

# Leicester Computer Art Pioneers

## Exhibition Catalogue



# Leicester Computer Art Pioneers

An Exploration of Leicester  
and Leicestershire's  
Computer Art History

Cover Image: **Ernest Edmonds**, *Nineteen* (1968-1969)

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Acknowledgements

# Leicester's Computer Art History

*by Sean Clark*

In the 1960s, making art with computers was still very new. In fact, gaining access to a computer was in itself hard, using one required specialist skills, and what an artist could actually do with a computer was very limited – certainly by today's standards. For most people, the computer was really seen as nothing more than a sophisticated calculating machine.

Despite this, two Leicester-based artists and educators - Stroud Cornock and Ernest Edmonds, who worked at Leicester School of Art and Leicester Technical College respectively - saw the potential of interactive computer-based art and after a chance meeting in 1968 began to work together.

The Leicester colleges merged in 1970 to become Leicester Polytechnic (now De Montfort University) and Cornock and Edmonds became influential in the international computer art scene, writing the seminal paper "The Creative Process Where the Artist Is Amplified or Superseded by the Computer". Cornock organised a series of events in Leicester in the early 1970s called "The Invention of Problems" and both artists continued to produce innovative artworks.

In the 1970s, Leicester Polytechnic and, in particular, the newly-established HCIRU Research Group went on to become important centres for computer art and Human-Computer Interaction research. They attracted a cohort of artists and researchers to Leicester - including Stephen Scrivener and then Dominic Boreham. Because of the work at the Polytechnic, it's not unreasonable to say that in the 1970s Leicester was at the heart of international computer art practice and research.

Edmonds moved up the A6 to Loughborough University in the mid-1980s and established the LUTCHI Research Centre. He was joined by Stephen Scrivener, who, coincidentally, became my final-year undergraduate project supervisor. Over the following years, many artists and researchers passed through LUTCHI, including Stephen Bell, in the late 1980s. Indeed, it was as a graduate researcher at LUTCHI that I began my personal journey from computer scientist to artist. Whilst at Loughborough, Ernest Edmonds continued to explore the intersection of art and technology with collaborative projects such as "The Gallery of the Future" in the mid-1990s.

This exhibition looks at the history of computer arts in Leicester and Leicestershire before 2000, with the starting point being Cornock and Edmonds' artwork in the late 1960s and early 1970s. The exhibition then moves on from those early days, to look at work by subsequent computer artists, with artworks by Stephen Scrivener (1970s onwards), Stephen Bell (1980s onwards) and myself (1990s

onwards) - all of who were students of Ernest Edmonds.

There are artworks by Dominic Boreham, an important artist based at Leicester Polytechnic in the 1980s. Work by Graham Bate is included, who worked at Leicester Polytechnic from the late 1980s. Finally, it features artwork by Brian Reffin Smith, a renowned computer artist and author who grew up in Sileby.

The exhibition is limited to 20 prints and does not pretend to be definitive – many other talented computer artists have lived and worked in Leicester and Leicestershire since the 1960s. However, it is my hope that the work shown here will generate interest in documenting more of our computer arts history and will result in many future exhibitions.

**Dr Sean Clark**

Exhibition Organiser

October 2023

seanc@interactdigitalarts.uk



# A Pioneer's View

by Ernest Edmonds

Artists have been using computers in Leicester since well before personal computers and games machines became available. This exhibition provides a partial survey of the city's contribution to the foundation and growth of the exploitation of this new and ever changing medium.

Even when all computers were very large and had to be programmed through feeding in paper tape or punched cards, more than 50 years ago, there was an interest in using them to make art. The first serious method was to write a program that controlled a pen that drew onto paper.

In the mid 1960s a few select exhibitions of such drawings were mounted in Germany and the USA. Then, in 1968, Jasia Reinhardt organised the seminal exhibition,

Cybernetic Serendipity, at the Institute of Contemporary Art London. This show brought artists, computer scientist, cyberneticians and others together in an exploration of the potential of computers. Soon afterwards the Computer Arts Society (CAS) was founded.

With this background, explorations of computer art were also underway in Leicester. Although my passion was art, I took a research assistant post at Leicester College of Technology in 1967, where I studied logic whilst continuing to paint in my own time. The College had recently acquired a Honeywell H-200 computer and it seemed quite intriguing to me. I spent some time teaching myself programming and trying it out, more-or-less for fun. Within a year of my joining the College the late Stroud Cornock was appointed to the College of Art, which was on the same campus. He was a sculptor but had previously been working with Roy Ascott in Ipswich, where he had been influenced by Ascott's interest in cybernetics and systems theory.

Independently in 1968, Stroud introduced "media studies" to the Fine Art programme and, in making my relief *Nineteen*, I decided to use a computer program to help me finalise its composition. I also decided to spray paint the work and I went over to Fine Art to see if they had spray painting facilities. They did and Stroud had been put in charge of it.

As soon as I told him about my use of a computer in art and he told me about his fascination with cybernetics and the new technologies we became both friends and collaborators. We came to the same point from different directions. Conveniently for us it was not long before the two colleges were merged and became Leicester Polytechnic. We also joined CAS.

In 1969, planning and preparation began for the exhibition and conference Computer Graphics '70 to be held at Brunel University in the UK. CAS had secured a presence in both aspects of this event. Stroud and I worked together both on a paper and an interactive exhibit (*Datapack*) to announce

our understanding and mission relating to computers and art. We saw the future as going well beyond computer generated drawings.

The paper asserted that computers were particularly important in their potential impact on creativity and went on to propose that interaction was a key example of what they enabled. This would bring with it significant opportunities for participation and for re-designating the role of the artist. The artist might enable, or frame, creative behaviour rather than only produce objects to be consumed. The paper was later published in the journal *Leonardo*.

In our different ways Stroud and I were now committed to exploring the implications of cybernetics, computers and systems for making art. What could artists do with these new concepts that they could not before?

Also in 1970 we gave a joint talk to CAS about our work and in it I proposed that the standard software development methods of the day would not work for creative users

such as artists. The organised flow of steps had to be replaced by an iterative method; an approach that today is known as agile design.

This was the start of a whole series of advances where working on computing for art led to new methods and tools in computing. However, that would be another story.

Leicester was fortunate to have notable artists working in the constructivist tradition, associated with the Systems Group, particularly Colin Jones and Susan Tebby. In many ways those artists were preparing the way for computer-based art with their use of mathematics. Early in the 1970s a founding member of the Systems Group, Malcom Hughes, started a postgraduate course on “experimental art” at the Slade in London. He managed to incorporate a computer into the facilities made available to the students.

A Leicester Fine Art graduate, Stephen Scrivener, joined that course and made

valuable use of the computer. When I had a PhD studentship available, I invited Stephen to come back to Leicester, which he did. He was instrumental in pushing forward Leicester’s computer art developments and has gone on to have a distinguished career in the field.

As time progressed the topic of interactive computing became more important, and funding was on offer to study it. In particular, the ways in which humans responded to these new systems needed research. A few of us, including Stephen, took advantage of this and we obtained a big grant to set up a research group. Although art was not specifically mentioned in our funding bid, it was an important aspect of the work that we did. The relationship between the Slade and Leicester Polytechnic was a significant feature of those times.

PhDs could not be awarded by the Slade in those days. Hence another student, Dominic Boreham, went to the Royal College to take his PhD following the Slade. Part way through he came to work in Leicester and I

became his external supervisor. Then Slade graduate Stephen Bell came to us. That was just when our group moved to Loughborough University, so he did his PhD there.

As I worked at Loughborough, unknown to me to start with, Graham Bate joined Leicester Polytechnic. Graham came from another direction in that, although like me he was a committed artist, he had trained in design. In fact, he was an award-winning designer with New York and London experience. Sean Clark was a computer science student when my team turned up at Loughborough and, probably partly inspired by the new team, began his conversion to art, later moving to De Montfort University to undertake a PhD in interactive art. Soon after that I moved back from Sydney, where I had been working supervising art/technology research, and re-joined my old institution, De Montfort.

There is no doubt that the community of artists and technologists in Leicester and Leicestershire who pioneered computer art

boosted one another’s creativity. This was partly through direct interchanges and partly through the connections that they brought to their colleagues. Malcom Hughes and the Slade has already been mentioned. Then there was the Royal College, where Brian Reffin Smith worked for a while in the same department that Dominic was attached to. By coincidence, Brian was brought up in Leicestershire. His importance is very clear as he was the very first artist to receive the Prix Ars Electronica Golden Nica. Brian still keeps his connections to Leicestershire. Susan Tebby connected us to Kenneth Martin. Malcom Hughes connected us to Harold Cohen and Edward Ihnatowicz. The Leicester community was enriched by these and many other connections at the forefront of art practice employing the new media and its related concepts.

