The CACHe Project: Its Work and Outcomes

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ABSTRACT
The CACHe Project at Birkbeck, University of London, was established in 2002 and is now entering its final year. This paper details CACHe's work in archiving the early days of British computer arts, from their origins in the 1960s to the beginning of the 1980s. Its goals are to investigate and recover this history, thereby confirming its cultural and aesthetic legitimacy. The principal archival resources of the CACHe project are also described. Its outcomes are assessed in terms of its funding by the Arts and Humanities Research Board (AHRB) and possible future projects to emerge from it.

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INTRODUCTION

The CACHe project was initiated to discover the extent of the pioneering effort in British computer art, identify its major figures and their works, and collate them in a central archive. "CACHe" is a mildly punning acronym for "Computer Arts, Concepts, Histories, etc.". This reflects our mission in several ways. Apart from the obvious reference to computer memory, a cache can also be a hoard or collection of precious objects, usually concealed from view. All these ideas inform what the CACHe Project is and what we do, because in a sense we are providing a memory for Computer Arts based on the concealed objects we have discovered in the course of our research.

CACHe is investigating the early days of the computer arts in the UK from their origins in the 1960s to the 1980s, when the first personal computers began to be used. The project intends to archive, document and contextualise the computer arts. Its principal goals are to recover this history and confirm its cultural and aesthetic legitimacy.

CACHe aims to

- Recover the work of leading pioneers in the field of digital-based art in Britain
- Identify artists, works, events and publications
- Document the contributions of artists, researchers, authors, academics, institutions and publications
- Collect material to create a permanent national collection based on a number of archives,
- Construct a critical and historical context for the computer arts
- Enable access to this research through an online database, books, videos/DVDs and other materials

CACHe's work includes tracing and contacting people associated with the field during this period, or their families. In all cases, we are trying to build up a comprehensive picture of the digital arts in the 1960s and 1970s in the UK and cross-reference them to international developments. Our main outcomes are a scholarly book with many contributors, all either in the field at the time or later critics; a popular book being written by Paul Brown; a national archive to be established from the collections we have accumulated; and the possibility of an exhibition beyond 2007/8.

History of the Project

CACHe was first mooted because Professor John Lansdown, formerly Head of the Centre for Advanced Studies in Computer Aided Art and Design at Middlesex University, sadly passed away in 1999. He was one of Britain's leading pioneers in the use of computers in the arts and his interests spanned many fields, notably architecture, graphics and dance. Lansdown's early death was a salutary reminder that many of the early innovators of Computer Art and allied areas had not been properly documented nor their achievements compiled in an academic study. This was the impetus behind the funding application that led to the foundation of CACHe at Birkbeck. [1]

In the field of computer-based art, many key artifacts have vanished on the death of their makers or when the research groups that made them became defunct. This problem is inherent in the marginalized status of the computer arts and the general lack of recognition given to their earliest manifestations.

Fortunately, Lansdown's institutional position enabled him to leave a significant archive to Middlesex University.

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However, many documents from his work in the arts and a related art collection were not included in this archive but remained with George Mallen at Systems Simulation. Here they formed part of the holdings of the Computer Arts Society (CAS), which had been founded jointly by Lansdown, Mallen and Alan Sutcliffe in 1969. The CAS provided a meeting place and focus for the growing field of computer art in its formative years, especially in Britain but also across the world because of its international links. Their archive contained the work of many artists, writers and contributors to CAS besides Lansdown, and was thus a unique record of the interlinked personalities, ideas and technologies that gave rise to British computer art.

By early 2000 Paul Brown, a noted computer artist who had worked with Lansdown at Middlesex before moving to Australia, was searching for a permanent home for this joint archive. [2] Brown hoped to save Lansdown's archive and the CAS records in some institutional setting where they could be properly investigated and written up. He held meetings with the Arts Council, the Science Museum, the Museum of Photography and George Mallen to determine the best course for preservation. It was proposed that the project should be based at Birkbeck College under the aegis of Dr Charlie Gere, who ran a Digital Art History course in the Department of History of Art, Film and Visual Media. Coincidentally, Gere had done his PhD under Lansdown at Middlesex and was keen to see the pioneer's work preserved. Paul began to frame an application to the AHRB – the Arts and Humanities Research Board – which was moderated by Gere and Mallen. The AHRB awarded us a record grant of £250,000, the largest award at that time given to a single project.

