss his ideas about destruction in art (supposedly inspiring a young Pete Townshend to destroy his guitar on stage with his band, The Who). As Simon Ford's "Technological Kindergarten: Gustav Metzger and Early Computer Art" (chapter 13) shows, Metzger, increasingly regarded as a major figure of the postwar British avant-garde, was a pioneer of the use of computers in art, as well as an early member of the Computer Arts Society (CAS). CAS was founded in 1968 by

Alan Sutcliffe, an engineer at ICL and a composer, architect John Lansdown, and cybernetician and colleague of Gordon Pask, George Mallen. In "Patterns in Context" (chapter 14), Sutcliffe describes the formation of CAS and of the Electronic Music Studio, with which he was also involved, while, in "Bridging Computing in the Arts and Software Development" (chapter 15), Mallen gives an account of the relation among Gordon Pask's company, System Research Ltd., CAS, and his own firm, System Simulation Ltd., as well as describing CAS's extraordinary 1970 installation, *Ecogame*. In "Two Cultures: Computer Art and the Science Museum" (chapter 16), Doron D. Swade writes about another CAS display in the computing gallery of the Science Museum. Malcolm Le Grice, perhaps best known for his contribution to "structural film," was also an early member of CAS, and in "Never the Same Again" (chapter 17), he describes his early computer-based experiments as well as the relation between CAS and other, similar organizations, such as the London Filmmakers Coop, the Arts Laboratory, and the Institute for Research into Art and Technology. Le Grice's invocation of such organizations is a reminder that not all the pioneering work took place in art schools, and in "Which Art in Heaven" (chapter 18) Stan Hayward gives an account of his development of commercial computer animation in the late 1960s and early 1970s.

If the Independent Group made computer art thinkable and *Cybernetic Serendipity* had shown what could be done, it was the art school system that fostered its actual development as Catherine Mason's "The Routes toward British Computer Arts: The Role of Cultural Institutions in the Pioneering Period" (chapter 19) shows. According to Mason the emergence of computer art was also a product of the particular nature of British art schools, especially after the reforms that came about as a result of the Coldstream Report in 1963. Mason charts the role played by art schools from the early Basic Design course in the 1950s through the 1980s, when cuts in the educational sector led many artists to enter the world of commercial computer graphics. In "From Machine to Metaphor: Artists and Computers at Chelsea School of Art 1960–1980" (chapter 20) Stephen Bury traces the history of the use of computers in art at one such institution, Chelsea School of Art.

Paul Brown's "From Systems Art to Artificial Life: Early Generative Art at the Slade School of Fine Art" (chapter 21) describes the formation of the Experimental and Electronic Art Department at the Slade School of Fine Art in the 1970s by Malcolm Hughes. Also involved were Chris Briscoe, Julian Sullivan, Darrell Viner, Stephen Bell, and Stephen A. R. Scrivener. Scrivener and Bell both give accounts of their time at the Slade in this chapter, as well as in their own chapters, "Connections: A Personal History of Computer Art Making from 1971 to 1981" (chapter 22) and "My First Brush with Computer Graphics" (chapter 23), respectively.

In "Conceptual Art, Language, Diagrams, and Indexes" (chapter 24), Graham Howard describes how, at Coventry Polytechnic in the late 1960s and early 1970s,

the Art & Language group, best known for their contribution to the development of conceptual art, made work that engaged with issues of information and database organization and clearly owed much to computing technology. Howard, an early member of A&L, is well placed to give an account of this work.

Ernest Edmonds's "Constructive Computation" (chapter 25) describes his combining mathematics, computing, and art at Leicester during the same period. In "PICASO at Middlesex Polytechnic" (chapter 26) John Vince describes the genesis of one of the first dedicated graphics programs, PICASO, which he developed at Middlesex Polytechnic in the early 1970s, while, in From "0 to 1: Art Made between the Times of Having and Not Having a Computer" (chapter 27) Brian Reffin Smith writes about using and not using computers in art at various institutions in the period. Jeremy Gardiner's "The Aftermath of Early Computer Art: A Painter's Odyssey" (chapter 28) describes Gardiner's attempts to make art using computers in the context of ebbing support and increasing resistance in the institutions where he was studying, particularly the Royal College of Art, despite the presence of important, pioneering figures such as Patrick Purcell and Brian Reffin Smith. To some extent Gardiner's experience at the RCA was part of a more general turn away from supporting computer art in the art schools. Gardiner does, however, pay tribute to the facilities offered by institutions that were less prestigious at this time which is a reminder that small enclaves remained to keep the practice of computer and new media art alive, particularly in the polytechnics, the technical and vocational higher education institutes that had subsumed many of the art schools in the United Kingdom. Many of the figures contributing to or featured in this book were involved in these activities, including John Vince, John Lansdown, and Paul Brown at Middlesex Polytechnic. It was courses such as these that, at least in part, enabled the computer arts to survive and even prosper in Britain as its reception improved with the advent of the World Wide Web and the ubiquity of computing in 1990s and 2000s. Such courses were a bridge between the early pioneers and current practice, and the effects of the pioneers' legacy is considered in the final essay in this volume, "The Ironic Heirs to Serendipity: British New Media Art, 1980s to Now" (chapter 29) by Beryl Graham.

As this brief introduction indicates, the early British computer art scene was extraordinarily lively and experimental. It was also a close-knit group of people and institutions. As a result, this book is far from just an account of how a number of artists at a certain period in a certain place used a particular technology. It is a story of a pioneering community, drawn together by a shared vision of how technologies can change the way things are done. This is especially admirable given the great difficulties of making such work at the time.

Of course one of the corollaries of being a pioneer of this sort is that you are not understood in your own time. This is almost a given for any form of avant-garde art

practice. Hal Foster suggests: "The avant-garde work is never historically effective or fully significant in its initial moments. It cannot be because it is traumatic—a hole in the symbolic order of its time that is not prepared for it, that cannot receive it, at least immediately, at least without structural change" (1996, 29). But, unlike many more explicitly avant-garde movements, computer art has remained particularly resistant to recuperation and restitution by the institutions of canonical and orthodox art history. Perhaps this makes it more genuinely avant-garde. If so, maybe its moment has come, in that the structural changes required for it to be understood are taking place. I hope in particular that this book will help hasten the recognition this area so richly deserves.

This book is one of the main outcomes of a three-year project, funded by the Arts and Humanities Research Board (now Council) in the United Kingdom. Computer Arts, Contexts, Histories etc (CACHe), the membership of which is also the editorial team for this book, was started with the aim of investigating the history of early British computer art. Another outcome of CACHe has been the donation by California-based art historian Patric Prince of her unique collection of computer art to the Victoria and Albert Museum in London in 2005. That a major museum is willing to accept such a donation signals the increasing recognition of the importance of this area of artistic practice. Much of the credit for this must go to Douglas Dodds, head of Central Services at the Victoria and Albert, whose commitment and support has been invaluable. The acquisition of this collection by the Victoria and Albert has been the catalyst for the AHRC to fund a further large research project, the Computer Art and Technocultures project, which aims to celebrate the international impact of the digital aesthetic in the late twentieth century. This project involves Douglas Dodds; CACHe member Nick Lambert, one of this book's editors; Professor Jeremy Gardiner, one of its contributors; and Dr. Lanfranco Aceti.

The original impetus for starting the project was the sad death at an early age of Professor John Lansdown, one of the major pioneers of computer art and graphics. Given his important role in the history this book seeks to describe, it seems only right that it be dedicated to his memory.

References

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