So where are we now? Well past the Honeywell main frame computer that I started with certainly. Also, only rarely making ink drawings by computer. But as this small exhibition shows the fact that the technology of today is hardly recognisable

as developments from that early machine, the concepts and mission expressed in the Cornock and Edmonds paper remain.

Much of the work is time-based, not infrequently interactive, but also very much the product of the artists' creativity. That paper had an implied question in its title, "The creative process where the artist is amplified or superseded by the computer". At least for us, the answer seems to be the same one that Stroud and I came to in 1970: the computer is amplifying the artist's creative process. Not only that, but it is adding to the creative experiences of the participant audiences.

**Professor Ernest Edmonds**  
October 2023



**Stroud Cornock** (right) and **Ernest Edmonds** (centre) with computer artist Paul Brown in 2008. Photograph courtesy of Catherine Mason.

# Stroud Cornock

*b.1938 d.2019*

*Stroud Cornock was born 1938 and sadly passed away in London in 2019. He worked at Leicester College of Art, and then Leicester Polytechnic from 1968 to 1989. He was fondly remembered by **Ernest Edmonds** in this obituary, originally published on the Computer Arts Society website in 2019.*

It must have been around 1971 when Stroud Cornock told me that he needed to buy a new car. He was very interested in the design and construction of cars, as well as of aeroplanes and boats, so he was well placed to evaluate the competing options. He found, however, that he could not just look at the technology. He said that he needed to think about his life, where he was going, what he was doing, what place a car might take in it. Did he even need a car at all? Stroud took a full systems view of his life and

the role of a car in it before making a decision. It was clear to me that Stroud was a deep systems thinker and this was something that underpinned so much of what he did.

Stroud studied sculpture at the Royal College of Art and then joined Roy Ascott's highly innovative team teaching fine art in Ipswich. At this time he was making sculpture in a minimalist style but his growing interest in systems and cybernetics was soon to take him in other directions. In 1968 he moved to Leicester College of Art, soon to be the City of Leicester Polytechnic, and now De Montfort University. There he quickly established the Media Handling Area with the explicit goal of making contemporary 20th Century technologies available to fine art students. That was when I first met Stroud.

I was making a large relief and needed to use a technology that I had no skill in and no access to. It was my first encounter with spray painting. I was working in Leicester College of Technology, so I walked across the

road to ask if anyone in Art or Design could help. I soon found Stroud who looked after the spray booth amongst the many media facilities that he championed. Not only did he advise me what to do, he was quick to start spraying my work himself, showing enthusiasm and a generosity that I came to learn was central to his personality. It turned out that my need for the spray booth was not what interested Stroud most about my artwork. It was the fact that I had written a computer program to help me complete the design that really set us talking. I think that Stroud had already decided that the computer had to have a key role in art's future. This was the year of the Cybernetic Serendipity exhibition at the ICA.

At Leicester, Stroud initiated a series of interactive art proposals, including *Interplay*, which was presented at the VI Paris Biennale in 1969. He and I worked together on building a working interactive art piece, Datapack, that we showed at the CG70 exhibition, Brunel University. We also presented a paper in the Computer Arts Society stream of the associated conference

and later published it in the new journal Leonardo. From hours of discussion, writing that paper, we developed a theory of interactive art, mapping out how we saw the future of art systems in the age of the computer. For me, these were crucially inspiring conversations that in many ways set the path that I have followed ever since.

Stroud never lost his interest in interaction and the use of computers in art. In fact he has made frequent contributions to Computer Arts Society meetings up until very recently. However, as the 1970s projects developed, we were looking for ways of progressing the, much needed, research in that area.

Stroud realised that Systems Theory provided a key component and he went to Peter Checkland, Professor of Systems at Lancaster University, to learn more and further this line. Checkland famously promoted a “soft systems methodology” that enabled the study of social systems as part of the field. This led Stroud to look beyond the art system itself and consider



the social context, taking a very particular interest in the ways in which art students learn.

When the Polytechnics were formed in the UK (The City of Leicester Polytechnic was founded in 1969) they were not given the direct power to award degrees, as was done in Universities. A national body, the Council for National Academic Awards (CNAA) took this role, overseeing all of those institutions. This was particularly significant in the areas of Art and Design in which degrees had not normally been previously awarded. So the ways in which art students learn was a key concern of the CNAA. It was perhaps not surprising, therefore, that Stroud joined its Registry for Art, Design, Art History and Performing Arts. By the time that the Polytechnics became Universities, with full degree awarding powers, and the CNAA was dissolved, Stroud was the team leader in that Registry. I explained above how he influenced me personally and I know that he also influenced many students directly, but his CNAA work was important for Art and Design education in the UK in general.

Whilst he was at the CNAA, Stroud also recognised that the Council owned a significant number of artworks and he founded the role of curator, ensuring that the collection was properly catalogued and looked after. This wasn't the first curatorial adventure that Stroud undertook. As a schoolboy he began collecting cigarette packets and he curated that intriguing collection throughout the rest of his life.

The CNAA's art, however, had to transfer to a new owner once the Council was no more. At that time Stroud transferred to the Open University (OU) where he helped them set up its Validation Services. At the same time the OU took the CNAA art collection over for some years and, again, Stroud took a curatorial interest in the OU's own art collection, taking responsibility for its organisation and development.

Eventually, having retired from the OU, Stroud continued to contribute to the maintenance of academic standards in art and design, both as an inspector for the British Accreditation Council and as a

consultant. Notwithstanding these contributions, all of the time Stroud has been an active and engaged participant in the latest developments in art thinking and practice, particularly in relation to the 'media handling' that he pioneered in Leicester.

Systems of one kind or another may have provided a backbone to Stroud's intellectual life. But as well as this, there was always time for those other important things, such as travel. At times he also put brush to canvas. He took a strong interest in martial arts and was an expert cook. Indeed, not that long ago he added to his influences on me through a gift of a fine book of recipes that was bound to inspire. Positive and active to the end, he ordered a new computer the day before he died.

Stroud was always there, somehow. He was always a pleasure to be with. When I met with Gustav Metzger, a short time before he himself passed away, he only asked one thing of me: "Put Stroud Cornock in touch". Everyone always wanted to talk with Stroud,