CACHe's Collections

It should be noted that at the beginning, we though we had a nicely delimited area to explore. We knew roughly the extent of the Computer Arts Society archive at SSL and the Lansdown collection at Middlesex; we also knew there was a further collection of Lansdown's papers and works in the basement of his house and we assumed there would be a scattering of personal papers from other computer artists.

But as our research progressed, we started to uncover - and receive! - vast amounts of material that found its way out of people's lofts and cellars into our overflowing shelves. As each new collection came to light, so a much more complex picture of early British computer art emerged. We began by following up names and links from the Computer Arts Society's magazine, *PAGE*, and other leads emerged quite unexpectedly to complicate the neat picture we had initially delineated. A range of artists, designers and computer graphics pioneers presented themselves and were interviewed by us to document their contributions to this area. Most poignantly of all, the relatives of deceased artists who had lovingly preserved their collections in the hope that someone might find them useful. These collections produced some major finds and significantly altered our understanding of the period and its artists.

Thus far we have discovered over a dozen major archives and numerous small personal collections, all tied together by an expanding web of personalities and shared interests.

In terms of its collections, CACHe has several levels of access. Firstly, there are archives like that of the Computer Arts Society which reside partially or wholly with us. Secondly, there are those like the Lansdown Archive which are with other institutions. Thirdly, there are several significant personal collections which have been promised to us or at least opened for our usage. In practical terms, it means that many of the archives we deal with will eventually come under the aegis of CACHe. One of the project's outcomes under the terms of the AHRB funding was that the archive be passed on to a major British institution when the project ends in 2005. We have been having discussions with a large national museum to ensure this happens.

Thus part of CACHe's mission is to provide a home for these previously disparate archives, in order to place them in an historical context and make them accessible for future researchers. Another AHRB condition is that we must also place the material on a website for public access through the Arts and Humanities Data Service (AHDS), which will be served by a database back-end. [3] Here I must acknowledge the support of George Mallen who, by remarkable coincidence, has developed the industry-standard MUSIMs database for museums and has kindly allowed CACHe to make use of it in our work. Our aim is to catalogue the extent of all archives that we will be responsible for and then scan the most significant material, i.e. that which is of greatest historical moment. [4]

Our Approach to Preservation

It should be noted that at the beginning, we though we had a nicely delimited area to explore. We knew roughly the extent of the Computer Arts Society archive at SSL and the Lansdown collection at Middlesex; we also knew there was a further collection of Lansdown's papers and works in the basement of his house and we assumed there would be a scattering of personal papers from other computer artists.

But as our research progressed, we started to uncover By their very nature, the collections span a wide range of physical and digital formats including large-scale plotter prints, movie film, slides in several sizes, reel-to-reel audio tape, punchcards and early magnetic disks. The period 1960-80 witnessed great technological advances in computer storage and output media and, in this respect alone, the CACHe archives document these changes. The types of work include essays, explanatory documents, exhibition notes, the magazine PAGE, John Lansdown's regular column for the British Computer Society's journal *Computer Bulletin*, entire programs for early computers like the DEC PDP-11, rough sketches and of course finished artworks. Given the range of material, we decided to scan as much of it as possible into

TIFF files and OCR the text files as far as technology would allow. The larger artworks were shot as glass slides and then digitised from the film. Meanwhile, we will be digitising the moving film and audio tapes early next year.

Of course, we first had to define the limits of what material could be included in the project, for both practical and historical reasons. In general, we were looking for work that was influential in its own or time, or that expressed certain lines of development and thought in Computer Art and related fields from 1960-1980: major artworks, writings, discussions, exhibitions, and applied areas including pure graphics and animations.

