

EDITORIAL



The experimental generation: networks of interdisciplinary praxis in post war British art (1950–1970)

Guest editors' introduction

This special double issue of ISR came out of a conference we organized together in 2014, exploring an apparent convergence of interest in art and science around the notion of social responsibility in the 1960s. Revolutionary social change was at the forefront of many people's minds in this period: whether it involved civil rights or resistance to nuclear weapons, ethics or artistic expression, what we heard at this event was the sense of a new interdisciplinary dynamic drawing the arts and sciences together as part of a wide-ranging revolutionary agenda.

Within the decade, artistic practice had expanded beyond all boundaries. New collaborative ways of working, knowledge sharing and production had become commonplace and no discipline or situation was out of bounds for artists. How did this happen? How did ideas, methods and concepts from science and technology and other disciplinary fields infuse and expand arts practice in post-war Britain?

We acknowledged at the outset the impossibility within the scope of the Journal of mapping the full breadth and width of interdisciplinary emergence during this period. Our focus therefore has been on case studies of activities, people and projects that exemplify and encapsulate aspects of the exchanges and cross-fertilization that took place in diverse contexts. We invited contributors to describe and reflect on ways in which knowledge was produced and transposed at both individual and collective levels. One of our primary aims was to reveal networks and nodes of activity often overlooked when viewed through the lens of singular disciplinary silos and to acknowledge pioneers in critical thinking about – and early adopters of – ideas, methods and processes emerging within cybernetics, information theory, computer science and other scientific disciplines.

Cambridge

It is rarely recognized that Cambridge was something of a hotbed of interdisciplinary exploration in the 1960s. Within this issue we seek to bring some of the leading figures behind this into the foreground, from the Language Research Unit led by Margaret Masterman to the Centre for Land Use and Built Form Studies created by Leslie Martin in the Architecture Department. Cambridge was, after all, where C.P. Snow (re)ignited the 'Two Cultures' debate in 1959; where two key figures in cybernetics and systems theory, Gordon Pask and Robin McKinnon-Wood, met as undergraduates, founded their company 'System Research' and developed their first early computers. Ian Sommerville, the precocious mathematician who invented the 'Dreamachine' with Bryon Gysin was an undergraduate at Trinity College when he invited Gustav Metzger to give his first public lecture/demonstration on Auto-Destructive Art for the Heretics Society in 1960. In 1964, St Catharine's College, Cambridge, played host to the 'First International Exhibition of Concrete, Kinetic and Phonic Poetry' initiated by a young academic in the English department, Michael Weaver who gathered together over 60 works

by poets and artists from 14 countries for a week's exhibition in a Cambridge college. He worked closely with Reg Gadney, Philip Steadman and Stephen Bann who co-edited a formative issue of IMAGE magazine, on Kinetic Art: Concrete Poetry in November 1964. Steadman, Weaver and Bann went on to launch Form (1966–1969), an independent journal dedicated to:

discussion of the relations of structure to form in the work of art, and of correspondences between the arts – and thus its scope will embrace painting and sculpture, poetry and literature, architecture, music and the cinema, as well as some scientific subjects.

As a founder member of the Cambridge University Artists Group, Gadney was instrumental in spreading knowledge of Kinetic Art methods and techniques through articles in the student magazine Granta as well as the London Magazine. In 1965 Metzger was invited back to Cambridge to deliver his 'Chemical Revolution in Art' lecture attended by Bann, Gadney and Steadman. In his article for this journal Professor Stephen Bann looks back at the art and ideas that informed his book *Experimental Painting*, published in 1970, which took developments in art of the previous decade as its subject.

This issue spotlights a period that is still within living memory, and still reverberates today. In encouraging such a diversity of articles we have followed our instincts as curators rather than historians. We have gathered together a constellation of voices, from pioneers to emerging scholars, in order to encourage and facilitate unanticipated connections. Hopefully, these texts will answer some of the questions we set out to ask, and, in turn, also prompt new questions.

We believed it was both critical and timely to gather together personal accounts from some of the pioneers who were at the forefront of interdisciplinary experiment in the arts during this period. Our readers will see recurrent references within various articles to some highly significant figures. Computer software developer George Mallen, responsible for some of the first digital animations for television, recalls working with Gordon Pask at System Research, and the early days of the Computer Art Society; the distinguished anthropologist Jonathan Benthall, once critic and author of the Art & Technology column in Studio International, discusses the editorial brinkmanship of Peter Townsend at Studio International and his own encounters in the arena of art and technology. Gadney recalls moving beyond his earlier interdisciplinary experiences in Cambridge to work at MIT with György Kepes, who features also in the essay by Neal White that closes this extended issue. We are delighted that artist Stephen Willats agreed to be interviewed about his 'Conceptual Designer' period in 1965, and has also produced a special image section for the journal. Liliane Lijn was interviewed by another important pioneer, Barry Miles, the founder of International Times and Indica Gallery, where she first exhibited in 1967. Lijn recalls times spent in Paris, New York and Greece as well as in London developing her work in light, text and visual arts often using new materials. Computer artist and scientist Ernest Edmonds is in eloquent conversation here with Francesca Franco regarding the influence of systems art and theory on his developing practice, while Nick Lambert's conversations with Roy Ascott earlier this year provided crucial new insights for Lambert's analysis of Ascott's early engagement with cybernetics in his work as both an artist and teacher. The curator and writer Jasia Reichardt, who worked at both the Whitechapel Gallery and the Institute of Contemporary Arts and curated some of the most important exhibitions of the period, including *Cybernetic Serendipity* (1968) and *Between Poetry and Painting* (1965), decided not to write about herself but to draw our attention to the vanguard interdisciplinary activities of the little-known Gaberbocchus Press and the Gaberbocchus Common Room in the late 1950s in London.

Their accounts are complemented by the critical analysis of a younger generation of scholars whose historical research draws on original source materials bringing other layers of insight to this exceptionally dynamic period. This includes Greg Thomas's reappraisal of the work of the enigmatic monk and poet, dom Sylvester Houëdard. Steve Willey takes a highly insightful (and original) look at the interplay between the work of Bob Cobbing and John Latham whilst Neal White, as mentioned earlier, follows the legacy of artists such as Latham to drill down into the complex politics at the root of many art and science collaborations. Brona  Ferran connects together poetry and code through her research into the work of Hansj rg Mayer and the Cambridge Language Research Laboratory. She also interviews Paul Brown, one of the earliest artists to use generative code within his visual arts practice. We wish to dedicate this special issue to the memory of the late Gustav Metzger (1926–2017), whose fiercely idealistic approach in many ways exemplifies the revolutionary spirit of the 'experimental generation'. Here, Elizabeth Fisher looks in detail at the ways in which his political activism informed a creative engagement with science and technology.

We are indebted to all our contributors who responded so generously and engagingly to our invitations. We would also like to thank those who peer reviewed articles, the range and quality of which far exceeded our expectations. Editing this special issue has been an honour, a learning curve and a pleasure. We are most grateful to Willard McCarty for this opportunity.

Brona  Ferran

Birkbeck, University of London

 bronacf@gmail.com  <http://orcid.org/0000-0001-5052-3908>

Elizabeth Fisher

Clare College, University of Cambridge

 eaf27@cam.ac.uk



Gustav Metzger: iconoclasm and interdisciplinarity

Elizabeth Fisher

University of Cambridge, Cambridge, UK

ABSTRACT

Gustav Metzger (1926–2017) has been described as ‘the conscience of the art world’ for the consistently political content of his art and his commitment to political activism on the subject of nuclear weapons, capitalism and environmentalism. Metzger’s artistic output from the late 1950s onwards reflects a theory of art as both aesthetic form and social action and identifies him as a key precursor of activist art. This article considers the inherent interdisciplinarity of Metzger’s practice as it evolved during this early period between the late 1950s and early 1970s in relation to his agenda of social engagement.

ARTICLE HISTORY

Received 8 September 2016
Revised 6 January 2017
Accepted 6 January 2017

KEYWORDS

Gustav Metzger; activist art; auto-destructive art; auto-creative art; social engagement

To save society men must act beyond their professional disciplines, in fact must use their professions to change society. To go on limiting oneself to achievement strictly within the rules of a profession laid down by a society that is on the point of collapse, is to me a betrayal. (Metzger 1965a, 3)

Gustav Metzger said this to an audience gathered at the Architectural Association in London in July 1965. They had come for one of his lecture/demonstrations on auto-destructive art – the theory and practice of which he had been propounding since the early 1960s. Auto-destructive art was, on the face of it, a spectacular and provocative form of art as social commentary, a protest against the development of ultimately destructive technologies such as nuclear weapons, cars, pesticides and other industrial sources of environmental pollution. It took its cue from emerging forms of conceptual and performance art to challenge the notion of the autonomous art object, intervene in public spaces and extend the agency of art within society. Unlike traditional art forms, it required an interdisciplinary and collaborative approach and called for the skills, materials and expertise of scientists and engineers.

Between 1960 and 1965, the lecture/demonstration became Metzger’s primary vehicle for both testing his ideas and reaching an audience. As he made clear to his audience at the Architectural Association, Metzger saw auto-destructive art as a movement and he was looking for others – particularly those involved in an interdisciplinary and socially engaged practice such as architecture – to ‘join in this direction’ (Metzger 1965a, 2).

The conscience of the art world

Gustav Metzger has been described as ‘the conscience of the art world’ (Walker 2002, 31). His political commitments and personal ethics have played an important part in directing the course of his artistic development, leading him to explore alternative contexts and ways in which to operate as an artist. His activities have encompassed editorial work and political activism, curating and organizing symposia, writing and research alongside innovative artistic forms including performative lecture/demonstrations, kinetic sculpture and some of the earliest light projections in the UK. His output from the late 1950s onwards reflect an evolving theory of art as both aesthetic form and social action, and make him a key precursor of activist art.¹

Metzger’s early childhood as an orthodox Jew in Nuremberg in the 1930s left him acutely politicized. In 1939, he escaped with his brother on the Kindertransport to England, leaving the rest of his family behind. In his early twenties, working in a furniture factory in Leeds, he became immersed in radical left-wing politics. There, he was involved with a Trotskyist workers’ union and absorbed the theories of Marx and the philosopher and ‘natural living experimenter’,² Edmund Szekely. He discovered Eric Gill’s anti-capitalist writings on art and industrial society, which inspired him to seek work as a gardener at Harewood in 1943, then at Champneys, ‘a kind of nature-cure heaven’ where he encountered the writings of Wilhelm Reich³. Through Reich, he read Freud. He moved to Bristol in 1944 and spent six months in an anarchist community, and although it left him disenchanted with the relationship between power and politics, these experiences fuelled his desire to become an artist; ‘one who cannot accept the way things are, who has to use his whole life, including his art, to change the world, society’ (Phillpot and Metzger 1997a).

Between 1945 and 1953, Metzger studied with the artist David Bomberg at Borough Polytechnic in London. Bomberg encouraged wide-ranging interests in art and architecture, and gave Metzger a thorough grounding in the history of modernism. Bomberg, who was himself deeply concerned with the relationship between art and society and expected the same of those around him, ‘urged his students to consider both revolutionary form and content’. As Kristine Stiles notes, he ‘taught Metzger that the revolutionary formalism that had been unanimously upheld as the standard for radical art since Impressionism was insufficiently concerned with revolutionary content’.⁴ In 1997, Metzger went as far as to describe the trajectory of his own ideas ‘as a continuation, an extension of Bomberg’s’. He recalled

¹Activist art was to emerge as a coherent and identifiable set of practices in the 1960s, informed by the expanded fields of conceptual and performance art practice. Metzger introduced his theory of Auto-Destructive Art in his first manifesto, 4 November 1959. By 1965, Metzger was describing auto-destructive art as

a comprehensive theory for action in the field of the plastic arts in the post-second world war period. The action is not limited to theory of art and the production of art works. It includes social action. Auto-destructive art is committed to a left-wing revolutionary position in politics, and to struggles against future wars. (Metzger 1965a, 1)

²Szekely was a Hungarian linguist who held professorships in philosophy and experimental psychology. He founded the International Biogenic Society with French novelist and mystic Romain Rolland in 1928. https://en.wikipedia.org/wiki/Edmund_Bordeaux_Szekely Accessed 20 December 2016.

³Reich was an Austrian psychoanalyst and student of Sigmund Freud, a Marxist political theorist, and inventor of the Orgone Energy Accumulator.

⁴Bomberg took an overtly political position as an artist. According to Kristine Stiles, Bomberg recommended to the London Group in 1937 that they prohibit reactionary groups from exhibiting, join Artists International Association and Surrealist groups in supporting anti-Fascism in politics and art, grant funds for the Spanish medical aid, and give honorary membership to left wing poets and writers (Stiles 1987, 66–67).

a profound interaction between my ongoing development as an artist and my status as a favourite of Bomberg ... He was all about a response. The first teaching was to respond to life, life outside. A concern to sharpen your intuition as much as your knowledge and to be a good person. (Phillpot and Metzger 1997c)

In 1953, Metzger left Bomberg's circle and moved to King's Lynn. He set up a studio in an old warehouse, supporting himself as a second-hand book and furniture dealer. He became increasingly involved in political activism, specifically in direct action and other forms of resistance to the developments of post-war capitalist society. Metzger's targets ranged from the proliferation of nuclear weapons and the chaos of Cold War politics to the commodification of art. He established the King's Lynn CND group and spearheaded the King's Lynn North End Protest against the gentrification of the town's traditional fishing quarters. He was heavily involved in the Direct Action Committee Against Nuclear War, and took part in the 1959 Aldermaston March. He was a co-founder of the Committee of 100, and in 1961 served a prison sentence for civil disobedience as a consequence of participating in direct action protests.⁵

In terms of making art, he gradually abandoned traditional techniques and materials, and began to move away from the production of actual objects. He mounted small exhibitions in King's Lynn, the focus of which marked the emergence of two critical concerns: the relationship between art and society, and the role of destruction in creation. The first exhibition was little more than a display of posters (there were twelve different designs) for the seminal exhibition, *This is Tomorrow*, at the Whitechapel Gallery in London in 1956. Organized by the architect and writer Theo Crosby with members of the Independent Group, the exhibition included over forty artists, architects, designers and theorists working in collaboration as twelve small, interdisciplinary groups to produce installations that incorporated new and mass-produced materials, images and objects – expounding ways in which art could be inserted into the structures of modern society and daily life. Metzger visited the exhibition repeatedly and collected posters to redisplay in the street front windows of his shop/studio space at 30 Queen Street in King's Lynn. In 1957, he brought together sacred artefacts that had been mutilated and defaced during a period of iconoclasm between the English Reformation in the 1530s and the Commonwealth of 1649–1660, in an exhibition entitled *Treasures from East Anglian Churches* presented in the Crypt at Clifton House, also on Queen Street, as part of the King's Lynn Arts Festival. In Metzger's eyes the relics, rather than being diminished, had acquired greater symbolic value as a result of the destructive efforts of the Protestant reformers. This exhibition established a dialectical dynamic that found expression in the relationship between auto-destructive and auto-creative art which developed over the following decade and has remained at the core of Metzger's ongoing practice.

Auto-destructive, auto-creative

On 4 November 1959, Metzger published his first manifesto. It was printed on a broadsheet produced to accompany the exhibition of *Cardboards, selected and arranged by*

⁵Metzger was a founder member of the Committee of 100 along with Bertrand Russell, Michael Randle, Ralph Schoenman and others. The group used mass non-violent resistance and civil disobedience as a form of direct action. According to Christopher Driver, Metzger and Schoenman gave the organisation its name, as a reference to the medieval Guelph Council of 100. [https://en.wikipedia.org/wiki/Committee_of_100_\(United_Kingdom\)#cite_note-Driver-3](https://en.wikipedia.org/wiki/Committee_of_100_(United_Kingdom)#cite_note-Driver-3), accessed 30 July 2016.

G. Metzger at 14 Monmouth Street, London. On display were a selection of discarded pieces of cardboard, presumed television packaging, cut and folded by machine for a strict purpose and unadulterated by the artist except insofar as having displayed them with the aim of emphasizing their formal qualities. At the top of the page, in a short text describing the exhibition, Metzger declared 'These cardboards are nature unadulterated by commercial considerations or the demands of the contemporary drawing room. They have reference to the greatest qualities of modern painting, sculpture and architecture'.⁶ Having established parity between the formal qualities of natural and machine-produced objects and the artistic achievements of modern masters, Metzger introduced a variation on this aesthetic paradigm, in the form of the first manifesto of *Auto-Destructive Art*.

Auto-destructive art could be 'machine produced and factory assembled' in that it shared the formal qualities of found objects and unadulterated nature, but it was 'primarily a form of public art for industrial societies'.⁷ It had a limited lifespan; it could last seconds or decades, but it was not permanent, instead harnessing processes of change. It borrowed the event-structure of performance art and involved 'a total unity of idea, site, form, colour, method and timing of the disintegrative process', recalling Walter Gropius' vision of 'architecture, sculpture and painting in one unity' in the utopian Bauhaus manifesto of 1919 (Gropius 1919).

In many ways, Metzger took his lead from the early twentieth century avant-garde. The closer integration of artists with science and industry had been a fundamental tenet of Constructivism; it had underpinned the radical educational philosophy of the Bauhaus and inspired the pioneering use of plastics in the kinetic art of artists Lazlo Moholy-Nagy and Naum Gabo among others. At the same time, the form of the manifesto itself had been an important platform for mobilizing avant-garde movements from Dada to the Futurists. Moholy-Nagy in particular was an important reference point for Metzger, who perhaps thanks to Bomberg, saw his task as taking up the baton of the revolutionary avant-garde. In a seminal article on automata written in 1969, Metzger quoted Moholy-Nagy: 'This is our century: machine-technology-socialism. Come to terms with it, and shoulder the tasks of the century' (Metzger 1969, 108).

In the spirit of the Constructivists, Metzger put cross-disciplinary collaboration at the heart of his manifesto: 'The artist may collaborate with scientists, engineers' (Metzger 1959). Less than six months prior to this, the British scientist and novelist CP Snow had re-ignited public debate over perceived differences between the arts and sciences with his lecture, *The Two Cultures and the Scientific Revolution*.⁸ Metzger saw his opportunity. He approached the English critic Lawrence Alloway, then director of the Institute of Contemporary Arts, asking for help to establish contacts between artists and scientists. The requested help was not forthcoming, but Metzger found a like-minded supporter in the form of assistant director Jasia Reichardt, who introduced his first demonstration of auto-destructive art at the Temple Gallery in June 1960.⁹ In an article published in

⁶Metzger, Gustav 'Auto-Destructive Art' First manifesto. London, 4 November 1959.

⁷Ibid.

⁸The University of Cambridge Annual Rede Lecture, Senate House, 7 May 1959. Metzger described Snow's lecture as a decisive moment both for his own development and in the wider cultural context of the 1960s. Conversation with the author, May 2014.

⁹According to Stiles, Reichardt also invited Metzger to participate, along with the philosopher Stephan Themerson, the physicist David Bohm, and an art therapist, in an evening of discussion and presentations on auto-destructive art at

1962, Metzger went further: ‘The study and appreciation of *Machine Art* involves technology, sociology, psychology and other branches of knowledge. The next step in *Machine Art* is the entry of the artist into factories ...’ (Metzger 1962a). His calls to foster interdisciplinary exchange pre-dated high profile projects such as *Experiments in Art and Technology* and *The Artist Placement Group* (both 1966) by several years.

The *Auto-Destructive Art* manifesto marked the start of a particularly intense period in which his activism and artistic practice became increasingly intertwined. The manifesto played a central role in articulating this; by 1964, Metzger had produced five manifestos. His second manifesto, *Manifesto Auto-Destructive Art* (10 March 1960), served to embed a clear anti-capitalist, anti-war message. As a response to ‘the immense productive capacity, the chaos of capitalism and of Soviet communism, the co-existence of surplus and starvation ... the disintegrative effect of machinery and of life in vast built-up areas on the person’, auto-destructive art was to ‘re-enact the obsession with destruction’, ‘demonstrate man’s power to accelerate disintegrative processes of nature and to order them’ and ‘mirror the compulsive perfectionism of arms manufacture’. Auto-destructive art would achieve this through ‘the transformation of technology into public art’ (Metzger 1960). Listing examples of materials and techniques – from ballistics and cybernetics to nuclear energy – that could be used to create auto-destructive art, Metzger firmly located this new art form in a field of enquiry that aligned the artist with scientists and engineers and attempted to open a conversation between scientific research and artistic practice. Auto-destructive art would not produce permanent objects and could not be manipulated by the art market. It was conceived for a new society forged, as Harold Wilson put it, in ‘the white heat’ of a scientific revolution.¹⁰

The third manifesto, dated 23 June 1961, began by reiterating the aesthetic principles of the first manifesto. ‘Each visible fact absolutely expresses its reality. Certain machine-produced forms are the most perfect forms of our period. In the evenings, some of the finest works of art produced now are dumped on the streets of Soho’ (Metzger 1961). This last line referred specifically to bags of textile offcuts, which, like the *Cardboards*, had been thrown out by the fashion houses along Great Marlborough Street. Metzger collected these bags and presented them as *objets trouvés* at a number of events in the early 1960s (Figure 1).

Echoing the format of the first manifesto, Metzger moved swiftly on to introduce *Auto-Creative Art* in the fourth line. In contrast with auto-destructive art, ‘an attack on capitalist values and the drive to nuclear annihilation’, auto-creative art was described as ‘art of change, growth, movement’. Deploying the same materials and processes, both auto-

the ICA in 1961, but the event was cancelled (Stiles 1987, 35). At the ICA, Reichardt curated numerous interdisciplinary exhibitions including the seminal *Between Poetry and Painting* (1965) and *Cybernetic Serendipity* (1968).

¹⁰

It is, of course, a cliché that we are living at a time of such rapid change that our children are accepting as part of their everyday life things which would have been dismissed as science fiction a few years ago. We are living perhaps in a more rapid revolution than some of us realise. The period of 15 years from the last time we were in Scarborough, in 1960, to the middle of the 1970s, will embrace a period of technological change, particularly in industrial methods, greater than in the whole industrial revolution of the last 250 years. When you reckon, as it is calculated, that 97% of all the scientists who have ever lived in the history of the world since the days of Euclid, Pythagoras and Archimedes, are alive and at work today, you get some idea of the rate of progress we have to face ... we are re-defining and we are re-stating our Socialism in terms of the scientific revolution ... The Britain that is going to be forged in the white heat of this revolution will be no place for restrictive practices or for out-dated methods on either side of industry. (Wilson and Harold 1963)



Figure 1. Gustav Metzger, 1960 Photograph by Ida Kar © National Portrait Gallery, London.

destructive art and auto-creative art, according to Metzger, aimed ‘at the integration of art with the advances of science and technology’. Auto-creative art, unburdened by the weight of political critique, allowed Metzger to pursue a broader spectrum of aesthetic experiences, defining a new role for the artist in relation to the work of art (further removed from the act or gesture itself), and a new form of art. ‘The immediate aim’ he wrote, ‘is the creation, with the aid of computers, of works of art whose movements are programmed and can include “self-regulation”’ (Metzger 1961).

‘Artist acts in a political framework whether he knows it or not. Whether he wants to or not. The quantity of experience the artist has to pack into a work is so vast now, it is not possible to compress it all into the space of an object’ wrote Metzger in *Manifesto World*, his fourth manifesto, on 7 October 1962. Written in the context of ‘a world on edge of destruction’, just days before the Cuban Missile Crisis, Metzger also used the manifesto to lambast the bourgeois art world and the inadequacy of object-based art in the face of such reality. ‘Artist cannot compete with reality. [...] Artist cannot integrate within himself all the experiences of the present. He cannot render it in painting and sculpture’. He concluded ‘It is a question of a new artistic sensibility’ (Metzger 1962b).

By September 1964, in his fifth manifesto, *On Random Activity in Material/Transforming Works of Art*, Metzger had arrived at the all-encompassing term ‘material/

transforming art'. The self-regulation posited in the third manifesto (1961) and the new artistic sensibility suggested in the fourth finds expression as molecular theory and random activity in the fifth. The artist's relation to the work is explained thus: 'At a certain point, the work takes over, is in activity beyond the detailed control of the artist, reaches a power, grace, momentum, transcendence ... *which the artist could not achieve* except through random activity' (Metzger 1964). Ranging from nuclear annihilation to random molecular activity, Metzger's manifestos define art as the world as he experienced it and vice versa.

The same period (1959–1964) saw Metzger experimenting with new materials and techniques, developing an aesthetic lexicon that drew on scientific ideas, and required engineers, computer programmers and scientists as advisors and collaborators. He began to develop proposals for public art works such as *Model for an Auto-Destructive Monument* (1960), which relied on a principle and technique 'suggested by Mr E. Ll. Evans, who worked in the corrosion of metals research group at the National Chemical Laboratory' (Metzger 1965a, 19) and the unrealized *Five Screens with Computer* (1965–1969), a complex, ambitious proposal developed in consultation with different people at different stages, the first of whom was Beverley Rowe, then Head of Applications at the University of London Computing Centre. Another key technique developed during this time involved a chemical reaction between hydrochloric acid and the synthetic fabric, nylon.

On 3 July 1961, dressed in protective gear including a gas mask, Metzger performed *Recreation of First Public Demonstration of Auto-Destructive Art* on the South Bank in London.¹¹ It was a guerrilla intervention in public space without official sanction; Metzger had originally proposed it in response to an invitation from the architect and writer Theo Crosby to participate in the International Union of Architects (IUA) summer conference on the theme of 'the architecture of technology'. When the IUA withdrew its support at the last minute, Metzger went ahead with the event, helped by a team of architecture students. In a broadsheet that was handed out to bystanders at the event, also known as his third manifesto, which included his third manifesto *Auto-Destructive Art Machine Art Auto-Creative Art* alongside the first two manifestos, he described the work thus:

Acid action painting. Height 7', Length 12' 6." Depth 6'. Materials: nylon, hydrochloric acid, metal. Technique. 3 nylon canvases coloured white black red are arranged behind each other, in this order. Acid is painted, flung and sprayed onto the nylon which corrodes at point of contact within 15 seconds. (Metzger 1961) (Figure 2)

Metzger had moved from making recognizable 'paintings' with oil paint on various supports such as cardboard and steel in a studio to executing the same actions with different materials in a public setting. He had switched attention from the object to the event of painting itself, and turned a simple chemical reaction into a symbolic act on several levels. In 2009, Metzger recalled, 'I was very aggressive putting the acid onto that nylon ... it was partly me attacking the system of capitalism, but inevitably also the systems of war, the warmongers, and destroying them in a sense symbolically'.¹²

¹¹The first public demonstration of auto-destructive art took place at Temple Gallery, London on 22 June 1961.

¹²Metzger quoted in Peyton-Jones and Obrist (2009), 25.

AUTO-DESTRUCTIVE ART

Demonstration by G. Metzger

SOUTH BANK LONDON 3 JULY 1961 11.45 a.m.—12.15 p.m.

Acid action painting. Height 7 ft. Length 12½ ft. Depth 6 ft. Materials: nylon, hydrochloric acid, metal. Technique. 3 nylon canvases coloured white black red are arranged behind each other, in this order. Acid is painted, flung and sprayed on to the nylon which corrodes at point of contact within 15 seconds.

Construction with glass. Height 13 ft. Width 9½ ft. Materials. Glass, metal, adhesive tape. Technique. The glass sheets suspended by adhesive tape fall on to the concrete ground in a pre-arranged sequence.

AUTO-DESTRUCTIVE ART

Auto-destructive art is primarily a form of public art for industrial societies.

Self-destructive painting, sculpture and construction is a total unity of idea, site, form, colour, method and timing of the disintegrative process.

Auto-destructive art can be created with natural forces, traditional art techniques and technological techniques.

The amplified sound of the auto-destructive process can be an element of the total conception.

The artist may collaborate with scientists, engineers.

Self-destructive art can be machine produced and factory assembled.

Auto-destructive paintings, sculptures and constructions have a life time varying from a few moments to twenty years. When the disintegrative process is complete the work is to be removed from the site and scrapped.

London, 4th November, 1959

G. METZGER

MANIFESTO AUTO-DESTRUCTIVE ART

Man in Regent Street is auto-destructive. Rockets, nuclear weapons, are auto-destructive. Auto-destructive art.

The drop drop dropping of HH bombs.

Not interested in ruins, (the picturesque)

Auto-destructive art re-enacts the obsession with destruction, the pummeling to which individuals and masses are subjected.

Auto-destructive art demonstrates man's power to accelerate disintegrative processes of nature and to order them.

Auto-destructive art mirrors the compulsive perfectionism of arms manufacture—polishing to destruction point.

Auto-destructive art is the transformation of technology

into public art. The immense productive capacity, the chaos of capitalism and of Soviet communism, the co-existence of surplus and starvation; the increasing stock-piling of nuclear weapons—more than enough to destroy technological societies: the disintegrative effect of machinery and of life in vast built-up areas on the person....

Auto-destructive art is art which contains within itself an agent which automatically leads to its destruction within a period of time not to exceed twenty years.

Other forms of auto-destructive art involve manual manipulation. There are forms of auto-destructive art where the artist has a tight control over the nature and timing of the disintegrative process, and there are other forms where the artist's control is slight.

Materials and techniques used in creating auto-destructive art include: Acid, Adhesives, Ballistics, Canvas, Clay, Combustion, Compression, Concrete, Corrosion, Cybernetics, Drop, Elasticity, Electricity, Electrolysis, Electronics, Explosives, Feed-back, Glass, Heat, Human Energy, Ice, Jet, Light, Load, Mass-production, Metal, Motion Picture, Natural Forces, Nuclear energy, Paint, Paper, Photography, Plaster, Plastics, Pressure, Radiation, Sand, Solar energy, Sound, Steam, Stress, Terra-cotta, Vibration, Water, Welding, Wire, Wood.

London, 10 March, 1960

G. METZGER

AUTO-DESTRUCTIVE ART MACHINE ART AUTO CREATIVE ART

Each visible fact absolutely expresses its reality.

Certain machine produced forms are the most perfect forms of our period.

In the evenings some of the finest works of art produced now are dumped on the streets of Soho.

Auto creative art is art of change, growth movement.

Auto-destructive art and auto creative art aim at the integration of art with the advances of science and technology. The immediate objective is the creation, with the aid of computers, of works of art whose movements are programmed and include "self-regulation". The spectator, by means of electronic devices can have a direct bearing on the action of these works.

Auto-destructive art is an attack on capitalist values and the drive to nuclear annihilation.

23 June 1961

G. METZGER

B.C.M. ZZZO London W.C.1.

Printed by St. Martins' Printers (TU) 86d, Lillie Road, London, S.W.6.

Figure 2. Broadsheet distributed at the South Bank demonstration of auto-destructive art, 3 July 1961. Includes manifestos 1–3.

Metzger was at odds with the uncompromisingly self-referential modernist agenda of American Abstract Expressionism, not least for its association with U.S. foreign policy and the rhetoric of capitalism during the Cold War. Its influence had effectively embedded the notion of the autonomy of the art object within critical discourse and served to disengage art from any extraneous social context. Metzger's evolving praxis was one of many forms of resistance – from Gutai in Japan to Fluxus in Darmstadt and New York – to

the relationship between art and capitalism, and to the potentially perilous notion of ‘disinterested’ appreciation of the autonomous art object.

Working with new materials, forms and drawing on spheres of expertise beyond the traditional scope of art, Metzger saw a way to repudiate the notion of art’s autonomy and reinstate its social function. Between 1959 and 1972, he produced a number of auto-creative and auto-destructive art works. Some, like the *acid-action painting* revealed an explicitly political position; others expressed his radical aesthetic agenda. Underpinning everything was a desire for revolutionary change, in artistic and social realms. ‘Auto-destructive art seeks to be an instrument for transforming people’s thoughts and feelings, not only about art, but wants to use art to change peoples’ relation to themselves and society’, Metzger told the audience at the Architectural Association in 1965 (1965, 3). In works that included unrealized proposals for public art works that corroded or disassembled themselves, light projections through various fluids to capture effects such as Brownian motion, and kinetic sculpture-as-event, Metzger harnessed the physical properties of materials, chemical reactions and natural forces to establish an aesthetic of transformation, which embodied the rhetoric of revolutionary change at a symbolic level.

Alongside and in tandem with these works and his manifestos, Metzger was developing the hybrid format of his lecture/demonstrations, which as Andrew Wilson has noted, became a critical platform to contextualize and test his theories in front of audiences (Wilson 2008, 187).¹³ He adapted the template of a traditional academic lecture to develop a mode of artistic enquiry and production that also challenged the conventions of knowledge production, confronting the historical conditions and methodologies of public discourse. In this, he was a pioneer. Today, the lecture/demonstration or lecture/performance is seen as a sub-genre of Performance Art, a form of institutional critique, and its proliferation and theorization is well documented.¹⁴ Again lecture/demonstrations pre-date many other significant examples of the genre, including Robert Morris’ 21.3 (1964), Joseph Beuys’ *Information Action* (1972) – which Metzger attended – and Dan Graham’s *Performer/Audience/Mirror* (1975).

While Metzger’s lecture/demonstrations developed as a reflexive art form blending radical aesthetics, rhetoric and activism, they were as Wilson points out, ‘manifesto-as-form’ (Wilson 2008, 178) – essentially vehicles for a political message. Metzger adapted the particular performance techniques and pedagogical function associated with the lecture format, and added elements such as moving image projections, installations and live actions, significantly enhancing the perceptual experience in order to convey this message. He presented audiences with techniques still in development and ideas as detailed propositions for unrealized (and unrealizable) public art works, putting greater emphasis on the hypothetical and the work-in-progress. Occasionally Metzger created a

¹³Wilson’s article draws particular attention to the central role of the ‘manifesto-as-form’ in Metzger’s early work:

Metzger linked his production of manifestos with the form of the Lecture/Demonstration – the Lecture/Demonstration being a performative realisation of the manifesto to explain and declare the aims and beliefs underpinning auto-destructive art and show clearly its relevance and meaning to a contemporary audience, while at the same time remaining apart from the structures of the art market – there being no by-product, nothing to sell.

¹⁴Conferences have been organised and MA theses written on the subject. See for example: <http://www.e-flux.com/announcements/between-art-and-academia-lecture-performance/>, <http://thepublicschool.org/node/29191>; <http://www.theoffice.li/html/lecture.htm>, <http://gabrielledevietri.com/files/gdvmffinal.pdf>, <https://verysmallkitchen.com/2011/12/20/kitchen-essay-artists-talking-at-the-doubting-interface/> and Milder, Patricia. 2011. “Teaching as Art: The Contemporary Lecture Performance.” *Performance Art Journal* 97: 13–27.

complete visual environment for his lecture/demonstrations. His second lecture/demonstration, hosted by Cambridge University Heretics Society at Trinity College in 1960, included an elaborate installation of all his *Cardboards*, several *Bags* suspended from the ceiling and a miscellany of metal ‘forms’ plundered from skips around the university. He also covered the walls of the hall with the pages of that day’s newspapers.

Between his first lecture/demonstration at the Temple Gallery in 1960 and ‘The Chemical Revolution in Art’ at the Engineering School of the University of Cambridge in 1965, the format developed into a multi-layered event. Crucially, it provided Metzger with access to industrial-quality slide projectors, which enabled him to develop a range of startling visual effects. In February 1963, he incorporated his first light projection in a lecture at the Bartlett School of Architecture. Instead of a photographic slide, Metzger inserted a slide covered with nylon and painted with hydrochloric acid, so that the process of dissolving nylon was magnified and illuminated by the light of the projector. Metzger’s innovative light projections evolved rapidly and by late 1965, they had become complex, spectacular visual events. That year, at a benefit event for the ICA held at the Theatre Royal in Stratford, London, organized by the artists Mark Boyle and John Latham, Metzger used three large theatre projectors and a rear projector to project a variety of images simultaneously or in quick succession onto a large screen that spanned the entire stage.

Among the techniques he demonstrated, a circuit board used to build electronic equipment, was dipped in water and sprayed with graphite then inserted into the projector, which resulted in a ‘complex, always changing, very fast moving image’ (Figure 3). He used the circuit board in combination with laboratory tubes partially filled with glycerine:

A glass rod, almost as wide as the tube was slowly plunged into the tube. The glycerine was forced upwards in continuous motion. When projected through the hundreds of tiny holes, each of which was a water-filled prism – sensational. Endless unrepeatable change.¹⁵

In another technique, black ink droplets fell into slide-shaped vials wedged between the projector bulb and lens and filled with water mixed with glycerine to slow down the dispersal of the ink. Metzger varied the effects by moving the lens forward and back. Such a projection of moving, changing images, he recalled, ‘Had never been seen before (in London). The audience seemed shocked’ (Stiles 1987, 170).