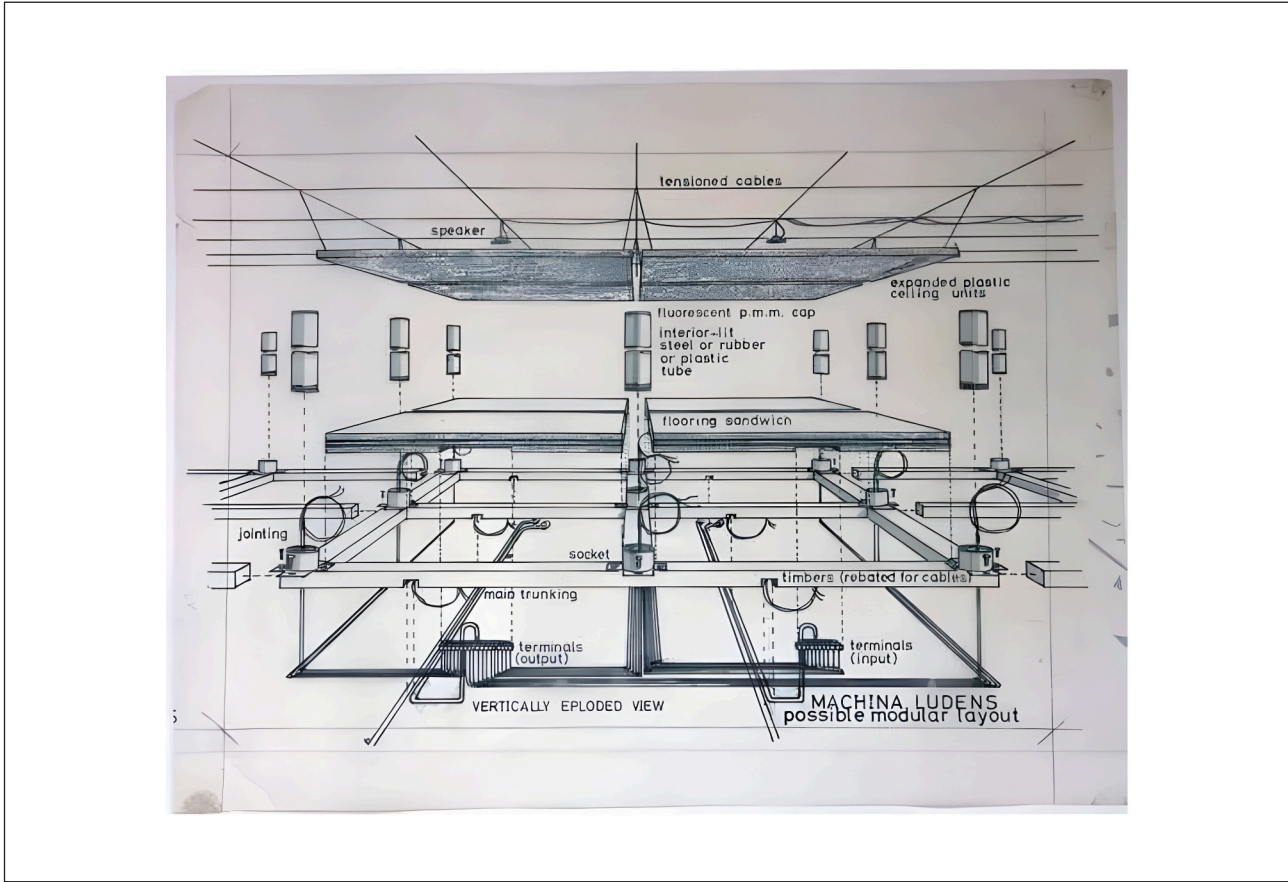
a kind, generous and highly perceptive friend who I will sorely miss, as will all who knew him.



**Stroud Cornock** pictured in 1971.



Stroud Cornock and Ernest Edmonds. *Datapack* (1970). Photograph Ernest Edmonds.

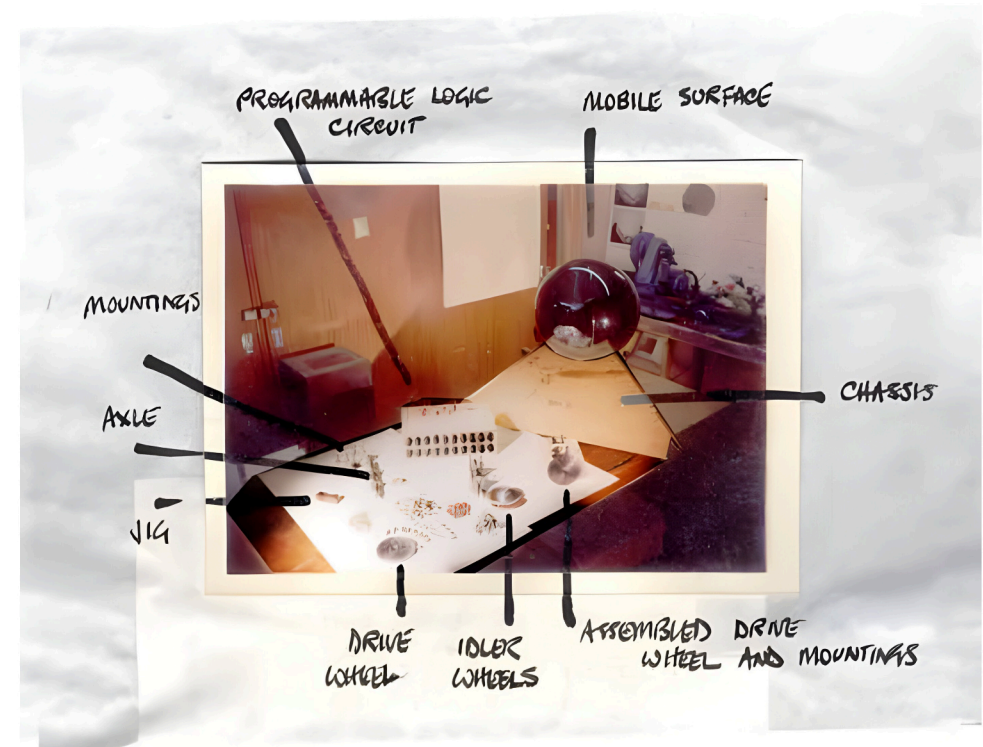


Stroud Cornock. A technical drawing for the interactive space *Machina Ludens* (1971).





Stroud Cornock inside the *Labyrinth* (1971) artwork on show at the Midland Gallery, Nottingham.



Stroud Cornock. *Rover* (1971/72) under construction in the Media Handling Area at Leicester Polytechnic.

# Ernest Edmonds

*b.1942*

Ernest Edmonds is an artist-researcher who pioneered the field of computational art from the late 1960s. He was a student at Leicester University and a Professor at Leicester Polytechnic, as it was, Loughborough University and more recently at De Montfort University, where he is Emeritus Professor. He is an honorary Patron at Phoenix in Leicester.

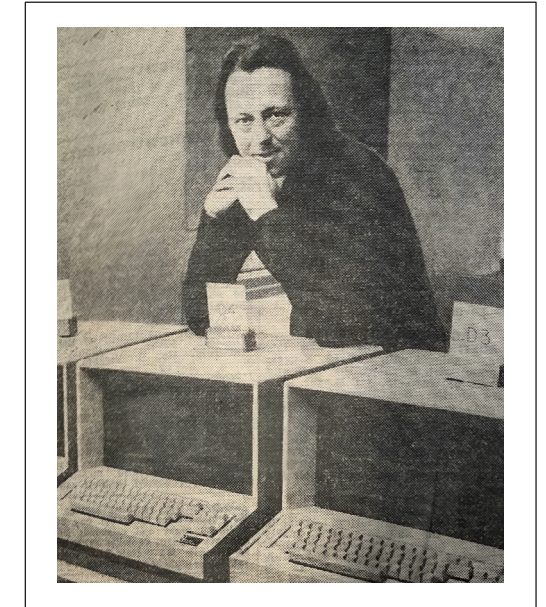
In 2017 he received the ACM SIGGRAPH Distinguished Artist Award for Lifetime Achievement in Digital Art. Edmonds' skills are trans-disciplinary and in 2017 he also won the SIGCHI Lifetime Achievement Award for the Practice of Computer Human Interaction. He recently exhibited in the Generative Generations show at the Gazelli Art House in Mayfair London. He has published widely on human-computer

interaction, creativity and computer-based art. His most recent books are *From Fingers to Digits: An Artificial Aesthetic* (MIT Press, 2019), written with Margaret Boden, and *art: notes and works* (Boco Publishing, 2022). His work was described in the book by Francesca Franco, *Generative Systems Art: The Work of Ernest Edmonds* (Routledge, 2017).

His recent exhibitions include retrospectives at Microsoft Research Asia, Beijing, De Montfort University, Leicester and Mosman Art Gallery, Sydney.

*Nineteen* (1968-1969) was the first artwork that he made with the help of a computer program. The Fortran program calculated the arrangement of the twenty parts following a specification in a set of rules. *Datapack* (1970) was an interactive computer artwork created in collaboration with Stroud Cornock. The interactive installation *Shaping Space* (2012) is shown in an image from the Site Gallery in Sheffield. *Beijing* (2022) shows six examples from a set of paintings using

digital print and acrylic paint on canvas. They were composed using mathematics and software to manipulate form and colour.