Part of the reason for the Computer Arts Society's importance to CACHe is because their magazine PAGE, which ran from 1969 to 1985 almost uninterrupted, hosted many leading computer arts practitioners and theorists from across the world. The CAS also exhibited widely and at several seminal exhibitions, notably their first show "Event One" in 1969 and "Interact" in Edinburgh, 1973, they made a considerable impact on the wider cultural and artistic consciousness. Some CAS members had also previously participated in "Cybernetic Serendipity" at the Institute for Contemporary Art in 1968. Because these events showcased so much contemporary computer art, the records of their exhibitors and the links these provide to the artistic and technological milieu are invaluable.

Not only did CAS have a role in supporting art, its members also put together several collaborative art projects, of which the Ecogame of 1970 represented a genuine step forward in both art and technology. This multimedia game was housed in a dome within the Computer Graphics 70 exhibition at Brunel University at Twickenham in 1970. It featured computer terminals running a simulation that presented the players with outcomes based on their choices in various situations where business decisions were linked to social costs. As Lansdown said, it was "an algorithmic game created to illustrate the decision logic of computing in management." Its visual elements included random-access 35mm slide projectors and realtime displays showing numbers and graphs for each player. It was highly successful and was apparently later taken to Davos for a summit of economic leaders. But whatever its applications, it is clear from Lansdown's description that the Ecogame pooled the creative and technical resources of the CAS and represented one of the Society's major outcomes:

"It soon became clear that there would be no shortage of bold and imaginative ideas for the project and all who participated in those early sessions grew very much aware of the creative potential of the multi-disciplinary group which had formed to design the feature. Programmers, painters, behavioural scientists, sculptors, analysts, architects, electronics experts, composers, all had something to offer and sparked original and often exciting ideas from one another. The atmosphere of these first meetings was indeed euphoric and it seemed that possibilities were endless." [5]

But the nature of such multi-format computer artworks presents problems for the archivist, many connected to the technological basis of the art. In the case of artworks with a computational basis, one must appreciate the issue of trying to run software designed for old and obsolete systems, either by resurrecting the hardware or emulating it on something more modern.

Now consider how to approach a piece of art whose physical form may seem straightforward enough – a plotter output, say, or a sheaf of sprocket paper with lines of computer poetry. These physical remnants we at CACHe will scan and present as images. But how should we regard the computer program that generated and delivered these images or words? It is an absolutely essential part of the art, indeed the program is its fundamental basis and raison d'etre in a sense. Yet without the computer that ran it (and often without the code itself), all we can do is exhibit the paper trail it left behind. And certainly, many computer artists of the time were happy to present these printouts as the "art". Yet huge interactive projects like the Ecogame left very few material traces apart from Lansdown's article, a few grainy photographs and a slide or two. How can one convey their scale and scope, and the fact that whilst being a game, albeit one of serious nature, the Ecogame might also be approached as a work of art in a performative and operational sense?

These questions are not simply thorny issues for our project, nor are they merely artifacts of an eccentric way of producing art which – after all, as some would say – has yet to make it in the mainstream. Indeed, the issue of what constitutes computer art, whether the material form, the interaction or the overarching project, instructions and all, was the subject of fierce debate in the early years of the Computer Arts Society.

On the one hand, the German computer art theorist Frieder Nake, wrote in PAGE Issue 18 that computer art "is nothing but one of [the latest] fashions, emerging from some accident, blossoming for a while, subject-matter for shallow […] reasoning based on euphoric over-estimation, vanishing into nowhere giving room to the next fashion." He thought that the concept of art itself should be given up as a purely self-serving notion. [6]

John Lansdown responded in the next issue, saying that Nake had confused mere "computer graphics" with the wider notion of "computer arts" which, as he points out, manifested itself in numerous other forms such as computer poetry and (Lansdown's particular interest) computer dance. Thus the area of computer art was no mere passing fancy but went beyond a traditionalist concept of visual art. [7]

Later, in PAGE 22, American artist Gary William Smith countered Nake by pointing out that in such a young artform, why should it fall to Nake to determine what its particular forms should be, and thus constrict it? Smith later questioned the validity of the very term "Computer Art" in his article. Did this novel description protect certain of its manifestations from proper criticism? He thought the weight of expectation deflected attention from the intrinsic qualities of existing computer artwork, which he felt were lacking. Indeed, Smith considered that putting the word "computer" in front of "art" gave the artwork a special significance it did not deserve - he called it a "crutch". It also implied that works of "Computer Art" were only relevant in relation to each other, and if so they did not succeed as "art". [8]

In fact, this constant debate about the nature and aims of computer art – this chimeric creature to which the Computer Arts Society hitched its wagon – is an underlying theme of PAGE over the course of nearly twenty years.