Soon after the ICA benefit, Metzger was invited to give a second lecture/demonstration in Cambridge, this time at the invitation of the student-run Society of Arts. This lecture/demonstration, known as the ‘Chemical Revolution in Art’ took place in November 1965; architecture student Robin Nicholson was responsible for organizing the event, which turned out to be the most ambitious ever, including ten different light projection techniques (Figure 4). Metzger decided the event in Cambridge was his opportunity to pursue something he had read about liquid crystals in the August 1964 issue of *Scientific American*, and asked Nicholson to put him in touch with a scientist. Nicholson made contact with the protein chemist and immunologist Arnold Feinstein through his Feinstein’s wife, the poet Elaine Feinstein.¹⁶ Metzger brought some liquid crystal samples

¹⁵Metzger quoted in Stiles (1987), 170.

¹⁶Stiles’ interview with Robin Nicholson provides some insight into this critical meeting. According to Nicholson, Metzger had read the *Scientific American* article and ‘like a lot of artists only half understood what was being talked about but appreciated the potential.’ Nicholson and Metzger went to Feinstein’s house for the first time the night before the lecture/demonstration. Stiles quotes Nicholson at length:



Figure 3. Portrait of Gustav Metzger in a projection using circuit boards during his lecture/demonstration *The Chemical Revolution in Art*, 1965, University of Cambridge Engineering Schools.

that he had obtained from the chemical company, Merck, and Feinstein helped Metzger develop a technique to manipulate the liquid crystals in such a way as to produce constantly changing visual effects, which he attempted (unsuccessfully) to demonstrate as

... none of us had met him before except through telephone calls and we had coffee and talked and things like that. Gustav talked about liquid crystals and this guy said, yes he was working on them. Then we discovered that he had a laboratory in his house. So we moved to the laboratory where one of the most amazing evenings of my life took place. The bloke had seen what Gustav was interested in and had been doing it all the time. But the scientist was only interested in it from a physical end. Gustav was over the moon. But in the way that he is, he was also completely out of control and was always burning himself and telling everyone not to worry when actually he was the only one that was in a stew. He was always picking up red-hot bits of glass. We definitely had the facility to put this thing in a slide projector and heat it up and project it in quite a small room. And it (the crystals) did do all the things they are meant to do – change constantly and everything else. Now we did this in the lab and it was 3 o'clock in the morning before we actually got it working. We were all very excited about it and the problem was how to get it to work the next evening at the lecture. It didn't work and the scientist didn't come and nothing went right.

Stiles: you needed the scientist to make it work properly?

Nicholson: Partly. By that stage I wasn't in a fit state to keep things cool.

Stiles: Gustav didn't know how to do it?

Nicholson: Gustav is not very good at organising things like that, very precise physical conditions – the right temperature, you know, and so many things can go wrong. We were trying to do it with an ordinary projector. (Stiles 1987, 179).



Figure 4. Gustav Metzger setting up equipment for *The Chemical Revolution in Art* lecture/demonstration, University of Cambridge Engineering Schools, 1965.

part of ‘The Chemical Revolution in Art’ lecture/demonstration. Within weeks Metzger had mastered the technique and presented a successful iteration of the liquid crystal technique at Better Books in London. He continued to use liquid crystals in lecture/demonstrations and exhibitions, eventually creating *Liquid Crystal Environment*, a large-scale installation work with five projections, conceived for an exhibition in 2005 (Figure 5). According to Metzger, the liquid crystal work had culminated decades earlier,

with a clearly worked out project for a kind of meditation centre, a renewal ground for people entirely based on liquid crystal. I discussed this in the early 1970s ... with Cedric Price in his office, and again with Frank Popper in his office in December 1982 when he wanted me to show it at the Elektra Exhibition 1983. (Stiles 1987, 184)

With his liquid crystal experiments and other light projection techniques, Metzger was not alone in pursuing radical new perceptual experiences capable of inducing altered states of consciousness in this period.¹⁷ Very little evidence survives of these light projections, but in 1966, the Benedictine monk and concrete poet Dom Sylvester Houédard wrote the only known description:

1. Polarizers in crossed position: insertion of liquid crystals: the effect as I remember is gentle wavering between slightly coloured intensities of light – paler than even hand-tinted Bombay films
2. ‘two pieces of perforated metal’ add water: move in relation to each other: this was dramatic and exactly the effect I aimed at in one of the kinetic poems conceived (still unmade) for the Cambridge 64 kinkon – a multi-flip like lighting up skyscraper – windows in controlled random-pattern rhythms

¹⁷Others included Gysin & Sommerville’s *Dreamachine* (1961) and Mark Boyle and Joan Hills’ early projections, *Son et Lumière* for Earth, Air, Fire and Water (1966).



Figure 5. *Liquid Crystal Environment* 1965/2005, from the exhibition *Gustav Metzger: Lift Off!* at Kettle's Yard, University of Cambridge, 2014. Photograph by Paul Allitt. Courtesy Kettle's Yard.

3. 'copper mesh with water: this dries out in heat of projector lamp add graphite to mesh: add glycerine: fast motion of graphite particles: yet this registered as a tamer experience

4. 'ink dripped into plastic containers filled with water: water at times mixed with glycerine: inverted gravity showed these beard forms mushrooming upwards – rigid control bouncing it off the invisible edges – elusive semi-freedom of a live Rorschach blot – elusive menace as it closes in to totally fill square lighted area & destruct all available counter-space – then blast of emerging into outer-counter-space as container is removed from projector – reminded of ambiguous psycho-sensation (birth trauma?) cathartic collapse of scenery in *le balcon*

5. 'projection of liquid crystals imprisoned between 2 thin sheets of glass: used with 2 pieces of polaroid: images made very quiet impact – I became acutely conscious this was like TV-screen – but bringing nothing in from outside – why not use this in a flick-a-disc – would a William palmer be lit like this?

6. 'microscope slide burned & melted with gas flame': is this what arson's pleasure means? The decoiling purity of the black wisp was a suprematis & relentless death – caress, - bearable only because beautiful & too quick

7. two pieces of perforated plastic: water: move in relation to each other: some use of polaroid: this was the moment of op beauty

8.1 liquid crystals: heat by gas flame: no Polaroid: chemical bubble mild colour change

8.2 liquid crystals: heat by gas flame: with Polaroid: chemical melts – rapid change from intense colour to total black out of field

8.3 liquid crystals cooling: with Polaroid: slow return of colour: formation of little close packed 4 leaved clovers like crosses or flowerbuds in islands of colour: these buds pirouette every time on piece of Polaroid is rotated – no sense of illusion like n.7 – this is nature not magic – a new world it is still part of our solar system – like cosmonauts looking over to this planet of flowerbud continent – a strategy map covered with kinetic stickpins – I can accept the projector now as telescope or microscope – not as magic lantern – yes psychologically was this destruction? This inviting glimpse before it cooled too far of a humanly

habitable Barbarella space-world could always be repeated with the same apparatus – the same crystals even not identically & in that sense it did extend the range of a Frank Malina or Ninocalos machine – nothing was destroyed except replaced heat – of all 8 events 4 & 6 were the only ones that achieved beauty thru real destruction – this was the point to be reminded that the announced titled included ‘auto-constructed-art – this n.8 was the event illustrated in the 10 Jun weekend Telegraph where Mario Amaya (who was unable to take part in the symposium) is actually made to say ‘It really should be called auto-constructive’ – the destruction of form thru change was to be a key to the entire discussion.

It was a cinema-like art form – a public art with all the eroticism of people sitting in a dark room confronted by light and shadows moving over a screen giving a direct physical impact often very rigorous. It was also theatrical in the rapport between Metzger’s activities and the resulting projection – metamorphoses of shapes – auto-creative tradition of Arcimboldo, Erasmus, Darwin, de Louthembourg, Pere Castel, Scriabin, Moholy-Nagy, Agam. Sometimes parts of what seemed to be like part of improvisation were quite rigorous – a kind of moiré effect of two superimposed grids – their more sensuous parts were produced toward the end by the liquid crystals and polaroid. (Houédard 1966) (Figure 6)

For Metzger, expanding consciousness had an implicit social dimension. At the Architectural Association in July 1965, he declared ‘Auto-destructive art is a comprehensive theory for action in the field of the plastic arts in the post-second world war period. The action is not limited to theory of art and the production of art works. It includes social action. Auto-



Figure 6. Detail, *Liquid Crystal Environment* 1965/2005, from the exhibition *Gustav Metzger: Lift Off!* at Kettle's Yard, University of Cambridge, 2014. Photograph by Paul Allitt. Courtesy Kettle's Yard.

destructive art is committed to a left-wing revolutionary position in politics, and to struggles against future wars' (Metzger 1965, 1).

Architecture had been an important influence for Metzger – from the medieval architecture of his childhood in Nuremberg to seminal encounters with Alison and Peter Smithson's work in the early 1950s. When he was living in King's Lynn, the Smithsons' first major public building, Hunstanton Secondary School (1954), was being built just down the road. Effectively a manifesto for Brutalism, their ideological and ethical approach appealed to Metzger, who visited the building repeatedly during its construction. The Smithsons were also participants in the seminal, and for Metzger, highly influential, exhibition *This is Tomorrow*.

Architects represented an important audience for Metzger, who saw not only opportunities to intervene and instigate revolution within the social fabric through the built environment, but also to exploit new materials and technologies on a spectacular scale. In an article published in *Ark* in 1962, Metzger described the London Transport Electricity Substation at Elephant and Castle as 'one of the most advanced forms of Auto-Creative Art in existence'. He continued

The walls of this building are composed of over 800 identical pressed stainless-steel panels. The panels were shaped to the architect's specifications and are highly reflective. The building is seen by thousands of people day and night, often from vehicles in motion. It creates an enormous quantity of significant images through spectator participation, sunlight, atmospheric conditions, vehicle lights and street-lighting. This great work of art is far more than an elaborate light reflector. It proves beyond doubt that only the collaboration of the artist and technology and the use of machine forms can give us certain experiences we need (Metzger 1962a).

Equally, Metzger's ideas about random and auto-destructive processes, revolutionary social change, temporary, interactive and kinetic structures found a receptive audience at the Architectural Association and traction within the experimental discourses around architecture in the 1960s.¹⁸ The South Bank event (1961) had made Metzger something of a celebrity figure amongst architecture circles; Cedric Price borrowed a copy of Harold Liversidge's film of the performance, and it was the architect theorist Royston Landau who invited Metzger to lecture at the Architectural Association. The young student Charles Jencks later borrowed Metzger's lecture notes.¹⁹

Metzger developed various detailed models and proposals for monumental public art works on an architectural scale; perhaps the most ambitious of which was *Five Screens with Computer* (1965–1969). He introduced it to his audience at the Architectural Association thus:

This sculpture consists of five walls or screens about thirty feet in height and forty feet long and two feet deep. They are arranged about twenty-five feet apart and staggered in plan. I envisage these in a central area between a group of three very large densely populated blocks of flats in a country setting. (Metzger 2015, 19)

Each wall would contain ten thousand uniform elements – made of steel, plastic or glass – which would be randomly ejected from the wall to crash onto the ground below, over a

¹⁸The hypothetical also had currency; precedents included Yves Klein's concept of Air Architecture (1958–62), Cedric Price's Fun Palace (1961) and Peter Cook's Plug-in City (1964).

¹⁹According to Stiles, Jencks borrowed a copy of his writings while still a student; Price borrowed a copy of the film of the South Bank Demonstration and Metzger later discussed a project for a kind of meditation centre for people entirely based on liquid crystal (Stiles 1987, 125).

period of ten years. A computer programme would be devised to control the ejections. The siting and scale of this sculpture were critical factors in achieving the desired physical and psychological impact. Technological, architectural auto-destructive art mirroring 'the dis-integrative effects of machinery and of life in vast built-up areas on the person' (Metzger 1960). He was unequivocal in challenging his audience to raise their game:

I have said that people must use their profession to change society. Architecture and town planning are among the most exposed professions today. You can go on confined by millenniums of traditions and taboos and help build our self-destructive society. You have the alternative of using architecture to unhinge these traditions and taboos. Instead of going on with the interminable large scale construction and competition, you can find from within the core of the discipline, concepts and forms that will shatter existing mental and physical structures in architecture as radically as auto-destructive art has done in art. Architecture can be used to undermine values, to protest, subvert and destroy. From this approach might emerge the great architectural form you are no doubt seeking. (Metzger 1965, 22)

Architecture students assisted Metzger with the South Bank demonstration, and it was an architecture student who organized Metzger's 'Chemical Revolution in Art' lecture in Cambridge (putting Metzger up in his college room and playing an instrumental role in Metzger's first liquid crystals experiments). Metzger also called on architects to help him develop design studies for *Five Screens with Computer*. He worked with Richard J. Stibbs, a research assistant at the Centre for Land Use and Built Form Studies, a research group set up by Leslie Martin within the Architecture Department at the University of Cambridge, to produce a number of plotter drawings as design studies for *Five Screens with Computer*. The drawings were programmed in FORTRAN 66 by Anthony W. Nutbourne and created on TITAN, the University of Cambridge Mathematics Department's mainframe computer²⁰ (Figure 7). Metzger continued to present such design studies in lectures and as contributions to exhibitions such as Jasia Reichardt's *Cybernetic Serendipity* at the ICA in 1968 and Event One at the Royal College of Art in 1969.²¹

Post-manifesto

In 1966, Metzger expanded his efforts to mobilize and inform, and to reach new audiences. In the space of six months, he organized two interdisciplinary symposia. The first, a modest day-long event in May 1966 at Ravensbourne College, was entitled 'Creation, Destruction and Chemical Change.' It involved mostly artists and writers, including Mark Boyle, Dom Sylvester Houédard, John Latham and Ivor Davies. Hot on its heels, in September 1966, Metzger and the poet John Sharkey organized the Destruction in Art Symposium (DIAS): a ground-breaking, two-day symposium and month-long programme of events which ran from 31 August to 30 September 1966.

The first press release for DIAS, which went out in April 1966, declared their aim

to create an opportunity for artist, writers, psychologists, sociologists, and other scientists to meet and exchange ideas. DIAS aims to assemble the maximum amount of information on

²⁰For more on TITAN, see 'TITAN computer / Bridging the Cultures: Architecture, Models and Computers in 1960s Cambridge' by Prof. Dean Hawkes, also in this issue. Metzger also worked with a D. E. Evans to produce a computer-generated drawing entitled *Design Study for Five Screens with Computer* (1969) using an IBM 7094 II and a CalComp plotter 536 (Rosen 2011, 426).

²¹See Reichardt (1968) and Lansdown et al. (1969).

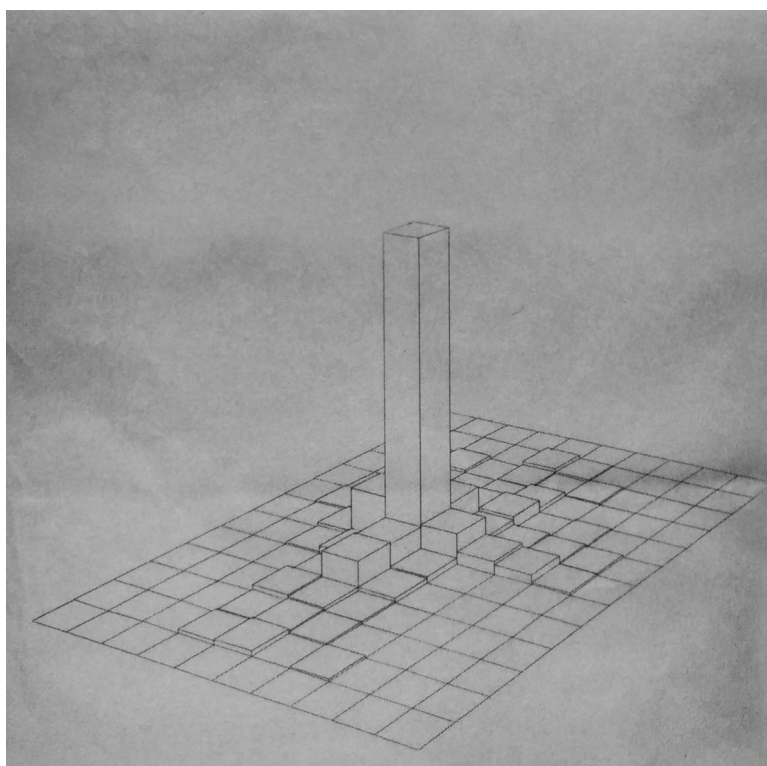


Figure 7. Gustav Metzger, Richard J. Stibbs, *Design Study for Five Screens With Computer*, March 1969. Photocopy of a plotter drawing. Programmed in FORTRAN 66 by Anthony W. Nutbourne, Richard J. Stibbs. Produced at Centre for Land Use and Built Form Studies, University of Cambridge.

the new art forms and related topics, and to make this information freely available. (Metzger 1966a)

According to Kristine Stiles,

Metzger sought to make DIAS an interdisciplinary framework for discourse related to the phenomena of destruction in the biological, economic, social, psychological and aesthetic sense. The dialogue that Metzger hoped to establish at DIAS would include professionals among all disciplines in order to prevent it from being mired in a narcissistic ghetto of avant-garde experimentalism. (Stiles 1987, 13)

The majority of its participants were pioneers of interdisciplinary practice, and included a high proportion of visual artists who had been instrumental in the development of event-structured art that drew on dance and theatre techniques, such as Happenings, Fluxus, Events, Actions and Concrete Poetry. Metzger had also assembled an Honorary Committee, representing a network of intersecting concerns from counter culture and concrete poetry to nuclear war.²² In order to avoid any conflict with his role as organizer, Metzger gave himself

²²Members included the pioneering historian of art and technology Frank Popper; the concrete poet and Benedictine monk Dom Sylvester Houédard; experimental poet and manager of Better Books, Bob Cobbing; the artist and writer John Sharkey, who was also gallery manager at the ICA at the time; Wolf Vostell, an early proponent of Happenings and Fluxus; Barry Miles, editor of the *International Times* and co-owner of Indica Gallery; Jim Haynes, co-founder of *International Times* who in September 1967 founded the Arts Lab alternative arts centre; Welsh artist Ivor Davies; Italian

the title of honorary secretary, and did not participate as an artist, except to chair discussions. In his opening speech at the symposium, Metzger listed the following topics for discussion 'ART: Architecture, film, Happenings, language, music, plastic arts, theatre. SOCIETY: Atmospheric pollution, creative vandalism, destruction in protest, planned obsolescence, popular media, urban sprawl/overcrowding, war. SCIENCE: Biology, economics, medicine, physics, psychology, sociology, space research' (Metzger 1966b).

Metzger envisaged DIAS as a catalyst for a movement; follow-up events were planned and Metzger produced at least two DIAS bulletins in the months following the symposium. The theme of DIAS keyed into debates within the anti-psychiatry and counter-culture movements, while in many ways its interdisciplinary emphasis, non-hierarchical structure, dedicated social aim and associations with various radical education and political groups paved the way for the *Dialectics of Liberation Congress* which was organized by Joe Berke ten months later at the Roundhouse in London, in July 1967.²³ Berke was a key figure in the anti-psychiatry movement who had also delivered a paper at DIAS.

Rather than mobilizing the masses, the momentum of DIAS and *Dialectics* gradually dissipated. After the performance by Hermann Nitsch at St Brides Institute on Fleet Street, on 15 September 1966, Metzger and his fellow organizer John Sharkey were charged with 'having unlawfully caused to be shown a lewd and indecent exhibition'.²⁴ Their trial at the Old Bailey coincided with the *Dialectics* congress although Metzger managed to attend part of the congress and it was there he met a young student, John Plant, who invited Metzger to take part in an arts festival he was organizing at the University of Swansea in the new year.

When Metzger arrived in the first week of January 1968, ten days before the festival opened, he found a newly-built filtration lab in the Chemical Engineering Department, and with Plant's help, enlisted the support of the departmental technicians, and moved in. The lab facilities included powerful water jets, a continuous supply of compressed air, natural and artificial light, heat and access to various chemical compounds and minerals. Using the resources at hand, Metzger made an 'exhibition'²⁵ of ephemeral, kinetic sculptures, 'Material/transforming art' that he created and controlled in the same way that he had animated the light projections in his lecture/demonstrations (Figure 8).

In the broadsheet produced to accompany the exhibition, Metzger defined his role as a coordinator – implying a more neutral relationship to the art than that of the artist. He choreographed interactions between elements such as water, heat and graphite to create aesthetic experiences based on physical phenomena such as the Leidenfrost effect, or direct currents of compressed air to make large panels of polystyrene 'levitate'. Plant would bring groups of visitors to the lab both during the day and at night, and Metzger orchestrated a variety of interactive aesthetic experiences for his audience. Metzger described his intervention as 'a purely scientific construction for purely artistic purposes' (Phillpot and Metzger 1997b); as he had put it, 'various forms of kinetic art give the opportunity for studying different aspects of spectator response to works of art' (1965, 25). The

artist and writer Enrico Baj; Mario Amaya, American founding editor of *Art and Artists* magazine; Roy Ascott, a pioneer of cybernetics and telematics in art, and Metzger himself as honorary secretary.

²³The purpose of the *Dialectics of Liberation Congress* was 'to demystify human violence in all its forms, the social systems from which it emanates, and to explore new forms of action.' <http://www.dialecticsofliberation.com>. Accessed July 2016.

²⁴According to Ford (2003), on 19 July 1967 the court found Metzger guilty and he accepted a £100 fine rather than spend four months in jail.

²⁵*Extremes Touch: Material/transforming art co-ordinated by Gustav Metzger* 22 January 4 February 1968.

ARTS FESTIVAL '68

UNIVERSITY COLLEGE OF SWANSEA

EXTREMES TOUCH

MATERIAL/TRANSFORMING ART

CO-ORDINATED BY GUSTAV METZGER

In Filtration Laboratory, 294, Department of Chemical Engineering.

22nd January - 4th February, 1968.

Open Sunday to Friday 12 - 2, 4 - 6, Saturday 12 - 6.

Open to the public. Approached from main entrance of Applied Science block, signs guide to exhibition on the second floor.

The exhibition is arranged by the Arts Festival '68 Committee (Chairman: John Plant), with the assistance of the departments of Metallurgy, Chemical Engineering, Physics, Chemistry, and Electrical Engineering.

It is not possible to show all techniques in one period.

Exhibits marked in red are either hot or cold. Approach with care.

NO SMOKING

Materials and techniques employed. Water - jet, fall, atomized.

Main line compressed air. Floating structures. Liquid crystal phenomena with electronically controlled continuous melting and cooling phases, - in reflected light, and with projected polarized light. Expanded metal. Vacuum. Nylon, copper, rubber and plastic tubes. Mica. Hot plates. Fibre optics. Carbon dioxide. Liquid nitrogen. Dewar. Silicones. Polyethylene oxide. Stroboscope. Graphite. Plastics. Hot air blower. Sound.

"Driven along in an incessant but variable movement some (atoms) bounce far apart after a collision while others recoil only a short distance from the impact those that do not recoil far being driven into a closer union and held there by the entanglement of their own interlocking shapes . . ."
Lucretius.

Quoted on page 116 - L. S. Penrose, "Automatic Mechanical Self-Reproduction". In New Biology, No. 28 Penguin Books, London, 1959.

Figure 8. *Extremes Touch* exhibition broadsheet, Swansea 1969.

installation in Swansea reimagined art as a pseudo-scientific study of perceptual experience. Metzger called it 'a landmark event in the history of British kinetic art that went almost unnoticed at the time' (Phillpot and Metzger 1997b).

Three years earlier, in his lecture/demonstration at the Architectural Association, Metzger had presented an argument for kinetic art, auto-destructive art and material/transforming art as forms of visual research, relating aspects of the work to 'some concepts of quantum theory', physics and processes within the autonomic nervous system (Metzger 1965, 23-26). In this, he revealed close affinities with the international *New Tendencies* movement (1961-1973), which had declared 'art as visual research' a core concern (Rosen 2011; Medosch 2016).

There was, indeed, significant overlap between Metzger's concerns and the political and aesthetic aims of the *New Tendencies* movement, which was broadly aligned with the post-war New Left. Artists and theorists involved with *New Tendencies* also deployed the form of the manifesto, in which they rejected 'the unique and isolated artist, the cult of the personality, the myth of creation, the production of unique works of art, and art's dependence on the market place' (Groupe de Recherche d'Art Visuel 1961). The movement espoused experimental research methods from Gestalt psychology, a holistic, experimental form of psychological research and combined it with the idea of liberating the viewer from alienation. This again would have informed Metzger's interest in psychology and his interaction with psychologists at DIAS (1966) and the *Dialectics of Liberation Congress* (1967). The notion of alienation in the social context of the time, characterized by rapid modernization processes or 'automation' in industry, also chimed with Metzger's anti-capitalist stance and the research that directly followed his work in Swansea and led to the two-part article 'Automata in History' (1969) on the relationship between automata and society.

In February 1968, Metzger returned to London to begin work on 'Automata in History', which had been commissioned by Peter Townsend for Studio International. He used the article to revisit the central premise of his earlier manifestos, namely the threat of destruction through the misuse of developing technologies and the problematic relationships between art, technology and capitalism. He did so this time through thorough and painstaking scholarly research, and produced a historical survey of automata in societies across Asia and Europe from prehistory to the twentieth century.

Part I, published in March 1969, focused largely on the position of artists in relation to technology in the twentieth century, contextualized within a social history of automata and mechanical art in which 'mathematicians, scientists, artists, engineers, musicians, priests, astronomers, princes, skilled men from scientific instrument makers to goldsmiths, worked in collaboration'. From the 'inter-media' endeavours that produced 'clocks and automata in ancient China, Greece, Islam, India, mediaeval and renaissance Europe [that] conveyed information about advanced technology' and played 'a prominent role in certain societies' to the Bauhaus, which despite aiming for 'social change through art and technology', supplied 'good design' and 'helped to cement Capitalism' instead, Metzger underlined the social impact of artists engaging with technology in order to highlight the stakes in a post-war context.

'Whilst more and more scientists are investigating the threats that science and technology pose for society, artists are being led into a technological kindergarten', wrote Metzger.

It is a moral crisis and hinges on the artist's social responsibility. There is a tendency for the artist to submit to and be overwhelmed by the tremendous opportunity, challenge, excitement, and power of the new media. There exists a great danger that the artist will be eaten up by big business and manipulated by technology. *That would be catastrophic.*

He summed up bluntly: 'the artist who seeks to integrate with technology without realizing what is involved is behaving immaturely and dangerously'. The '*scientist's backlash*,' with its origins in 'the revulsion and guilt felt by leading physicists over the detonation of the atomic bombs over Japan', offered an example to follow.

The revolutionary significance of [groups like *The Atomic Scientists of Chicago*] lies in having established the principle where each profession warns society about those dangers of which it has specialized knowledge. It is evident that of all artists, those engaged with science and technology must take a lead in this crucial new form of social agitation.

Metzger set out a role for the artist in contemporary research and industrial contexts, specifically ‘in the development of new forms of technology’. Artists could act ‘as bearer of ideas, information, intuitions, and techniques and materials ... serve as a stimulant and irritant ... [and] disorient, undermine and re-route established, ritualized, ways of thinking and doing’ (Metzger 1969a). The goal was clear to Metzger, who in ‘The Chemical Revolution in Art’ had declared ‘We are now faced with the imperative need to take one of the most radical steps in history: the conscious creation of new forms of science and technology that have been cleared, to some extent, of in-built destructive elements.’ (Metzger 1965b).

Part II began with the statement: ‘One letter but thousands of years separate automaton from automation. The increased automation of life, and recent work in kinetic and technological art, demand and facilitate an involvement with automata. The further we are removed from their origin, the greater the chance of achieving both a comprehensive and detailed view of their history, and of evaluating their decisive significance in the development of science, technology, and art’. In this text, Metzger charted the various roles of automata in societies as scientific tools, instruments of social control, traded goods and entertainment, highlighting correspondences between automata of the past and kinetic art of the present.

Alexandrian automata are close to current ideas of the random, feedback and automatic control. [...] The extensive use of chemical and fluid techniques in kinetic art during the past ten years brings this period into correspondence with Alexandria. Chemical, fluid, and biological exploration – in kinetic art, as in technology – is the most revolutionary direction now (Metzger 1969b, 113)

Metzger’s history sought to demonstrate how ‘the principles of automata became internalized within society and technology’ as the processes of industrialization and urbanization during the nineteenth century re-shaped society: ‘The automated factory is the automata of antiquity writ large’. (Metzger 1969b, 110).

It was around this time that Metzger became heavily involved in the ‘Art and Science’ and ‘New Science’ sub-groups of the British Society for Social Responsibility in Science (BSSRS). His view of the relationship between technology and capitalism coloured his ongoing activities and he continued to write on art and technology for a wide range of periodicals, from *Peace News* to the underground architecture journal *Clip-Kit*. ‘The task of the artist committed to the use of computers and advanced technology’, he wrote, ‘is to oppose the stasis in computer development caused by considerations of profit, and align himself with the scientists who are fighting the system from within’ (Metzger 1970a). In April 1969, Metzger became the founding editor of PAGE, the bulletin of the newly formed Computer Arts Society (C.A.S.), and in May 1969, he travelled to the International Symposium on Computers and Visual Research in Zagreb, Yugoslavia, with the cybernetician Gordon Hyde and art and technology critic Jonathan Benthall, to deliver a manifesto ‘from London’ announcing the launch of the C.A.S. They declared:

Artists are increasingly striving to relate their work and that of the technologist to the current unprecedented crisis in society. Some artists are responding by utilizing their experience of science and technology to try and resolve urgent social problems. Others, researching in cybernetics and the neuro-sciences, are exploring new ideas about the interaction of the human being with the environment. Others again are identifying their work with a concept of ecology, which includes the entire technological environment that man has

imposed on nature. There are creative people in science who feel that the resolution of the man/machine problem lies at the heart of making the computer the servant of man and nature. Such people welcome the insight of the artist in this context, lest we lose sight of humanity and beauty. (Benthall, Hyde, and Metzger 1969)

Metzger oversaw the first 27 issues of PAGE before stepping down in December 1972. Initially a modest, double-sided A4 sheet, PAGE's primary purpose was 'to encourage the creative use of computers in the arts and allow the exchange of information in this area' (PAGE 2, May 1969). Much of its limited space was devoted to news, reviews and listings. The fact that Metzger did most of the reviewing ensured that he became extremely well informed of new developments and technologies. This allowed him to make experimental artworks using early Plotters, and to write and lecture on creative applications of the technology, although PAGE was not merely a means for Metzger to connect with scientists and technologies.²⁶ He quickly established a distinctive editorial position, and consistently drew attention to issues associated with the social impact of technology (PAGE 24 [July 1972] simply included a full-page reproduction of the Sunday Times cover with a picture of a limb less young victim of the Vietnam war).

As it was a small, labour-intensive operation, Metzger assumed the roles of designer, typesetter and printer as well as editor and occasional contributor. This model presented him with a template to experiment with, and allowed Metzger the freedom to experiment – indeed at times Metzger was operating as much as an artist and activist as editor. PAGE 11 featured an article by Metzger entitled 'Social Responsibility and the Computer Professional. The Rise of an Idea. Part I' (Metzger 1970b) (Figure 9). The front page was filled with columns of numbers, a comprehensive list that Metzger had compiled of every article and news item containing the term 'social responsibility' that had appeared to date in the communications of the Association of Computing Machinery and associated *Journal of the Association of Computing Machinery*, and the magazine *Computers and Automation*. As Samuel Dangel has noted, the article exploited the organizational conventions and visual qualities of a bibliography – another template, like the lecture and the bulletin, with specific methodologies, lexicons and functions, effectively appropriated by Metzger to open up a critically reflexive space within the form itself.²⁷

The launch of PAGE coincided with the inaugural meeting of BSSRS in April 1969, which Metzger attended. He made a statement that led Maurice Wilkins' to invite him to join an 'Art and Science' sub-group that met on a monthly basis in Wilkin's laboratory at King's College. The group also included the artist Conrad Atkinson; Jonathan Benthall, who at the time worked at the ICA and wrote a regular column on 'Art and Technology' for Studio International; the science journalist David Dickson; Jerry Ravetz, who headed the Centre for History and Philosophy of Science at Leeds University; and 'Kit' Pedlar, who was head of the electron microscopy department at the Institute of Ophthalmology, University of London, and scientific advisor for the BBC on such programmes as Tomorrow's World and Dr Who.

²⁶Metzger's writings on the subject include 'New Ideas in Plotter Design Construction and Output,' an unpublished lecture at *Computer Graphics '70*, and 'Five Screens with Computer. Computer Graphic Aspects of a Sculpture Project' In *Computer Graphics '70*. London: Plenum Press, 1971.

²⁷Dangel uses the term 'bibliographic method' to describe a technique used by Metzger in this article and subsequently as his contribution to the exhibition & catalogue *Art into Society – Society into Art. Seven German Artists* at the ICA in 1974, published as Metzger, Gustav. 1974. 'The Art Dealer: A Bibliography' In *Art into Society – Society into Art. Seven German Artists*, edited by Christos Joachimides and Norman Rosenthal, 79–86. London: Institute of Contemporary Arts. See *Gustav Metzger: Years Without Art*, edited by Samuel Dangel & Sören Schmeling. Dangel and Schmeling 2012.