**Ernest Edmonds** pictured in the *Leicester Mercury* in September 1976.





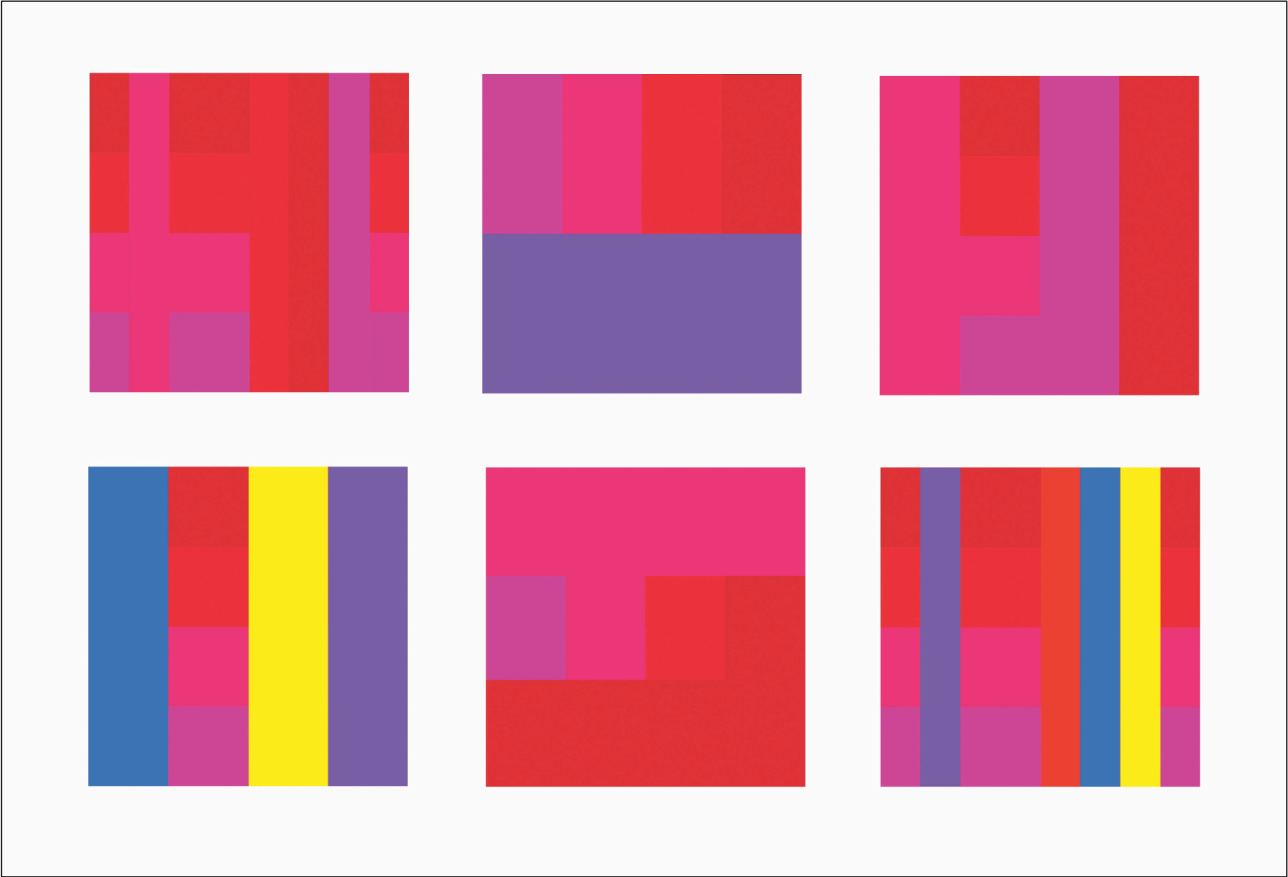
Ernest Edmonds. *Nineteen* (1968-1969)



Stroud Cornock (left) and **Ernest Edmonds** (right) with a participant who is interacting with their *Datapack* computer artwork in 1969.



Ernest Edmonds. *Shaping Space* (2012). Photograph Rupert Edmonds.



Ernest Edmonds. *Beijing* (2022)

# Stephen Scrivener

*b.1947*

In 1969 Stephen Scrivener commenced a fine art degree (then called a Diploma in Art and Design) at Leicester Polytechnic as a representational painter but, influenced by Jack Rodway and Gavin Bryas, he began working experimentally, producing a body of work exploring the image making potential of natural phenomena.

Post Diploma, in 1972, he entered the first cohort of the newly created Experimental Department, led by Malcolm Hughes, at the Slade School of Fine Art, London.

While there he began writing computer programs that modelled homeostatic systems. That is, systems that model natural organisms in the way they seek to maintain a stable relation with an environment following disturbance in organism/

environment equilibrium. Like a pond that settles flat at its surface after a pebble has been thrown into it.

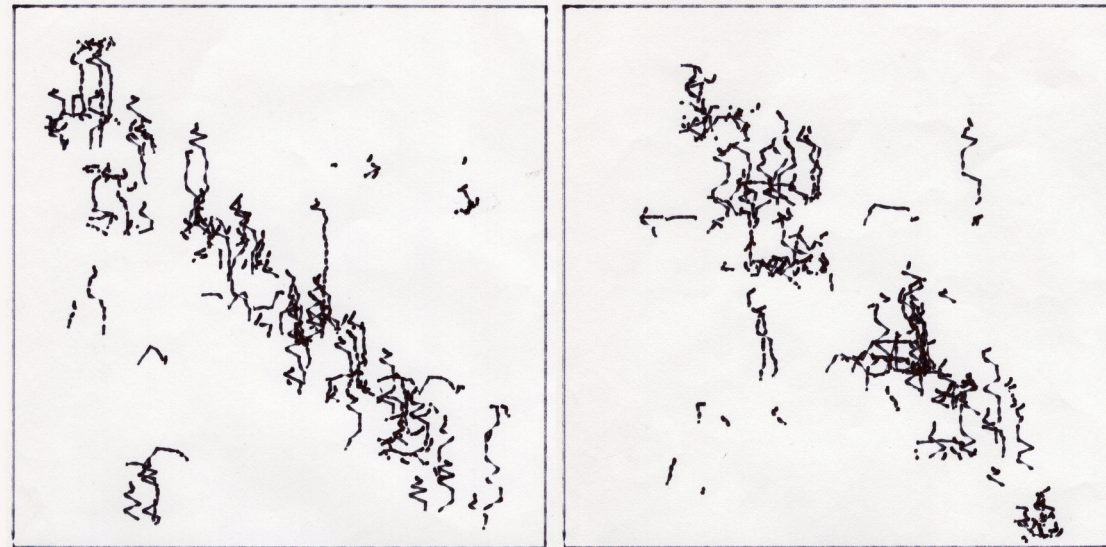
In 1974, he returned to Leicester Polytechnic to commence a PhD in Computer Science, under the supervision of Ernest Edmonds. From 1972 until 1984, he focussed almost exclusively on the production of algorithmic art, the primary works being *Homeostasis*, *Fifteen*, *Sixteen*, *Pop-out* and *Greenlines*.

His work often has a time-based dimension and, typically, chance contributes, as does the viewers' interactions with the work. Today, he works in representational, abstract and experimental modes in a variety of media, depending upon what seems appropriate to the idea. His work is underpinned by an interest in series and repetition, change and order, experimentalism, playfulness (including the absurd) and participation.



Stephen Scrivener pictured in 2023.

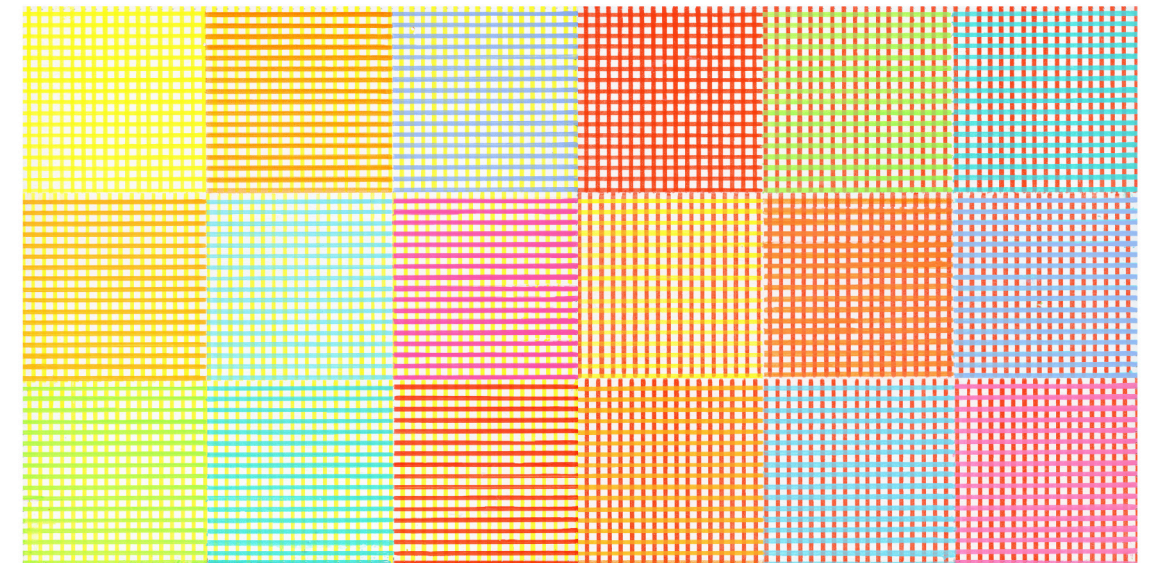




Two test plots from the program *Green Noise*

Scrivener 1979

**Stephen Scrivener.** Two test plots from the program *Green Noise* (1979)



Series 1+ 9 YR Nos 1 and 9

Scrivener 2023

**Stephen Scrivener.** *Series 1+ 9 PE Nos 1 and 9* (2023)

# Dominic Boreham

*b.1944 d.2022*

Dominic Boreham was born in Woodford, Essex, in 1944 and passed away in Dijon, France (2022), aged 77. He was educated at the William Morris Technical School, London. At the age of 12 he became aware that he had no choice but to be an artist. His father disagreed and instead of going on to art school, he was obliged to find employment. He worked first as a commercial artist and subsequently became an assistant at the Fitzwilliam Museum, Cambridge.