One of the researcher's privileges is to be able to see such things developing over time as arguments take shape and people refine their art or strike out into wholly new territory. What CACHe must try to do is present this vitality to a wider audience, simply because the issues discussed in *PAGE* through the 1970s and 80s are still hugely relevant to computer art design in all its forms today. This is far from a matter of purely antiquarian interest! Rather, it should inform the approach of all researchers and practitioners in this field. So too should the story of British technological art in the 1960s-70s: its meteoric rise, drift into obscurity and eventual resurrection (in a new form) with the personal computers of the late 1980s. I think this story also has much wider cultural and social resonances, as it would seem to mirror the fortunes of British technology in the post-World War II era.

The Significance of Edward Ihnatowicz

By way of illustration, I would like to consider the career of one particular artist who seemingly symbolizes the varied aspirations, successes and failures of this vital period: Edward Ihnatowicz. He signified a particular combination of mechanical genius, artistic vision and practical application that would have made him a towering figure in any other field. But the peculiar curse of computer art, up until now, has been to condemn such people to unjustified obscurity! In addition, the way he came to our attention can also serve as a model for CACHe's approach of finding things almost serendiptitously. The two people who deserve greatest thanks for rescuing and perpetuating the Ihnatowicz archive are his widow Olga, who preserved so much of his work in excellent conditions, and Dr Aleksandr Zivanovic, a robotics lecturer from Imperial college whose indefatigable curiosity and energy regarding Ihnatowicz's robots is expressed in his invaluable website. [9]

Ihnatowicz emerged from our research because he was so widely mentioned by other artists as an influential figure. A Polish emigré from the Second World War, he settled in Britain and studied sculpture at the Ruskin School of Drawing in Oxford. After a period as a professional photographer, he settled in London and worked as a furniture designer throughout the 1950s. However, Ihnatowicz completely changed his life around in the mid-1960s when, having discovered hydraulic and robotic systems, he went to live and work alone in a garage in North London to perfect his ideas for kinetic art. In a short space of time he acquired expert knowledge in these areas. Ihnatowicz was particularly interested in mechanisms that exhibited movement in reaction to stimuli from their surrounding environments, especially through sound; thus they would interact with the audience. He worked on a Sound-Activiated Mobile, or SAM, with four directional microphones in a moulded fibreglass head, mounted on a neck of articulated joints with hydraulics to move the entire assembly in several planes as determined by an analogue circuit that processed information from the microphones. This was exhibited at Jasica Reichardt's influential "Cybernetic Serendipity" show at the ICA in 1968, and Ihnatowicz was intrigued by visitors' reactions to his moving sculpture:

"Although the electronic circuitry is rather primitive and the general behaviour of the sculpture not always predictable, at the exhibition the thing was fairly successful, especially with the younger visitors and demonstrated the readiness of the gallery visitors to enter into a form of discourse with a machine and the obvious enjoyment derived from the ability to control its behaviour by voice alone" [10]

With backing from the Philips corporation, Ihnatowicz began developing a much larger robotic sculpture in conjunction with UCL's Robotics Lab: the Senster. This evolved from the hydraulics and sound feedback systems incorporated into the Sound Activated Mobile. The Senster was a four-metre-high robotic sculpture with an articulated neck on which the microphones were mounted; it lived in an arena around which people could walk and attract its attention by talking or clapping. Surviving photographs and film clips show an imposing bare metal frame with the sound sensors forming a "head"; it impresses with its scale and starkness. Yet it is only in surviving film footage that the Senster's graceful movement – and the breadth of Ihnatowicz's conception – becomes apparent. The sculpture seems to "look" towards each sound, possessed of some basic intelligence even though its code occupied barely 4K of memory on the Honeywell computer that drove it. Indeed, the code itself was an elegant production and another realisation of Ihnatowicz's abilities. He was able to leverage the primitive computers of the day to manouevre the sculpture around. Though the Senster predated his involvement with CAS, it seems to encapsulate everything that CAS tried to achieve.