COMPUTERS AND AUTOMATION

1. 3.4.1955; 4,17
2. 3.5.1954; 11
3. 3.5.1954; 22
4. 3.7.1954; 17
5. 4.3.1955; 28-9
6. 4.4.1955; 4
7. 4.5.1955; 14-20
8. 4.7.1955; 4
9. 4.8.1955; 6,9,16
10. 4.11.1955; 5
11. 5.8.1956; 4
12. 5.11.1956; 12-17
13. 5.12.1956; 16-19
14. 6.1.1957; 52-4
15. 6.2.1957; 14-19,43
16. 6.7.1957; 3
17. 6.7.1957; 6
18. 6.8.1957; 3,9
19. 6.11.1957; 6-8,14
20. 7.1.1958; 5-6
21. 7.2.1958; 3
22. 7.3.1958; 13-14
23. 7.4.1958; 6-9
24. 7.5.1958; 6,31
25. 7.5.1958; 22-29
26. 7.7.1958; 6
27. 7.8.1958 24
28. 7.9.1958 6,26,28
29. 7.10.1958 9-10
30. 7.10.1958 24-25
31. 7.10.1958 25
32. 7.12.1958 21-26
33. 7.12.1958 26-28
34. 8.1.1959 6-8
35. 8.2.1959 6-8
36. 8.2.1959 20-22
37. 8.3.1959 6,30-31
38. 8.4.1959 9,20
39. 8.4.1959 25-28
40. 8.5.1959 6,30
41. 8.5.1959 20-21
42. 8.9.1959 6,34-36
43. 8.10.1959 6,30
44. 8.10.1959 31
45. 8.12.1959 6
46. 9.4.1960 8-9
47. 10.5.1961 6-8,22
48. 10.7.1961 6,22
49. 10.8.1961 8,25,26
50. 10.9.1961 8,26
51. 10.9.1961 23-24,28
52. 11.3.1962 26-42
53. 11.4.1962 24-26
54. 12.12.1963 6-7
55. 13.4.1964 8-9
56. 13.7.1964 8
57. 14.10.1965 7
58. 15.10.1966 7
59. 16.3.1967 6,7,18
60. 16.7.1967 28-35
61. 16.9.1967 7
62. 16.9.1967 8
63. 16.9.1967 10
64. 16.9.1967 11

65. 16.11.1967 10-12
66. 17.3.1968 7,46,47
67. 17.4.1968 43-47
68. 17.7.1968 14
69. 17.8.1968 6,46
70. 17.8.1968 28
71. 17.9.1968 11
72. 17.12.1968 25-28
73. 18.4.1969 8,41
74. 18.4.1969 11-14
75. 18.5.1969 24-26
76. 18.6.1969 12-13
77. 18.8.1969 10-12
78. 18.9.1969 13-14
79. 18.9.1969 9
80. 18.10.1969 12-13
81. 18.10.1969 8
82. 18.11.1969 12-13,14
83. 19.2.1970 9-13
84. 19.5.1970 6-13
85. 19.5.1970 30-60
86. 19.6.1970 41-47
87. 19.6.1970 8-15
88. 19.7.1970 29-36

COMMUNICATIONS OF THE ACM

89. 1.2.1958 1
90. 2.7.1959 2
91. 3.7.1960 386,395
92. 3.7.1960 437
93. 4.5.1961 205
94. 4.5.1961 206
95. 4.6.1961 255
96. 4.10.1961 467-68
97. 4.10.1961 473
98. 4.12.1961 581
99. 5.1.1962 3
100. 5.1.1962 66
101. 5.6.1962 300-7
102. 5.6.1962 358
103. 5.7.1962 369
104. 5.7.1962 372
105. 5.10.1962 535-37
106. 6.1.1963 34
107. 6.1.1963 46
108. 6.7.1963 352
109. 6.7.1963 360
110. 6.10.1963 591
111. 7.1.1964 46
112. 7.1.1964 49
113. 7.4.1964 204
114. 7.5.1964 382
115. 7.6.1964 389
116. 7.7.1964 394-95
117. 7.7.1964 451
118. 7.9.1964 559
119. 7.10.1964 572-584
120. 7.10.1964 636-39
121. 7.11.1964 684
122. 7.11.1964 688
123. 7.12.1964 741
124. 8.1.1965 3
125. 8.1.1965 7
126. 8.1.1965 8
127. 8.2.1965 136

128. 8.4.1965 248
129. 8.6.1965 409-10
130. 8.7.1965 420-21
131. 8.8.1965 532
132. 8.9.1965 583-84
133. 8.11.1965 651-55
134. 8.11.1965 656
135. 9.1.1966 53
136. 9.2.1966 125
137. 9.4.1966 310
138. 9.5.1966 390-91
139. 9.6.1966 465
140. 9.7.1966 473
141. 9.7.1966 474
142. 9.7.1966 539
143. 9.8.1966 545-56
144. 9.10.1966 714
145. 9.10.1966 719-20
146. 9.10.1966 772
147. 9.10.1966 782
148. 9.11.1966 824-26
149. 9.12.1966 838-39
150. 9.12.1966 879-80
151. 10.1.1967 1,61
152. 10.1.1967 68
153. 10.1.1967 128-29
154. 10.3.1967 139-40
155. 10.3.1967 141-44
156. 10.3.1967 144
157. 10.3.1967 145-47
158. 10.4.1967 248
159. 10.4.1967 254
160. 10.5.1967 259
161. 10.5.1967 314-23
162. 10.5.1967 325
163. 10.5.1967 327-8
164. 10.6.1967 379-80
165. 10.6.1967 385
166. 10.6.1967 389
167. 10.7.1967 393,395
168. 10.7.1967 457
169. 10.8.1967 524
170. 10.8.1967 525
171. 10.9.1967 145-47
172. 10.9.1967 533-37
173. 10.10.1967 667-68
174. 10.10.1967 672
175. 11.1.1968 2
176. 11.1.1968 54
178. 11.1.1968 61
179. 11.1.1968 85
180. 11.1.1968 67
181. 11.3.1968 198-201
182. 11.3.1968 202
183. 11.3.1968 211
184. 11.4.1968 220
185. 11.4.1968 229
186. 11.4.1968 231-39
187. 11.5.1968 365-69
188. 11.5.1968 293-4
189. 11.5.1968 377-78
190. 11.5.1968 380
191. 11.5.1968 381-82
192. 11.5.1968 384
193. 11.6.1968 393
194. 11.6.1968 458

195. 11.7.1968 465-69
196. 11.7.1968 524
197. 11.7.1968 527-28
198. 11.7.1968 529
199. 11.8.1968 583
200. 11.8.1968 584
201. 11.9.1968 593
202. 11.9.1968 645-6
203. 11.9.1968 647
204. 11.9.1968 653-55
205. 11.9.1968 654
206. 11.10.1968 659
207. 11.10.1968 711
208. 11.10.1968 718
209. 11.11.1968 731,736
210. 11.11.1968 792
211. 11.12.1968 803-04
212. 11.12.1968 860
213. 11.12.1968 863
214. 11.12.1968 864-65
215. 11.12.1968 868
216. 11.12.1968 871
217. 12.2.1969 84
218. 12.2.1969 121
219. 12.2.1969 122-25
220. 12.3.1969 190
221. 12.3.1969 243
222. 12.5.1969 248
223. 12.5.1969 297
224. 12.5.1969 298
225. 12.6.1969 303
226. 12.8.1969 421
227. 12.8.1969 481
228. 12.9.1969 532-33
229. 12.10.1969 539
230. 12.10.1969 587
231. 12.11.1969 594
232. 12.11.1969 641
233. 12.12.1969 706-07
234. 12.12.1969 709
235. 13.2.1970 126-7
236. 13.2.1970 128
237. 13.3.1970 140
238. 13.3.1970 195
239. 13.4.1970 203
240. 13.4.1970 205
241. 13.4.1970 209-10
242. 13.4.1970 269
243. 13.4.1970 270
244. 13.4.1970 271
245. 13.5.1970 277
246. 13.5.1970 278
247. 13.5.1970 328-331
248. 13.6.1970 337
249. 13.7.1970 396-401
250. 13.7.1970 393
251. 13.7.1970 455
252. 13.7.1970 456

SOCIAL RESPONSIBILITY AND THE COMPUTER PROFESSIONAL. THE RISE OF AN IDEA IN AMERICA. PART I.

GUSTAV METZGER

This article seeks to trace the rise of a movement within the computer profession. It is based on three key documents: The Journal of the Association for Computing Machinery (ACM); the Communications of the ACM; the magazine Computers and Automation.

In January 1958, a letter appeared in Computers and Automation condemning the employment of computers in weapons of mass destruction. The magazine then opened its pages to a discussion of this area in relation to the responsibilities of the computer professional. Ever since, the magazine has been engaged in a campaign on this issue. Computers and Automation is also of particular interest to artist since it was the first publication in the world that actively encouraged computer art, by arranging a computer art contest in 1963, which continues to the present day.

The appended bibliography contains all the key references that have appeared in Computers and Automation, and in the Communications of the ACM. In the case of the former, the bibliography traces the origins of the controversy and its development; it includes related areas such as the privacy issue. With the latter publication a conscious attempt was made to list every article, news item etc., that contains

the term social responsibility. Beyond this, other issues, such as privacy, law enforcement are included. The article and bibliography is presented with the hope that it will enable the movement to make further progress.

It is quite certain that next year will see a great upsurge of activity. In protest against the decision to hold the 1971 annual meeting of the ACM in Chicago, several hundred members are organising a 'Counter-Conference' in Boulder, Colorado. This is the most extreme challenge presented to the ACM on the issue of social responsibility, and is sure to lead to the strengthening of the campaign. (More information on the Counter-Conference elsewhere in this issue of PAGE.)

The theme of the 1971 Spring Joint Computer Conference, Atlantic City, May 18-20 will be RESPONSIBILITY. Whilst one can expect the majority of the papers on the given subjects like data files; law enforcement and the judiciary; national policies; the techniques and practices of embezzlement to be angled in favour of maintaining the trend towards an integrated authoritarian computer-linked kind of social system, the theme will inevitably permit the extensive discussion of an alternative approach.

Figure 9. Page 11, Bulletin of the Computer Art Society. October 1970. Courtesy the Computer Art Society.

The momentum of BSSRS also spawned several weekend-long meetings of a 'New Science' group at Pedlar's home in the summer of 1970. Invitees were largely left-leaning scientists and intellectuals, including Ravetz, Dickson and Peter Harper, founder of the Centre for Alternative Technology. Metzger was the only artist present. Discussions centred around the crisis of confidence and ethical issues in science, the

impact of the H-bomb, and revolution. Despite a heady mood of ‘apocalyptic ferment’²⁸ the group did little, but produced a manifesto, *Harmony* (1970), which remained unpublished until recently (Fisher 2014). Metzger was still hopeful that revolutionary change through interdisciplinary effort was possible. He continued to attend BSSRS events such as *The Social Impact of Modern Biology* conference in November 1970, where he made the following statement:

... We are faced by issues that are deeper than the political level. The problem also resides in the particular fabric of science and technology – not merely in its social applications. It seems to me – and I am speaking as an artist – that the most challenging and profound, and ultimately the most constructive research activity in science, is that effort to establish new and revolutionary insights into the nature of science and technology as it has developed in different cultures in the past thousands of years.²⁹

The early 1970s saw Metzger become increasingly engaged with problems of environmental pollution, in projects such as *Stockholm June*, a proposal drafted in response to the first UN Environmental Conference in Stockholm in 1972, and *Karba*, which was commissioned by Harald Szeeman for *Documenta 5* and included in the exhibition catalogue, but not actually realized. The Architectural Association hosted an exhibition of Metzger’s *Unrealizable Disintegrative Architecture and Other Projects* in April 1972. Unrealizable was becoming a theme. Despite this, he continued to lecture on the subject of ‘Ethics of the Art/Science/Technology Link’ and contribute to group exhibitions.

In 1974, Metzger was invited to take part in the exhibition ‘Art Into Society/Society Into Art’ at the ICA, London. In the exhibition catalogue, in lieu of a material contribution, he chose to call for an art strike: *Years Without Art 1977–1980*. Art no longer held the promise of revolution. He gave the following reason:

Artists engaged in political struggle act in two key areas: the use of their art for direct social change; and actions to change the structures of the art world. It needs to be understood that this activity is necessarily of a reformist, rather than revolutionary, character. Indeed, this political activity often serves to consolidate the existing order, in the west, as well as in the east.

He continued:

The use of art for social change is bedevilled by the close integration of art and society. The state supports art, its needs are as a cosmetic cloak to its horrifying reality, and uses art to confuse, divert and entertain large numbers of people. Even when deployed against the interests of the state, art cannot cut loose from the umbilical cord of the state. Art in the service of revolution is unsatisfactory and mistrusted because of the numerous links of art with the state and capitalism.

‘Deep surgery’, as he called it, was necessary. ‘As the 20th century has progressed, capitalism has smothered art – the deep surgery of the years without art will give art a new chance’.³⁰ Metzger went on strike alone.

²⁸Peter Harper, in conversation with the author, Feb 2014.

²⁹Metzger’s statement is recorded in Watson Fuller, ed. 1971. *The Social Impact of Modern Biology, Proceedings of a Conference Organised by the British Society for Social Responsibility in the Sciences, 26–28 November 1970*, 245. London: Routledge & Kegan Paul.

³⁰Metzger, Gustav. 1974. ‘Years Without Art’ In *Art into Society – Society into Art: Seven German Artists*, edited by Christos Joachimides and Norman Rosenthal, 79–86. London: Institute of Contemporary Arts.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributor

Elizabeth Fisher is an independent curator and writer currently pursuing a PhD in History of Art at the University of Cambridge. In 2014 she curated an exhibition of Gustav Metzger's early work for Kettle's Yard in Cambridge. She was Curator of Exhibitions and Collections at Kettle's Yard from 2004 to 2013, where she organized over 40 exhibitions of modern and contemporary art. In 2013 she co-edited 'How Artists Think' (Black Dog Publications) with the artist Rebecca Fortnum.

References

- Benthall, Jonathan, Gordon Hyde, and Gustav Metzger. 1969. "Zagreb Manifesto" London, 4 May 1969 in *Studio International* vol.177 no.911, London June 1969.
- Dangel, Samuel, and Sören Schmeling, eds. 2012. *Gustav Metzger: Years Without Art*. Freiburg: Modo Verlag.
- Fisher, Elizabeth. 2014. *Gustav Metzger: Lift Off!* Cambridge: University of Cambridge Kettle's Yard.
- Ford, Simon. 2003. "Technological Kindergarten." *Mute* 1 (26) Summer/Autumn 2003. Accessed September 26, 2016. <http://www.metamute.org/editorial/articles/technological-kindergarten>.
- Gropius, Walter. 1919. "Bauhaus Manifesto and Program" Staatliches Bauhaus Weimar, April 1919. Accessed November 23, 2016. <http://mariabuszek.com/mariabuszek/kcai/ConstrBau/Readings/GropBau19.pdf>.
- Groupe de Recherche d'Art Visuel. 1961. "General Propositions of the Visual Arts Research Group." Trans. Davida Fineman. In *Readings in Latin American Modern Art*, edited by Patrick Frank, 161–163. New Have: Yale University Press, 2004.
- Houédard, Dom Sylvester. 1966. *Aesthetics of the Death Wish? Change as Creative Destruction: the Ravensbourne Symposium on Creation Destruction & Chemical Change: Record and Comment*. London: Destruction/Creation, BM/DIAS.
- Lansdown, R. John, ed. 1969. *Event One. Exhibition Catalogue*. London: Computer Arts Society.
- Medosch, Armin. "Art as Visual Research: The Tendency in New Tendencies." *Journal for Research Cultures* (issue 1) Accessed January 2, 2017. <https://researchcultures.com/issues/1/art-as-visual-research.html>.
- Metzger, Gustav. 1959. "Auto-Destructive Art" First manifesto. London, 4 November 1959.
- Metzger, Gustav. 1960. "Manifesto Auto-Destructive Art" Second manifesto. London, 10 March 1960.
- Metzger, Gustav. 1961. "Auto-Destructive Art, Machine Art, Auto-Creative Art." Third manifesto. London, 23 June 1961.
- Metzger, Gustav. 1962a. "Machine, Auto-Creative and Auto-Destructive Art" in *Ark*, Royal College of Art London, Summer 1962.
- Metzger, Gustav. 1962b. "Manifesto World." Fourth manifesto. London, 7 October 1962.
- Metzger, Gustav. 1964. "On Random Activity in Material/Transforming Works of Art." Fifth manifesto. London, July 30, 1964. Published in *Signals. Newsbulletin of the Centre for Advanced Creative Study*, Vol. 1, No. 2, September 1964: 14.
- Metzger, Gustav. 1965a. *Auto-Destructive Art*. Typescript of a lecture given at the Architectural Association, 24 February 1965. 3rd ed. London: Bedford Press, 2015.
- Metzger, Gustav. 1965b. "The Chemical Revolution in Art" published as "Auto-Destructive Art" in *Granta*, 6 November 1965.
- Metzger, Gustav. April 1966a. First DIAS press release.
- Metzger, Gustav. 1966b. Abstract of DIAS opening remarks, excerpted in: *Studio International* issue 174, December 1966: 238.

- Metzger, Gustav. 1969a. "Automata in History Part I." *Studio International* 177 (909), March 1969: 107–109.
- Metzger, Gustav. 1969b. "Automata in History Part II." *Studio International* 178 (915), October 1969: 109–117.
- Metzger, Gustav. 1970. "New Ideas in Plotter Design Construction and Output." unpublished lecture at Computer Graphics '70.
- Metzger, Gustav. 1970a. "Notes on the Crisis in Technological Art" and "4 Manifestos by Gustav Metzger." *Kleph* (1). Swansea, January 1970.
- Metzger, Gustav. 1970b. "Social Responsibility and the Computer Professional. The Rise of an Idea. Part I," PAGE 11, October 1970.
- Metzger, Gustav. 1971. "Five Screens with Computer. Computer Graphic Aspects of a Sculpture Project" in *Computer Graphics '70*. Plenum Press, London 1971.
- Metzger, Gustav. [1969] 1971. "Untitled Paper on Theme Number Three." *Computer and Visual Research Symposium*, Zagreb 1969, In *Bit International no. 7*, edited by Boris Kelemen and Radoslav Putar, 26–33. Zagreb: Galerije grada Zagreba.
- Peyton-Jones, Julia, and Hans Ulrich Obrist, eds. 2009. *Gustav Metzger Decades 1959–2009*. Köln: Walter König.
- Phillpot, Clive, and Gustav Metzger. 1997a. *Artists' Lives Recording*. British Library ref C466/292.
- Phillpot, Clive, and Gustav Metzger. 1997b. *Artists' Lives Recording*. British Library ref C466/50/BSZZ.
- Phillpot, Clive, and Gustav Metzger. 1997c. *Artists' Lives Recording*. British Library ref C466/50/APZZ.
- Reichardt, Jasia, ed. 1968. *Studio International. Cybernetic Serendipity. The Computer and the Arts*. London: Studio International.
- Rosen, Margit, ed. 2011. *A Little Known Story About a Movement, a Magazine, and the Computer's Arrival in Art: New Tendencies and Bit International, 1961–73*. Cambridge, MA: MIT Press.
- Stiles, Kristine. 1987. "The Destruction in Art Symposium (DIAS): The Radical Social Project of Event-Structured Live Art." *PhD History of Art*, University of California, Berkeley.
- Walker, John A. 2002. *Left Shift, Radical Art in 1970s Britain*. London: IB Tauris & Co.
- Wilson, Andrew. 2008. "Gustav Metzger's Auto-Destructive/Auto-Creative Art: An Art of Manifesto, 1959–69." *Third Text* 22 (2): March 2008: 177–194.
- Wilson, Rt Hon, and M. P. Harold. 1963. "Labour's Plans for Science" *Speech Given at the Annual Labour Party Conference, Scarborough, 1 October 1963*. London: Victoria House Printing Company. Accessed September 25, 2016. <http://nottspolitics.org/wp-content/uploads/2013/06/Labours-Plan-for-science.pdf>



Gaberbochus press and the common room

Jasia Reichardt

Independent scholar, London, UK

ABSTRACT

The Common Room, started by Stefan and Franciszka Themerson, was active 1957–1959, in the basement below the Gaberbochus Press office at 42a Formosa Street, London W9. It was a place for those interested in the arts and the sciences to meet, read journals, look at works of art on the walls, hear talks, see films, eat spaghetti and drink wine. There were events on Thursdays, later on Tuesdays too, and eventually the Common Room opened during the Gaberbochus office hours, Monday–Friday 3–7 pm, for members to read international journals, to write, drink coffee and play chess. From November 1957, subscription was raised from 10 shillings to one guinea and could be renewed with a purchase of four Gaberbochus books. The Common Room opened its doors on 1 August 1957. After hosting 82 events, it closed for the summer on 9 July 1959, and never re-opened.

ARTICLE HISTORY

Received 28 July 2016

Accepted 20 December 2016

KEYWORDS

Gaberbochus Press; Stefan Themerson; Franciszka Themerson; Jasia Reichardt; the Common Room; Gaberbochus Reading Room

Gaberbochus

The Gaberbochus Press, ‘the largest small press in Britain’, was founded by Franciszka and Stefan Themerson in Maida Vale, London in 1948. In thirty years, they published some sixty titles, running the Press until 1979, when it was taken over by De Harmonie in Amsterdam.

The name Gaberbochus was borrowed from the Latin translation of the poem ‘Jabberwocky’ in Lewis Carroll’s *Through the Looking Glass*. The translation was made by Carroll’s clergyman-uncle, Hassard Dodgson, in the 1870s. Franciszka Themerson created its image in 1951 (Figure 1).

The ambition and achievement of the Press was to put before British readers important works by European writers that were hitherto unpublished here, and, in several cases, untranslated, e.g. Jarry, Schwitters, Hausmann, Apollinaire and Queneau. The Themersons also published the work of British authors who, like themselves, had experienced difficulty finding a sympathetic native publisher with a taste for the avant-garde. Design of the Gaberbochus books was always a high priority. It was a matter of principle to produce ‘best lookers’ rather than best sellers. Asked once what were the strengths and what were the weaknesses of the Press, Stefan Themerson gave the same answer to both questions, ‘refusal to conform’.



Figure 1. Gaberbocchus logo by Franciszka Themerson.

The Common Room

The Common Room was active 1957–1959, in the basement below the Gaberbocchus Press office at 42a Formosa Street, London W9. It was a place for those interested in the arts and the sciences to meet. There, they could see films, listen to talks or performances, read journals, look at works of art hung on the walls, and eat spaghetti and drink wine.

Initially, the Themersons thought of the Common Room as the Gaberbocchus Reading Room. It was in fact both. To begin with it was open on Thursdays for various events, but from 26 November 1957 Tuesday evenings started to be used for authors' readings, although in due course there was no difference in the programmes between the two days. Eventually, the Common Room opened during the Gaberbocchus office hours, Monday–Friday 3–7 pm, for members to read the wide selection of international journals, write, drink coffee and play chess.

From November 1957, subscription was raised from 10 shillings to one guinea and could be renewed with a purchase of four Gaberbocchus books.

The Common Room opened its doors on 1 August 1957. After hosting 82 events, it closed for the summer on 9 July 1959, and never re-opened.

Aims of the Common Room included the text in Themerson's letter to the biologist, R.F.J. Withers:

Gaberbocchus Common Room

August, 1957

The aim of this Common Room is to provide artists and scientists and people interested in both the philosophy of science and the philosophy of art with a congenial place where they can meet and exchange thoughts.

We don't identify science with gadgetry, nor art with a kind of romantic irresponsibility. We would rather prefer to see both sides as investigators and explorers of the universe, whether the part of the universe that is being explored is the nebula in Andromeda, or a molecule, or the constellation of individual experiences of an artist or a poet.

When we say modern science and modern art, the word modern means something more than just 'contemporary.' It is probably not pure coincidence that both in modern science and modern art we seem to be ceasing to see the world in terms of things and objects, causes and effects, and tending to think in terms of relations, structures, organisations of space, and even 'thingless' events. However, we do not advance any particular theory. It is possible to produce so many, all equally plausible! All the same, it seems that the artificial barrier dividing science from the arts is becoming obsolete, and it may be worth while to try to ignore it. This is an attitude to which we feel an urge to contribute, not so much because we want to fulfil a particular programme as because it promises to be interesting, fruitful and a pleasure.

Stefan Themerson once said that a human being is made up of three layers.

The top layer is behaviour. It concerns itself with manners, mores, observation of customs, rituals and codes of conduct. It is the layer that allows us to live with other people and to function in the world.

The bottom layer is pure instinct. It is the layer that concerns itself with the necessities of our survival, the survival of our bodies and of our genes. It is blind, deaf and driven.

The middle layer is what we are as individuals: our real selves with our thoughts and concerns that distinguish us from each other. It is a layer that is often squashed between the other two into a thin and fragile membrane. Sometimes it disappears altogether.

Gaberbocchus Common Room, like the Press, existed for the protection and promotion of this middle layer. That is, whatever individuals have to offer that is special to them and is compelled neither by the demands of society nor by those of untamed nature.

As a counterpart of the press and an extension of its activities, the Common Room was to provide a live context and a social milieu. Its purpose was to create conditions that could give birth to new ideas and new books, and to promote some of the unrealized Gaberbocchus projects. Several cherished projects on which the Themersons had already embarked were thwarted for lack of resources. These included the writings of Michaux and Witkacy, the drawings of Siné, Le Douanier Rousseau's plays, Bertrand Russell's short stories, and a *Pictorial Dictionary of Semantically Interpreted Terms*.

Among other works that the Themersons hoped to publish were those by the individuals invited to address the Common Room. At the beginning of 1958, Stefan was planning to produce a 'series of thin pamphlets, each by one author, related to the Common Room activities. (I think of calling the series *Gaberbocchus Abstracts*) – on tinted paper – one

colour for science, one for art, and one for literature'. He invited the biologist, R.F.J. Withers, to be the first author.¹

On 26th June 1957, he wrote to Withers, whom he had met earlier that year at the Philosophy of Science Group in Manchester:

Gaberbocchus has not yet published anything that could be said to have both its feet in science, but we feel an urge to do so. We also intend to convert a part of our premises into a 'Gaberbocchus Common Room' where we hope writers, artists, scientists and people interested in Literature, Art and Science would like to meet, have a cup of coffee and attend a recital or a lecture.

When the Common Room opened 5 weeks later, 1st August 1957, Stefan stated the aims as follows:

The aim of this Common Room is to provide artists and scientists and people interested in both the philosophy of science and the philosophy of art with a congenial place where they can meet and exchange thoughts.

We don't identify science with gadgetry, or art with a kind of romantic irresponsibility. We would rather prefer to see both sides as investigators and explorers of the universe, whether the part of the universe that is being explored is the nebula in Andromeda, or a molecule, or the constellation of individual experiences of an artist or a poet.

When we say modern science and modern art, the word modern means something more than just 'contemporary'. It is probably not pure coincidence that both in modern science and modern art we seem to be ceasing to see the world in terms of things and objects, causes and effects and tending to think in terms of relations, structures, organisations of space, and even 'thingless' events. However, we do not advance any particular theory. It is possible to produce so many, all equally plausible! All the same, urge to contribute, not so much because we want to fulfil a particular programme as because it promises to be interesting, fruitful, and a pleasure.

We aim at having this room open every evening, and having it well supplied with reading matter (magazines) and coffee, refreshments and chess boards, but we are also considering some special ventures, held periodically, whether a recital of music or a talk on, e.g. cybernetics, the reading of a play or the showing of films made in research laboratories, an exhibition of objects of art or an exhibition of scientific objects.

These activities will take the form of a club. It will be started in the Autumn, and in the meantime you are welcome every Thursday as our guest. If you would like to join the club now, you will find subscription forms on the table in the foyer upstairs.

It was indeed like a common room in a college. The space consisted of a basement underneath the office of Gaberbocchus Press. It was a long room running the full length of a corner house at 42a Formosa Street. It was five minutes walk from Warwick Avenue metro station and close to the Themersons' home, at 49 Randolph Avenue. The walls were white. There were round wooden tables painted red or black, some canvas-covered folding metal chairs, stools and benches, and a raised platform at one end. Paintings that related to the events on any particular evening were displayed on the walls. Around were magazine racks for art and science journals of which specimen copies were usually supplied by the publishers. At one end there was a small room which was

¹Withers was, at the time, editor of *The British Journal for the Philosophy of Science*.

the kitchen. Here were made omelettes, teas, coffees and hot toasted sandwiches. Barbara Wright reminded me recently that she used make enormous quantities of spaghetti before each evening's proceedings.

Red, black and white are the Gaberbocchus colours. Not only in typography but also in interior decoration. In the bookshop above the Common Room there were black desks and red shelves.

The Common Room had 149 members, each of whom paid a subscription of 10 shillings. It was open to members and their guests initially on Thursday evenings. Later, Tuesday readings were introduced, then the London Studio started holding open rehearsals on Sundays, and finally members were invited to use the Reading Room during the publishing 'office hours', which were Monday to Friday 3–7 pm.

During the two years that the Common Room was active, there were 82 evening events that included programmes of experimental and scientific films and lectures, mainly about art and science, and various topics in between. There were talks and readings by poets, artists and translators, music performances, play readings and play rehearsals.

Among those who appeared before the Common Room were: Gwen Barnard, Oswald Blakeston, George Buchanan, H.R. Calvert, Gurney Campbell, Sean Connery, William Crozier, Patrick Fetherston, Peter Fisk, Michael Graubart, Michael Horovitz, William Irvine, Hugo Manning, John McGrath, Dudley Moore, Al Mulock, Victor Musgrave, Philip O'Connor, Elizabeth Russell, C.H. Sisson, David Sladen, Stevie Smith, F.N. Souza, Elizabeth Sprigge, Niso Ticcianti, Simon Watson Taylor, Zev and Koni Zilliacus.²

The Common Room avoided categories. The speakers, instead of identifying themselves by their daily occupations, whatever these might be, would associate themselves with their interests. In the programme leaflets there were no professional descriptions about the speakers. Stefan Themerson disliked categories, refused to be classified himself and accepted people according to what they thought was important rather than what they did for a living.

The scientists who were invited to speak on their own subjects were sometimes uncertain as to how they should address themselves to artists. Stefan advised them 'that as far as artists are concerned they like to see things as they are, even if they cannot understand. After all, they show pictures as they paint them and don't paint special pictures for scientists'.

'It seems to me' — Stefan continued — 'that the ideal proportions are:

¼ what the audience knows already

½ what they don't know but are capable of understanding

¼ what is too difficult to understand without special qualifications, but what gives a kind of insight and let's say 'couleur locale'.

By the way, we performed a kind of experiment recently: I.J. Good³ delivered his lecture *COULD A MACHINE MAKE PROBABILITY JUDGMENTS?* in exactly the same, and undiluted form as on the previous day to the Philosophy of Science Group. And — to our surprise — its rather difficult technicalities proved to be an attraction.'

²They came from film and theatre, and included playwrights, poets, actors, writers and translators; philosophers, artists, gallerists, musicians, composers and politicians.

³Irving John (I.J.) Good (1916–2009), was a British mathematician and statistician of Polish Jewish heritage who worked as a cryptologist at Bletchley Park with Alan Turing and at GCHQ. *Speculations Concerning the First Ultraintelligent Machine* (1965) is regarded as a foundational work in artificial intelligence.

The evenings included several firsts: Stefan's talk about Kurt Schwitters in England and the reading of the prose and verse from Schwitters's last notebook; Paul Harris's talk with a discussion of art and advertising that predated pop art; Barbara Wright's introduction to Queneau's prose; Simon Watson Taylor's⁴ discussion of 'Pataphysics, the first performance of LIVE NEW DEPARTURES that included performances of works by Samuel Beckett, John McGrath and Stefan Themerson.

Throughout the two years, predictions about the future were advanced and argued. I.J. Good proposed that 20 years hence a machine will be capable of making probability judgments that we should not be able to understand any better than we can understand how human beings made probability judgments. Dr S. Andrzejewski⁵ claimed that sociology would continue to predict what would not happen rather than what would happen. Z.K.M. Tarkowski⁶ thought that in 50 or so years, psychology might become a science but that at the time when he was speaking it was still closer to an art, particularly to that of playing an instrument.

For the artists, predictions for the future were of little interest. In her talk about translating *Exercices de style*, Barbara Wright quoted Raymond Queneau's poem:

Ce soir
si j'écrivais un poème
pour la postérité?
fichtre
Ia belle idée
je me sens sur de moi
j'y vas
et
à
Ia
postérité
j'y dis merde et remerde
et remerde
drôlement feintée
la postérité
qui attendait son poème
ah mais ...

⁴Simon Watson Taylor (1923–2005) was an actor, translator of modern and avant-garde French literature and an anarchist who became a key proponent of Pataphysics. He was secretary of the British Surrealist Group, a regular contributor to *Art and Artists* and edited various publications including the Surrealist review *Free Union*.

⁵Stanisław Leonard Andrzejewski (Stanislav Andreski, 1919–2007) was an outstanding figure among the first generation of British sociologists. In 1954 he published *Military Organization and Society*, a pioneering work in military sociology and a model of the comparative methodology.

⁶Z.M.T. Tarkowski was a consultant psychologist to the British government and expert in the psychological and sociological analysis of organizations.

Gaberbochus Common Room
Application for Membership

To the Secretary, Gaberbocchus Common Room
Gaberbochus Press Ltd., 42a Formosa Street,
London, W.9. tel. LORds 1280

I wish to become a member of
Gaberbochus Common Room
and I enclose.....*10/-*.....as my subscription
I agree to observe the rules and
regulations of the club.

Subscription 10/- a year

Surname.....*FROSHAUG*.....
(Block Letters)
Christian Names.....*ANTHONY*.....
Address.....*HOCHSCHULE FÜR GESTALTUNG*
ULM (DONAU).....
Telephone.....*ULM 65-75*.....
Occupation.....*none at present*.....
Proposed by.....*RR*.....
Elected.....*RR*..... No.....*25*.....

Signed.....*Anthony Froshaug*..... Date.....*21.viii.57*.....

Figure 2. Anthony Froshaug’s membership application, 1957. Froshaug was a designer, teacher and leading exponent of modern typography in Britain.

Gaberbochus Thursdays
past and forthcoming:

1st Thursday: films: High Speed Film of Drop Formation Photo-Elastic Stress Analysis Una Lezione di Geometria Colour Box /Len Lye/	1 AUGUST 1957
2nd Thursday: Niso Ticieti - Clavichord : J.S.Bach	8 AUGUST 1957
3rd Thursday: Mr.R.F.J.Withers: on Science & Art discussion Exhibition of pictures	15 AUGUST 1957
4th Thursday: films: Crystal Growth Legato Equation: $x + x = o$	22 AUGUST 1957
5th Thursday: Mrs.Gurney Campbell and Miss Daphne Athas: on Feedback in Theatre	29 AUGUST 1957
6th Thursday: Hugo Manning: Four Poems discussion	5 SEPTEMBER 1957
7th Thursday: Paul Harris: on Art & Science	12 SEPTEMBER 1957
8th Thursday: Z.Tarkowski: Cybernetics & Psychology /1/	19 SEPTEMBER 1957
9th Thursday: S.Themerson: Reflections on the Second Conference of the Philosophy of Science Group, Nottingham, 1957.	26 SEPTEMBER 1957
10th Thursday: Dr.H.R.Calvert: Harvey’s Mathematical Models talk and demonstration	3 OCTOBER 1957
11th Thursday: M.Graubart: Music - Electronic & Concrete talk and demonstration	10 OCTOBER 1957
12th Thursday: Z.Tarkowski: Cybernetics & Psychology /2/	17 OCTOBER 1957

Figure 3. Opening programme, Autumn 1957.

The programme accommodated contradictions. The gap between art and science was not bridged but it was illuminated. The artist wants facts that the scientists find, said Paul Harris, and given these facts he will push them around and put them together in another pattern. But, said Stefan Themerson, the scientists come up with facts that are informed by their imagination and their experience. And these have been shaped by art, poetry and music with the conclusion that 'the arts and science became inescapably interlocked and the circle is closed.'

The Common Room opened in August 1957 and closed two years later. Or rather, it closed for the summer in July 1959, but never reopened.

In May 1959, Stefan wrote a letter to one of Common Room speakers (Terence White-Gervais) who had enquired whether Gaberbocchus Press might be interested in some of his writings.

Dear Terence

I think you wouldn't like to be in my shoes. Time has lost its speed and I feel as if I were clutching on to the sail of a classical windmill which — *pourtant* — doesn't seem to move. To ride a Rosinante, or whatever the beast was called, within the so shamelessly capitalistic pattern, is a very curious affair. Or perhaps just anachronistic. I do remember your *Satires & Sensations*, but I just can't possibly tell you when I shall be able to tell you something about them. Fate is in the hands of the gods, and they are no more.
Yours hopefully, ST

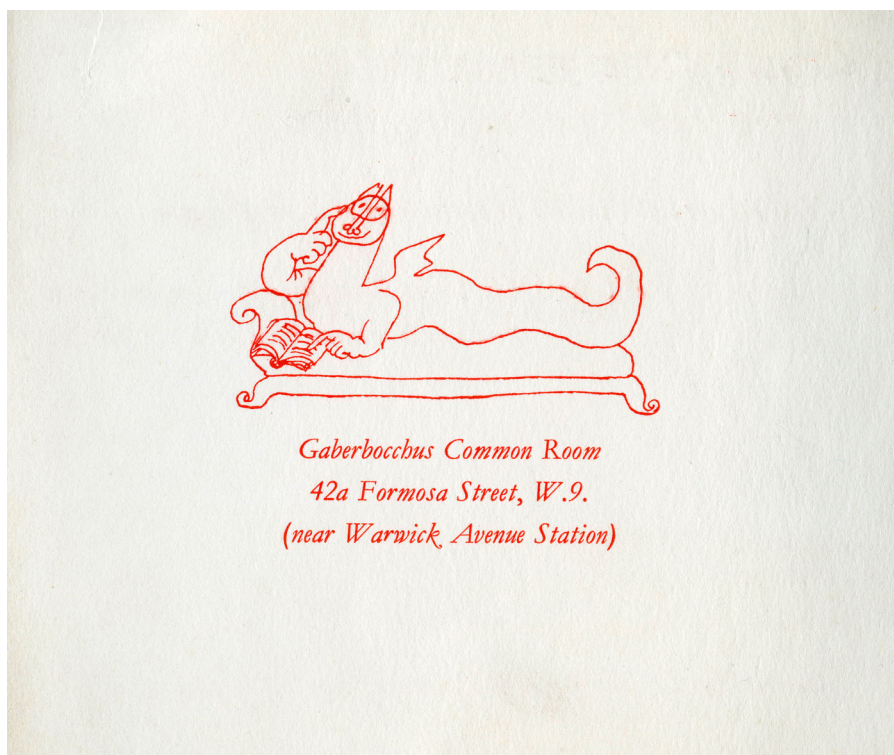


Figure 4. Gaberbocchus Common Room letterhead.

In the history of Gaberbocchus, the gods came and went. The fact that Gaberbocchus Press existed for as long as it did was as much due to the pranks of the gods as to the Themersons' determination. When, one day the Themersons were discussing giving up the Press altogether, because it was no longer possible to continue, the telephone rang. The caller, who was a well-spoken stranger, ordered an enormous quantity of Gaberbocchus books. They quickly decided not to close the Press after all, since the huge order would enable them to continue. Books were sent off with an invoice but weeks later when payment failed to materialize, Gwen Barnard went round to the address to which the books had been dispatched. She arrived at an empty bomb site.

'Gods cannot deal with money', said Stefan. They had, at any rate, saved Gaberbocchus Press on that occasion. They did not save the Common Room in 1959.

**Art
&
Science**

**Coffee
&
Refreshments**

**Reading
Room
&
Chess**

Books

Subscriptions

Thursdays

**Weekday
Afternoons**

GABERBOCCHUS COMMON ROOM

As you know from what we wrote when we opened it in August 1957, the GABERBOCCHUS COMMON ROOM (on the left bank of the Canal) is a basement where "artists and scientists and people interested in science and art can meet and exchange thoughts".

Coffee and refreshments are available and you can bring your own wine if you like.

Magazines from all over the world are there to be read, and there is a chess table.

In the shop above, on the ground floor, you can see and buy Gaberbocchus books, and also order any books or magazines published by any other publisher here or abroad.

The subscription to the Common Room is now one guinea. (When your subscription is due for renewal you can renew it by buying 4 of our books, if you prefer).