In 1972 at the age of 27, he did, however, commence the two-year Foundation Course at Cambridge School of Art. On completion in 1974, he chose Wimbledon School of Art, where his tutor was Colin Cina. In his second year, he won 1st Prizes in both Painting and Graphics as well as the Student Union Prize.

On graduating he was awarded 1st class Honours with a distinction.

He went on to the Slade in 1977 where his tutor was Malcolm Hughes. He spent his entire two years in the Slade Electronic Experimental Department programming the computer to drive a flat-bed plotter to make several different series of drawings. Conceptually, he benefited from many sessions with Dr A.R. Jonckheere of the Psychology Department, who also introduced him to Prof. Richard Gregory at Bristol University.

On completion of his post-graduate studies he was invited by Bruce Archer to conduct PhD research in the Design Research Department at the Royal College of Art. Here he found the computing facilities inadequate but a timely invitation in 1980 from Ernest Edmonds to join his Human-Computer Interface Research Unit gave him the research environment that he needed. He received his Doctorate in pictorial structure and artificial vision from the Royal College of Art in 1983.

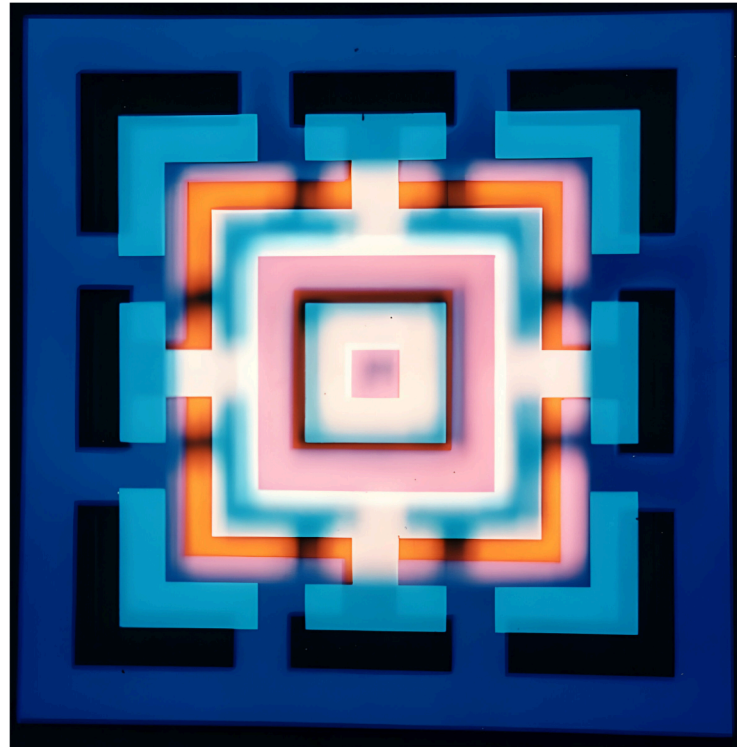
In 1976, Tony Longson initiated him into computer programming and from 1977 until 1983 he concentrated entirely on making drawings by programming a computer to drive a plotter. Edward Ihnatowicz introduced him to John Lansdown and the Computer Arts Society where he became Editor of PAGE from 1979 - 82, transforming it from a broadsheet to a forty-page journal, and consequently became a significant and influential pioneer of Computer Art in the international Avant-Garde.

His computer artwork is collected internationally and is in several public collections including the Victoria & Albert Museum, London; Musée d'Art et d'Histoire, Cholet; National & University Library, Zagreb; Sainsbury Centre for Visual Arts - Collection of Abstract & Constructivist Art, Norwich.

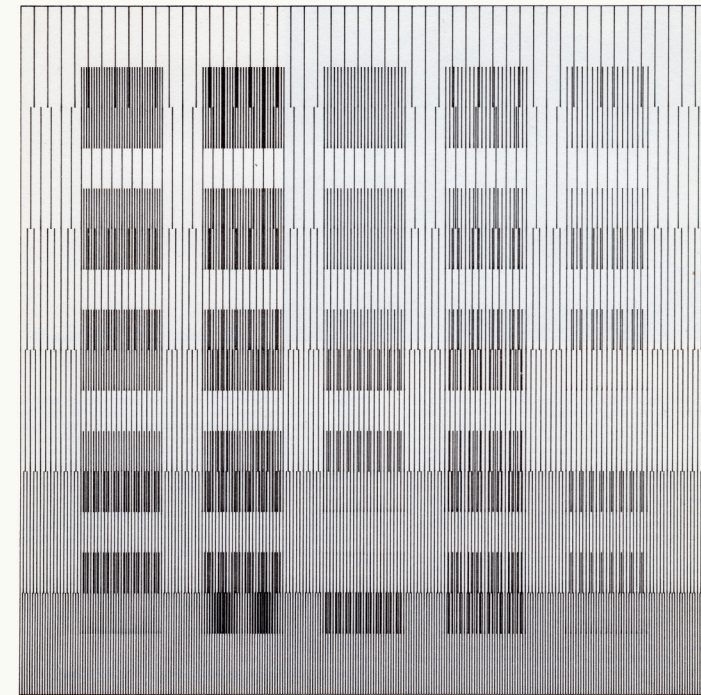


**Dominic Boreham** in the Slade Experimental Art Studio (1977)





**Dominic Boreham.** *Yantra*, multiple light projection (1974)



**Dominic Boreham.** *Indeterminacy Grid IG74* (1979)

# Brian Reffin Smith

*b.1946*

Brian Reffin Smith, though born in Sudbury, Suffolk in 1946, lived from the age of 6 months in Sileby, Leicestershire, where his father worked in (and was equally-paid President of) a cooperative shoe factory and later taught leather technology part-time at Leicester College of Technology.

Smith went to what was then Humphrey Perkins Comprehensive School, and at 18 left Leicestershire to go to Brunel University, and then the Royal College of Art, London, where he studied and later taught.

His parents spent their lives in Sileby and Kibworth Beauchamp. He was awarded the very first Prix Ars Electronica, the “Oscars” of digital arts, in 1987. In Berlin, where he now lives, he consumes Walkers crisps in a

bar that imports them from the UK. He returns not infrequently to Leicester for computer art and Indian food.