Here it is worth noting that much of the historic development of Computer Art had to take place outside the usual venues and locations for "art" because of the size and nature of the technology involved. This also applied to the patrons who backed it and the venues where it was displayed. Ihnatowicz's Senster was hugely expensive by 1960s standards (costing £6000 when a semi-detached house could be bought for £4000!) and was bankrolled by Philips for their Eindhoven showcase of futuristic equipment, the Evoluon. However, the sculpture was both extremely successful, always drawing a crowd, and very hard to maintain because of the complex hydraulics. Eventually Philips dismantled it altogether in 1974 without Ihnatowicz's knowledge. He went on to design other, smaller robots and components at UCL, where he became a technician at the Robotics Lab, but never again did he receive such a large commission.

Now that the sculpture has been put out to grass in a forlorn Dutch field, the computers are long-since dismantled and Ihnatiwicz himself is sadly deceased, what remains of the Senster's remarkable concept? Only the rusting frame, which in its inanimate state hardly represents the work which Ihnatowicz had in mind. In this sense, the photographs and films are more than snapshots or footage: they incorporate something of the original work in their very existence. Quite apart from their status as visual records, they also show the Senster's operation and the audience's reaction. In this, they convey Ihnatowicz's concept in more than merely visual ways.

The Significance of Computers for Artistic Creativity

I think a "work" of computer art – I use the term in a musical sense – is distributed over each of its manifestations, none containing a canonically identifiable "pure" artwork, but all being instances of it. This might mean that sequences captured on film or paper from an interactive artwork convey something of its essence – in a sense, transferring a reflection of what made it "art" – and if they go on to survive the years whilst the original is switched off and dismantled, then they have proved their "fitness". They go on presenting a fragmentary echo of the original artistic idea, and whilst they have no status in the gallery they perform an important task in furthering the artist's vision and concept. Moreover, they can even lead the researcher back to some physical instance of the original artwork, as with the chain of discoveries that led me back to Edward Ihnatowicz's archive and the physical remains of the Senster. It is theoretically possible (given funding and expertise) to take Ihnatowicz's plans, structures and copies of his original computer program and make the vast hydraulic robot live again.

In Ihnatowicz's case, the computer functioned as a coordinating device to translate the sound-feedback from the Senster's microphones into appropriate movements. Inspired as he was by the subtleties of movement in nature, Ihnatowicz found a variety of ways to realize such fluid forms in a medium that might seem almost inimical to organic shapes. That he was able to do so by combining several of the newest technologies of his day – acoustic feedback, a programmable computer and servo-motors – shows how an inventive artistic mind might apply his vision through technology. In a real sense, Ihnatowicz made the computer a vehicle for his art: an element of it, rather than the focus, but still an integral component without which the whole would not have been complete.

In the person of Edward Ihnatowicz, then, it would seem the contradictory strands of CAS's aspirations for computer art and even the nascent possibilities of Art & Technology, were resolved in one artist who was simultaneously an engineer. In this, he seemingly proved that the most meaningful technological artworks would come from artists fully acquainted with technology, not from art-engineer partnerships. Although the Senster was constructed by the robotics team at UCL, it was indubitably the outcome of Ihnatowicz's vision.

CONCLUSION

Ultimately, CACHe is important partly as an archival exercise to retrieve a significant yet overlooked area of British art. However, it is also a repository of potential ideas that may yet be reclaimed by artists with the vision to use them. As an early member of the Computer Arts Society, Robin Shirley, said regarding CAS, there was much unfinished business in terms of the ideas it generated: so many projects undeveloped because the technology and the artistic community of the 1970s had not caught up with them. My fervent hope is that by providing an historical record, CACHe will spur a new generation of digital artists to build on these early foundations instead of attempting to reinvent the wheel. Out of this should also come greater appreciation of the achievements of artists like Lansdown and Ihnatowicz, who worked wonders with early computer technology.

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NB: This essay is a much revised and extended version of "The CACHe Project: Its Aims and Outcomes", PAGE 57, Summer 2004 issue.

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