The Common Room will be open every Thursday evening, from November 13th, from 7 to 11 p.m., with or without the special organisation of talks, readings, plays etc.

You are welcome to use the Reading Room for reading and writing during our publishing "office hours", which are: Mon to Fri. 3—7 p.m.

Figure 5. Letter to members.

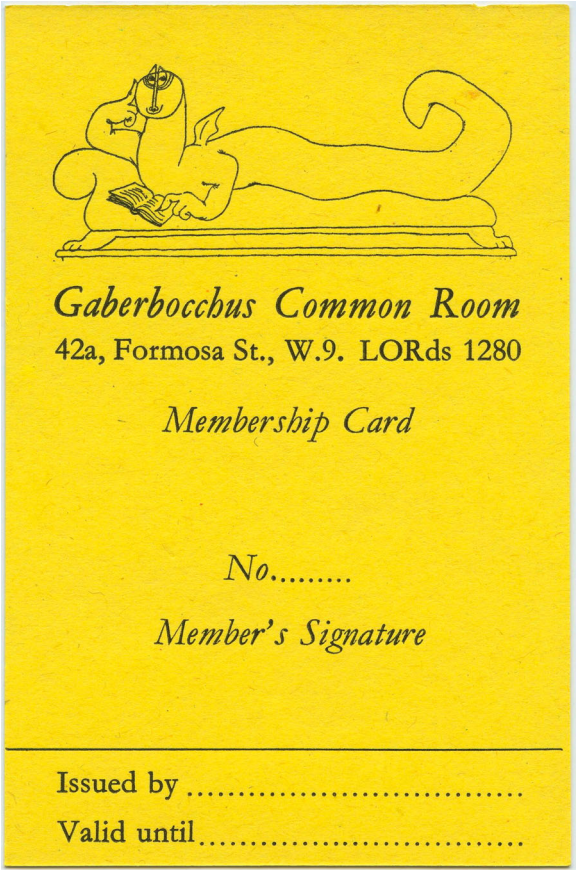


Figure 6. Membership card.

Tuesday 28 January 1958	TERENCE WHITE GERVAIS will read his satiric prose and verse.
Thursday 30 January 1958	AL MULOCK, and actors from THE LONDON STUDIO, in a discussion and demonstration of <i>The unMethod</i> .
Tuesday 4 February 1958	STEVIE SMITH will read her poems.
Thursday 6 February 1958	Z.M.T. TARKOWSKI : <i>Psychology — a bridge between the sciences and the arts. (Part I: Experimental Psychology.)</i>

Figure 7. Programme Jan-Feb 1958.

A NOTE FROM THE AUTHOR

CHESSE AND COFFEE

and something to think about.

I attended the Common Room for every session during the two years of its existence, 1957–1959. I helped with preparation of the premises, served coffee, washed up, read the

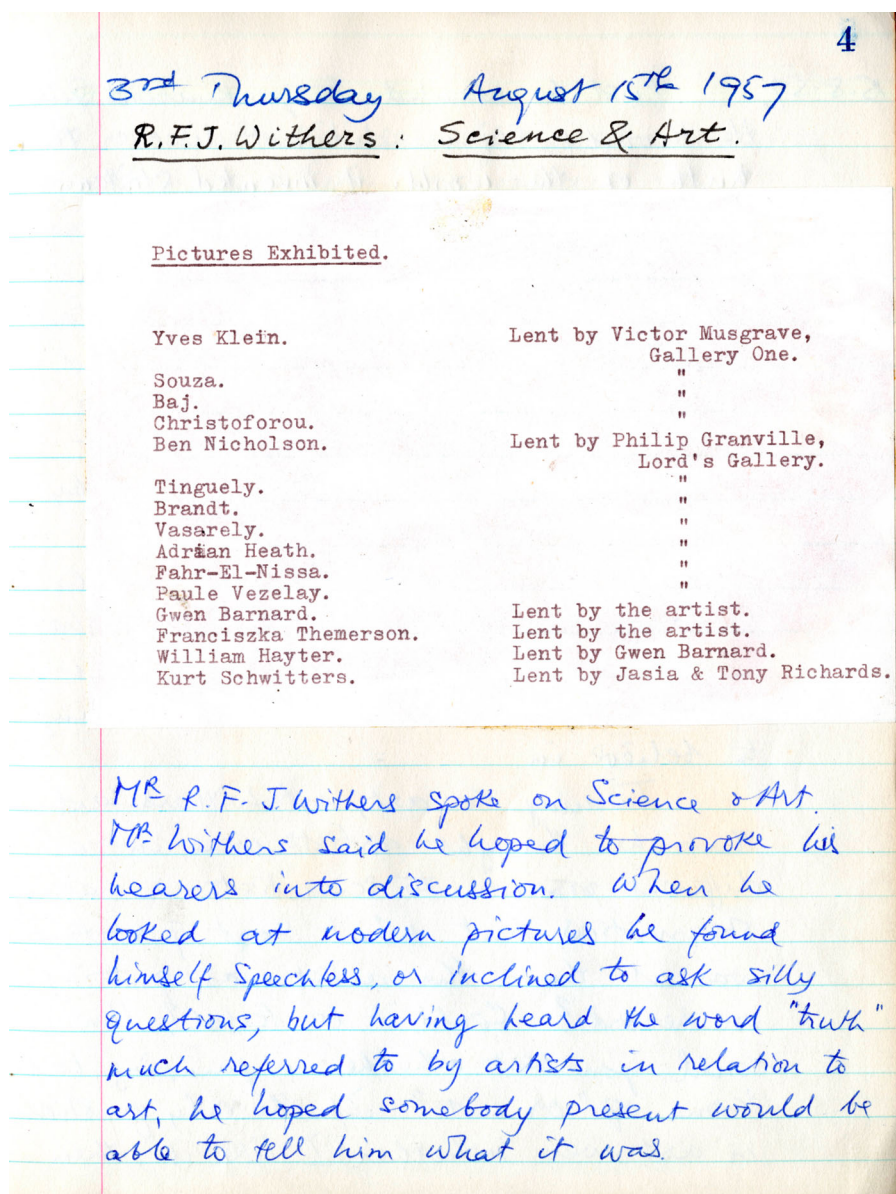


Figure 8. Excerpt from the Gaberbocchus Common Room Minute Book.

magazines and listened to lectures. The two years during which the Common Room was active provided me with an introduction to thinking about very different subjects in combination. In the club, scientists talked about art, artists asked questions about science and poets commented on film. After every session, there was a discussion and Barbara Wright recorded it in the Minute Book. It was there that for the first time I heard the terms pop art and cybernetics. Who can tell how much of what I heard, read and saw influenced or inspired me and led to what happened later? But a definite change did take place, in my mind at least, the distance between art and science was gradually reduced (Figures 2-9).

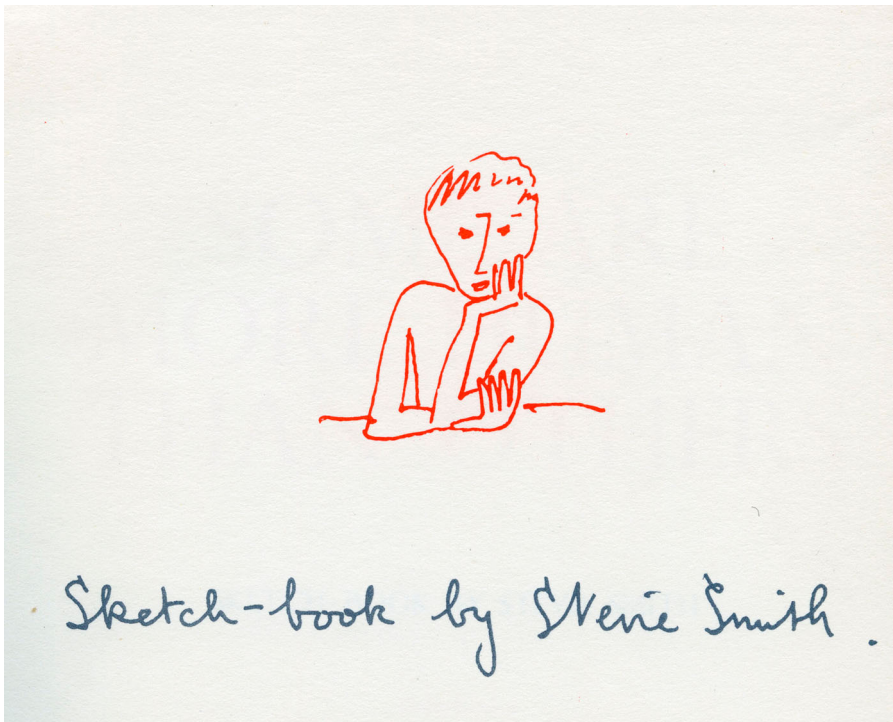


Figure 9. Drawing by Stevie Smith, who published 'Some are more human than others: a sketchbook' with Gaberbocchus Press in 1958.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Notes on contributor

Jasia Reichardt is a writer on art and an exhibition organiser. She was Assistant Director of the ICA in London, 1963–1971, and Director of the Whitechapel Art Gallery, 1974–1976. She has taught at the Architectural Association, as well as other colleges and wrote several books. She is interested in art that encroaches on other fields: science, music and literature, and has spent many years following up the connections between art and technology. Among her exhibitions staged in Britain, the best known is *Cybernetic Serendipity* (1968), about the computer and the arts.



The cybernetic moment: Roy Ascott and the British cybernetic pioneers, 1955–1965

Nick Lambert 

The Research Office, Ravensbourne, London, UK

ABSTRACT

Professor Roy Ascott developed the Ground Course at Ealing College of Art, drawing on his experience of Basic Design under Victor Pasmore and Richard Hamilton at Newcastle University. Through his reading of Ross Ashby and his friendship with Gordon Pask, Ascott introduced cybernetic theory into his art practice and pedagogy. This essay explores the degree to which Ascott embodied a distinctly British approach to cybernetics.

ARTICLE HISTORY

Received 30 November 2016
Accepted 3 January 2017

KEYWORDS

Cybernetics; art pedagogy; postwar art; new media; digital art; Independent Group; Victor Pasmore; Richard Hamilton; Roy Ascott; Nicholas Lambert

Roy Ascott is a significant interlocutor between cybernetics and the arts who introduced cybernetic theory into his Ground Course at Ealing College of Art in 1961. He has evolved concepts that continue to inform artists' approaches to networks, communications media and the Internet; whilst also drawing deeply on shamanism and spiritual discourses. Ascott's circle of influence is international and, through the graduates of his Planetary Collegium, works through a wide range of arts organizations and practices.

The word 'cybernetics' developed rapidly from a specialist term denoting a field of scientific interest and became a household word that covered a whole gamut of expectations about the future in the 1950s. Later its usage faded in the 1970s as the computer became more established in business, and then in the home, and the concept of Artificial Intelligence took over its 'futuristic' niche. By the mid-1990s, cybernetics was widely regarded as a quaint product of its times. However there is a resurgence of interest in the area, which is being reassessed in terms of contemporary approaches to ubiquitous computing and the rapid developments of new interfaces that bring the concept of 'feed-back' to a wide range of devices.

Ascott's understanding of cybernetics was deeply influenced by two key British pioneers: Ross Ashby and Gordon Pask. Andrew Pickering points out that cybernetics in the UK manifested itself in a very different way, with a distinctly aesthetic and performative aspect that shifted 'from epistemology to ontology, from representation to performativity, agency and emergence, not in the analysis of science but within the body of science itself' (Pickering 2002).

This essay proposes that Ascott's cybernetic theories concerning the arts emerged from this British school, combined with his formative aesthetic experiences under Victor

Pasmore, Richard Hamilton and Lawrence Gowing on the BA Fine Art course at Newcastle University in the mid-1950s (Figure 1).

Though it is now overshadowed by the revolutions of the 1960s, the preceding decade laid the foundations for many of its radical changes. There was clearly a ‘cybernetic moment’ in mid-1950s Britain that enabled the concept to spill over from the sciences into some of the artistic avant-garde. For instance, Jasia Reichardt was first introduced to the term on September 19th 1957, at a talk by Z Tarkowski at the Gaberbocchus Common Room, the salon run by her uncle and aunt, the Themersons. From then onwards, she followed the development of kinetic art in the UK and abroad, and went to the United States to observe the developments around Experiments in Art and Technology (Reichardt 2014).

Ascott was seemingly predisposed to find cybernetics at the right moment and realize its application in art. As this discovery preceded his friendship with Gordon Pask, important though that was, the answer must lie in the confluence of British Constructivism, represented by Pasmore and Gowing, and Hamilton’s approach to Duchamp, filtered through his connections with the Independent Group. It says much that Ascott was able to combine these very different strands. Pasmore, with his roots in Russian Constructivism, was ‘strikingly divergent’ from the work of Hamilton, Paolozzi, Henderson and Smithsons, and these differences manifested themselves in the 1956 exhibition ‘This is Tomorrow’ (Grieve 1994, 225).

Ascott said that these two approaches to art ‘produced in me an extreme psychosis’ (Ascott 2011, 203). In terms of the Basic Design course at Newcastle, Hamilton brought the concepts of ‘Flow and Process’; whereas Pasmore provided ‘Point and Line to Plane’ (Ascott 2016). Indeed, Ascott averred that he responded not to Hamilton’s collages but to his precise way of working and also his longstanding interest in Duchamp.

Hamilton’s exploration of D’Arcy Thompson’s *On Growth and Form*, to which he was introduced by Nigel Henderson during his studies at the Slade (Massey 2013), was an important element in Ascott’s education that would later draw him to Henri Bergson’s vitalist philosophy (Shanken 2003, 28). Indeed, Bergson assumed a place of central importance in Ascott’s early explorations of cybernetics, as demonstrated in his first essay for *Leonardo* magazine which appeared in 1968:

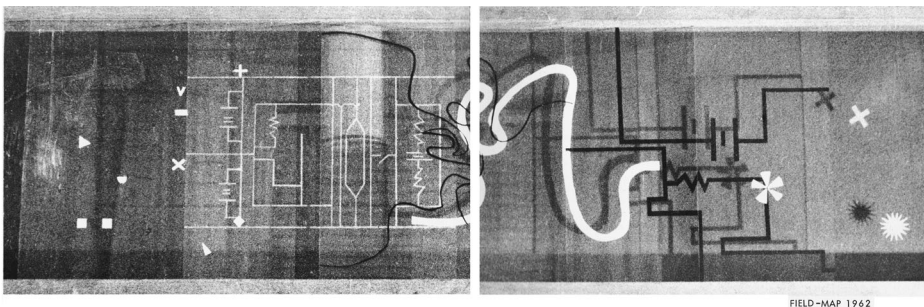


Figure 1. *Field-Map* 1962, Roy Ascott; from the catalogue to his exhibition ‘Diagram-boxes & Analogue Structures’ at the Molton Gallery, 12th February to 1st March 1963. Reproduced with the kind permission of the artist.

Henri Bergson, living in that period which served, so to speak, as the fulcrum of these two eras, revealed repeatedly in his *Philosophy of Change* the nature of the new situation. 'The role of life is to insert some indetermination in to matter' ... 'The living are relatively stable, and counterfeit immobility so well that we treat each of them as thing rather than as progress, forgetting that the very permanence of their form is only the outline of a movement.' (Ascott 1968, 106)

Edward Shanken also follows Jack Burnham's assertion that Bergson's influence could be traced through Jean Arp, who was an important influence upon Victor Pasmore (Shanken 2003, 29). Certainly there is something of Arp in Ascott's earliest reliefs such as the *Video-Roget* (1962, now in the Tate Gallery Permanent Collection). Along with Arp, Klee also occupied an important place in Pasmore's thinking and the *Pedagogical Sketchbook* in particular underpinned his work in the 1950s. These ideas too filtered down to his students at Newcastle. In 1953, at a symposium on Klee's *Pedagogical Sketchbook* at the ICA, Pasmore described Klee in these terms:

Klee aims to provide the student with a concrete and objective basis from which to develop. He seeks this basis in Nature: but it is not in Nature's finished results, as is traditional art, but in its processes. (Grieve 1982, 548)

Pasmore's approach at Newcastle, where he had been appointed Head of Painting in 1954, drew deeply on the Bauhaus tradition which had been inculcated in him during his time at Camberwell and the Central School by the painter William Johnstone. From his readings of Klee and Kandinsky he developed the famous Basic Design course:

I was interested in developing a new visual language which was independent of anything in front of you such as a still life, a language made up of basic visual sensations and basic visual forms. So at Newcastle I concentrated on experimenting with the students in creating this new language, which I called basic form, basic sensation. (Watkins 2001, 287)

Ascott later recalled Pasmore's 'very strange way of speaking' that made it more difficult to convey his ideas but Ascott declared that he 'got it almost telepathically!' Certainly he was deeply imbued with Pasmore's approach to relief paintings, which gave the idea of constructing things that later included movement. His constructivist principles were 'hugely important', as was the growing influence of Charles Biederman (Walsh 2013).

Biederman was another touchstone for both Pasmore and Ascott, because his textbook *Art as the Evolution of Visual Knowledge* provided much of the material for the Basic Design course. It was here, for instance, that Cézanne was accorded particular importance. The text proposed an evolutionary model of art that favoured the relief as a form appropriate to the industrial age:

For Biederman the next logical step in the search for a real art is the relief constructed of three dimensional planes under natural light. These reliefs, made from industrial materials by precision machines, are an 'art for a Science-Machine culture'. (Grieve 1982, 540)

Pasmore borrowed a copy of Biederman's book from Ceri Richards whilst teaching at Chelsea; Richards had been given it by the scientist William George, who had been sent it directly by Biederman himself due to the latter's interest in his work. Although Pasmore had begun exploring reliefs due to his encounters with Ben Nicholson, it was Biederman who provided him with a particular justification for using this form (Grieve 1982, 542). However he was no uncritical adopter of Biederman's theories; on the contrary,

Pasmore challenged the idea that one could create a scientifically-based objective artform that did not contain something subjective:

Your anatomy of processes, however, does not account for the subject. You have formed an anatomy, but no perspective; that is to say you have not identified processes within the artist which correspond to the processes of nature outside him.

In response, Biederman wrote:

the artist does not abstract from particular objects, but from all his experience with the general behavior (or function) of process as revealed in nature' ... 'We seek correspondence to the conditions of reality or nature (three-dimensional) in order that the structure of our art will be open to the possibilities evidenced in the functions of nature. (Grieve 1982, 547)

Having made reliefs until the late 1950s, Pasmore eventually returned to painting due to his experience of designing the Peterlee new town in County Durham, following Berthold Lubetkin's departure from the project. The housing designs emerged from Pasmore's constructivist concepts, and he also brought in his students to work on the designs; Ascott recalls being asked to develop several buildings (Ascott 2016). Following this, Pasmore said, 'after the full experience of urban design at Peterlee, making reliefs seemed rather ridiculous, it was too limiting, so I thought I would go back to painting' (Watkins 2001, 287).

It is notable that Biederman emphasized Cézanne in *Art as the Evolution of Visual Knowledge*, because Ascott regards his dissertation on Cézanne as a turning point. Here he discovered the sensibility for understanding an artwork as an organism: he could see that Cézanne's later paintings are unresolved and the resolution comes from the viewer; in this sense they are interactive. Understood in the light of cybernetics, the work of art is a system, including painter and viewer (Ascott 2016). Later, he recognized that sensors and other mechanisms could facilitate or enhance this interactivity but for some time he did not include mechanisms in his works. He also perceived some continuity between Cézanne and Jackson Pollock and arrived at the idea that Pollock's paintings contain a visual metaphor for networks.

It was the Pollock retrospective in 1958 at the Whitechapel, curated by Betty Parsons, that made a considerable impression on Ascott. One can sense its impact in the contemporary review broadcast by David Sylvester on the BBC Third Programme:

I think it is their seductiveness that has been the big surprise for those of us who are seeing Pollock wholesale for the first time. Their *elegance* is the most striking thing about them. Probably it would be less striking [if] it didn't run counter to the great Pollock legend [of] the slapdash improviser [...] Pollock's handling of paint and organisation of colour is in fact as sure, as subtle, as magisterial as Matisse's or Bonnard's. (Sylvester 2001, 61)

This caused Ascott to move away from reliefs and instead produce several huge painted canvases. He feared the results of such a radical break with Pasmore's direction and thought this would be brought out in the next departmental crit, which included the head of the Art School, Lawrence Gowing. Instead of censuring him, Gowing wholeheartedly approved: 'he said, "This is exactly what you've been doing previously. It's still constructed; it is just the other side of the coin". He got it.' (Walsh 2013).

Indeed, Gowing was also influential in other ways; Ascott recalled being impressed by his early advice: 'Gowing put up shelves with bottles on them and said: "Don't draw the

bottles, draw the space between them”’. Following the positive crit, this set up a kind of a chemistry between Ascott and Gowing, and when Ascott was doing his dissertation he was able to go into Gowing’s studio and study portfolios of facsimile watercolours of late Cezanne which informed the writing. Gowing was still doing his Euston Road paintings, and was of course responsible for bringing Hamilton and Pasmore to Newcastle (Ascott 2016).

Moreover, it was Gowing who provided the scholarship that enabled Ascott to go to Paris and meet Victor Vasarely and Nicholas Schöffer. Both of these Hungarian artists had settled in France and were working along Constructivist lines with kinetic sculptures; Vasarely was also credited as the ‘father’ of Op Art. Certainly his superimposed acrylic panes and *unités plastiques* were in a similar vein to Ascott’s later Change Paintings, and he too was deeply interested in theories of perception. He gave Ascott an etching that was later useful to him when he was able to sell it and help his financial situation (Ascott 2016).

Schöffer, meanwhile, was constructing his first CYSP (CYbernetic-SPatiodynamic) piece, which used the homeostatic principle of Ross Ashby’s early cybernetic devices as its underlying concept: ‘The homeostat, as first described and modelled by Ashby, essentially seeks an equilibrium point when it gets out of balance. CYSP-1 is a homeostat on wheels’ (Hoggett). CYSP was an early application of electronic sensors in a fully mobile piece of interactive and robotic art. Schöffer’s philosophical rationale for CYSP and his subsequent robotic pieces were summed up in a later article:

Every creator of sonic or visual art reveals and develops a framework. The harmonics of the framework in some sense mirror the complex structures which make us what we are and act upon our programs, regulating them according to each person’s specific rhythms. [...] Concretized in the domain of art, these structures constitute works coded and programmed in time and space. (Schöffer 1985)

Ascott certainly found this visit illuminating but did not engage with cybernetics until 1961, when he read F.H. George and Ross Ashby. He was not initially interested in cybernetics as an adjunct to robotics or mechanisms but as a social, political, spiritual and philosophical system. Indeed, he disagreed with Pasmore’s more disengaged approach, because he held that one had to involve the social in art and engage with it. Only later, when he established his course at Ipswich did he start working with electronics and wanted to take this forward with Stroud Cornock, but his exit from Ipswich precluded that (Ascott 2016).

Around 1955 the concept of cybernetics was also introduced to the Independent Group. As Anne Massey recounts it:

Reyner Banham’s interest in cybernetics [led] to E.W. Meyer being invited to talk about ‘Probability and Information Theory and Their Application to the Visual Arts’ in March 1955, resulting in several diagrams and collages by John McHale on the theme of the transistor. (Massey 1995, 91)

This arose from the IG’s engagement with science and technology, driven in particular by Richard Hamilton’s longstanding interest in the area that went back to the exhibition ‘Growth and Form’ (1951), inspired by D’Arcy Thompson’s book of the same name; and also the group’s concern with popular culture, especially American culture, that animated Lawrence Alloway and John McHale.

The latter seems to be often overlooked in the histories of Pop Art, but McHale's son claimed that his father had in fact produced a detailed mock-up design of *Just what is it that makes today's homes so different, so appealing?* (1956), as part of a collaboration for 'This Is Tomorrow', which was later credited to Hamilton alone (McHale 2006). Though this was refuted by Hamilton in 2007 (Hamilton 2007), it is instructive to take a closer look at McHale's contributions to the Independent Group and in particular his interests in contemporary communications technology.

McHale came to art following a wartime career as a medic and working for Admiralty Intelligence decrypting codes. During the late 1940s he travelled to Paris and met Ferdinand Leger and Tristan Tzara, then became interested in the Vorticists and Constructivism. Later he established a studio in Maida Vale and exhibited at the ICA, where he encountered Eduardo Paolozzi and attended his 'Bunk' presentation in 1952, the first meeting of the Young Group that evolved into the Independent Group, led by Reyner Banham and Lawrence Alloway. McHale stayed until 1955, when he left to study with Josef Albers at Black Mountain College, North Carolina. At the same time he also had a commercial design and graphics business with clients in London including Shell and Air France. During this period he looked into optical perception and also studied symbolic content, signs and meaning (McHale 2006).

From 1954 he developed a series of collages and influenced the concept of 'Pop Art' as it evolved within the Independent Group. These contained the collaged elements of popular culture, in particular referencing the rise of electronics, that at the very least presaged the general form of Hamilton's famous poster for 'This Is Tomorrow.' McHale was immersed in the world of American technology and culture earlier than many of his contemporaries and this underscored his decision to move to America later in the 1950s.

As a protégé of Buckminster Fuller and the Eamses, and with his background in visual perception and the symbolic nature of media, McHale was well aware that the value of art was changing; hence the concept of the 'Expendable Icon' that he developed at some length. John McHale Jr summarizes his father's concept: 'Images could be fixed, permanent, ephemeral, or they could be "expendable icons" depending on one's choice, source or channel of information' (McHale 2006).

McHale was thus open to informational theories and indeed, several of his collages included arrow-like diagrams, which also entered the commercial work he did for Air France in designing electronic information kiosks (McHale 2006). By the time that E.W. Meyer lectured about cybernetics to the Independent Group, it is likely that McHale was already cognisant of this area, and it seems that Meyer's talk inspired some of the *Transistors* series. Later in 1967, McHale formulated his understanding of the future of art:

As art and non-art become interchangeable, and the masterwork may only be a reel of punched or magnetized tape, the artist defines art less through any intrinsic value of the art object than by furnishing new conceptualities of life style and orientation. (McHale 1967)

This exploration is germane to the question of Roy Ascott's influences because McHale did in fact come to talk at Newcastle in the mid-1950s. Ascott recalls that Hamilton invited both McHale and Alloway to speak to them, along with a surviving member of the Dadaists, the poet Richard Huelsenbeck. When this venerable figure entered the room, Ascott

played 'God Save The Queen' on an old record player, thus causing everyone to stand up! (Ascott 2016)

Certainly there was a sense that cybernetics was impacting the visual arts from the mid-1950s onwards, and it is noteworthy that the artists who began to investigate it came from a Constructivist or Bauhaus-influenced background. At the same time, at least one cyberneticist was taking another route into visual art from the areas of science and drama: Gordon Pask. His Musicolour machine, was positioned between the fields of art, music, performance and science. As an example of an early piece of interactive art, it was so far ahead of its time that the vocabulary to describe it did not really exist, though it influenced Pask's concept of an 'aesthetically potent environment'.

Musicolour was the outcome of Pask's interest in synesthesia combined with his research in machine learning, and was first constructed in 1953 with Robin McKinnon-Wood, the co-founder of System Research Ltd whom he had met at Cambridge. Musicolour was designed to respond to sounds made by musicians; it altered visual patterns on a colour wheel according to filters that analysed the frequency, attack and rhythm; these then caused the performers to alter their music as they became familiar with the patterns, so the music did not become repetitive.

It is important to note that there [were] no fixed mappings between sounds and lights: these were developed through the interaction of the musicians with Musicolour. There is reciprocal feedback between Musicolour and the performers. (Bird and Di Paolo 2008, 193)

The system was deployed at a number of theatres and clubs in Northern England and London between 1955 and 1957, most successfully at Churchill's Club in London where people 'participated in the system by dancing, responding to the music and light show'. [Bird and Di Paolo, p194] However Musicolour was only effective in smaller spaces where the interactions were obvious and it became little more than a novelty in large night clubs. Hence Pask moved on to learning systems such as SAKI, but Musicolour set the stage, as it were, for the *Colloquy of Mobiles* at Cybernetic Serendipity. Pickering reflects on the importance of the system to Pask's evolving philosophy of cybernetics:

a Musicolour show was precisely a decentred joint performance of the human and the non-human. As Pask put it: 'He [the performer] trained the machine, and it played a game with him. In this sense, the system acted as an extension of the performer with which he could cooperate to achieve effects that he could not achieve on his own' (Pask 1971, 78). As nice an exemplification of the dance of agency as one might wish. (Pickering 2002, 427)

Thus by the late 1950s there was already one cybernetically-inspired performance system in the UK, albeit in the area of music. Although not directly influential on Ascott, it would be consequential for him when he finally met Pask a few years later. Having finished his course at Newcastle in 1959, he was employed as a demonstrator in the School of Art. Two years later, he was appointed to the post at Ealing College of Art where he would establish the Ground Course, which he initially conceived along the lines of Basic Design. Whilst looking through the book stacks in the University of Newcastle library, however, Ascott found: 'this really weird book called *Cybernetics and Business* by F. H. George. At the time I didn't know what cybernetics was, I just thought 'what?' So I opened it up. It had inside special words such as 'feedback', 'retro-action', 'black box', all of which were magic to me. I thought, 'Jesus, what is this stuff?' From this he went on to read Ross

Ashby and this connected deeply with his concepts of change and the societal aspects of cybernetics that were to assume great importance later on (Ascott 2011).

During a recent interview, Ascott was asked whether the Ground Course at Ealing was conceived as a cybernetic experiment. He replied as follows:

It was initially an attempt to set up a Basic Design Course, but changed considerably thanks to finding the cybernetic book in Newcastle. In the 'Construction of Change' there's a short manifesto about it. Bernard Cohen and Anthony Benjamin were particularly supportive of my concept. From the start it was intended to be a cybernetic organism with rules of reciprocity; if given info you must find a way to pass it on. I brought in Gordon Pask and Johnny Nerikov, a militant Marxist who gave classes in small arms training; also Gustav Metzger, Cohen and many others to expose the students to as wide a range of thought as possible. It was all tied together by the idea of systems and process. (Ascott 2016)

'The Construction of Change' (1964) was Ascott's first substantial reflection on the importance of cybernetics to his own creative process and by extension, as the basis for the Groundcourse itself. By providing a multiplicity of experiences to his students, and forcing them to confront new modes of thought and the fluidity of their own personae as well, Ascott could then make them comprehend the dynamic and unfixed nature of things they had previously assumed to be unchanging. In so doing he better equipped them for a cybernetic world which was becoming, to a large degree, automated and where human perception was mediated through a range of mechanisms. As Ascott declared: (Figure 2)

Cybernetic method may be characterised by a tendency to exteriorise its concepts in some solid form; to produce models in hardware of the natural or artificial system it is discussing. It is concerned with what things do and how they do them, and with the process within which they behave. It takes a dynamic view of life, not unlike that of the artist. [...] Cybernetics is concerned with the behaviour of the environment, its regulation, and the structure that reveals the organisation of its parts. "Control and communication in animal and machine" is a proper study for the artist. (Ascott 1964)

Behaviour and identity flowed from this interchange and by the second of the course, much of the learning was given over to mind maps and calibrators to change the students' behaviour. Therefore the Ealing course departed significantly from previous art courses

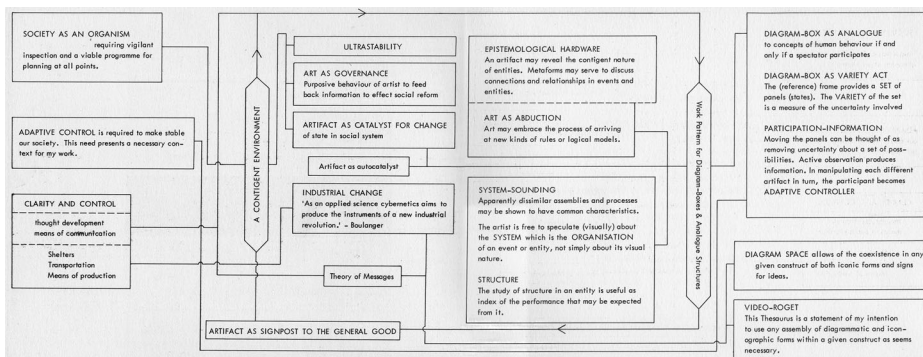


Figure 2. Cybernetic diagram by Ascott, 1963, demonstrating his application of the theory. From the exhibition 'Diagram-boxes & Analogue Structures'. Reproduced with the kind permission of the artist.

and produced little assessable material in terms of portfolios, but strong results in the students themselves. Ascott reported that there was good support within Ealing art school for this, but when the students' work was sent out for assessment to Laurence Gowing (now professor there) he 'couldn't understand a jot', as Ascott put it (Ascott 2016). This was despite his earlier support for Ascott at Ealing. At that point, Ascott decided to leave for a more senior position at Ipswich College of Art, where he also implemented further cybernetic concepts (Mason 2008, 66–67).

It was at a 1961 show by the Artists' International Association in Frith St that Ascott met Gordon Pask, who was intrigued by the *Change Paintings* that Ascott was exhibiting. On the strength of their conversation, Pask came back to his studio in Highgate. They spent the night looking at a book on computer programming which was a Russian book in translation; quite possibly by Kamynin, Lyubimskii and Shura-Bura, whom Ascott later celebrated in an eponymous work in 1964 (Shanken 2003, 32). Ascott could understand the more general analogies in the text but Pask had the necessary mathematical knowledge to help interpretation. The results of this were a milestone for Ascott (2016). He later explained how cybernetic art connected with his earlier Constructivist-influenced training and developed it further:

Just as Constructivist art mirrored in its structures those kinds of spatial organizations thought to be excellent at the large architectural levels, so my studio work mirrors in its processes the behavioural possibilities I am intending when I plan, at the larger social level, the requirements of a Cybernetic Art Matrix. (Ascott 1968, 108)

Pask's development of Conversation Theory was a key part of his discussions with Ascott and he acknowledged importance to his later thought. He found Pask to be a great friend and mentor, who introduced him to many people in the cybernetics and art scenes both in UK and abroad. Through him, Ascott was inducted into the International Institute of Cybernetics. He was once asked to give a keynote to this august organization at a suitably grand theatre in Vienna. No sooner had Ascott walked to the podium, there was a sudden crash as Pask strode through the door, wearing a green cloak and rustling a bag of medicines, and sat down at the very front! 'Do you mind if I start now Gordon?' asked Ascott (2016)

Later, it was Pask who brought Ascott into the Fun Palace project set up by Cedric Price and Joan Littlewood in 1964. Amongst the various committees working different aspects of the Fun Palace, Ascott was to chair the Amenities Committee, where his central contribution was the Pillar of Information:

Based on patterns of user interaction, the Pillar of Information would gradually develop an increasingly complex network of cognitive associations and slippages as a kind of nonhierarchical information matrix, both allowing and provoking further inquiry beyond the user's initial query. (Matthews 2006, 40)

This was a prescient concept for a type of publically-accessible database that would enable various searches to be made and also track the paths taken by various users, to enhance the directions taken by later questioners. Pask's ideas around performativity were key to the Fun Palace; indeed, the concept of 'fun' was reinterpreted towards something more like societal conditioning through experience. Arguably, the range and dynamic of the activities, and committees established to serve them, made the Fun Palace ever more unlikely to

reach fruition and Ascott reflected that it was ‘scuppered by the “mafia” of the Arts Council’ because of its myriad approaches (Ascott 2016).

One positive outcome of the project, however was that Ascott was introduced to the architect Will Alsop; and participating in discussions with Cedric Price and his colleagues also ensured a wider circulation for Ascott’s cybernetic concepts (Ascott 2016).

Although Ascott’s work at Ealing and Ipswich came to an untimely end due to its inherent radicalism, he inspired other art educators to approach fine art courses in more radical ways. Peter Kardia, for instance, saw the potential of the behaviourist aspects of the Ground Course and engaged with them in his Objective Studies course at St Martin’s:

Frequently progress in study involves the questioning of institutional definitions of the boundaries of a subject. Behavioural studies are concerned with the procedures of redefinition. (Staff handout by Kardia in 1965; quoted in Westley 2010, 45)

Following the cessation of the programme at Ealing, Kardia went on to recruit many of the tutors for his own course (Westley 2010, 43).

In conclusion, then, it is clear that Ascott discovered cybernetics at an early moment in its evolution; about a decade after the term entered circulation following Norbert Wiener’s book of 1948. He had already been prepared to some degree by the innovative Basic Design course at Newcastle, which was itself the result of a confluence of resurgent Constructivist ideas combined with an appreciation for the mediated (and Americanized) postwar cultural landscape, together with the potentials of science and technology in the arts. Through Cybernetics, he was able to synthesize the contrasting influences of Pasmore and Hamilton, and also benefit from the guidance of Gordon Pask at a crucial time for his work.