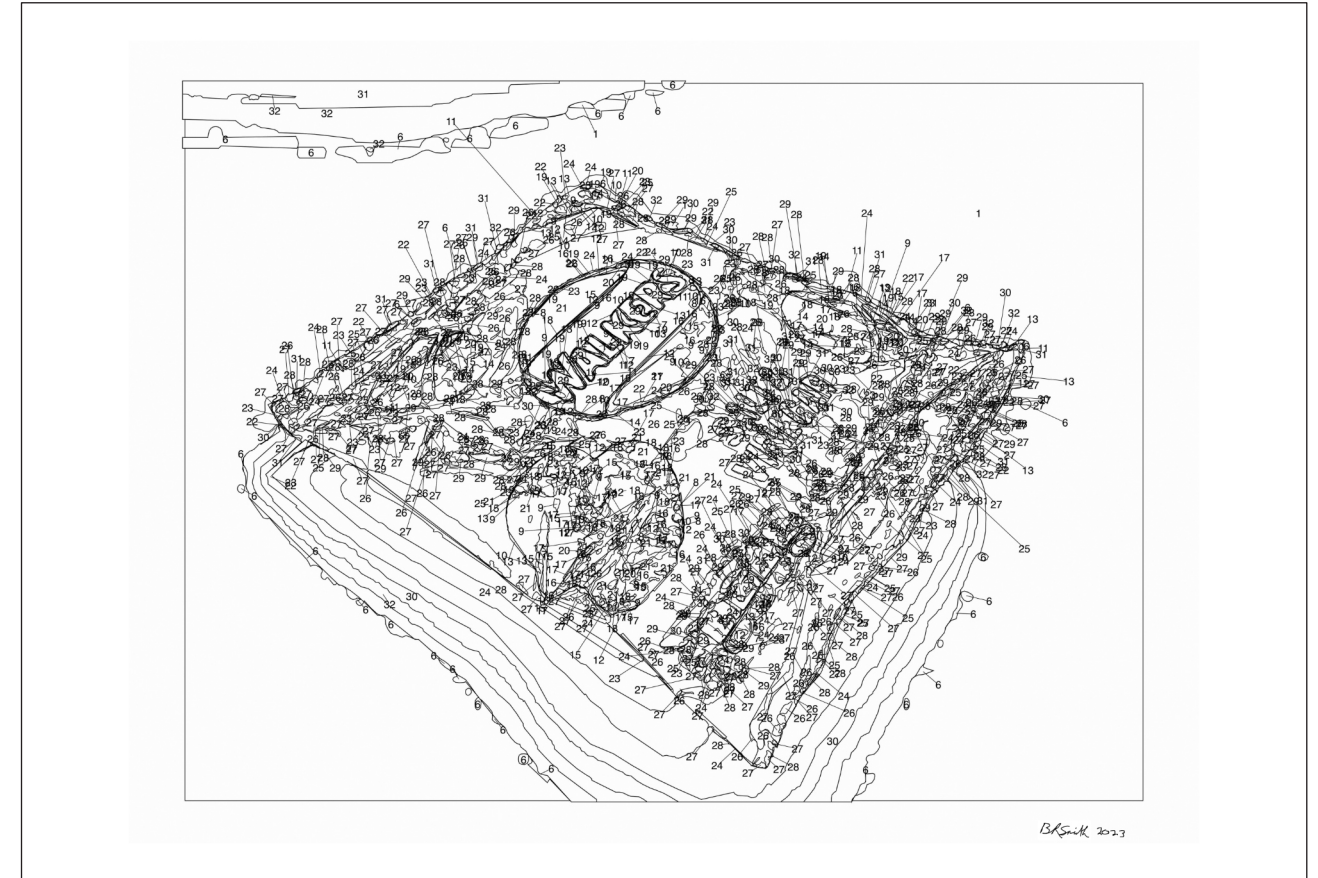
As well as computer-based conceptual art, Smith gives lecture/performances, often involving Zombie theory and/or the absurdist but rigorously useful science of imaginary solutions, Pataphysics, which might start very academically but end with 100 scientists, artists or philosophers having their heads wrapped in toilet paper, a “Zombification”.



**Brian Reffin Smith**, aged about ten, wearing the pullover of Sileby Senior School.



Brian Reffin Smith. *Three Kisses* (1989/2023)



Brian Reffin Smith. *Salt and Vinegar* (2023)



# Graham Bate

*b.1945*

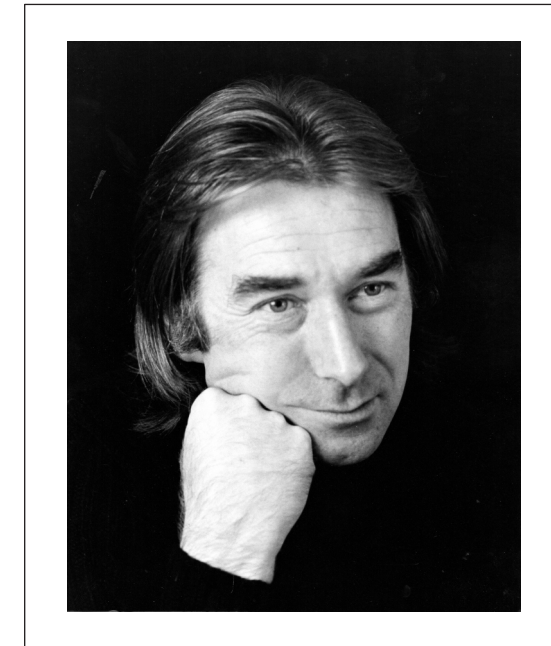
Graham Bate studied at Birmingham College of Art. He has lived and worked in New York, London, France, Austria, Scotland and the Peak District of England. He has held senior academic posts at Central Saint Martins School of Art London, Leicester Polytechnic in the 1980s (now De Montfort University) and Sheffield Hallam University.

*Homage to Ellsworth Kelly* is a print derived from a time based work I made in 1999. During 1951 to 1953 the American artist Ellsworth Kelly produced a painting in which randomly selected colours were applied to each of the 1444 squares of the painting. As a tribute I created a computer generated continuous sequence in which I reproduced the painting as a digital image run on a PC and used modular mathematics whereby adjacent squares of colour randomly

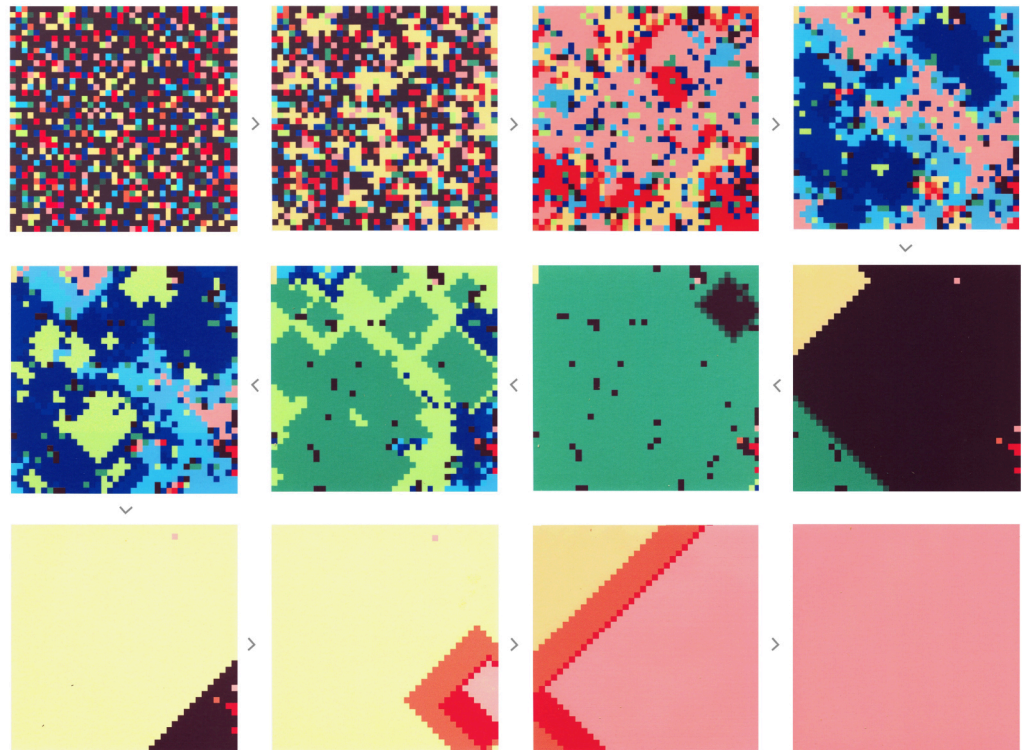
affected each other. Each transmission produced a different result.

During his tenure at Leicester Polytechnic he discovered the newly installed Apple Macintosh desktop computers which seemed able to achieve similar results to much larger less elegant devices. It was here that he began to explore their use to create computer controlled imagery that has continued to captivate him through to his current work.

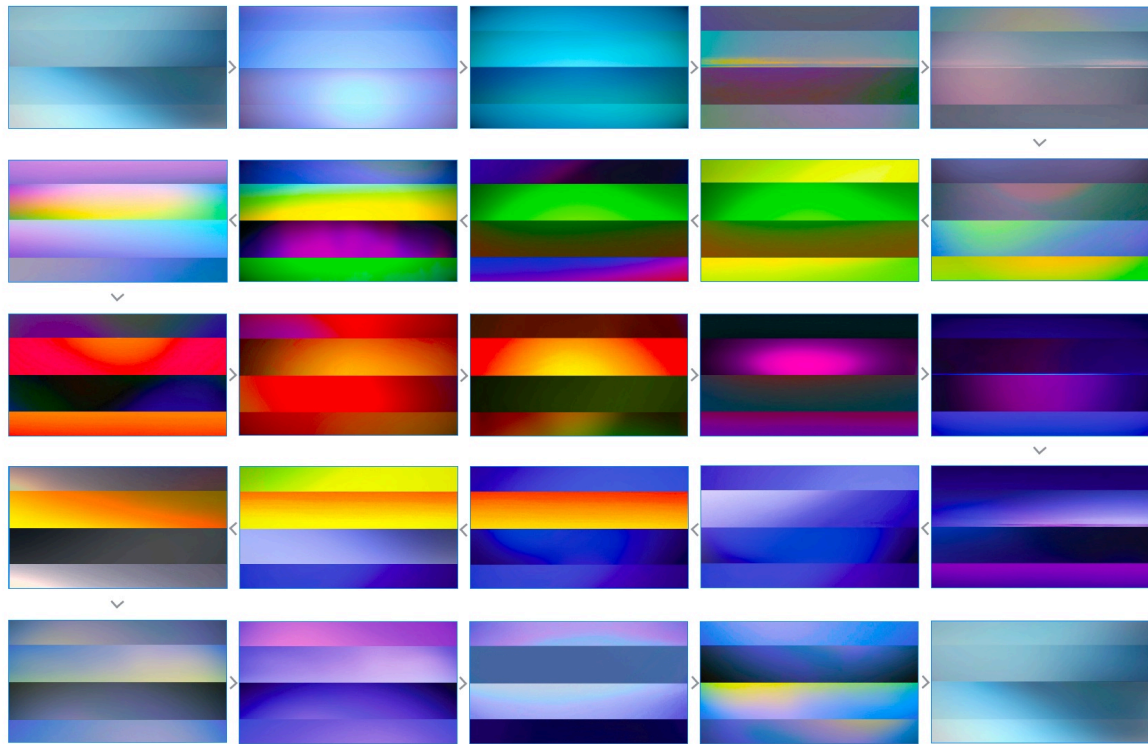
*Eight Hours* shows a progression of still images drawn from an eight hour silent movie entitled *Moving Painting Four*. The print captures the continual flow of the movie in a static sequence. *Moving Painting Four* creates a quiet space for tranquil, contemplative encounters with the self. It offers a continuous, slow, imperceptibly changing visual panorama and is meant to be experienced like a painting rather than watched like a film.



**Graham Bate** at the time he was working at Leicester Polytechnic [now De Montfort University].



Graham Bate. *Homage to Ellsworth Kelly* (1999)



Graham Bate. *Eight Hours* (2021)

# Stephen Bell

*b.1955*

Stephen Bell has roots in the East Midlands, having been born near Rugby in 1955, with relatives in the area. After studying Fine Art at Bristol Polytechnic, in 1977 he started using computer programming to make work as a student at The Slade School of Art. In 1984 as Artist in Residence at the University Kent at Canterbury (UKC) computing laboratory, Bell began a project to investigate the viability of interactive computer art. He wanted to come up with something different to the popular use of fractals to create images.

At UKC he successfully designed a generative system of algorithms to produce abstract images based upon animal and human social behaviour, including conflict and collaboration, and other interactive phenomena to generate computer graphic

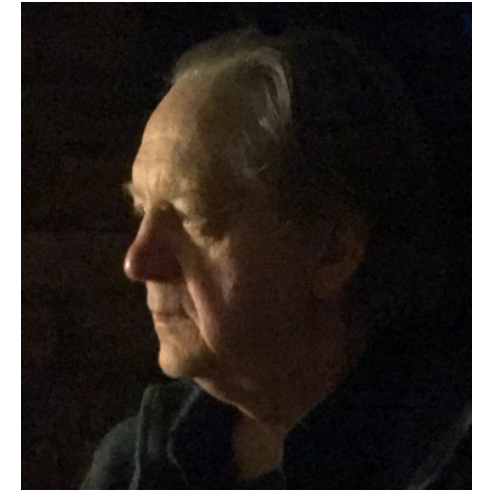
forms to interact with, animate and print. He called the system *Smallworld*.

To enable him to build these *Smallworld* generative programs into interactive works he joined Prof. Edmonds' Loughborough University of Technology Computer-Human Interface research unit (LUTCHI) as a PhD student, living and working in Loughborough and Leicester from 1985-89.

This gave Bell almost unique access to some of the most advanced computer graphic technology in the world, because at this time, Jonathan Waldern was pioneering research into VR at LUTCHI and acquired the first two non-commercial Silicon Graphics IRIS workstations in the country, which Bell helped to install and then had access to, to develop his interactive *Smallworld* art works. Versions of *Smallworld* that visitors were able to interact with were first exhibited in Brighton in 1987 and Middlesbrough and The Netherlands in 1988.

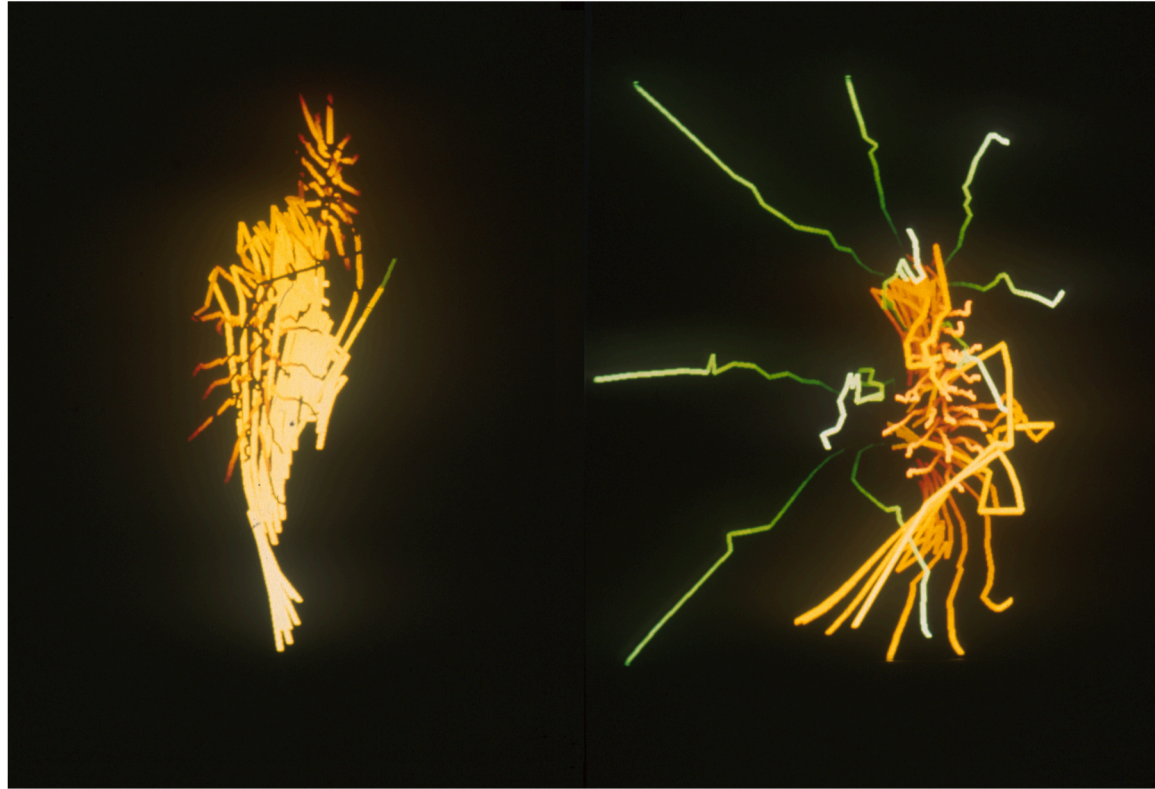
The works in this show include *Prospero and Caliban*, two images produced whilst listening to a radio broadcast of *The Tempest*, which were exhibited in Brighton. *Miranda*, a companion piece was created in 2023 using the latest version of *Smallworld* developed using Apple computers. A video recording the exploration of shapes generated by *Smallworld* which led to capture of the *Miranda* image can be seen on Bell's website

Bell received his PhD from Loughborough University of Technology in 1991. He completed his decade of enquiry into interactive art at the National Centre for Computer Animation, (NCCA) which he helped to establish in Bournemouth after having started to work there as a lecturer in 1989 to teach artists how to use computers. He retired from teaching in 2017 and currently lives in Bournemouth. He still makes his art by continuing to develop his *Smallworld* programs.