Ascott put all these ideas to use at Ealing and also in the evolution of his own artworks; and they provided him with a dynamic set of artistic principles that would later make him one of the key figures in communications art, and his own area of telematics art.

The question then comes back to the extent to which cybernetics was used as a tool for control or for activating the creative responses of both makers and participants. Here we come back to McHale who thought that in the era of technological production, artists and audience participated in the creation of whole creative environments rather than individual works and the ‘work’ as such was destined to disappear. Clearly this underscored the rise of Conceptual Art, of which Ascott was seen as a key exponent.

At the same time, of course, Jack Burnham, Sol LeWitt and many others were formulating ideas around the use of process and systems in art; and in Germany the ideas of Max Bense were also proving influential. But Ascott’s ideas remain a very distinctive expression, in both a British and international context, and evolved in their own way through the 1970s, surviving the gradual fading of ‘cybernetics’ as a buzzword for the future. Currently, cybernetics informs the development of Roy Ascott’s undergraduate and postgraduate programmes provided by his studio at the DeTao Masters Academy in Shanghai.¹

¹http://www.detaoma.com/Roy_Ascott/

Acknowledgement

The author is very grateful to Roy Ascott, who kindly agreed to be interviewed for this article on 27th September 2016.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Dr Nick Lambert is Head of Research and Contextual Studies at Ravensbourne. His interests revolve around the digital medium and its application in contemporary art and visual culture. Through this, he engages with questions about the boundary between ‘fine’ and ‘applied’ arts, design and interfaces, and the relation of art, science and technology. He has researched the history of computer art and engaged with artists and theorists in this field. He has also developed parallel interests in the history of evolution of interfaces and display technologies during the Cold War.

ORCID

Nick Lambert  <http://orcid.org/0000-0002-5482-2830>

References

- Ascott, Roy. 1964. “The Construction of Change.” *Cambridge Opinion*, reprinted on p. 100, *Telematic Embrace: Visionary Theories of Art, Technology and Consciousness*, edited by Edward Shanken (University of California, 2003).
- Ascott, Roy. 1968, Apr. “The Cybernetic Stance: My Process and Purpose.” *Leonardo* 1 (2): 105–112.
- Ascott, Roy. 2011. “Roy Ascott in conversation with Mike Stubbs,” transcription of a speech from Nam June Paik Conference “The Future Is Now: Media Arts, Performance and Identity After Nam June Paik.” Presented by FACT and Tate Liverpool, 18 February 2011, in *Leonardo Electronic Almanac*, Vol. 19, No. 5 (2013), pp. 202–211.
- Ascott, Roy. 2016. Transcript of interview with Nick Lambert, 27th September 2016.
- Bird, J., and E. A. Di Paolo. 2008. “Gordon Pask and His Maverick Machines.” In *The Mechanical Mind in History*, edited by P. Husbands, M. Wheeler, and O. Holland, 185–211. Cambridge, MA: MIT Press.
- Grieve, Alastair. 1982. “Charles Biederman and the English Constructionists I: Biederman and Victor Pasmore.” *The Burlington Magazine* 124 (954): 540–549+551. Special Issue Devoted to Twentieth-Century Art (Sep., 1982).
- Grieve, Alastair. 1994, Apr. “‘This Is Tomorrow’, a Remarkable Exhibition Born from Contention.” *The Burlington Magazine* 136 (1093): 225–232.
- Hamilton, Richard. 2007. “A statement by Richard Hamilton”, <http://www.warholstars.org/articles/richardhamilton/richardhamilton.html>.
- Hoggett, Reuben. “1956 – CYSP-1 – Nicolas Schöffer.” <http://cyberneticzoo.com/cyberneticanimals/1956-cysp-1-nicolas-schoffer-hungarianfrench/>.
- Mason, Catherine. 2008. *A Computer in the Art Room*. Fakenham: JJG.
- Massey, Anne. 1995. *The Independent Group: Modernism and Mass Culture in Britain, 1945-1959*. Manchester: Manchester University Press.
- Massey, Anne. 2013. “Richard Hamilton” biographical notes: <http://independentgroup.org.uk/contributors/hamilton/>.

- Matthews, Stanley. 2006. "The Fun Palace as Virtual Architecture: Cedric Price and the Practices of Indeterminacy." *Journal of Architectural Education* 59: 39–48. ©2006 ACSA.
- McHale, John. 1967. "The Plastic Parthenon." *Dot Zero* No. 3 in 1967; quoted by Rick Poyner in "John McHale and the Expendable Ikon" in *Design Observer*, Feb 2012 <http://designobserver.com/article.php?id=32898>.
- McHale, John, Jr. 2006. "Interview with John McHale (Jr.), the son of the "Father of Pop." Gary Comenas, July 2006 <http://www.warholstars.org/articles/johnmchale/johnmchale.html>.
- Pickering, Andrew. 2002, Jun. "Cybernetics and the Mangle: Ashby, Beer and Pask." *Social Studies of Science* 32 (3): 413–437.
- Reichardt, Jasia. 2014. Transcript of lecture given at the White Heat Symposium, Kettle's Yard, Cambridge 26th July, 2014 [from author's notes].
- Schöffner, Nicolas. 1985. "Sonic and Visual Structures: Theory and Experiment." *Leonardo* 18 (2): 59–68.
- Shanken, Edward. 2003. "From Cybernetics to Telematics." In *Telematic Embrace: Visionary Theories of Art, Technology, and Consciousness*, 28–32. Berkeley: University of California Press.
- Sylvester, David. 2001. "Pollock." In *About Modern Art*, 61. New Haven: Yale University Press.
- Walsh, Meeka. 2013. "Analogue: Incidents in the Life of Roy Ascott." *Border Crossings* Issue 127, August 2013, <http://bordercrossingsmag.com/article/analogue-incidents-in-the-life-of-roy-ascott>.
- Watkins, Nicholas. 2001, May. "An Interview with Victor Pasmore." *The Burlington Magazine* 143 (1178): 284–289.
- Westley, Hester. 2010. "The Intellectual Metronome: Peter Kardia at St Martin's." In *From Floor to Sky: The Experience of the Art School Studio*, edited by Peter Kardia, Hester Westley, and Malcolm Le Grice, 43–45. London: A&C Black.



Reading back from *Experimental Painting*

Stephen Bann

Department of History of Art, University of Bristol, Canterbury, UK

ABSTRACT

My book, *Experimental Painting* (1970), was the product of a decade of coming to terms with the history of modern art and with contemporary manifestations of the avantgarde. While at Cambridge from 1960 to 1967, I published art criticism, initially in locally published magazines, and then went on to review art exhibitions both nationally and internationally. This led to being co-editor of *Form*, which produced further opportunities. The term 'experimental' that I adopted in 1970 was intended to suggest the paradigm of scientific discovery which suited some, if not all, of the artists I studied. This article considers concepts directly imported from contemporary scientific enquiry that seemed relevant to me at the time, notably those from experimental psychology, psychoanalysis and structural linguistics. I relate them to the character of intellectual life at Cambridge in a period which saw much debate about the relationship between Sciences and Humanities as 'Two Cultures'.

ARTICLE HISTORY

Received 1 July 2016
Revised 7 November 2016
Accepted 30 November 2016

KEYWORDS

Experiment; science; destruction; construction; abstraction; modern movement; psychoanalysis; anthropology; structuralism; linguistics; computing; aesthetics; kinetic art; concrete poetry; Cambridge University

In 1970, I published a book with the title *Experimental Painting: construction, abstraction, destruction, reduction*. This was part of a series recently launched by the enterprising arts publisher Studio Vista, and it was accompanied in the same year by two other volumes: *Experimental Theatre: from Stanislavsky to today*, by James Roose Evans, and *Experimental Architecture*, by Peter Cook. All of these studies were, in a general way, attempts to sum up the way in which a specific discipline in the arts had been reconnected with the work of the pioneers of the Modern Movement, following upon the interruption of the Second World War. Each study however viewed the concept of 'experiment' from a somewhat different angle. Roose Evans identified the separate strands of theatrical development by reference to specific figures: Stanislavsky for foregrounding the importance of the actor, Edward Gordon Craig for investigating the scenic possibilities of theatre, and (for the postwar period) the Polish director Grotowski who had focused on the live relationship between actor and audience. His definition of experiment as such was that it involved 'a foray into the unknown [...] something that can be charted only after the event' (Roose Evans 1970, 7).

Peter Cook, by contrast, saw the experimental impulse as responding to a specific political agenda in so far as it militated against 'the broad and horrific mainstream of recent architecture'. In Cook's view, the tradition of experimentalism could be more or less directly equated with socialism. The 'present mood', he suggested, was 'to research as many of the originating points of syndromes (the Bauhaus, the Futurists, the

Constructivists, for example) as possible, in order to point up the morality or not of those movements' (Cook 1970, 7).

My own response to the assignment differed from both of these approaches. Like Roose Evans, I broke the notion of experiment down into a number of separate categories. However these were not considered as sequential stages, associated with specific figures, but as conceptually different 'paths' of experiment to which a group of different artists could be assigned. Like Cook, I saw it as important to examine the impulse and direction of the various movements of the avant-garde. But my own interest in doing so was historical, rather than moral, and part of my concern was with the degree to which concepts of experiment that recalled the disinterested pursuit of scientific knowledge had entered the mainstream of contemporary artistic production. As I underlined in my Introduction:

The 'experimental' procedures which I shall be tracing will therefore approach at their most extreme the scientific analogy of the research worker, whose experiments are valuable only in so far as they can be inserted into an evolving theoretical scheme. At the other end of the scale, this emphasis upon the artist's 'path' need imply very little more than Mondrian meant when he wrote: 'True art like true life takes a single road'. (1970a, 8)

I take 1970 as the starting point for this essay as a prelude to retracing the road that I myself had followed over the preceding decade. For *Experimental Painting* was indeed my attempt at a kind of summation of the critical itineraries that I had pursued since my arrival at King's College, Cambridge in 1960, some of which had raised interdisciplinary issues pertaining to science and art. Prominent on the cover of my book (and chosen by the editor for its striking appearance) was a detail of Gustav Metzger's 'First demonstration of acid-nylon technique', which dated from 22 June 1960. One of my first artistic excursions on arriving at Cambridge was to observe the second of these historic demonstrations, which was performed in a small room at Trinity College in October of the same year. Ten years later, Metzger's ongoing work appeared to me to be the most vivid recent testimony of a path of 'destruction' in art that reached back to Delacroix and Giacometti, while having a contemporary counterpart in the work of a fellow student under David Bomberg, Frank Auerbach.

The fact that this event took place in Cambridge can hardly be regarded as accidental. I shall mention later the various publishing opportunities that eased my way from undergraduate criticism into a more public position as a writer. But it is worth observing from the outset that Cambridge had earlier been, and continued to be, the epicentre of debate about 'The Two Cultures': that is to say, the question of whether there was a significant, and regrettable, cultural division between specialists in the Humanities and those in the hard Sciences. C. P. Snow had launched the debate in his Rede lecture at the Senate House, Cambridge, on 7 May 1959, and followed this up with a much-discussed book on the subject. The well-known critic of English literature, and fellow of Downing College, F. R. Leavis, had taken up the cudgels from the point of view of the cultural mission of the Humanities, questioning Snow's contention that ignorance of the significance of scientific laws was indefensible. A less polarized approach to the debate would be taken by the distinguished biochemist and fellow of my own college, Michael Yudkin, whose essay in response to Snow's lecture was published together with Leavis's text in 1962.¹

¹See Leavis (1972).



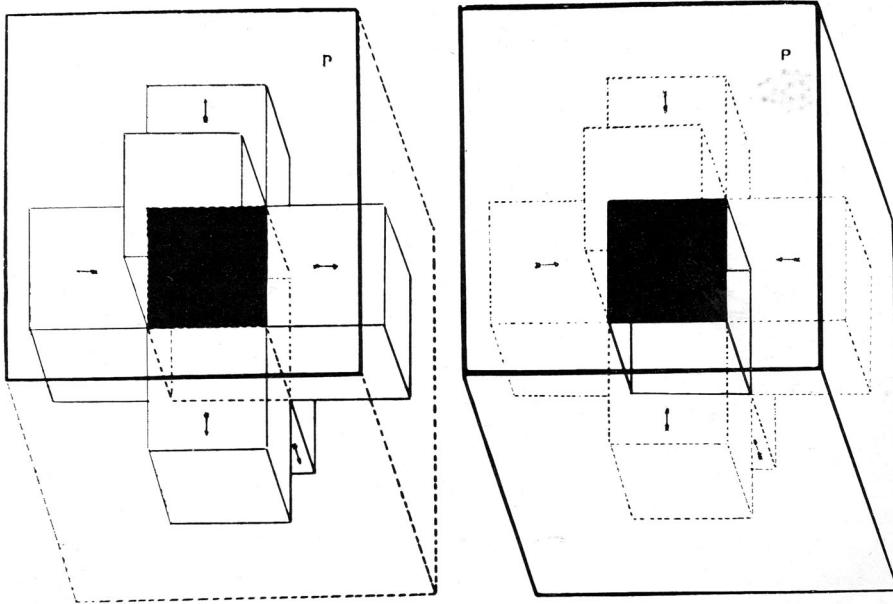
Although Snow focused his argument on the premise that the English educational system was especially at fault in perpetuating this divide, there is no doubt that his intervention also produced ripples farther afield, at any rate in the English-speaking world. Not much has changed in the last half-century in respect of the stereotyped images that Snow brought to the surface. That the spectacle of brilliant scientists captivated by low-brow cultural pursuits can still be a subject of popular entertainment on a wider scale is surely proved by the international success of the brilliant American sitcom, *The Big Bang Theory*. Yet the scenario of dysfunctional Caltech scientists competing to acquire the rarities of the Comic Book Store in Pasadena bears little relation to the kind of social and cultural interaction that was taken for granted in the life of a Cambridge college in the 1960s. When I myself arrived at King's to read history in the autumn of 1960, my immediate social circle consisted of a modern linguist, a classicist and a geologist who would later emerge as one of the undoubted world leaders in his field. Established literary fame was represented by resident fellow E. M. Forster, and future achievement by the arrival in a few years later, of Salman Rushdie. Music was always to the fore, with the excellence of the chapel choir under David Willcocks being complemented in the later 1960s by the emergence of the successful spin off known as the King's Singers, and John Eliot Gardiner

arriving as a History scholar in the year following my own arrival. The Provost of the college from 1966 onwards was the leading British anthropologist Edmund Leach, who was chiefly responsible for the British reception of the structuralism of Claude Lévi-Strauss.

Form

Just published is the first ('Summer 1966') number of a new quarterly magazine of the arts called '**Form**'. The emphasis in '**Form**' is to be rather on aesthetics, and the theoretical basis of the work of art, than on the reporting of current news of the art world, and of 'what's on at the galleries'. In particular the aim of '**Form**' is to publish discussion of the relations of structure to form in the work of art, and of correspondences between the arts—and thus its scope will embrace painting and sculpture, poetry and literature, architecture, music and the cinema, as well as some scientific subjects. There will be particular coverage of two new genres—concrete poetry and kinetic art.

Below: from Theo van Doesburg's article 'Film as Pure Form'.



I mention these names in order to underline that, not only on the social level, there was an expectation of commonality, rather than division, between disciplines in the college, and I shall later mention the importance for me of one particular connection. But of course the university as a whole offered other opportunities of a more specific kind. In respect of publishing, I was enabled me to progress through a variety of critical outlets, from the cheaply produced Cambridge entertainment guide *Broadsheet*, of which I was briefly an editor, to the more established undergraduate literary magazine, *Granta*, and the semi-official organ of *The Cambridge Review*, published by Heffer's Bookshop, which offered the opportunity for me to write at length about exhibitions like the first British showing of Robert Rauschenberg at the Whitechapel Gallery (Bann 1964a) and

Documenta III at Kassel (Bann 1964b). These assignments led in their turn to a participation in the publications edited by Philip Steadman, first of all the London-based magazine *Image*, which was devoted for three successive numbers to our investigation of avant-garde art and poetry (1964–65) and secondly the 10 issues of a wholly independent little magazine of the arts, *Form*, which was edited and designed by Steadman and had Mike Weaver and myself as co-editors (1966–1969).

I should also mention at this point the opportunity offered by the programme of the university's Society of the Arts, which Steadman and I managed in 1962–1964. We inherited this role from Piers Paul Read, the future novelist and son of Sir Herbert Read, and Rackstraw Downes, who has since become a prominent landscape painter in the United States. Among the visiting lecturers whom we invited to speak were the American painter Larry Rivers, the English constructive artist Victor Pasmore, and the psychoanalytic writer Anton Ehrenzweig.² The site for this society's operations was the lecture theatre that served the Faculty of Architecture and History of Art at Scroope Terrace. Steadman was studying architecture, and it would be fair to say that the international range of architectural practice and theory that was reflected in the ethos of the faculty at the time provided a very congenial context for my developing interest in the visual arts. The founding Professor of Architecture at Cambridge, Sir Leslie Martin, had been co-editor of *Circle*, a historic collection of pre-war texts on the theory and practice of modernism, in conjunction with the English artist Ben Nicholson and the Russian expatriate sculptor, Naum Gabo.

It would, all the same, be true to say that the first major influence in determining the future direction of my critical interests was the London-based literary magazine *X*, edited by the poet David Wright and the painter Patrick Swift. While I was still at school, I began to subscribe to this luxuriously produced but short-lived publication, beginning with its initial number, which appeared in 1959. *X* published work by Samuel Beckett, and also that of his friend Robert Pinget, who was one of the authors identified with the French 'new novel' (*nouveau roman*). Pinget's more well-known fellow novelist, Alain Robbe-Grillet, was the subject of the essay that I entered for a college prize competition in 1962, which was subsequently published in *Granta* (Bann 1962, 18–27). The novels of Pinget himself were the subject of my first essay for a national publication, the *London Magazine* (Bann 1964c).

As far as the visual arts were concerned, *X* featured the painter and sculptor Alberto Giacometti, but was largely confined to the artists represented by the Beaux-Arts Gallery in London at the time, who included Francis Bacon, David Bomberg and Frank Auerbach. I became a regular visitor to the gallery, and published articles on Giacometti and Bacon in *Granta*. My interest in what I determined to be this path of artistic activity reached a synthesis when I placed Bacon, Giacometti, Bomberg and Auerbach in the section of *Experimental Painting* that I labelled 'destruction', concluding with the acid-on-nylon experiments of Metzger (Bann 1970a, 53–62).

In retrospect, my first postgraduate year, 1963–1964, was the period in which my critical writing first acquired some degree of coherent theoretical underpinning, and started to draw upon concepts from various, more or less scientific, areas of knowledge. In a round-up of London exhibitions for *The Cambridge Review* (Bann 1964d), entitled 'Bomberg,

²Anton Ehrenzweig, who died in 1966, achieved posthumous fame with his book, *The Hidden Order of Art* (1967).

Picabia and the New Generation', I invoked the concept of 'psychical distance' developed by Ernest Bullough in an article for the *British Journal of Psychology* in 1912. I was attracted to Bullough's notion of 'the elaboration of [aesthetic] experience on the new basis created by the inhibitory action of Distance'; this underscored my perception of 'the integrity of the work of art' as being the common feature of the work of the British 'New Generation', as shown at the Whitechapel. I have no recollection of how I came by this somewhat recondite source. But I have no doubt that the most important single work of artistic theory that I read around this time was Ernst Gombrich's *Meditations on a hobby horse* (London: Phaidon, 1964). I published in *The Cambridge Review* of 7 March 1964 an article on 'Rauschenberg and Representation' (Bann 1964a) that drew heavily on the concept of representation developed in the essay that Gombrich chose for his title. I also recall corresponding around the same time with the psychoanalyst Anton Ehrenzweig (doubtless following his lecture to the Society of Arts) about the implications of Rauschenberg incorporating a 'real' chair into one of his assemblages. This helpful exchange was later summarized in my discussion of Rauschenberg in the 'reduction' section of *Experimental Painting* (1970a, 125).³

By the end of 1964, however, my artistic horizons had also been greatly expanded. I had visited the Documenta III exhibition in Kassel, and wrote at length on this unprecedentedly comprehensive display of modern and contemporary art in *The Cambridge Review* (Bann 1964b). As a postgraduate working on nineteenth-century French historiography, I had also begun residence in Paris for the academic year 1964–1965. But at the same time my critical approach was becoming less responsive and more active, and perhaps creative, as I began to engage with the new contemporary movements of kinetic art and concrete poetry. This development was largely the result of the stimulus provided by a number of my Cambridge friends. Reg Gadney (then editor of *Granta*), who had strong links with the American kinetic artist, Frank Malina, introduced me to this lively and cosmopolitan section of the Parisian artistic milieu. Through the intermediacy of the critic Frank Popper, I came to know, in particular, the artist Bernard Lassus, who was then creating 'ambiances' of an architectural nature, but was destined to become over the following half-century one of the foremost garden designers and theorists in Europe.⁴ Mike Weaver, who had begun to correspond with the Scottish concrete poet Ian Hamilton Finlay, drove me up to Edinburgh to meet him in August 1964 and so initiated another long-standing connection with another garden designer of the very first importance. Finally, I should mention once again my school friend Philip Steadman, whose prowess and commitment as editor and designer ensured a sequence of magazine publications that would carry our texts, culminating in the 10 issues of *Form* that would appear between 1966 and 1969.

Our jointly produced issue of *Image* on Kinetic art and Concrete poetry was published in November 1964, in the same month as *Granta* published the catalogue for the 'First International Exhibition of Concrete, Phonetic and Kinetic Poetry', held in the Rushmore Rooms of St Catharine's College, Cambridge. My own short essay on 'Communication and

³I also referred in my Introduction (8) to the subject of Erhenzweig's lecture at Cambridge, which was concerned with 'the dangers of over-precise visualisation' in the plastic arts. The letter which I received after sending Erhenzweig my review of the Rauschenberg show was dated 22 April 1964.

⁴A report that I originally compiled on Lassus' work up to the early 1980s has recently been published in a bilingual version (Bann 2014).

Structure in Concrete Poetry', published in *Image* beside a letter by Finlay, was avowedly a direct application of Gombrich's brilliant essay entitled 'Expression and Communication', and more particularly of the use that Gombrich made in developing the concept of 'semantic space' originating in the work of the experimental psychologist, C. E. Osgood. It was Osgood who had devised a simple principle for representing the relationship between words in ways that transcended their literal meaning. Gombrich neatly expressed the point by stating: 'all kinds of relationships or transitions can be equated in our half-dreaming mind within the transition from "ping" to "pong"' (Bann 1964e, 8). This was a gift to me, as a poem by the foremost Swiss/German concrete poet, Ernst Gomringer, deployed exactly those two juxtaposed terms in a particular typographic sequence. In Gombrich's case, the dividend of the argument was that comparisons between primarily abstract paintings – specifically works by Kandinsky and Klee – could be shown to have similar semantic implications. In my argument, the role of typography in the graphic arrangement of texts (as in Finlay's *Canal Stripe 3* poem) could be understood as being integral to their meaning.

This short piece launched me on a series of writings about concrete poetry which led in the short term to the Introduction to my international anthology of 1967 (Bann 1967), and anticipated my much more lengthy involvement as a critic and commentator on the work of Ian Hamilton Finlay. However my review of the Kassel Documenta III (Bann 1964b) was a response of a more general nature to this unparalleled opportunity of viewing the entire compass of modern and contemporary art in a single coherent grouping. Some of the modern British artists represented were indeed already familiar to me: Ben Nicholson and Henry Moore, for instance, from my visits to Jim Ede's collection at Kettle's Yard. But much of the work was new to me, and I pointed out that the spacious installation in several locations was far superior to the cramped installation of contemporary work from the Gulbenkian collection that had been shown recently at the Tate. This was my first chance to make an assessment of the historical development from nineteenth century art, by way of modernism, to the contemporary American artists whose work had recently impressed me. I suggested:

[I]t is possible to perceive strong lines of development in recent painting. The acute contrast between surface plasticity and represented object, so fruitful in modern painting from the late Delacroix to Francis Bacon, has acquired an additional element. Painters like Rivers and Rauschenberg have heightened the tension by an exploration of the implicit assumptions of representation. They have induced illusion, yet sharpened it with elements of ambiguity. (Bann 1964b)

The attempt to make sense of this comprehensive, yet highly diversified, exhibition was the necessary prelude to the broad argument that I later formulated in *Experimental Painting*. But it also provided an incentive to look more closely at the kinetic artists featured at Kassel, who were becoming well-known to me through the activities of my Cambridge colleagues. I also wrote in this review: 'A picture by Soto or Agam requires simply an open eye, and the movement of the spectator. The new simplicity is not an impoverishment, but rather a move towards order and discipline [...]'. For the next couple of years, I tried to pin down the implications of this new aesthetic, focusing in particular on the programme of one of its most radical exponents, the Paris-based Groupe Recherche d'Art Visuel.

This was in effect the period in which the phenomenon generally known as ‘Op art’ acquired world-wide publicity, which peaked in William C. Seitz’s exhibition, ‘The Responsive Eye’ at the Museum of Modern Art, New York (1965). This show however generated dissent and controversy, not least from artists like Bridget Riley and Ad Reinhardt who were prominently featured. There can be no doubt that the GRAV were scrupulous in attempting to differentiate their own practice from the relatively simplistic message conveyed by ‘The Responsive Eye’, striving in particular to explain how far their own notion of ‘experiment’ both related to, and was different from, the scientific concept. In a series of questions posed by Ohio University, which were republished in *Image* (Winter/Spring 1966), they replied in the following way to the suggestion that their works were ‘laboratory experiments’:

Our aim is *not only* to achieve a certain knowledge of visual phenomena. Otherwise it would simply be pure research.[...] we do not seek to accumulate optical effects [...] If ‘op art’ can be called a laboratory experiment, then the work of the GRAV does not fit this category. This is because we see laboratory work as taking place in a closed cell, where all the elements of an experiment are carefully related, whilst here it is a question of an open experiment. The laboratory extends on the scale of the road or of the town.⁵

The GRAV adhered to several other principles besides their commitment to ‘open experiment’, the most ambitious of which was the maintenance of the anonymity of the individual members. This principle broke down in a highly public way, when one of the group, Julio Le Parc, was awarded the Grand Prix for painting at the 1966 Venice Biennale. The group did not survive as a group, though certain members, such as François Morellet, went on to have long and productive careers. In the context of the mid-1960s, nonetheless, their radical message appeared significant. When (in collaboration with Frank Popper, Reg Gadney and Philip Steadman), I contributed a text to *Four Essays in Kinetic art* in 1966, my own concern was to stress the long-term historical antecedents of the ‘art of movement’. But it was also a question of differentiating the extreme position of the GRAV from the more traditional and personal adaptations of the techniques of ‘virtual’ and actual movement, the latter involving ‘as many types of effect as there are metaphors of movement’. As I put it: ‘For the GRAV instability is a physiological fact, based on the properties of the retina. For artists like [Frank] Malina, [Nino] Calos, and [John] Healey it can be used to create the illusion of growth or decay, vulnerability or cumulative power’ (Bann et al. 1966, 53). Much of my essay was however concerned with the historical and theoretical position of the artist who was the GRAV’s acknowledged patron, and at the time enjoyed a world-wide notoriety unparalleled for a European artist of his generation: Victor Vasarely.

My interest in Vasarely was not exhausted by this essay. His work, together with that of the GRAV, made up the major part of the ‘Abstraction’ pathway that I traced in the third chapter of *Experimental Painting*. For *Form 7* (March 1968), I translated an article by the French communication theorist, Abraham Moles, entitled ‘Vasarely and the Triumph of Structuralism’. Yet this mention of the magazine *Form*, which I co-edited with Philip Steadman and Mike Weaver from 1966 to 1969, necessitates a shift in the argument of this essay. Up to this point, I have focused upon my own personal development as a

⁵The references to ‘the road and the town’ would be clarified by the GRAV’s moving their interactive works into the street, a development later discussed by Popper (1966, 5–9).

critic, with attention being paid to the different strands that were later woven together in the structure of *Experimental Painting*. But *Form* was a joint endeavour, which gained its significance from a blend of separate (though happily complementary) orientations: Steadman's expertise in architecture and design, which also endowed the magazine with its distinctive visual format⁶; Weaver's historical interest in the 'little magazines' of the Modern Movement, and his well-informed American perspective, which brought about our special emphasis on documenting the multi-disciplinary programme of Black Mountain College, while encompassing the fields of avant-garde poetry and photography. In my case, *Form* provided an opportunity to bring together some of the seemingly disconnected aspects of my own earlier research: the French new novel, concrete poetry, and (to borrow my title from the anthology of historical texts and manifestos that I completed by 1970, though the work was published only in 1974): *The Tradition of Constructivism* (Bann 1974).

The first number of *Form*, which was published in Summer 1966, provided a conspectus of these interlinked concerns. Two articles in particular investigated the connections between art and design, on the one hand, and the areas of science and technology. Crispin Gray looked at the history and possible future of 'computer aided design', surveying the developments from the Electronic Systems Laboratory at MIT in the 1950s to the latest techniques used in aircraft production by the Lockheed-Georgia Company at Marietta, USA. Carolyn Cumming developed the arguments for an 'Experimental Aesthetics', considering the evidence from the use of 'figure preference tests' and concluding that 'aesthetic judgement is not such an irrational subjective process as it might at first sight appear to be' (Cumming 1966). My own contribution to this opening number was a translation of Roland Barthes's short essay on 'The Activity of Structuralism', originally published in French in 1963 and probably the first of his texts to appear in any English publication. What attracted me about this piece was the link made between notions of representation and the ongoing development of information science. As Barthes argued clearly,

thought and artistic creation do not arise [...] from the original 'imprint' of the world; they are concerned with the actual fabrication of a world which resembles the first, for the purpose of making it intelligible and not of copying it.

The consequence would be that structuralism

makes known a new category of object, neither real nor rational but *functional*, linking up in this way with a whole scientific complex, which is in the process of being developed, in relation to researches on the theory of information. (Barthes 1966, 13)

Form continued to feature articles that focused on the implications of structuralism, relying broadly (as Barthes had done) on the insights offered by the 'structural anthropology' of Claude Lévi-Strauss. In addition to Moles's article on Vasarely, already cited here, these comprised the Italian cultural critic Gillo Dorfles's 'For or Against a Structuralist Aesthetic', which Steadman and I translated for *Form* 2 (September 1966), and Gérard Genette's 'Structuralism and Literary Criticism', translated by David MacDuff for *Form* 10 (October 1969). These translations were all published in the spirit of alerting our English-speaking readers to a movement that promised to create a bridge between

⁶For an illuminating interview with Philip Steadman about the development of *Form*, see 'Looking at *Form*' (2010).

humanistic and scientific research, but was meeting with a certain amount of resistance in the traditional fields of literary and humanistic study. Here again, Cambridge was important in supplying a supportive background. As mentioned earlier, the Provost of King's College in the late 1960s was the anthropologist Edmund Leach, the foremost exponent of Lévi-Strauss's method in Britain at that time. *Form* ceased publication in 1969, as a result of the differing academic trajectories of its three co-editors, but I had by then been precipitated into being Deputy Editor of a new academic journal, launched by the Faculty of Humanities in the University of Kent at Canterbury, which I joined in 1967. The first thematic number for which I took responsibility was on 'Structuralism' (May 1970),⁷ and Leach congratulated us on having moved the enquiry into previously neglected fields.

To arrest this account in 1970 is of course to make a division that is in some ways arbitrary. One of the texts to which Leach was alluding was my own essay on three nineteenth-century historians, in which I had adapted an idea of Lévi-Strauss in order to posit 'A cycle in historical discourse'. This was to initiate a long process of further enquiry, at first tentative but later encouraged by the American historiographer Hayden White, which came to fruition in 1984 with my publication of *The Clothing of Clio* (Bann 1984). But 1970 was, primarily, the year of *Experimental Painting*, which was in some ways a digest of my experience of the 1960s, as has been shown here. The cause of 'structuralism' had not been won by 1970. Yet its interdisciplinary impulse had not diminished. Also, distinct from the type of enquiry stimulated by Lévi-Strauss, there was a renewed interest in the 'semiotics' pioneered by the American philosopher, Charles Sanders Peirce, some of whose concepts I introduced in the Conclusion of *Experimental Painting*, and would continue to explore. A statement by the English constructive artist, Anthony Hill, from an article written for *20th Century Studies* in 1970, suggests that the use of data from experimental sources was to be welcomed, though not necessarily on their own narrowly defined terms:

I would maintain that the scientific study of art – to be taken in the widest possible terms – ought not to be restricted to laboratory aesthetics (studies of eye movements, colour preferences, etc.), but should encompass the kind of approach indicated by Peirce. But I would also hope that this approach [...] could be linked with the general shift towards mathematical thinking in the behavioural sciences. It is here that I believe that structuralism and the visual arts could become seriously engaged. (Bann 1970b, 109)

This was perhaps a Utopian prospect. But there was a more immediate future for the range of theoretical approaches represented in the 10 numbers of *Form*, which I had explicitly drawn upon throughout the development of *Experimental Painting*. A critical but encouraging review of the latter by John Elderfield – shortly to leave Britain for a post at the MOMA in New York – contained an amusing typo when commenting on my Conclusion: 'Not the least stimulating aspect of this work is the concluding attempt at a semi-logical [sic] classification for painting' (1971, 183).

Semiology and structuralism had, indeed, come to stay in my critical work, and would persist, at least up to the middle of the next decade. My own introduction to the method had been Peter Wollen's 'Cinema and Semiology: Some points of contact' (*Form* 7, March

⁷In my Introduction, I quoted Edmund Leach as saying: 'to believe that the only things worth saying are those that can be writ plain in the English language seems to me a very arrogant assumption' (Bann 1970b, 5).

1968), which was republished almost immediately in his highly influential *Signs and Meaning in the Cinema* (1969). My thoughts on the interpretation of constructive art through the tools of structural analysis were further galvanized by a fruitful association with the 'Systems' group of painters, and resulted in a lengthy Introduction to the catalogue of their group exhibition at the Whitechapel Gallery in 1972. As Editor of *20th Century Studies*, I went on to devote the very last number (December 1976) to the theme of 'Visual Poetics', my own contribution being an essay that reflected my new-found interest in the psychoanalytic writings of Adrian Stokes and the paintings of Brice Marden. It began: 'This essay is a voyage' (1976, 116).⁸

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Stephen Bann is Emeritus Professor and Senior Research Fellow at Bristol University. He gained his PhD in History at the University of Cambridge in 1967, and taught at the University of Kent for 30 years before becoming the first Professor of History of Art at Bristol in 2000. He was elected Fellow of the British Academy in 1998, and appointed Commander of the Order of the British Empire in 2004. From 2000 to 2004, he was President of CIHA (Comité international d'histoire de l'art). In addition to publishing many books and articles on the history of collecting, historical painting and nineteenth-century printmaking, he has maintained the interest in writing about modern and contemporary art that began at Cambridge in the 1960s when he was a co-editor of *Form* magazine and resulted then in works such as the edited volume, *Concrete Poetry; An International Anthology* (1967) and the book, *Experimental Painting* (1970).

References

- Bann, Stephen. 1962. "The Art of Robbe-Grillet." *Granta* LXVII: 1221, 10: 18–27. November 10.
- Bann, Stephen. 1964a. "Rauschenberg and Representation." *The Cambridge Review* March 7: 333–336.
- Bann, Stephen. 1964b. "Documenta III." *The Cambridge Review* 86 (2081):21–23.
- Bann, Stephen. 1964c. "Reputations – XII; Robert Pinget." *The London Magazine* 4 (7): 22–35.
- Bann, Stephen. 1964d. "Bomberg, Picabia and the New Generation." *The Cambridge Review* 85 (2075): 403, May 9.
- Bann, Stephen. 1964e. "Communication and Structure in Concrete Poetry." *Image*, special issue on Kinetic Art and Concrete Poetry: 8, November.
- Bann, Stephen. 1967. *Concrete Poetry – An International Anthology*. London: London Magazine Editions: 7–27.
- Bann, Stephen. 1970a. *Experimental Painting – Construction, Abstraction, Destruction, Reduction*. London: Studio Vista.
- Bann, Stephen, ed. 1970b. *20th Century Studies*. No. 3, May.
- Bann, Stephen, ed. 1974. *The Tradition of Constructivism*. Documents of Modern Art. New York: Viking Press. Reprinted New York: Da Capo 1990.
- Bann, Stephen, ed. 1976. *20th Century Studies*, Nos. 15/16, December.

⁸The other contributions to this collection reflected several different methodologies, ranging from the translation of a classic semiological text by the late Jan Mukarovsky to the contemporary exponents Max Bense and Umberto Eco, the artist and theorist Victor Burgin, and the French critics Hubert Damisch, Jean-Louis Schefer and Marcelin Pleyne.