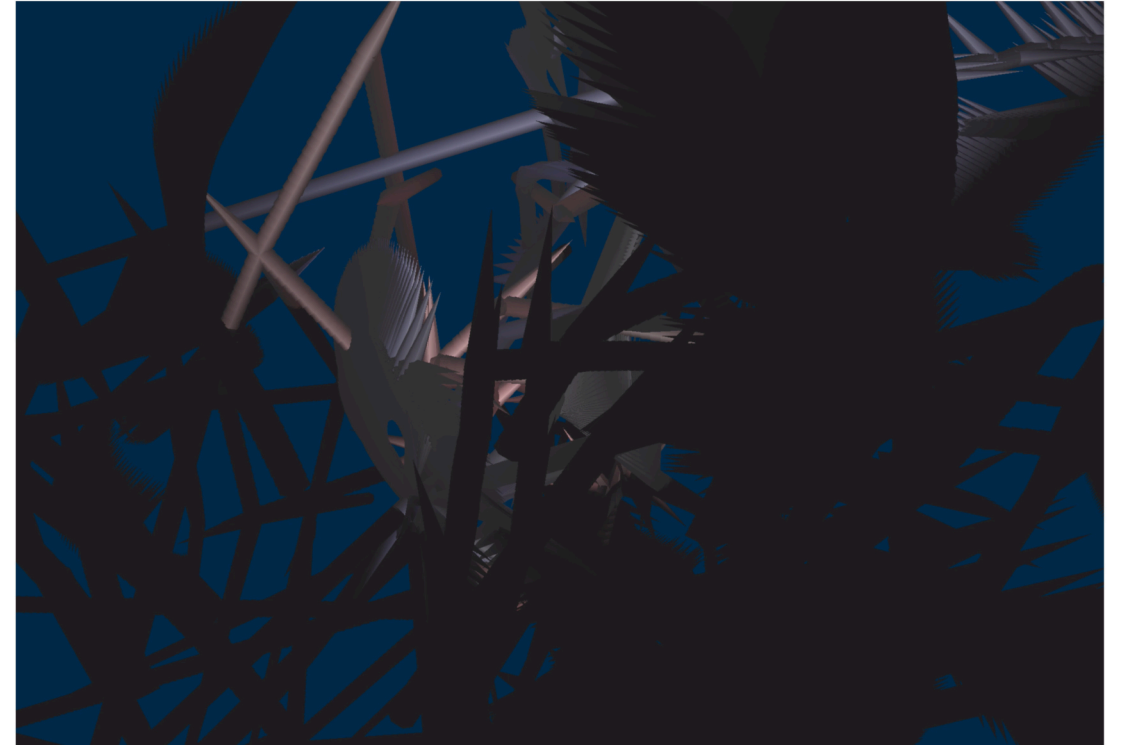


Stephen Bell pictured in 2019.





Stephen Bell. *Prospero and Caliban* (1987).



Stephen Bell. *Miranda* (2023)

# Sean Clark

*b.1965*

Sean Clark is an independent artist, curator and researcher based in Leicestershire, UK. His artwork explores interaction and connectedness through the construction of audiovisual systems presented on screen, as installations, and as prints. He is the director of Interact Digital Arts Ltd and the curator of the Computer Arts Archive. He has a PhD in Computational Art from De Montfort University and in 2016 was co-winner of the Lumen Prize for 3D/Sculpture and the ArtCHI Digital Art Prize.

Having had an interest in computers since school (where, coincidentally, he encountered books by Brian Reffin Smith), he went to Loughborough University in 1984 to study Computer Science. In his final year he worked with Stephen Scrivener and, after a short period in industry, returned to

Loughborough to work with Scrivener as a Research Assistant in the LUTCHI Research Centre led by Ernest Edmonds.

He was an early user of the World Wide Web - having created his first website, on the subject of Virtual Reality, in 1993. He went on to work on internet projects with bands such The Shamen and Zion Train in the 1990s and co-created the digital arts group Resonance in 1994. He returned to industry in 1995, although he continued to develop his creative practice. In particular he performed as a VJ under the name "VJ Cuttlefish".

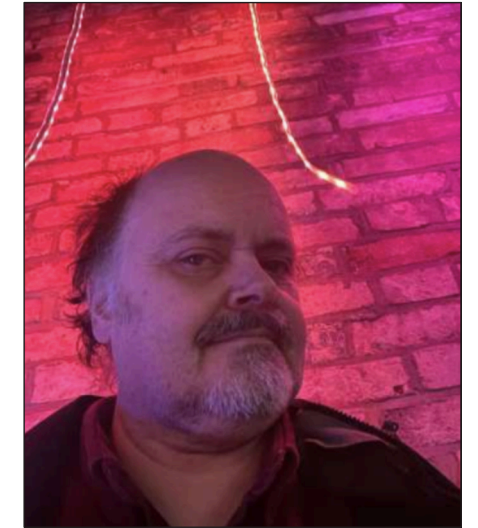
In 2000 he formed his own internet company Cuttlefish Multimedia Ltd which initially focussed on internet and CD-ROM projects for "music. arts. community". He continued to run Cuttlefish until 2020 when he left the company in the capable hands of a new management team.

Looking to develop his creative thinking further, he undertook a part-time MA in Digital Art at Camberwell School of Art

between 2006 and 2008. He started a PhD at De Montfort University in Leicester in 2009. He invited Ernest Edmonds to give a talk at the University in 2011 and Edmonds became his PhD supervisor soon after. Clark completed his PhD in Computational Art in 2018.

Sean Clark has been involved in the Computer Arts Society since 2010 and is currently Chair of the group. He is an Honorary Visiting Research Fellow at De Montfort University and is an International Professor at GDUT in Guangzhou, China. He remains committed to creating new artworks and capturing the history of computer art, particularly histories that are not part of the current historical canon.

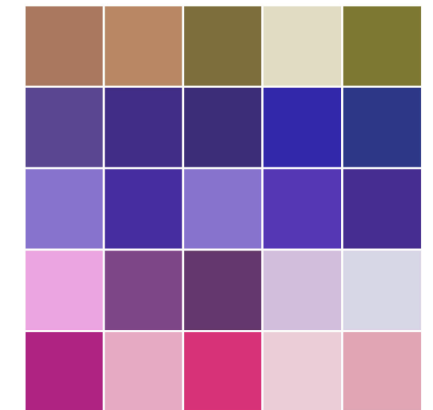
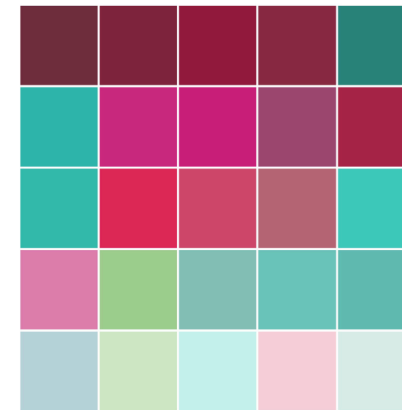
The images shown here are from *A Choreographer's Cartography* (2005), an interactive video artwork created in collaboration with writer Raman Mundair and *System One* that is representative of the more 'minimal' visual style he developed during his PhD.



Sean Clark pictured in 2022.



Sean Clark and Raman Mundair. *A Choreographer's Cartography* (2005)



Sean Clark. *System One* (2014)

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The research presented here is ongoing and feedback is welcome. Please contact Dr Sean Clark from the **Computer Arts Archive** and **Interact Digital Arts** via email using the address [seanc@interactdigitalarts.uk](mailto:seanc@interactdigitalarts.uk).

Thanks to the **Computer Arts Society** for supporting this project and to **Phoenix** for hosting the exhibition in their Café Bar.

Finally, thank you to the artists and their families for their encouragement in putting this exhibition together and for helping with the research.

A digital copy of this catalogue can be downloaded for free via the **Computer Arts Society** website.

[www.computer-arts-society.com](http://www.computer-arts-society.com)



“The sadness of most art is that it does not know its future. The  
sadness of computer art is that it does not know its past.”

– *Brian Reffin Smith*