- Bann, Stephen. 1984. *The Clothing of Clio: A study of the Representation of History in Nineteenth-Century Britain and France*. Cambridge: Cambridge University Press.
- Bann, Stephen. 2014. *Le Destin paysager de Bernard Lassus/ Bernard Lassus; The Landscape Approach*. Orléans: Editions HYZ.
- Bann, Stephen, Reg Gadney, Frank Popper, and Philip Steadman. 1966. *Four Essays on Kinetic Art*. St Albans: Motion Books.
- Barthes, Roland. [1963] 1966. "The Activity of Structuralism." Translated by Stephen Bann. *Form* 1 (Summer): 13.
- Cook, Peter. 1970. *Experimental Architecture*. London: Studio Vista.
- Cumming, Caroline. 1966. "Experimental Aesthetics." *Form* 1 (Summer): 14.
- Ehrenzweig, Anton. 1967. *The Hidden Order of Art*. St Albans: Paladin Press.
- Elderfield, John. 1971. "Review." *Leonardo* 4 (2): 183.
- Leavis, F. R. 1972. *Two Cultures? The Significance of C.P. Snow*. London: Chatto and Windus.
- Popper, Frank. 1966. "Le Parc and the Group Problem." *Form* 2: 5–9.
- Roose Evans, James. 1970. *Experimental Theatre from Stanislavsky to Today*. London: Studio Vista.
- Steadman, Philip, ed. 1966. *Image*. Winter/Spring 1966. With contributions by Bann, Gadney, et al.
- Steadman, Philip, ed. with Stephen Bann and Mike Weaver. 1966–1969. *Form* issues 1–10.
- Steadman, Philip. 2010. "Looking at *Form*, a Quarterly Magazine of the Arts (1966–1969)." *Unit: Design/Research*, 02. London: uniteditions.



Art as research: an interview with Liliane Lijn by Barry Miles

Liliane Lijn  and Barry Miles

Independent Scholars

ABSTRACT

In conversation with the biographer and author Barry Miles, the artist and poet Liliane Lijn talks about her early influences as a young American artist living and working in Paris, Athens and New York and the development of her practice between 1959 and 1970. She recalls her encounters with prominent surrealists, poets and artists of the Beat generation: André Breton, William Burroughs, Gregory Corso, and her enduring friendship with Greek sculptor Takis. Inspired by the experimental nature of their works, Lijn explains how her own work focused on research and invention. She describes her *Poem Machines* as 'seeing sound' and explains her growing interest in science and, in particular, light. Lijn details the long and complex gestation of *Liquid Reflections*, her most well-known cosmic work of the late 1960s, and how working with industry and technology allowed her to increase both the scale and complexity of her oeuvre.

ARTICLE HISTORY

Received 9 September 2016
Revised 25 September 2016
Accepted 7 December 2016

KEYWORDS

Art as research

I first met Liliane Lijn at the time of her solo show on the 9th of March 1967 at the Indica Gallery, started by myself, Peter Asher and John Dunbar along with the Indica Bookshop in Mason's Yard, off Duke Street St. James's. In the artist's statement printed on the invitation card she described her *Liquid Reflections*: 'Water trapped in transparent disk condenses, forms perfect spherical lenses of many sizes alive and changing with temperature and movement. Pressure of heavy ball on thin Perspex surface makes contact with water leaving a trail.' Visitors to the gallery were mesmerized and stood, watching the balls move for many minutes at a time. I kept track of Liliane over the decades. She exhibited at *Riflemaker Becomes Indica*, the 40th anniversary recreation of Indica staged at the Riflemaker Gallery in Beak Street, Soho in November 2006 and, when the show travelled to New York the following year, I introduced her talk. Though we both live in London, this interview was conducted over the Internet as she was in New York this summer and I was in SW France. This gave us time to correct details and edit her replies and for me to add new questions. For me, it has been a delight to revisit these works and see them afresh with the new-to-me knowledge of how they were created (Figure 1).

BM: Who, or what, were your early influences and how do you think they shaped you?

LL: I began my first year in Paris in 1959 studying archaeology and art history at the Sorbonne and the Ecole du Louvre. Although my studies were to be incomplete, their influence



Figure 1. Liliane Lijn at her exhibition at Indica Gallery, London, February 1967. Photo: John Dunbar. Copyright and courtesy of the artist.

on my later works were profound. My childhood friend, Nina, whose mother, Manina, was a Surrealist painter married to the poet Alain Jouffroy, had also come to live in Paris and together we often went to meetings at the Surrealist Café, where André Breton presided over those who still remained in the Surrealist group. Nina gave me André Breton's *Entretiens* (Discussions, 1952), *The Surrealist Manifesto* (1955) and *L'Amour Fou* (Mad love, 1937). I was fascinated by Surrealism, in particular, their interest in dreams and the subconscious. I immediately experimented with 'automatic writing'¹ and drawing. Introduced to Indian and Japanese Zen Buddhism, I merged the reclusive purity and meditative direction of Buddhism with the inclusive multiplicity and liberal sexuality of Surrealism. They were both equally important for me and receiving the teachings of both may have allowed me to accept the extreme contradictions I felt within myself. Antonin Artaud's writings impressed me deeply and awoke in me a belief in the urgent necessity for awareness that has remained a central aspect of both my art and my life.²

In the summer of 1959, I visited Madrid and spent a week in the Prado. My favourite work there was the Hieronymus Bosch, *The Garden of Earthly Delights* (1490–1510). I loved his wild and prophetic imagination; his translucent globes and strange fruit fountains. I

¹First Automatic Writing was possibly in: Soupault and Breton ([1920] 1971).

²See also Lijn (2014).

spent days analysing its composition. I thought Bosch had arranged all the elements in the triptych into triangulated segments, each segment related to the others, in a magical connective web.

The beginning of my interest in geometry stems from imagining a web of interconnected triangles in *The Garden of Earthly Delights* and was a way of abstracting and ordering, thus emptying of emotion, the myriad of mad and fantastic forms and creatures that teem in Bosch's masterpiece.

BM: Had you not met Takis at such an early stage of your career, do you think you would have still been a sculptor or would you have concentrated on painting and drawing?

LL: I don't think I became a sculptor in the classical sense. Soon after I met Takis in 1959, he came to visit me in my small apartment in rue Chanoinesse, where I had started to paint on jigsaw puzzles. I would take the puzzle apart and then paint each piece, as if it was separate and unconnected to the other pieces of the puzzle and then, once they were all painted, I would try to put the puzzle together. Takis saw my first attempt and he was very impressed. He said I was attempting to do the impossible. He suggested I try something similar in three dimensions and taught me his technique of lost wax. But, although I made a three-dimensional puzzle in wax and Takis had it cast for me in bronze, I never completely finished it. Perhaps it was too solid, too sculptural. Instead I focused on a particular technique of drawing that had been suggested to me by the Italian painter, Gianni Bertini, on seeing my early drawings. This technique involved rubbing Crayola wax crayons over paper and then applying a wash of gouache. The Crayola acted as a luminous resist revealing landscapes and clouds transforming into strange floating creatures. I had seen an exhibition of horizontal Chinese scrolls depicting huge landscapes in which people and their palaces were not drawn as central to the picture but seen as a small part of the natural environment. I liked their way of viewing the world and the horizontal format but I was more interested in the sky and called my works, *Skyscrolls*. In both these instances, I began to work as I would continue, exploring new techniques to find my own vision.

This was the beginning of our friendship, in the spring of my first year in Paris. Takis was 15 years older than I was and vastly more experienced. He and I began living together in the autumn of 1959. He was making *Signals* in a blacksmith's shop, while I worked in the apartment we shared with his assistant, Raymondos, who played the piano in the dark and carved black wooden angels. In the summer of that same year, I spent some time alone in Greece. Because I intended to work there, I took a few of these scrolls with me. In Paris and in Italy, where we spent the summer, with a select group of artists and poets, at Caresse Crosby's³ Castello di Roccasinibalda, they had seemed quite luminous but in the very bright, clear light of Greece, they appeared less vibrant and quite flat. I began to think that was why the Greeks favoured sculpture. When I returned to Paris in the autumn of 1960, I knew that I would need to find a new way of working.

I was drawn to light, fascinated by luminous reflections and shadows. I began to explore new materials and technologies in a conscious effort to 'work with the source of light' and started reading books on optics and physics. I particularly liked the diagrams and photographs in the monthly journal *Scientific American*. Two issues of that journal stand out even now: an entire issue devoted to Light and another to Material Science or solid state physics. I was fascinated by the discovery that light was both wave and particle and that those particles were called photons. I dreamt of capturing photons.

³Caresse Crosby was the most inspiring woman I have known. I first met her in 1960, when she was 70 and I was 20. She had invited Takis and I to stay the summer in her castle north of Rome, the huge Castello di Roccasinibalda, where she held court over a changing group of artists, poets and guests from the world of fashion. She had met Takis in Greece, some years earlier, and helped him to leave Athens and live in Paris. Her's was a long history of patronage to the arts. She was a free spirit born into an aristocratic American family. She invented the brassiere in 1913 when she was just 21 and sold the patent, she told me, to Warner Brothers. In the 1920s, she and her husband, Harry Crosby, founded the Black Sun Press, publishing the early work of authors including T.S. Eliot, James Joyce, Henry Miller and Anaïs Nin.

Soon after I went to New York, where I decided to spend a few months living and working on my own to get out from under Takis' shadow. His influence on my development as an artist and as a human being was important but daunting. Although he tried to encourage me, he was also jealous of my early successes. I concluded that the most important thing I could learn from him and from his work was to aim for invention rather than expression.

BM: You met members of the Beat generation through Takis.

LL: Gregory Corso came to visit and looked carefully at my numerous *Sky Scrolls* that Takis had hung on all the walls. Gregory gave me a copy of *Bomb* and Sinclair Beiles gave me *Minutes to Go*, my first encounter with cut-ups. Iris Owens, an American novelist, who penned the infamous Harriet Daimler series for Olympia Press, introduced me to William Burroughs. When I had my first exhibition in 1963 at Gaït Frogé's La Librairie Anglaise on rue de Seine, Brion Gysin was exhibiting his calligraphic paintings at Galerie Stadler just across the street. Burroughs came into the bookshop and told Gaït to ask me to come and visit him at the Beat Hotel. Having read André Breton's *Entretiens*, I had already been introduced to 'automatic writing' and the Beats' cut-ups were an update on it, a new tool facilitating chance apertures to new paths of thought. My *Poem Machines*, first made in 1962, behave like automated cut-ups, allowing a reading of the text freed from its syntax, when their speed of rotation was slow enough so that the words could be deciphered. On seeing them, William Burroughs told me that he wanted to get his words off the page and asked me to try.

BM: How did your involvement with the Beats affect you?

LL: I am sure that my contact with the Beats was one of the liberating experiences in my early years, although I came from a very open and uninhibited family. My parents, both Russian and Polish Jews, did not keep their feelings or their thoughts to themselves. It was not until I went to school that I found out that other people were not quite as direct and voluble as I was. So my education was inhibiting. In fact, I think that, when I first found myself in Paris, the intellectual excitement and the overwhelming and contradictory feelings I experienced led me to shy away from expressing feelings through my work and focus on materials and energies in their purist form. This was taking very much an opposite direction to the Beats, although I felt attracted and inspired by the ease with which they passed from one discipline to another. They moved from painting to poetry to film and used them interchangeably. Their interests, much like the Surrealists, were broad and included all areas of science, economics, medicine, new and ancient cults and religious or philosophical beliefs. To be simply a painter, a sculptor, a poet, to keep within narrow frontiers seemed then to me to be limiting and stultifying.

BM: Tell me about your experiments with industrial material.

LL: Early in 1960, I came down with a nasty kidney infection and stayed in Geneva with my father to recuperate. Once recovered, it was thought that mountain air would help me regain my strength. I spent a couple of weeks in Val d'Isère, in the French Alps, where I met and became friendly with one of the skiers of the French Olympic Ski team. He used what was then a new proprietary polymer-based ski-wax "Tefon-Stift" and observing him wax his skis, I thought this might be an interesting material to experiment with. Burning these like candles, I dripped and spattered the molten wax-like material on to paper and realized that by vibrating the stick I could extrude fine filaments, thus drawing in the air with molten material that I then deposited firstly on paper, then wood and finally on clear Perspex sheets. I could embed the plastic fibres by melting them into the Perspex sheet, using a small torch that Takis had given me as a present, and they would cast shadows through the clear Perspex onto the wall. The shadows multiplied the lines I created. The doubled lines moved when I did and their motion brought interaction to the work. It was thus that I first became a kinetic artist. My interest in becoming actively involved, when observing the results of my work, led to my involving the viewer in precisely that kind of active looking. I called the first works on paper *Starspace* (1959–60) and the works on Perspex that followed *Firelines* (1960) (Figure 2).



Figure 2. *Fire Lines* (detail), 1960. Teflestuck on Plexiglas. Copyright and courtesy of the artist.

From 1960 to 1962, when I gave birth to my son Thanos, I moved in between Paris and New York. On Canal Street, I discovered Industrial Plastics: a whole building selling all kinds of plastics, Perspex both in sheet and block form, as well as all sorts of recycled nylon tubes and polythene bottles, boxes full of brightly coloured plastic bits and pieces. I became friends with the owner, Max Landau, who on hearing that I could not find a studio, offered me a space in his warehouse and *carte blanche* use of all his machinery and plastic materials. I began by burning and melting different kinds of plastic to see how they reacted when molten but soon realized that the 'Tefon-Stift' that I could buy in many colours was more interesting because I could draw with it in the air. This was a turning point in the way I worked. I began to actively research materials, to explore how they behaved under different conditions and to find out what I could do with them. In the six months I spent there, I began my series of *Drillings* and *Cuttings*, using a circular saw to slice into sheets of Perspex, drilling holes into Perspex blocks and discovering that cavities made in a transparent material appear as solids, thus reversing the way we perceive reality. Working with larger blocks, I stressed the material by injecting acetic acid into the holes I had drilled and attacking them using a screwdriver and hammer. This produced haloes and tiny air bubbles inside the blocks. I used repetitive elements or actions (drilling) to generate an energetic vibration in the material. I was interested in the shadows cast by the empty holes, which transformed the negative spaces of the drilled holes into positive forms, creating the illusion of solids. I felt I had created an architecture of the void.

Experiencing headaches from the 'Tefon-Stift' fumes, I went to the leading US Perspex manufacturer, Rohm & Haas, and bought liquid polymer in bulk. With this clear acrylate polymer, I created surfaces that projected luminous reflections similar to cellular life forms. I wanted to see coloured reflections without using coloured pigments, to create what I called *invisible colour* but the solution involved such complexity of means I decided, instead, to move away from the informal organic reflections to more geometric forms by making my own clear lenses. Leaving New York in 1963 to live again in Paris, I

continued working with nine centimetres thick blocks of Perspex on the surface of which I made perfect lenses, using a hypodermic needle filled with clear polymer (Figure 3). I designed a light projector with a revolving glass lens that, when illuminating the lens patterns I had made on the Perspex blocks, caused them to appear to move and double or split themselves. I called these *Echo-Lights* and their effect was a vision of particles of light, photons made visible. I felt I had captured the essence of light. They were shown, with *Cuttings*, *Le Vibrograph* and *Poem Machines*, in my first solo exhibition in November 1963 at La Librairie Anglaise.

BM: All these ideas were brought together in *Liquid Reflections*, one of which is in Tate Britain. It is described in the Tate catalogue as a Perspex drum filled with water and liquid paraffin; the condensing water vapour creates a profusion of droplets, which are picked out by a beam of light as the turntable revolves. The earliest were without balls and you only began to place Perspex balls on the rotating surfaces towards the end of 1966, starting with ones, which were clear and colourless. Your first piece using balls was exhibited in the Salon Comparaisons in Paris in February 1967 and was bought by the Musée d'Art Moderne de La Ville de Paris. Over the two years 1967–8, you made a number of works of this type of varying sizes with one, two or three balls, but only began in 1968 to use balls that were partly coloured. You intended the ingenious inclusion of a fluorescent plane of colour within the balls, primarily, to call attention to the rotation of the balls, but it also introduced a note of colour. This is the work that most people know you by. Can you tell me about the making of this series of works?

LL: It was only on coming to London in the autumn of 1966 that I really began to develop the diverse strands with which I had been experimenting in Paris, New York and Athens. London was still a city where small engineering and manufacturing companies could be easily located. It was in London that I was able to make the first *Liquid Reflections* (1966–68), in which I not only explored light in the form of reflections and shadows, but also gravity and forces similar to those that govern the cosmos. (Figure 4) *Liquid Reflections* was the final development in experimental works that began five years earlier with my experiments with liquid polymers. In 1962, I wrote in a notebook:



Figure 3. Echolights, 1963. Perspex block, acrylic polymer, projector with rotating lens. Photo: Jean Loup Charmet. Copyright and courtesy of the artist.

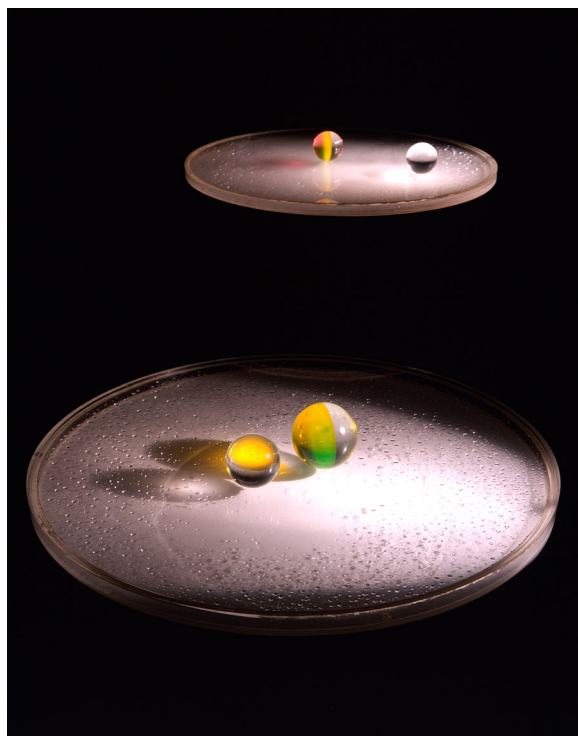


Figure 4. *Liquid Reflections Series 2*, 1968. Perspex drum containing water and liquid paraffin, acrylic balls, spotlight, motor. Photo: Liliane Lijn. Copyright and courtesy of the artist.

‘Water in Crystal’

‘Instead of plastic lenses on the outer surface there are other alternatives.

‘1. In a transparent cavity already fabricated inside the Plexiglas **inject** water or oil or both ...’⁴

In Paris, in 1966, I switched from using Perspex blocks to thin sheets of Perspex, introducing polymer lenses onto their surface and framing them so that there was space between the lens patterns and the white back-plate. I also used the surrounding frame as a support for numerous spotlights that were programmed to come on and off in a random pattern constantly changing the angles at which the surface was lit (*Cosmic Flares* 1966). On one of these works, the lenses formed a large spiral that could only be seen when lit from outside the work itself. Once I turned on the random array of spotlights, the reflections were chaotic flares. This led me to wonder about the role of optics in astronomy and whether galaxies could not behave like lenses. I discussed this idea with a collector of my work who was also a mathematician, who commented that my ideas were related to the concept of galaxies behaving like gravitational lenses. *Cosmic Flares* led to my designing a hollow drum, that, after an aborted experiment with mercury, I part filled with water. To my surprise, the

⁴Notebook marked N63 017.

condensing droplets remained alive and trembling, forming and changing in time into a lunarscape of reflections and shadows.

It was at this point that my method of working changed quite radically, because up until then I had always made all my pieces by myself but I was not equipped to fabricate the shallow Perspex drum that I now needed. The step I took then to draw up what I wanted and approach a small factory was the beginning of a new way of working, which would prove to be important as it opened up possibilities of working in many different mediums at once and liberated me from the most elementary technical problems, allowing me to concentrate on developing my ideas.

This first drum containing water was in fact the prelude to *Liquid Reflections*. I exhibited it at Kunsthalle in Berne in the summer of 1966 in the *White on White* exhibition curated by Harald Szeemann. Later that summer, while conversing with friends in the sunshine, I happened to play with some large clear marbles. I was fascinated by the pure beam of white light they threw as they moved across the table, the intense focal point that refracted through them and I decided to experiment with similar balls on a rotating white surface. On my return to Athens, where I was then living, I found I only had the work that had been shown at Berne Kunsthalle, still containing the water paraffin mixture. When I placed two clear Perspex balls, bought on Canal Street five years earlier, on the surface of the spinning drum, it was as if a new world was revealed as the balls slid across its dewy surface, magnifying the changing reflections and shadows created by the water inside the drum. In the autumn I moved to London, where I found a Perspex fabricator and a small engineering workshop to complete *Liquid Reflections* and subsequently, in February 1967, exhibited them at Indica Gallery.

BM: Did that exhibition also include your Poem Machines? Can you tell me more about how they were developed.

LL: No, for some reason, it didn't. At Indica I showed an installation of five *Liquid Reflections* in the centre of the space, *Cosmic Flares* and my first works with prisms on the walls and the first cylinder works that were, in part, objets trouvés.

While living in Paris in 1963, I visited Le Palais de La Découverte.⁵ I was also reading about optics, physics and astronomy and was particularly interested in early experiments made by the French physicist, Augustin-Jean Fresnel. There was one experiment with light interference that I wanted to try to make myself. Using two cylinders on which I had painted three columns of parallel black lines, I made them revolve at the same time at a constant speed. I was amazed to see the lines vibrate in spectral colours. I called this work *Vibrograph* and it was one of the works in my first exhibition at La Librairie Anglaise (Figure 5).

Since letters were also made from lines, I wondered what kind of vibrations spinning words could make. I started with the alphabet and then thought of using random texts culled from newspapers. Nazli Nour, a British poet friend, suggested that I use her poems, since she wanted them to move. I wondered how, since her poems were literally pages long. Nazli casually encouraged me to cut them up and choose sections of her poems as material for my *Poem Machines*, which were later much admired in Concrete Poetry circles (Figure 6).

BM: John Ashbury, then the Paris art critic for the New York Herald Tribune, wrote: "Her Vibrographs are wheels revolving too fast for you to read the words printed on them, but perhaps they influence you unconsciously like subliminal advertising." I believe Nazli Nour was distressed at the way the rotating drums made the words impossible to read directly but that you reassured her that "they would communicate subliminally."

LL: What disturbed Nazli was that her spinning poems were illegible but my reaction was that this might make people more curious to read her poems. My intention was to transform the written word into the energy of sound.

⁵Le Palais de La Découverte is the science museum in Paris.



Figure 5. Liliane Lijn at Librairie Anglaise, 1963. Installation view with the artist at her one woman show in the Librairie Anglaise Gallery, Paris 1963. Photographed with *Vibrograph* and *Young Universe*. Photo: Jean Loup Charmet. Copyright and courtesy of the artist.

BM: The Poem Machines began as cylinders but quickly evolved into cones.

LL: In Paris and in Greece, where I went to live in 1963, technology was not easily available. In Athens, I could not find a source of Perspex and made the mistake of trying to reuse many of the *Firelines* works. Hunting for materials in a town where distinct neighborhoods were dedicated to selling particular goods, I came across a street selling everything for cars and trucks. I loved the cylindrical oil filters on display in shop windows and thought I might be able to use these to make *Poem Machines*. I also found used and battered filters in Monastiraki.⁶ I left one on a small turntable in the sun. It was wound with silver wire and had a dent on its surface. When it revolved, the sunlight formed a line across the silver windings and the dent appeared as a wobble of light. I saw light dancing on that cylinder and thought I could develop that.

In Athens, I also found small woodworking shops, where I could get cones turned out of solid wood. I had realized that if I printed words onto cones instead of drums or cylinders, the changing diameter of the cone would alter the apparent velocity of the word, meaning that the Letraset words appeared to move at different speeds on the same cone. When I returned to Paris in 1965, I began to use cork cones. I started again with the alphabet, rubbing white letters in no apparent order on a painted black background, *ABC Cone* (1965), and then decided to use a poem by a young American poet I had met in Athens, Leonard D. Marshall, whose beautiful, unpublished poems were so short, I had been able to memorize them. When spoken, they had a very musical sound, a rhythm that I wanted to emphasize on

⁶The Athens flea market.



Figure 6. *Get Rid of Government Time Poem Machine*, 1962. Letraset on painted metal drum, plastic, painted metal, motor. Words from a poem by Nazli Nour. Collection Stephen Weiss. Photo: Richard Wilding. Copyright and courtesy of the artist.

the *Poemcon*. In order to do that, I decided to use repetition and spacing. The result was *Sky Never Stops* (1965) now in the collection of the National Art Library at the Victoria and Albert Museum (Figure 7).

When a *Poemcon* spins, words printed around the circumference of the cone disintegrate into a blur of colour. At high speed they become a band of colour. A wave band. Colours are narrow bands of reflected light and all materials communicate through the media of spectral bands. Deciding that colours communicated like words, I painted bands of colour on cork cones similar to those I had used for words. When these revolved, the colour pulsed with energy. I called these works *Hiway Cones* (1965) because they were inspired by the striped cones lining the roads. I would put a cork cone on a turntable and make it spin. Then, using a brush, I laid colours on the spinning surface. The colour stripes were a memory of motion. I made a red and white striped cone and a yellow and white striped cone. Both referred to signal cones on roads. Then I also made some multi-coloured striped cones. The numerous bands of colour reminded me of the rings of Saturn. The cone is an astronomical form. It is the form taken by all emission. Both light and sound radiate along a conical path.

Colour and words became interchangeable for me. I saw colours as language. That was, incidentally, also when I discovered the importance of prisms. I had found a shop on the Boulevard Beaumarchais that sold second hand optical equipment and initially went there to buy lenses for the projectors I had designed for *Echo-Lights*. The first time I went there, I was dazzled from across the boulevard by a pure blue brilliance that made me stop and cry out. As I moved, the light filling my sight became green and then yellow, orange, red. The change of mood I felt was instantaneous. In the window of the second hand optical store, displayed along with model locomotives and loose camera lenses, were trays of optical glass prisms of varied shapes and sizes. I knew then that I had to work with prisms and sunlight but I did not know how to control the sun. That came much later during my ACE,



Figure 7. *Sky Never Stops Poemcon*, 1965. Letraset on painted truncated cork cone, motorized turntable. Poem by Leonard D. Marshall. Collection National Art Library, V&A Museum. Photo: Herve Gluagen. Copyright and courtesy of the artist.

NASA, Leonardo Network artist residency at the Space Sciences Laboratory at the University of California, Berkeley in 2005.

In 1968, I came across a boat builder in Plymouth, who worked with glass-reinforced polyester. I used fibreglass to make hollow cones, that were cut into elliptical sections and then sandwiched with various thickness sheets of fluorescent Perspex. A great deal of study went into deciding on the relationship between the Perspex planes, which appeared as lines on the finished white cones. These were lit from inside and motorized to spin at a precise and constant speed that allowed the viewer to focus on the luminous lines. The lines appear to move through the cone while the spinning cone appears immobile. The viewer, immersed in a dance of form, no longer perceives the cone as a material volume. Since the cone turns and the viewer remains in the same position, the luminous lines dissecting the cone give the viewer information about form and surface in a continuous flow, unlike an object around which the viewer has to walk, and where the viewer's perceptions are discontinuous. I called these sculptures *Koans: Anti-Gravity Koan, Space Displace Koan, Exit Matter Koan* (Figure 8). Their titles give you the gist of the ideas I wished to convey through them. The word 'koan' is Japanese and describes a riddle without a solution.



Figure 8. *Anti-Gravity Koan*, 1969. Perspex, fibre glass, turntable, fluorescent light, motorized turntable. Collection Mme Boissonas, Flaines Cultural Centre. Photo: Jorge Lewinski. Copyright and courtesy of the artist.

Koans were given as meditation exercises to Zen monks. The *Koans* were first shown in London in 1970 in my solo show at the Hanover Gallery.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Liliane Lijn was born in New York and studied Archeology and History of Art at the Sorbonne in Paris, where her interest in science and her friendships with Greek sculptor Takis and Beat poets William Burroughs, Brion Gysin and Nazli Nour inspired her early works with the poetics of science and light. Internationally exhibited since the 1960s, Lijn's works are in numerous collections including Tate, British Museum, V&A, London and FNAC, Paris. Lijn's recent exhibitions include *Beat Generation*, Centre George Pompidou, Paris, *Power Game*, a socio-political word game and performance, South Bank Centre, *The City Sculpture Project*, Henry Moore Institute, Leeds and *As Above, So Below*, IMMA, Dublin.

Barry Miles has written extensively on the Beat Generation and the Sixties counter-culture including biographies of Allen Ginsburg, William Burroughs, Jack Kerouac, Charles Bukowski and Frank Zappa, as well as *London Calling: A Countercultural History of London Since 1945*. He was the co-founder of Indica Bookshop and Art Gallery (1965), and of *The International Times* (IT, 1966) Europe's first underground newspaper. He lives in London.

ORCID

Liliane Lijn  <http://orcid.org/0000-0002-0473-9254>

References

- Lijn, Liliane. 2014. "My Influences." *Frieze* no. 164. Summer 2014.
- Soupault, Philippe, and André Breton. [1920] 1971. *Les Champs magnétiques*. Paris: Gallimard.



Technological art and *Studio International's* eclectic vanguardism

Jonathan Benthall

University College London, London, UK

ABSTRACT

This article takes the editorship by Peter Townsend of *Studio International*, to which the author contributed regularly between 1969 and 1972, as a starting-point to recall decisive personal encounters with Roy Lichtenstein's paintings, Wen-Ying Tsai's sculptures, Jasia Reichardt's exhibition *Cybernetic Serendipity* and the British Society for Social Responsibility in Science. It goes on to re-endorse the earlier argument that a long historical time-scale was required for the aesthetic implications of photography to become clear, and that, like photography, the computer and holography are technological media whose immediate interactions with aesthetics and the culture at large will take many decades to pan out. Earlier claims about the relationship between art and ecology are then reviewed. Finally the article suggests that though world politics have changed considerably since the 1960s and 1970s, artists have undiminished opportunities to grapple with the challenges of new technologies directly, rather than retreating into a closed system.

ARTICLE HISTORY

Received 1 July 2016

Revised 27 October 2016

Accepted 21 November 2016

KEYWORDS

Computers; holography; cybernetics; ecology; Jasia Reichardt; British Society for Social Responsibility in Science

Enter Peter Townsend

In 1966 the owner of a long established but declining London-based monthly art magazine, *The Studio*, appointed a new editor in his mid-40s, Peter Townsend (Figure 1), with a brief to internationalize it. Townsend (1919–2006) was a left-leaning Sinologist who had spent some years in China during the late 1940s building up local cooperatives with the Communist party. In a few years, before he was ousted from the post in 1976 and the magazine never recovered its leadership role,¹ he succeeded in establishing *Studio International* as the main centre in Britain for debate about contemporary visual art, which was not yet governed by big money as it is today but more by ideas. Fortunately, Townsend and some of his associates left a substantial archive, now with the Tate in London, which has been mined in an excellent University College London doctoral thesis (Melvin 2013). I call Townsend's policy 'eclectic vanguardism' because his policy was to identify zones of intellectual and visual excitement without imposing any editorial line, and to encourage young artists and writers. The ten years of his rule are best remembered for fiery transatlantic controversies concerning minimalism and conceptual art.

CONTACT Jonathan Benthall  jonathanbenthall@hotmail.com  Downingbury Farmhouse, Pembury, Tunbridge Wells, Kent TN2 4AD, UK

¹Despite the editorship of a distinguished art critic, Richard Cork, till 1979. Jasia Reichardt guest-edited two issues, in 1981 and 1982. Publication continued till 1992.

© 2017 Institute of Materials, Minerals and Mining Published by Taylor & Francis on behalf of the Institute

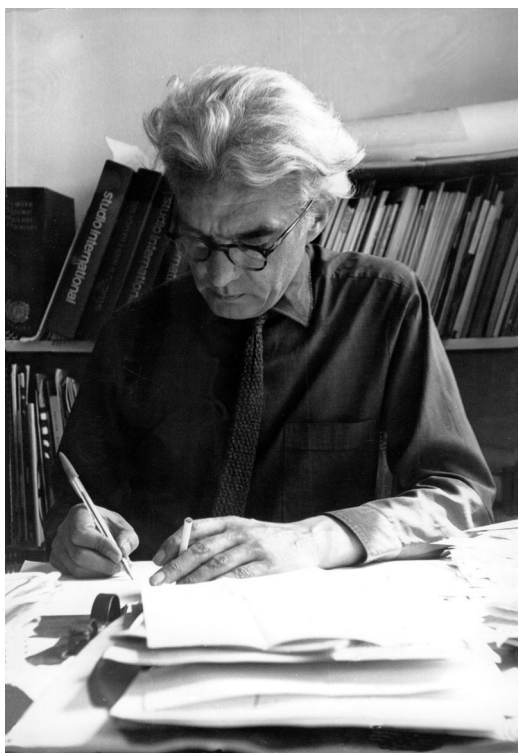


Figure 1. Peter Townsend, c.1970. Photo courtesy of Catherine Townsend.

But a sub-theme of his editorship was the relationship of art to science and technology. Townsend's commitment to this question seems to have originated in his interest in the constructivist movement, which had always merged aesthetic and political values since its origins in the Soviet Revolution, and especially in his close friendship with Naum Gabo the Russian sculptor and pioneer of kinetic art (1890–1977). The April 1966 issue, devoted to 'Naum Gabo and the constructivists' – including Charles Biederman and a group of 'British constructivists' – was immediately hailed as evidence of the calibre of the new editor (Melvin 2013, 81). In 1968 *Studio International* published the catalogue for Jasia Reichardt's ground-breaking ICA exhibition 'Cybernetic Serendipity' as a special issue (Reichardt 1968). He also published Gustav Metzger's imaginative article on 'Automata in history' (*SI*, March and October 1969). I was fortunate enough to be commissioned by Townsend between 1969 and 1972 to write, among other things, a monthly column on art and technology, whose better elements were shortly afterwards recycled as a Thames and Hudson book, *Science and Technology in Art Today* (Benthall 1972).

Revelations in New York and London

I visited New York in May 1968 and was interested both in Pop Art, having published an article on Roy Lichtenstein's 'art as programming' in the neo-Leavisite *Cambridge Quarterly* (Benthall 1968a) and also – being then employed by IBM United Kingdom with the grandiose job-title of 'systems engineer' – in the immense impact that new technologies would obviously have on every aspect of culture. Indeed, the article on Lichtenstein relied on the

principle of ‘the ubiquity of coding’ (borrowed from Claude Shannon) and championed his strident simplifications of Picasso and Mondrian as comparable to a computer rounding off a number to gain in meaningfulness to the user. Lichtenstein had found (the argument ran) a solution to the ‘collapse of genres’ that had set in since Dada and similar movements: the strip-cartoons and advertising images that he worked with were recognized by all, so that ‘there is thus optimal identity between the coding conventions under which the painter operates and those under which we respond, and so minimal leakage of information’. The concepts of ‘economy’ and ‘organization’ could be applied to works of art as much as to living beings – both being successful reversals of the tendency of all systems to decay or run down with time.

This visit to New York coincided with an exhibition of Tsai’s ‘cybernetic sculptures’ at the Howard Wise Gallery on West 57th Street, the leading gallery for kinetic art and light sculpture. One of his works was later included in a celebrated exhibition at the Museum of Modern Art organized by K. G. Pontus Hultén, ‘The Machine as seen at the end of the mechanical age’ (November 1968 to August 1969), remembered for its catalogue with a decorative metal binding (Hultén 1968). An article in the *Times Literary Supplement* (Benthall 1968b) tried to convey some of the excitement generated in New York at the time by such initiatives as E.A.T. (Experiments in Art and Technology):

The work of art may be regarded as a machine programmed by the artist to produce a deferred output. Its objective is survival – by survival I mean not continued acclamation but a continued ability to stand intact as the organized system that the artist originally intended. To survive it must operate within a culturally accepted genre of some kind. ... That is why an artist like Tsai is likely to be so valuable; not because he is an innovator (all his techniques taken separately have been used before) but because he has the kind of authority that establishes a stylistic tradition.

Townsend commissioned me to write an article on Tsai (*SI*, March 1969). Wen-Ying Tsai (1928–2013), a Chinese born American trained in both art and engineering, produced extraordinary works using electric motors, stainless steel rods, high-frequency strobes and audio feedback to create a shimmering visual reality evocative of plant life and very low animal life. They may be seen as developments of the concept underlying Gabo’s celebrated ‘Standing Wave’ (1920) in the Tate Gallery (Figure 2). In 1972 Sir Norman Reid, director of the Tate Gallery, purchased one of Tsai’s sculptures, ‘Umbrella’, for the collection, but after developing a technical fault it was soon consigned to a storage facility, only to play a part after over forty years in the inauguration of the Tate Modern extension, the Switch House, in June 2016 – the first work to be exhibited in the Drum Gallery. I had written before that ‘with the current switched off, or without the participation of spectators, Tsai’s works are as drained of life as sea anemones stranded in an empty pool, or a cine-film projected into sunlight’, but did not anticipate such a long period of oblivion in a Swindon warehouse followed by an auspicious resurrection.

In 1969 the inaugural meeting of the British Society for Social Responsibility in Science (BSSRS) was held at the Royal Society in London, emerging from a campaign against university research on chemical and biological weapons. One of the less well documented elements within BSSRS was the Science and Art group, whose patron was the President of BSSRS, Maurice Wilkins the molecular biologist and Nobel Laureate (1916–2004). The group met regularly for a year or two in his laboratory at King’s College London, and included David Bohm (of whom more below); Gustav Metzger; the science journalist, expert on alternative technology and BSSRS’s general secretary, David Dickson; the artist Conrad Atkinson; and Jill Purce, who became for a time the composer Karlheinz

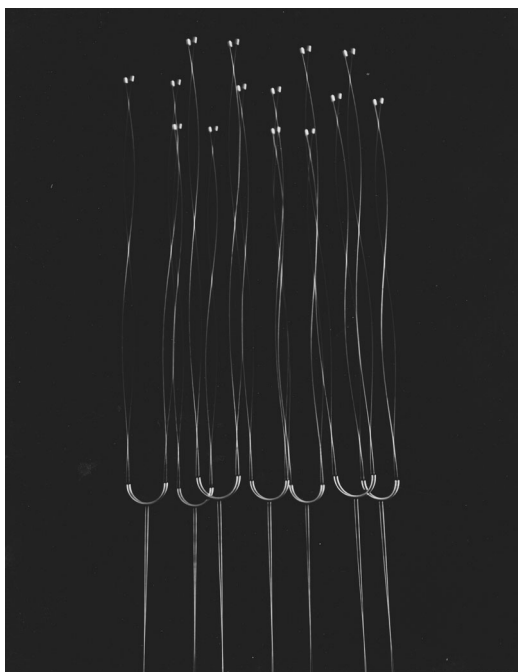


Figure 2. Cybernetic sculpture by Tsai. Photo credit Gertrude Marbach-Raus. © Tsai Foundation, New York.

Stockhausen's companion and collaborator. Wilkins recalls in his autobiography 'one topic we considered was Buckminster Fuller's architecture and its links with the symmetry of the virus particles that we could see with electron microscopes and X-rays' (Wilkins 2003, 254). Purce was awarded a Leverhulme Research Fellowship at King's College London biophysics department, to explore the spiral as a universal form.²

Metzger was a leading spirit in the formation of the Computer Arts Society, which still exists, editing its newsletter *PAGE* with his habitual brio. Meanwhile I joined the staff of the Institute of Contemporary Arts in London, after organizing an exhibition there in 1970 devoted to Cymatics, or wave phenomena, the work of a Swiss scientist-philosopher in the alternative tradition of Goethe, Hans Jenny (1904–1972) – to which *Studio* devoted a front cover (Jenny 1967, *SI* November 1969). With the help of Jasia Reichardt, who was then the ICA's assistant director, a supporting series of lectures on wave phenomena was given. Brian Goodwin, a pioneer of developmental biology well-known for his anti-reductionism, endorsed Hans Jenny's almost mystical interpretation of vibration as a universal phenomenon. A week later the equally distinguished developmental biologist Lewis Wolpert poured icy water on Hans Jenny's and Brian Goodwin's ideas. Till then I had espoused a naïve notion that science and art could somehow merge as a unified form of enquiry. But working at the ICA on lecture programmes devoted to ecology, and to the body as a medium of expression (where the lectures were complemented by performances and

²Purce became general editor of the Thames and Hudson 'Art and Imagination' series, which ran to over thirty books – shading, with titles such as *Atlantis: Lost Lands, Ancient Wisdom*, from a science-oriented inclination into a full-blown New Age aesthetic.

teach-ins), exposed me to anthropology, and since 1974 I have enjoyed the licence which that discipline gives to trespass on all kinds of intellectual territory.³

Re-reading some of the feuilletons written for Peter Townsend, I single out here two themes which may still be of interest today: first, the long time-scale that seems to apply for new technological media to change aesthetics, and second, ecology and conservation.

Time-scale of technological impacts

The two new media I discussed were computing and holography. Incidentally, whereas futurologically inclined writers such as H.G Wells and Aldous Huxley were spot-on with predicting some other technologies, from nuclear warfare to genetic engineering, as far as I know *these* two mid-twentieth-century innovations came more or less out of the blue (despite the intellectual antecedents of modern computing as far back as Charles Babbage, Augusta Byron and George Boole).

Photography

I drew an analogy in *Science and Technology in Art Today* between the history of photography and the ongoing evolution of these two new media. Photography in its modern form was invented in the 1830s or a little earlier depending on how you define it, and had an immense influence on the visual arts – stimulating both imitation and reaction, but also affecting sensibility and perception in subtle ways. We can find an apprehension of this manifold influence in the fiction of Proust, in particular, but it was not till the publication of Aaron Scharf's *Art and Photography* (1968) that it was more extensively unveiled to art historians. At about the same time a visual artist such as Richard Hamilton, in his Whitley Bay series, and a film director such as Antonioni, in *Blow-up*, were discovering new aesthetic possibilities in enlarging photographs to the limits of legibility. The art historian Andrew Forge wrote that, since photography is an act of choice on the instant, 'The analogy for the photograph from within art did not exist when the camera was invented. Such an analogy was the Duchampian Readymade' (*SI*, May 1969). This burst of art-historical interest in the 1960s came some 130 years after the inventions by Fox Talbot and his near contemporaries, some 80 years after the use of multiple exposures by Étienne-Jules Marey and Eadweard Muybridge, and some 70 years after the discovery of X-rays. Nor is the debate about the specific qualities of photography concluded today. In a recently published book, Robin Kelsey has emphasized not the choice exercised by the photographer, but the aspect of blind chance. For Kelsey, photography is at its most creative when it embraces chance, as in Alfred Stieglitz's capture of the accidental beauty of the streets of New York, or Andy Warhol's celebration of the glitches and smears that interfere with mechanical transmission (Kelsey 2015).⁴

My case in the early 70s was that the digital computer and holography were two technological innovations of a similar order to photography.

³On a personal note, I learnt a great deal from the scientists who came together under BSSRS, in particular their opposition to what might be called 'disciplinary narcissism'; and as director of the Royal Anthropological Institute for 26 years I always set out to emphasize the social and political responsibilities of anthropologists, which met at first with some opposition from conservative academics but are now much more widely accepted.

⁴The effects of technological change can also be tracked in study of the influence of the cinematograph film on narrative fiction – for instance in the use of fast cutting and closeups in the novels of Graham Greene, who was a film critic before he became a full-time novelist. Again, it took decades for explicit apprehension of this influence to sink in and become obvious.

The computer

To take the computer first: I tried to emulate Aaron Scharf on photography by singling out artists who used the new medium to mimic existing art-forms. Hiroshi Kawano, for instance, created his ‘Artificial Mondrian’, an enormous colour mosaic programmed in the FORTRAN language for a Hitachi computer, the HITAC 5020, and a line printer, with the primary colours filled in by hand. But others were exploiting its specific potentials. An example of the latter was the early development of computer graphics that now seems crude but was to totally transform animated film, which till then required immensely laborious handcraft, and title sequences (Figure 3). My analysis conflated the computer with cybernetics, and Reichardt’s exhibition at the ICA provided many examples, including one of Tsai’s cybernetic sculptures. Another major work was the *Senster* by Edward Ihnatowicz (1926–1988), an interactive robotic device inspired by the articulation of a lobster’s claw (*SI*, November 1971), commissioned by Philips of Eindhoven in their Evoluon museum but unfortunately demolished by them after a few years (Figure 4). It took many years before the importance of *Cybernetic Serendipity*, and Reichardt’s farsightedness, came to be widely recognized (Usselman 2003; Fernández 2008), partly because until recently successive ICA managements displayed no interest in its institutional history; but in the autumn of 2014 a small documentary exhibition was organized in the same building in the Mall, London⁵ (Figure 5).

There was much discussion at the time about Herbert Marcuse’s claim that a technology such as the computer was inevitably tainted by its involvement in warfare and political oppression.⁶ I tried to emphasize its potentially liberating power as well, stimulated by the writings on communications technologies by Raymond Williams, whose lectures I had attended at Cambridge and whose pioneering book on television was part of a short series of books called ‘The Technosphere’ that I edited for Collins the publishers (Williams 1973). I cannot claim to have predicted the internet but I did cite the industry of computer dating, then in its infancy, as an example of ‘liberating technology’ (Benthall 1976, 204). Many people found computer and cybernetic art uninteresting, but I demurred, writing as follows, and remember that this was long before the days of the laptop⁷:

... So far the constraints of working with the computer so dominate anything done with it that they actually appear to oppose the advances of the artist. It is as if the computer were some creature of great sexual attractiveness whose actual anatomy remains elusive, frigid and unexplored. (Benthall 1972, 84)

⁵*Cybernetic Serendipity*: A documentation, 14 October–30 November 2014. Jasia Reichardt’s contribution to the arts has been remarkable, her curatorships ranging from the first exhibition of British Pop Art in 1962 (‘Image in Progress’, Grabowski Gallery, London) to ‘Nearly Human’, an exhibition of art and robotics held in Poland and Norway in 2015; and she has also published widely. Reichardt was nominated Visionary Pioneer of Media Art 2016 by Ars Electronica, Linz.

⁶The Center for Advanced Visual Studies at MIT, founded and presided over by Gyorgy Kepes as a focal point for technological art, was a focus for sometimes bitter controversy – aesthetic, ethical and political – in 1969–1971 (Blakinger 2016).

⁷The ICI (Imperial Chemical Industries) offices in Slough, where I was assigned in 1966 as part of the IBM sales support team, still included a large central pool of women employees engaged in entering information on punched cards. When a System/360 mainframe crashed, it was necessary to try to interpret a ‘core dump’, the entire contents of its memory printed out in hexadecimal. Trying as a novice and a misfit to satisfy a demanding and important customer, when both the System/360 hardware and the new PL/I programming language were suffering from serious teething troubles, was stressful and I did not discern any connections with visual art till later. The high point in a short career with IBM was a warm testimonial to my branch manager from Pan American World Airways at Heathrow Airport, dated November 1967, after I helped to organize a computer introduction seminar for senior employees, who reported that ‘this will be of tremendous value to them in the future as we move into the Computer Age’.

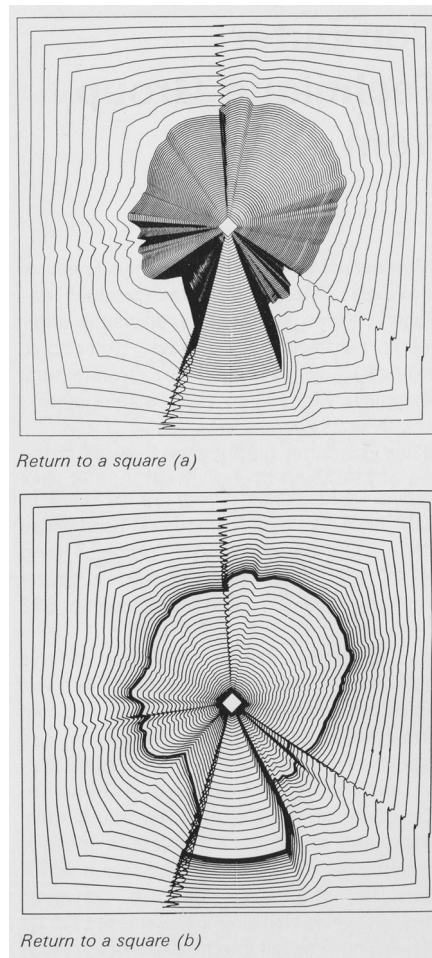


Figure 3. *Return to a square (a) and (b).* Idea by Masao Kohmura, programme by Kunio Yamanaka of the Computer Technique Group, Japan, © Cybernetic Serendipity 1968. (a) is programmed according to an arithmetic series, (b) according to geometrical progression.

The argument was that as computing became vastly more sophisticated and cheaper, it would affect art and aesthetics in ways that could not be predicted at the time. Metzger and I contributed in 1969 to the ‘Zagreb Manifesto’, introducing the Computer Arts Society and looking forward to ‘optimizing the creative potential at the man–machine interface’ as an antidote to the abuse of computers for violent and oppressive purposes:

... The aesthetic demands of artists necessarily lead them to seek an alliance with the most advanced research in natural and artificial intelligence. ... There are creative people in science who feel that the man–machine problem lies at the heart of making the computer the servant of man and nature. Such people welcome the insight of the artist in this context, lest we lose sight of humanity and beauty. (Hyde, Benthall, and Metzger 1971)⁸

⁸I read this at the symposium and exhibition on Computers and Visual Research in Zagreb, 5–6 May 1969. The late Gordon Hyde believed he had discovered a revolutionary new principle for data processing based on the revision of Cantorian set theory by a great mathematician, Paul J. Cohen (1934–2007). Cohen wrote:

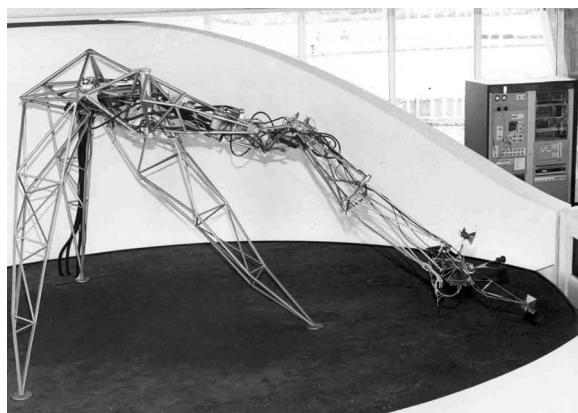


Figure 4. Edward Ihnatowicz, *The Senster*, 1971, installed at the Philips Evoluon, Eindhoven, Netherlands. Note the computer to the right. © Richard Ihnatowicz.



Figure 5. Jasia Reichardt, 1968.

Holography

In an introduction to Margaret Benyon's exhibition of holographic art at the Nottingham University art galley in 1971—the first one-artist show of its kind anywhere – I wrote (Benthall 1971) that holography was probably an even more radical technological development than photography, since photography depended principally on new chemical techniques, its optical principles having been known since the Renaissance. The theoretical principles of holography would have been intelligible to nineteenth century physicists,

The abstract theory of sets is currently in a state of change that in several ways is analogous to the 19th-century revolution in geometry. As in any revolution, political or scientific, it is difficult for those participating in the revolution or witnessing it to foretell its ultimate consequences, except perhaps that they will be profound. (Cohen and Hersh 1967, 104)

If Cohen's theories are ever applied to practical computing, Hyde's sadly disappointed hopes will be vindicated. As of 2016, it seems that 'quantum computing', though still in its infancy, is more likely to become a reality.

though they were first made explicit by Dennis Gabor in 1947 and were implemented practically later after the development of the laser in the 1960s. The obviously novel 3-D effects of holography were a by-product of a far more fundamental principle, that of interference patterning: which led to consideration of the ideas of the theoretical physicist David Bohm (1917–1992) (*SI*, February and June 1970, June 1971). Bohm argued that the optical lens was a key factor in the development of modern scientific thought, since it had brought into sharp relief the illusion of an approximate one-to-one correspondence between points in an object and points in its image; this facilitated the vast extension of analysis and synthesis as a method of enquiry. But according to Bohm, relativity and quantum theory implied undivided wholeness; for the interference pattern in each region of a holographic plate is relevant to the whole structure, and vice versa. The interference pattern on the plate is a relatively permanent write-out of the interference pattern of the light that is present in each region of space. According to Bohm's theory, which he later went on to publish in a popular book, *Wholeness and the Implicate Order* (1980), holography suggested the germ of a new notion of physical order as a total order implicated in each region of space and time. Bohm asks us to consider how when we look at the night sky and discern immense structures of space and time, they are in some sense contained in the movements of light in the tiny space encompassed by our eye. The hologram is thus a visual model for post-Einsteinian physics. This was difficult for us to grasp, I argued, but a similar effort would have been needed in the 1840s to guess at the long term significance of those early daguerreotypes and calotypes.

Margaret Benyon's work intrigued especially because she stressed phenomena that were 'peculiar to the holographic medium'. In this photograph of one of her holographic plates, [Figure 6](#), evoking the tradition of still-life paintings, the moistness of the fruit has caused very slight surface movement and hence a loss of image brightness, rather than the blurring that results from movement in ordinary photography. I argued that

much more than the computer, holography is a medium which will swamp with its own mystery all attempts by artists at personal expression, for some time to come. Holography will over the years influence our art, our everyday perception, our language, reality itself.

Seventy years after the formal invention of holography by Gabor, it has become ubiquitous as an anti-counterfeiting device but so far made only a modest contribution to the visual arts (Johnston 2016). David Bohm, despite his unimpeachable achievements as a physicist, was credulous on such topics as parapsychology and spoon-bending (Gardner 2000). But since his death in 1992 a newly defined, if sharply counter-intuitive, 'holographic principle' has taken off in cosmology. Originating from the study of black hole thermodynamics, the holographic principle applied to the universe as a whole postulates that the 3-D objects in our perceived world are smeared around a distant 2-D surface that surrounds us, the 'cosmological horizon'. Our innate perception that the world is 3-D could be an illusion, if indeed we are a holographic projection of that distant data. Alternatively:

The real universe is a 4-D system: it has volume and extends in time. If the physics of our universe is holographic, there would be an alternative set of physical laws, operating on a 3-D boundary of spacetime somewhere, that would be the equivalent of our known 4-D physics. (Bekenstein 2003, 63–64)

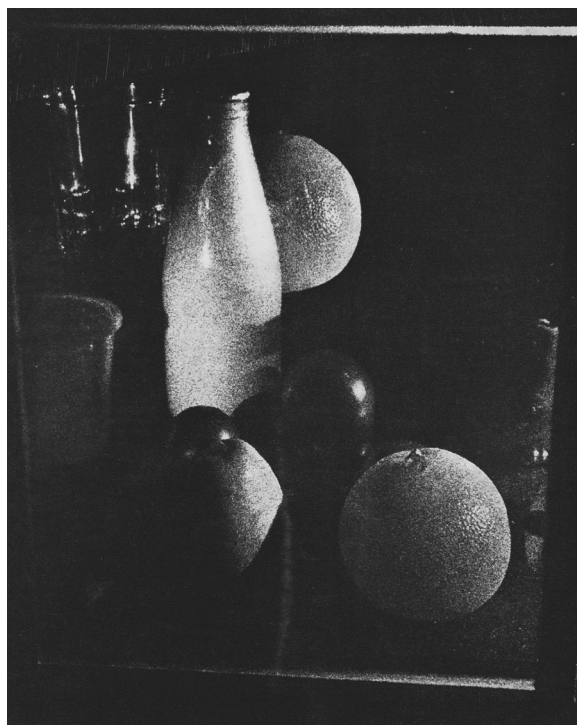


Figure 6. Photograph of a double-exposure hologram by Margaret Benyon, Nottingham University Art Gallery, 1971. 'By exposing the plate to two different set-ups', she wrote, 'it is possible to achieve the appearance of "weightlessness". The glass in this hologram appears to hang in space above the fruit, and the orange to float through the bottle of milk. It is possible for an apparition to baffle another apparition and block it from view.' © Margaret Benyon (Permission granted).

Bohm is not even cited in the extensive references supporting an authoritative review article by Raphael Bousso (2002) on the holographic principle.⁹ This way of thinking has not yet attained the status of a physical law, but its chief proponents such as Juan Maldacena have achieved an extraordinary citation count,¹⁰ and some believe that it gives important clues to the ultimate nature of reality (Bekenstein 2003, 60).

I suggested in *Studio International* (April 1970), following C. H. Waddington's seminal book *Behind Appearance* (1970), that the 'all-over' paintings by Jackson Pollock or Mark Tobey, or the use of interference patterns in the work of Bridget Riley or Jesús Rafael Soto, could be seen as expressions of a holographic sensibility. It remains to be seen how recent theories in astrophysics will affect our experience of everyday reality and consequently the work of artists. Moreover, some cultural historians today reject the model of an 'interplay' between art and science, preferring instead to consider how artists and scientists have developed ideas at the same time:

⁹In quite another scientific field, the study of the human brain, Bohm's ideas inspired the 'holonomic brain model of cognitive function' developed by Karl H. Pribram (1919–2015), which has not been universally accepted but which has certainly played its part in shaking up classic brain science (Pribram 2007).

¹⁰The 40 most highly cited papers of All Time¹ in high energy physics (2013 edition), published by INSPIRE-HEP, gives a count of 9,635 core citations (up to the end of 2013) for Maldacena's "The Large N Limit of Superconformal Field Theories and Supergravity." *International Journal of Theoretical Physics* 38 (1999), 1113–1133. Source: <http://inspirehep.net/info/hep/stats/topcites/2013/alltime.html> (accessed March 6, 2016).

the most notable example being Picasso and Einstein, who independently achieved revolutionary insights into the nature of space–time, a possible common denominator being the mathematics of Henri Poincaré (Miller 2001, 2012).

Art and ecology

The other main theme to look back on from old issues of *Studio* is the relationship between art and ecology, where I was strongly influenced by the globetrotting guru Buckminster Fuller, author of *Operating Manual for Spaceship Earth*, whom I interviewed for *Studio* in a train (SI, May 1970). Oceanology was not neglected (SI, April 1969) and brought me in touch with Farooq Hussain, a former architectural student, who wrote in his book *Living Underwater* about the prospect of a surgical procedure to enable human beings to recover the gills we lost during our evolution, so that we can colonize the seabed (Hussain 1970).

A two-part article in *Studio* dilated on the importance of ecology: ‘the artist is likely to become the “minister” of a higher ecology of his own making’, quoting Merleau-Ponty’s observation that ‘it is impossible with man to superimpose a first layer of behaviour that one calls “natural” and a fabricated cultural or spiritual world’ (SI, December 1969, April 1970).¹¹ The most widely publicized work of eco-art in London at this time was the American artist Newton Harrison’s *Portable Fish Farm: Survival Piece* shown at the Hayward Gallery in 1971, predicting the need to farm fish in this way if pollution of the sea continued. This consisted of six sea-water tanks containing catfish and some shellfish. He planned to electrocute two dozen catfish in public and serve them as a feast for the Contemporary Art Society. The Arts Council intervened to ban this spectacle, under pressure from the RSPCA, despite Harrison’s defence that electrocution was the most humane way to kill fish. The BSSRS led by Maurice Wilkins and David Bohm weighed in to denounce censorship. In my column in *Studio*, I hailed Harrison’s originality but questioned the reasoning behind his work on two grounds (SI, December 1971). First, the taking of life in a symbolic rite, especially in view of the American criminal justice system’s commitment to electrocution, was insufficiently justified. And second, Harrison was imprecise in calling his work a ‘cycle of production and consumption’: he ignored the elaborate support system of water-heaters, agitators and so on required to operate the tanks, with energy generated from the heavily polluting London power-stations, as well as the result of the planned consumption by the art connoisseurs, which he could have represented by collecting their excrement and recycling its energy into the system. The expensive technical complexity of Harrison’s piece reversed Buckminster Fuller’s precept ‘More with less’, so that he might be symbolizing the poison rather than the cure. But I concurred with Newton Harrison’s observation:

Art has to change. Its whole ground must be redefined. It is sterile; it is a closed system; it is stiflingly cross-referential and its yield per quantum of effort expended is pitifully low.

¹¹The second of these articles, ‘The relevance of ecology’, was reprinted in an anthology edited by Gregory Battcock (1973, 30–40).

Conclusion

I was unconvinced by what Joseph Kosuth called ‘purely conceptual art’ – ‘art as idea as idea’ (Kosuth 1969, 161). But it was impossible not to be affected by the conceptualist turn in visual art. One of the last of the ‘technology and art’ columns – ‘The inflation of art media’, *SI*, October 1971 – welcomed the idea of participation in a social system as a form of art medium, as in Hans Haacke’s politically forceful intervention in the communications media of the art-world, or Douglas Huebler’s use of the American parcel-post service in his *Duration Piece No. 9* 1969. This article took as its epigraph Shakespeare’s ‘Is it not strange that sheepes’ guts should hale soules out of mens bodies?’ (*Much Ado about Nothing*, 2.3) and went on to cite Richard Wollheim’s reflections on the mystery of why ‘certain apparently arbitrarily identified stuffs or processes should be the vehicles of art’ (Wollheim 1975, 59). Since Marcel Duchamp’s innovations, I noted, the concept of art was no longer confined to a few accredited stuffs and processes. This was ‘like a kind of monetary inflation, or like the undignified proliferation of the diplomatic corps into an infinity of tin-pot embassies’.¹² But the collapse of the hierarchy of the fine arts was not necessarily a disaster if the properties specific to each medium – including photography, computing and holography – could serve as the ‘stringencies’ that according to Wollheim were necessary for creative expression.

Townsend allowed me to snipe in his pages at the inward-looking contemporary art world in an aggressive style that seems in retrospect juvenile. I would not now compose sentences such as ‘The brilliant virtuosity and seeming freshness of Warhol or Richard Hamilton ... resemble the insidious glamour of cosmetics to which, in *Death in Venice*, the dying von Aschenbach resorts amid a plague-ridden city’ (*SI*, May 1971). By 1974 the avant-garde art scene seemed to me to present more blind alleys than exciting vistas, and I switched attention to anthropology. It is a common experience with advancing years that one’s personal preferences in the arts become more conservative – though the visual artist I revere most, Goya, was anything but. Invited recently to add an afterword to my earlier thoughts on Tsai’s cybernetic sculptures, I have concluded that Tsai was an artist in the Chinese tradition but trained in a Western modernist aesthetic and committed to non-traditional materials. His best known works belong on the whole to the analogue and early digital age of electronics. It is as if he built and meticulously tuned his own musical instruments. In his sculptures, the man-made electric current stands in for the wind in nature. I was reminded of the Aeolian harp or wind-harp that responds spontaneously to the breezes that surround it, and became a favourite metaphor of the Romantic poets, often evoking creative power – literally, inspiration – and the renewal of life; and I quoted one of the most beautiful poems of Samuel Taylor Coleridge, who was inclined towards pantheism, ‘The Eolian Harp’ (1795). According to Taoism, the entire cosmos, all of nature, is understood to be numinous, an expression of the combined forces and laws that make it possible and are beyond comprehension (Benthall 2017).

The Zagreb Manifesto, cited above, noted:

Artists are increasingly striving to relate their work and that of the technologists to the current unprecedented crisis in society. Some artists are responding by utilizing their experience of science and technology to try and resolve urgent social problems. Others, researching in cybernetics and the neurosciences, are exploring new ideas about the interaction of the human being with the environment. Others again are identifying their work with a concept of ecology which includes the entire technological environment that man has imposed on nature.

¹²A turn of phrase that I would not use today.

The imminent risk of nuclear holocaust was a strong preoccupation for Gustav Metzger, and has recently come to the fore again in world politics.¹³ Our ‘manifesto’ was written only nine years after the Cuban missile crisis, and Maurice Wilkins, president of the BSSRS, had worked on the Manhattan Project to develop the first nuclear weapons during the Second World War. Other global problems that face us today do not need enumerating.

One historian surveying the American and British technological art of the 1960s and early 1970s has written ‘It is hard to recapture the utopian energy and belief embodied in these exhibitions and publications’ (Gere 2004). If the argument is correct (as put forward in Benthall 1976) that there is a dialectical relationship between technophilia (the ‘romance of technology’) and technophobia (the ‘recoil to the body’), then the period under review was certainly one of technophilia. But it was mitigated by a questioning approach, one of whose exemplary facilitators was Peter Townsend.

Acknowledgements

This is an expanded version of a lecture given on 26 July 2014 at a conference entitled ‘White Heat: Art, science and social responsibility in 1960s Britain’, organized in the Department of Engineering, University of Cambridge, by Kettle’s Yard to accompany its retrospective exhibition of work by Gustav Metzger. My thanks to the editors of this special issue, Elizabeth Fisher and Bronac Ferran, and to Andrew Wilson and Lun-Yi Tsai for their insightful comments on drafts.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Jonathan Benthall was born in Kolkata in 1941, and graduated in English Language and Literature from the University of Cambridge. He was Secretary of the Institute of Contemporary Arts, London, from 1971 to 1973, and Director of the Royal Anthropological Institute from 1974 to 2000 where he founded the bimonthly journal *Anthropology Today* in 1985. In 1972 he published *Science and Technology in Art Today* with Thames and Hudson. More recently, his principal research interests have focussed on the overlapping area between humanitarianism and religion, with special reference to Islam, on which he has published widely. He was appointed Chevalier de l’Ordre de Arts et des Lettres by the French Government in 1973, and in 1993 was awarded the Anthropology in Media Award by the American Anthropological Association.

References

- I have not given full page references to articles in *Studio International*, which would overload the reference section. The articles can easily be found in a library that stocks a run of the magazine. Battcock, Gregory, ed. 1973. *Idea Art: A Critical Anthology*. New York: E. P. Dutton.
- Bekenstein, Jacob D. 2003. “Information in the Holographic Universe.” *Scientific American*, August 289 (2): 58–65.
- Benthall, Jonathan. 1968a. “Art as Programming: Reflexions on Roy Lichtenstein.” *The Cambridge Quarterly* III (2): 107–114.
- Benthall, Jonathan. 1968b. “Artists and Technicians.” *Times Literary Supplement*, October 31, 1229.

¹³See Perry (2015) for a persuasive warning that the present dangers of nuclear catastrophe are greater than during the Cold War.

- Benthall, Jonathan. 1971. Introduction, *Margaret Benyon Exhibition 1971 Catalogue*. Nottingham: Nottingham University Art Gallery.
- Benthall, Jonathan. 1972. *Science and Technology in Art Today*. London: Thames and Hudson.
- Benthall, Jonathan. 1976. *The Body Electric: Patterns of Western Industrial Culture*. London: Thames and Hudson.
- Benthall, Jonathan. 2017. "Cybernetic Sculpture of Tsai" and "Trembling into Thought: An Afterword." in L.-Y. Tsai (ed.), *Tsai* 蔡文颖. Beijing: Tsinghua University Press.
- Blakinger, John R. 2016. "The Aesthetics of Collaboration: Complicity and Conversion at MIT's Center for Advanced Visual Studies." *Tate Papers*, no. 25, Spring 2016. <http://www.tate.org.uk/research/publications/tate-papers/25/aesthetics-of-collaboration-2>.
- Bohm, David. 1980. *Wholeness and the Implicate Order*. London: Routledge.
- Bousso, Raphael. 2002. "The Holographic Principle." *Reviews of Modern Physics*, July 74: 825–874.
- Cohen, Paul J., and Reuben Hersh. 1967. "Non-Cantorian Set Theory." *Scientific American*, December 217 (6): 104–116.
- Fernández, María. 2008. "Detached from HiStory: Jasia Reichardt and *Cybernetic Serendipity*." *Art Journal*, Fall 67 (3): 6–23.
- Gardner, Martin. 2000. "David Bohm and Jiddo Krishnamurti." *Skeptical Inquirer*, July 24 (4): 20.
- Gere, Charlie. 2004. New Media Art and the Gallery in the Digital Age, para. 24. <http://www.tate.org.uk/research/publications/tate-papers/02/new-media-art-and-the-gallery-in-the-digital-age>.
- Hultén, K. G. Pontus. 1968. *The Machine as Seen at the End of the Mechanical Age*. New York: Museum of Modern Art.
- Hussain, Farooq. 1970. *Living Underwater*. New York: Praeger.
- Hyde, Gordon, Jonathan Benthall, and Gustav Metzger. 1971. Zagreb Manifesto. *bit international* 7, Boris Kelemen and Radoslav Putar (eds). Zagreb: Galerije grada Zagreba, p. 3–4. Reprinted in Margit Rosen (ed.), 2011 *A Little-Known Story About a Movement, a Magazine, and the Computer's Arrival in Art: New Tendencies and Bit International*. Karlsruhe: ZKM Center for Art and Media and Cambridge, MA: MIT Press, p. 421.
- Jenny, Hans. 1967. *Cymatics*. Basel: Basilius Presse.
- Johnston, Sean F. 2016. *Holograms: A Cultural History*. Oxford: Oxford University Press.
- Kelsey, Robin. 2015. *Photography and the Art of Chance*. Cambridge, MA: Belknap Press.
- Kosuth, Joseph. 1969. "Art After Philosophy Part II: 'Conceptual Art' and Recent Art." *Studio International*, November, 160–161.
- Melvin, Joanna. 2013. "Studio International Magazine: Tales from Peter Townsend's Editorial Papers." Doctoral thesis, University College London.
- Miller, Arthur I. 2001. *Einstein, Picasso: Space, Time, and the Beauty that Causes Havoc*. New York: Basic Books.
- Miller, Arthur I. 2012. "Henri Poincaré: The Unlikely Link Between Einstein and Picasso." *Guardian*, July 17.
- Perry, William J. 2015. *My Journey at the Nuclear Brink*. Stanford: Stanford Security Studies.
- Pribram, Karl. 2007. "Holonomic Brain Theory." *Scholarpedia*. http://www.scholarpedia.org/article/Holonomic_brain_theory.
- Reichardt, Jasia, ed. 1968. *Cybernetic Serendipity*. London: Studio International.
- Scharf, Aaron. 1968. *Art and Photography*. London: Allen Lane.
- Usselman, Rainer. 2003. "The Dilemma of Media Art: Cybernetic Serendipity at the ICA, London." *Leonardo* 36 (5): 389–396.
- Waddington, C. H. 1970. *Behind Appearance*. Edinburgh: Edinburgh University Press.
- Wilkins, Maurice. 2003. *The Third Man of the Double Helix: The Autobiography of Maurice Wilkins*. Oxford: Oxford University Press.
- Williams, Raymond. 1973. *Television: Technology and Cultural Form*. London: Collins.
- Wollheim, Richard. 1975. *Art and its Objects*. Harmondsworth: Penguin (first published in 1968).



Cool nothing: Dom Sylvester Houédard's coexistentialist concrete poetics

Greg Thomas

University of Edinburgh, Edinburgh, UK

ABSTRACT

This article concerns the concrete poetics of Dom Sylvester Houédard, which I define using a term from his 1963 article 'Concrete Poetry & Ian Hamilton Finlay', 'coexistentialist'. Houédard's concrete poetry has sometimes been criticized for an anachronistic avant-garde quality, because of its non-semantic use of written language, and its associated air of intermedia experiment. But the term 'coexistentialist' has various connotations which allow us to interpret Houédard's work as highly responsive to its cultural moment, and to the unique theological tradition from which it emerged. These connotations include: the relationship between early and mid-twentieth-century modern art and literature; existentialist philosophy, especially the writing of Jean-Paul Sartre; Marshall McLuhan's theories on modern communication and ecumenical dialogue within the Catholic Church during the Second Vatican Council. After presenting an outline of Houédard's poetics related to these themes, I analyse some of his concrete poems or 'typestracts', produced between 1967 and 1972.

ARTICLE HISTORY

Received 30 October 2016

Revised 23 November 2016

Accepted 23 November 2016

KEYWORDS

Dom Sylvester Houédard;
concrete poetry; Ian Hamilton
Finlay; Marshall McLuhan;
Jean-Paul Sartre; intermedia

In 1963 Dom Sylvester Houédard published the article 'Concrete Poetry & Ian Hamilton Finlay' in Herbert Spencer's journal *Typographica*, the first account published in the UK of what had become known as concrete poetry, a kind of poetry in which, simply put, the visual or material elements of language were central to poetic meaning. Finlay, the article's nominal subject, became disillusioned with the interpretation of concrete poetry, and of his work in particular, which it seemed to represent, describing it curtly in a 1970 biographical note as 'less useful' than other accounts (qtd in 'FINLAY, Ian Hamilton', 369).¹ The reason was perhaps that Finlay always held concrete poetry to be a fundamentally linguistic art, enhanced by visual and phonetic devices which served as indications of syntax, or to emphasize or modify a central theme, but always oriented around a nucleus of meaning provided by words. Houédard presented another idea of concrete poetry, more in tune with the artistic spirit of the decade if more removed from the aims of the first, Northern-European and Brazilian concrete poets during the mid-1950s. In a spirit exemplary of the experimental generation, he emphasized concrete poetry's capacity to blur and

CONTACT Greg Thomas ✉ greg.thomas@ed.ac.uk 📍 University of Edinburgh, Room 3.16, 15 Buccleuch Place, Edinburgh EH8 9LN, UK

¹Finlay's comment is quoted in the entry on his work in the 1970 reference book *Contemporary Poets of the English Language*. The entry is anonymous but includes a biographical note by Edwin Morgan.

© 2017 Institute of Materials, Minerals and Mining Published by Taylor & Francis on behalf of the Institute

dissolve medium boundaries, bringing the visual and linguistic registers into a kind of relativizing co-existence.

In the introduction to his 1971 concrete poetry anthology *Mindplay*, John Sharkey described Finlay and Houédard as the two ‘seminal personalities’ associated with the style in Britain (14). Indeed, Houédard’s prolific creative and critical output helped to generate an understanding of concrete poetry that stood in illuminating contrast to Finlay’s, and by the close of the 1960s his work was well-known in Britain, and to exponents and critics of concrete poetry worldwide. It would even be possible to argue that by the time Sharkey’s anthology appeared, Finlay’s own sense of what concrete poetry represented had been somewhat submerged, by a wave of creative and critical activity which had redefined it along the lines implied by intermedia art and counter-cultural ideology. On these terms, concrete poetry’s main value lay in evading the constraints of medium, thereby placing metaphorical or literal pressure on broader systems of authority, control and categorization.² But although Houédard was sympathetic to some such set of ideas, his own work cannot be defined on these terms nearly as neatly as Finlay’s disapprobation assumed. In any case, across the intervening decades the situation vis-à-vis critical attention has entirely shifted: while Finlay’s practice is now celebrated as a striking manifestation of late-modernist literary aesthetics, and for its trenchant response to the ideological tenets of modern art, Houédard’s has reverted to something of the status of a niche interest.³ Admittedly, the publication of Nicola Simpson’s *Notes from the Cosmic Typewriter: The Life and Work of Dom Sylvester Houédard* (2013), an engaging and superbly presented collection of critical essays, reminiscences and reproductions, indicates a limited resurgence of interest, in line with the more general critical revaluation of concrete poetry over the last five years or so. But in many instances Houédard’s work is still written off as an eccentric manifestation of a sixties fascination with phantasmagoria, synaesthesia and new-age spirituality.

That perception is understandable but unfair, or rather, incomplete. As critical interest in concrete poetry continues to grow, it therefore seems worth offering a more nuanced account of Houédard’s poetics than has so far appeared, by reference to a word which resurfaces throughout his *Typographica* article. That word is ‘coexistentialist’, and it is a term in which several layers of meaning can be identified, besides its superficial use to define the co-existence of the visual and linguistic registers already referred to. In this article I wish to focus on four – some, perhaps all, of which were consciously invoked by Houédard –

²The tenets of intermedia practice which I have in mind here, and their ideological and political connotations, are evident in Higgins’s 1966 manifesto ‘Intermedia’:

The concept of the separation between media arose in the renaissance. The idea that a painting is made of paint on canvas or that a sculpture should not be painted seems characteristic of the kind of social thought – categorizing and dividing society into nobility with its various subdivisions, untitled gentry, artisans, serfs and landless workers – which we call the Feudal conception of the Great Chain of Being. This essentially mechanistic approach continued to be relevant throughout the first two industrial revolutions, just concluded, and into the present era of automation ... However, the social problems that characterize our time, as opposed to the political ones, no longer allow a compartmentalized approach. We are approaching the dawn of a classless society, to which separation into rigid categories is absolutely irrelevant. ([1])

³As regards critical consensus on Finlay’s work, the influential critic of literary modernism Marjorie Perloff, for example, has written of it on several occasions, notably in ‘From “Suprematism” to Language Game: The Blue and Brown Poems of Ian Hamilton Finlay’ (2010). The long-standing critical support of Stephen Bann has also been important in ensuring its reputation.

before turning to some examples of his work in which his coexistentialist poetics is borne out. The first involves the relationship between what might be called the first and second-wave Western avant-gardes of the early twentieth century and the 1950–1960s respectively; another involves French existentialism, especially the writing of Jean-Paul Sartre; a third involves Marshall McLuhan's 1962 text *The Gutenberg Galaxy* and a fourth the spirit of ecumenism within the Catholic Church which Houédard served as a monk, priest and theologian during the Second Vatican Council of 1962–1965.

But before running through these ideas, it is worth defining this idea of merging the visual and linguistic registers a little more precisely. I am associating that quality particularly with Houédard's so-called 'typestracts', although it is identifiable to varying degrees in almost all of his work. Typestracts were made by using the linguistic and diacritical marks of the typewriter to build up precise geometrical constructions, generally set in an implied three-dimensional void, sometimes with more fluid or dispersed visual elements floating or swimming around a central edifice. Language and image co-exist in a simple sense because we are presented with a visual image made from pieces of language, using a tool for writing, which thus retains, besides its visible form, what Edwin Morgan called a 'lingering literary hookup' (1975, 729).⁴ More subtly, one might say that the visual and linguistic co-exist because the work appears beyond conventional symbolic frameworks, preceding identification as either visual art or language but potentially identifiable as either or both, that process to be determined by the reader or viewer rather than being pre-emptively configured by the poet.

In short, the typestracts are works which we might see as using linguistic marks to make visual art, or as occupying a space between or beyond language and image. These are, of course, qualities associable with a raft of visual-linguistic experiments conducted by poets and artists across the late-nineteenth and early-twentieth centuries, most obviously the Dadaists and Futurists. However, to return to the four affinities mentioned above, the term 'coexistentialist' refers as much to the spirit in which this merging of registers was undertaken as to the process itself, a spirit particular to both the cultural epoch and the theological tradition from which Houédard's work emerged.

His *Typographica* article had, for example, pointedly distinguished between the 'coexistentialist' modern art and literature produced since World War Two and that which came before it, in particular between the Salon des Refusés exhibition of 1863 and World War One, which Houédard describes as either 'constrictive' or 'constructive'. The crux of this distinction is between what he calls 'the largely pre-WW/1 move to the authentic and non-mimetic' and the 'largely post-WW/2 overspill to ... mutual interpretation, rejection of divides & borders, delight in accepting ambiguity/ambivalence: alive blurring of frontiers between art & art, mind & mind, world & world, mind art & world' (1963b, 47). Artworks of construction and constriction, Houédard suggests, were compelled by a kind of urge towards transcendence, the yearning for an expressive or communicative register with an objectivity surpassing all previous ones, potentially staked on a movement beyond signification. This could be attempted 'constructively', by the nominal development of such registers – the quintessential example perhaps being the Zaum language of the Russian Futurists – and/or by 'constriction'. Constriction involved the

⁴This comment appears in Morgan's untitled biographical note on Houédard in the second edition of *Contemporary Poets of the English Language* (1975).

destruction or undermining of existing registers to clear space for the new, what Houéard calls 'the necessary negative anti-past ... épurations [cleansing or purging] of eg the Dada-ists' (47). By contrast, coexistentialism stood for a certain equalization or levelling out, a combination of expressive registers which accepted and emphasized their mutual non-transcendence or non-objectivity: their containment in symbolic frameworks defined by custom and context rather than mystical affinity with their objects.

Houéard associates coexistentialism specifically with concrete poetry, describing its characteristics under the consecutive headings 'constricting' and 'constructive' before alighting on the third term as if to offer a conclusive definition. In this sense, coexistentialism set concrete poetry apart from earlier avant-garde art and literature by what Houéard called, in his 1964 lecture 'Eyear', a 'sense of zen-peace found in accepting things for the sake of their hollowness' (1964a, n.pag.).⁵ It is useful, in this sense, to think of the frequent absence of language in the typestracts as evidence not of some compulsion towards immaculate expression or communication but of a withdrawal from that very urge, a certain silent repose which is both ascetic and whimsical. Another of Houéard's terms for concrete poetry, 'Paradada' – the title of his 1964 *Times Literary Supplement* article – confirms this suggestion: concrete as 'beyond' or 'other than' Dada; or, as Houéard puts it in that piece, 'un-un & cool nothing paradada (surdada) outgrowing sticky fears of inner neant' (6 August 1964b).

However, the appearance of the Sartrean term 'néant' here is also instructive. In biographical terms, that is, Houéard's coexistentialism represented not so much a movement beyond Dada as beyond engagement with a literary and philosophical movement whose title is embedded in the term itself: existentialism. At Sant Anselmo Benedictine College in Rome in the early 1950s, Houéard had completed a licentiate dissertation on Jean-Paul Sartre, a process which he later recalled as pivotal to his poetic development.⁶ Moreover, as a native of the Channel Islands Houéard was bilingual, steeped in a Francophone tradition which encompassed the French existentialist literature of the mid-twentieth century.

Commenting on his dissertation in a 1987 article on Beckett, Houéard remarked that

Beckett's non-pessimism (say non-non-optimism for greater precision) has here a *place* and *function*, eliminative of what I called in my fifties thesis on *Sartre and Nothingness* the failure of Sartre to (not *revel* in but) feel at home with this Néant *in* which (and *that*) we are. (1987, 53)

The reference to Sartre is fleeting but it must be primarily to his 1943 work *L'Être et le néant* (*Being and Nothingness*), in which Sartre defines the mode of being which characterizes human consciousness (being-for-itself) as an absence or negation of the pure, undifferentiated being of the inanimate universe (being-in-itself) (Sartre [1958] 2003). The prerequisite of human consciousness, in other words, is not any essential quality or function but the negation or nihilation of a prior state. This meant, amongst other things, that human consciousness had to be defined as arbitrary or non-necessary, lacking any pre-determined, metaphysically definable purpose. The idea of such purpose rather emerged from the process by which consciousness perpetually transcended

⁵Houéard's delivered this lecture in two parts, at the Royal College of Art and the Institute of Contemporary Arts, on March 2 and May 12, 1964. The transcript quoted here is stored with the Edwin Morgan Papers at Glasgow University Library.

⁶See Houéard's reference to this period in his autobiographical note 'Chronobiography/ Autozoography', for example, in which he describes the theme of his dissertation as 'liberty in Sartre' (1972a, 26).

and reflected back on itself, by which a sense of the self or ego emerged, and by which meaning was granted in tandem to the external world (ibid.).

For Houédard, the anguish at the core of this existentialist condition seems to have been rooted in some sense of an absent alternative, an imaginable yet uninhabitable mode of being which would possess an essential quality or function of the kind just outlined, expressed through a language or sign system which somehow embodied that same truth. In other words, Houédard defined existentialism as constrictive/constructive, characterized by an underlying dread at the sheer contingency of human consciousness and its systems of communication. Concrete poetry, by contrast, accepted the 'néant' as neutral fact, playfully combining language and image as if to express a cool awareness of the arbitrariness of man-made sign systems, and of the meanings they inscribed onto the self and the world. Making its home in the néant, concrete poetry redefined the existentialist condition along similar lines to Beckett's more anguished quests for neutrality: not existentialism, but coexistentialism.

And yet the word also contains further layers of significance. Houédard's *Typographica* article had also defined coexistentialism as a necessary condition of what he called '[t]he shrinking world: contracted/constricted negatively by bomb & spacefears, positively by jet-communications telstar space-probe. This makes coexistentialism inevitable, international: i.e. all arts merge, barriers crumble, are scrambled' (1963, 50). The idea of a global society entwined and homogenized by mass communication technology and the pervasive threat of nuclear war – amongst other things – partly takes its cue from the concrete poet Eugen Gomringer's 1950s manifestos.⁷ But it also brings to mind the condition of 'the global village' identified by Marshall McLuhan in *The Gutenberg Galaxy* the previous year ([1962] 1971, 31). More generally, Houédard's 1960s critical writing shows a clear awareness and digestion of McLuhan's terminology.⁸ This implies another hookup within the word 'coexistentialism', linking it to a similar term used in the prologue to McLuhan's text, 'co-existence', to indicate the potential ability of the modern mind to hold the information and ideas received through different symbolic systems in a kind of sceptical tension.

The key assumption of *The Gutenberg Galaxy* is that changes in communication technology are not passive markers of societal evolution but active determinants of our cognitive and social conditions at any one point in history, which have the effect of 'outering' or 'extending' one sense, leading to an engagement with reality dominated by that sense. In particular, McLuhan distinguishes between the 'visual' condition brought about by the development of the phonetic alphabet and the printing press and the 'oral' or 'aural' condition of pre- and non-literate societies. The former is defined by, amongst other things, the perception of reality as ordered three-dimensional space, pursuit of linear causal links between objects and events, and the endowment of the individual with rational power and

⁷See for example Gomringer's 1956 statement 'Concrete Poetry', which defines the style as:

International-supra national. It is a significant characteristic of the existential necessity of concrete poetry that creations such as those brought together in this volume began to appear almost simultaneously in Europe and South America and that the attitude which made the creation and defense of such structures possible manifested itself here as it did there. (68)

⁸In his 'Eyear' lecture, for example, Houédard described concrete poetry as emerging 'partly [out of] the planetarisation effect of our global village culture as we move out of the 4th season of the industrial/mechanical age into the 5th season of the electronic & spaceage' (1964a, n.pag).

self-awareness. In oral cultures, three-dimensional space is not recognized in the same way, thought is formed in passive, emotionally configured response to external stimuli, and the individual does not recognize himself so discretely from the social mass. McLuhan felt that the advent of 'electric' communication technology was beckoning in a new oral age for the West, albeit one mediated by, and which would mediate in turn, the extant cognitive modes of the visual age: 'any Western child today grows up in this kind of magical repetitive world as he hears advertisements on radio and TV' ([1962] 1971, 19).⁹

Though hailed, partly correctly, as a proselytiser for new media, McLuhan saw both the visual and oral conditions as problematic. While the technology of the visual age had led to a numbing entrancement by the subject-centred, linear logic of language – through an out-er-er of visual sense – the oral condition reduced human consciousness to a de-individualized, tribal identity, liable to outbursts of mass panic and irrationality. The current post-visual oral age, meanwhile, potentially presented an amalgamation of these threats, with a range of intersecting technologies extending our various senses by ever more pervasive and simultaneous means, such that the subject was increasingly unable to notice or avert their cognitive effects, bringing about a new form of irrational tribalism.¹⁰ It is in defining this predicament that McLuhan offers the word 'co-existence':

[T]he principle of exchange and translation, or metaphor, is in our rational power to translate all of our senses into one another. This we do every instant of our lives. But the price we pay for special technological tools, whether the wheel or the alphabet or the radio, is that these massive *extensions* of sense constitute closed systems ... , incapable of interplay or collective awareness. Now, in the electric age, the very instantaneous nature of co-existence among our technological instruments has created a crisis quite new in human history. Our extended faculties and senses now constitute a single field of experience which demands that they become collectively conscious. Our technologies, like our private senses, now demand an interplay and ratio that makes *rational* co-existence possible. ([1962] 1971, 5)

Just as our 'private senses' entail an inbuilt capacity for translation or metaphorical exchange, McLuhan suggests, so the extended sensory channels which constitute our new technologies of communication, and which now utterly pervade those private senses, must somehow be placed in a kind of interactive or constellatory relationship. In developing the ability to translate or transliterate between different channels of perception in this way, the subject would identify and demystify their effects, loosening their emotive grip on the mind.

The final section of *The Gutenberg Galaxy*, 'The Galaxy Reconfigured', is partly concerned with how this rational coexistence of technologies or perceptual modes might be established. Interestingly then, it initially takes the form of a potted summary of visually and sonically augmented literature and its associated criticism, from Blake's engravings to Ruskin's writing on gothic manuscripts to the work of Joyce and the French symbolists. Bringing these developments together under Ruskin's term 'the grotesque', McLuhan

⁹The famously gnomic, aphoristic style of *The Gutenberg Galaxy* is partly intended to prevent this kind of theoretical shorthand, which implies the objectivity of its own perspective. Instead, the book's compacted style and 'mosaic'-like structure (265) make the reader highly conscious of their own role in inferring an overall image from the individual units or tiles.

¹⁰This comes across in one of McLuhan's more problematically Eurocentric section headings: '[t]he twentieth century encounter between alphabetic and electronic faces of culture confers on the printed word a crucial role in staying the return to the Africa within' (45).

describes their compositional mode as ‘a collocation, a *parataxis* of components representing insight by carefully established ratios, but without a point of view or lineal connection or sequential order’ (267). If this is ‘coexistentialism’, then the word is partly a clarion call for multi-media art, especially for modes of linguistic expression in which the visual and sensory dimensions of language are granted primary attention. In that respect, of course, it is strikingly similar in implication to Houéard’s ‘coexistentialism’, and given its prominent position in McLuhan’s prologue, it is feasible that Houéard intended a McLuhanite allusion in his own coinage. In any case, like McLuhan’s ‘rational co-existence’, Houéard’s ‘coexistentialism’ evokes a mode of imaginative interplay or interaction between different modes of communication – in this case typewritten language and the conventions of visual representation – which would emphasize their mutual contingency: their lack of divine authority.

Having said all this, perhaps the most important allusion embedded in the term ‘coexistentialism’ is that which links it to the overarching spiritual imperatives of Houéard’s art. ‘Coexistentialism’, that is, expresses a contemporary concern, within the Catholic Church and within Houéard’s own thinking, with the co-existence of belief systems. After all, the object of Houéard’s poetry was always, at some level, God, or union with God: though in his terminology ‘God’ must be re-envisioned as a more nebulous and syncretic force than the term might imply. In his 1963 essay ‘Beat and Afterbeat’, Houéard stated that ‘poetry all art is one of universal worship à l’insu of [unbeknownst to] god the unknown’ (1963a, 140). In this sense, the renunciation of sign systems in Houéard’s work embodied a sense that any formulation of the nature of God in subjective thought necessarily comprised a movement out of or away from God: or rather, away from that inner component of the human mind which was shared with or indivisible from God.

This was an idea which Houéard inherited from the negative and apophatic traditions of a range of world religions.¹¹ His posthumous *Commentaries On Meister Eckhart Sermons* (2000), for example, focus on two paradoxes of consciousness explored through various theological traditions, in particular by the Christian mystic Eckhart (1260–c1327) and the Sufi mystic Ibn’ Arabi (1165–1240). First there is:

[T]he paradox of perpetual creation, that we are continuously receiving being without any interruption, and this being is the self-gift of God. So we have the paradox as to whether we can say it is God’s Being or our being; He gives it to us as ours. (2000, 4)

The most inward aspect of the human mind, Houéard suggests, preceding subjective consciousness, is actually a facet of God, separated from his elementary, indivisible state so that he can recognize and celebrate himself: his ‘self-gift’. The inner core of each human mind can thus be defined as both human and God, or as being shared with God. Secondly there is ‘the paradox of what St. Paul calls *epektasy*, which is the continuous advance of the mind to God, which goes on through time and through eternity so that we never reach God but we always journey towards him’ (4). The mind in its outer, subjective aspect, that is, can never inhabit this inner state of union, but passes out of it in the very act of reflecting on it, rendering it an other, an object of contemplation rather than a state of being. This is the moment of thought, and of all communication, including poetry.

¹¹Though it also seems to owe something to Sartre’s idea of the relationship between human consciousness and pure being: between being-for-itself and being-in-itself.

Putting aside the finer details of this apophatic schema, the salient point is that Houéard's poetry reflected and defined his faith. In this sense, it is significant that he composed his first typestracts during the Second Vatican Council of 1962–1965, indicative of a new culture of 'aggiornamento' or 'bringing up to date' within the Catholic Church. This culture was partly characterized by increased interaction with other faiths, as Houéard noted in 'Beat and Afterbeat': 'what Vat II is ABOUT is universal need to re-phrase without loss of content so as to communicate with the non-us' (1963a, 140). His own contribution to that culture was an idea he called 'The Wider Ecumenism', which involved interaction with a diverse range of spiritual traditions both within and beyond the confines of organized religion. He outlined the idea in his 1965 article 'The Wider Ecumenism', arguing that 'god has spoken in a variety of ways [to] all humanity' (1965, 118):

[S]o that our basically jewish-greek-northeuropean synthesis feels its limitations as sacred history & feels the need to incorporate the sacred history of the regional insights of african-indian-eastern genius, as well as the nonregional insights of technological mentalities that are today's mental theophanies (1965, 118–19).

The Wider Ecumenism, then, was to entail dialogue not only with a global range of religions but also with various artistic and intellectual communities. Though Houéard perhaps alludes here to the spiritual implications of contemporary 'technological' discourses such as cybernetics, those communities would also include ones associated with the 1960s counter-culture, and with international communist and anarchist movements. In a 1963 letter to his friend Stefan Themerson, Houéard referred approvingly to the expanded ecumenical sensibilities accommodated by VAT II, noting that 'catholic communism, catholic atheism and coexistentialism are becoming household words' ([April 14, 1963c]).¹² In so doing he granted the last of those terms further depth, rendering the co-existence of language and image in the typestracts a metaphor for the co-existence of different systems of faith and belief. This aspect of coexistentialism is evident in the references to Buddhism and Hinduism, particularly Tantric ritual, which permeate the language and symbology of the typestracts.

In short, the layered connotations of the term 'coexistentialism' suggest the need for a more nuanced reading of Houéard's concrete poetry than is perhaps invited by Jamie Hilder's generalizing dismissal, in a largely excellent recent survey of the concrete movement worldwide, of 'concrete poets who sought a spiritual experience via the merging of logos and imago' (2016, 27).¹³ As noted, it is the typestracts which offer the most striking manifestation of Houéard's coexistentialist poetics, and in attempting such a reading over the remainder of this article I want to focus on some examples of that form. But before doing so, let me turn briefly to another definition of the typestracts, provided by Edwin Morgan, who coined the term, in a letter to Robert Burchfield, editor of the Oxford English Dictionary (January 10, 1978). Morgan was attempting, unsuccessfully, to have

¹²Rather than being explicitly dated, this letter is marked 'yom EOstre/Pasques/Pesach', a coded reference to Easter Sunday. 'Yom' is a Biblical Hebrew term often translated as 'day', 'Eostre' a Germanic goddess from whose name the English word 'Easter' derives, and 'Pasques' and 'Pesach' Old French and Jewish terms for Easter and Passover respectively. The letter is also accompanied by poems dated around Easter 1963, and followed by another, dated '180463' – seemingly by Themerson, upon receipt – which begins 'My dear moncher/ I wrote as you niticed [sic.] on EASTER DAY' (18 April 1963d). The first letter must also date from 1963, then, when Easter Sunday fell on April 14.

¹³Hilder asserts that these poets' work misrepresented the initial aims of concrete poets such as Gomringer, and 'should not be read as exemplary of the movement' (ibid.).

the word ‘typestract’ added to the dictionary, and recalled first using it in a letter to Houédard sent on or around November 20, 1963:

Houédard [had] sent me some of his ‘typewriter poems’ (there was as yet no term for them), and I wrote back enthusiastically about them, referring to them as typestracts. The term arose swiftly and spontaneously in the course of writing the letter, but I suppose it was a portman-teau word from ‘typewriter’ and ‘abstract’.

As Morgan’s letter implies, one of the defining characteristics of the typestracts is their ‘abstract’ quality, involving not just an absence of semantic content but also, in most cases, a lack of any clearly figurative or pictorial visual element. In this sense, we should not expect the themes and contexts just outlined to be borne out by explicit visual or linguistic gesture. At the same time, the typestracts do display various recurrent compositional features which cultivate a general impression of multi-media ferment, and of *apophasis* – a renunciation of positive expression – which allows us to infer that more precise set of compositional reference-points.

As the typestracts’ multi-media character has been central to discussion so far, I want to focus here on the latter of these qualities, *apophasis*.¹⁴ The apophatic quality of the typestracts is partly conveyed by their wordlessness, of course: whereas earlier concrete poets used the visual arrangement of language to enhance semantic sense, in Houédard’s work the presentation of language as a visual entity generally means the erasure of semantic sense. But the orientation of these poems around their implied object is more complex than that simple renunciative gesture would imply. Rather than the typestracts purporting to assume some transcendent expressive capacity by casting off the word – so that the visual structure itself is implied to possess some magical intimacy with its referent, or to become its own referent – the structure generally seems characterized by its relationship with an enveloping three-dimensional void.¹⁵ It is this encompassing and permeating space rather than the visual form ‘pushed into shape’ by it – as Sharkey puts it in his *Mind-play* introduction (1971, 18) – which stands for the poetic object, specifically for that inexpressible union with the divine outlined above. The structures are rather representations of the processes of thought, prayer or supplicatory ritual by which the subject attempts some intimacy with or awareness of that state.

These two aspects of apophatic composition – the absorption of language into abstract visual motif, but also the orientation of the visual structure around a blank space – are evident in almost all of Houédard’s typestracts. But there are distinctions to be observed in the terms of their deployment. In some cases, the structuring void seems to be enclosed or captured by the visual form, as in the piece ‘Chakrometer’ (1967a [Figure 1]) from *A Book of Chakras*, which suggests a hollow cylindrical structure containing an emptiness. In other cases, the emptiness seems to envelop the design from without, as in the untitled work below (1972b [Figure 2]), from a later collection, *Like Contemplation*. A more significant distinction, perhaps, is that some of the typestracts are granted a degree of

¹⁴The term ‘apophasis’ appeals because of its allusions both to apophatic theology – the idea that the nature of God can only be indicated by rejecting of all positive descriptions of him – and to literary and rhetorical contexts, in which it would function as a form of irony, of conscious reference through conspicuous non-reference.

¹⁵This may remind us of the relationship between typographic form and visual space outlined in Mallarmé’s essay ‘Crisis in Poetry’ (1896), which describes printed language as ‘a fragmentary disposition with alternations and oppositions, all working towards the total rhythm of the white spaces, which would be the poem silenced; but it is translated to some extent by each pendent’ (232).

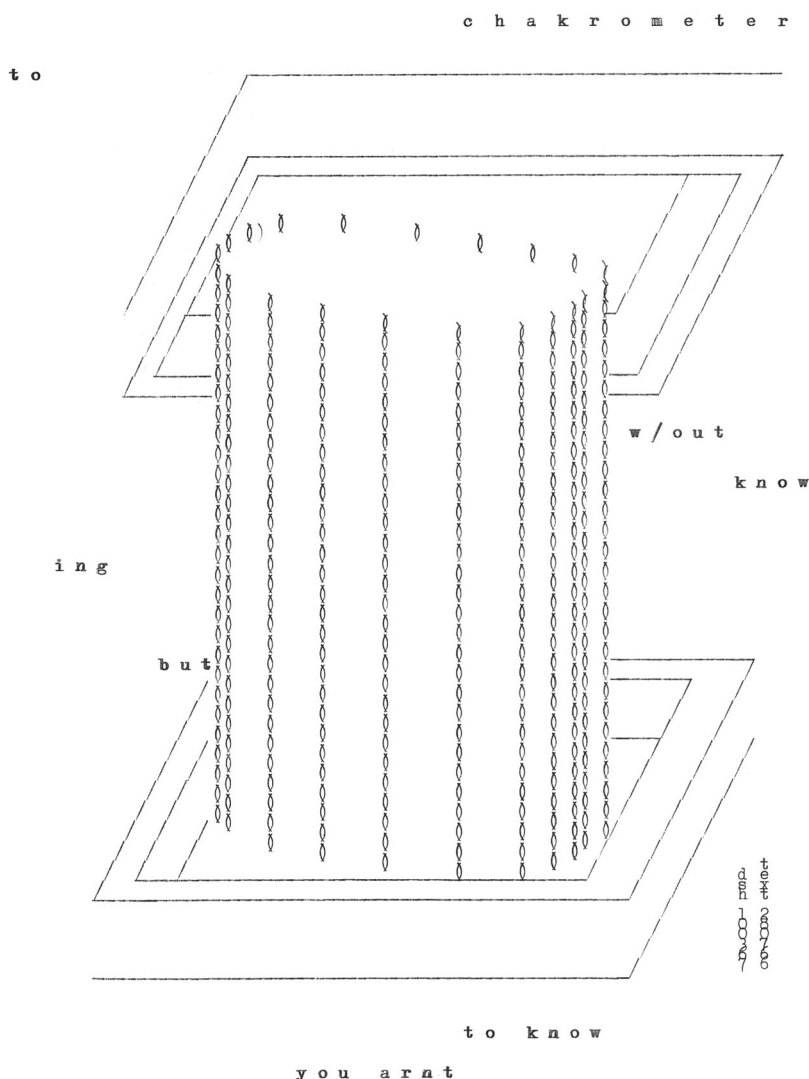


Figure 1. Dom Sylvester Houédard. 'Chakrometer.' [1967a]. From *A Book of Chakras*. All images are reproduced by kind permission of the Prinknash Abbey Trustees.

conceptual clarity by an accompanying tag or annotation, as in the impression of ascetic awareness generated by the phrase 'w/out knowing but to know you arnt' (see Figure 1). These linguistic tags occasionally specify the particular form of ritual or prayer evoked by the design, which therefore assumes more precise, diagrammatic values than we might expect. For better or worse, the design also tends to take on more exclusively spiritual overtones by this means.

Houédard's 'Visualisation of Idapingala Staircases...' (1967b [Figure 3]), for example, from *Tantric Poems Perhaps*, is one of many typestracts which mimic the 'yantras' or visual art-objects used in Tantric ritual. According to Philip Rawson's *The Art of Tantra* ([1978] 2010), yantras are diagrams of locations on the body and the surface of the world assumed to contain the energy of a divine creation process.

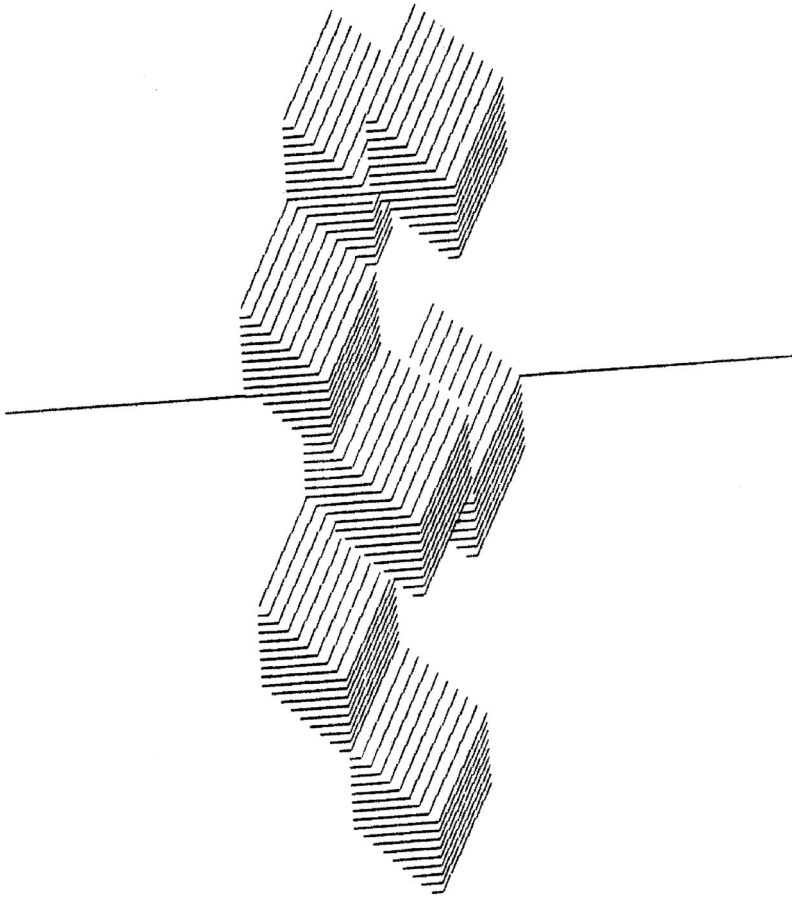


Figure 2. [Cube typestract]. 1972b. From *Like Contemplation*. This and all subsequent images are reproduced with acknowledgements to Writers Forum.

They thus function as ‘maps of the system, together with detailed instructions for working the mechanism’, providing information or cues regarding the forms of psychosomatic activity by which these points of energy could be engaged or interacted with, by which subjective being could be merged with the creation process (Rawson, [1978] 2010, 14).¹⁶ This particular piece is a representation of energy channels called ‘nadis’

¹⁶Rawson describes the Tantric creation process based primarily on Hindu rather than Buddhist variants. According to Tantric mythology, he states, the entire ‘universe of phenomena’ ([1978] 2003, 14) is generated by:

[t]he active play of a female creative principle, the Goddess of many forms, sexually penetrated by an invisible, indescribable, seminal male. In ultimate fact He has generated Her for his own enjoyment. And the play, because it is analogous to the activity of sexual intercourse, is pleasurable to her (9–10).

As noted, the energy of this creation process is concentrated at particular points in the body and world, so that the perceptible universe has a ‘subtle four-dimensional skeleton of channels’ (14). Thus, while the creation process is impalpable to subjective consciousness, Tantric practice can familiarise or merge subjective being with the energy of creation through an interaction with these points of energy called ‘sādhana’: ‘i.e. psychosomatic effort, assimilating his own body to higher and higher levels of cosmic body-pattern. In the end he may become identical with the original double-sexed deity, which is involved, without beginning or end, in blissful intercourse with itself’ (14). Much sādhana involves mimicking the creation process, occasionally through ritual sex.

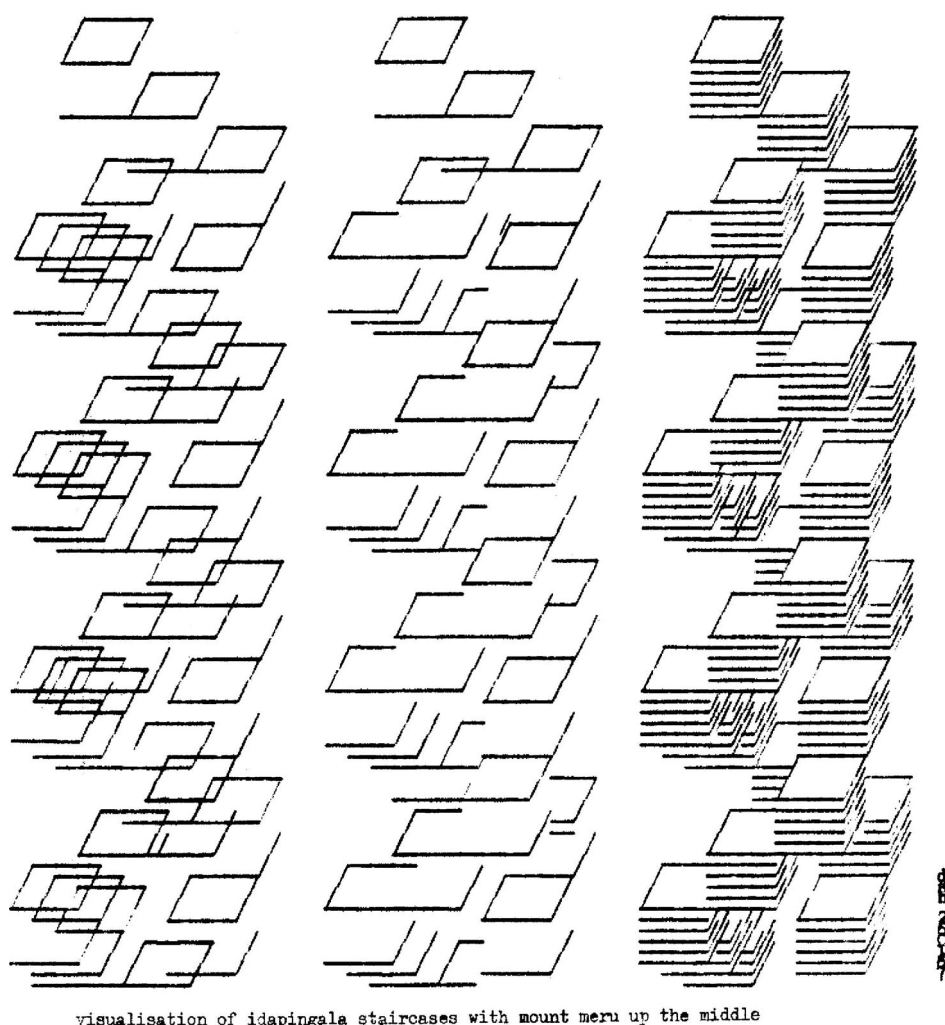


Figure 3. 'Visualisation of Idapingala Staircases with Mount Meru up the Middle.' 1967b. From *Tantric Poems Perhaps*.

located within the 'subtle body', the body as envisaged in a rarified, spiritually defined state aloof to empirical study. An equivalent image in Tantric art would indicate a series of psychosomatic states to be passed through by engaging particular points on those energy channels called 'chakras' in order to cultivate greater and greater intimacy with the energy of creation (Rawson, [1978] 2003).¹⁷ Accepting the unavoidably new-age connotations of this terminology, the key point is that Houédard's 'staircases' are not images of the creation process or the creator itself. Instead, they represent and

¹⁷These are ideas common within the aspect of Tantric ritual defined as Yoga. Houédard's terms 'ida' and 'pingala' refer to two of the nadis within the subtle body, which spiral upwards from left and right-hand positions around a central spinal nadi or 'suṣumna'. All the nadis have associative qualities and locations, ida connected to femininity, the moon and the Ganges, pingala to masculinity, the sun and the Yamuna river, and suṣumna to the central point of the universe in Tantric mythology, the sacred, five-peaked Mount Meru, hence Houédard's titular reference.

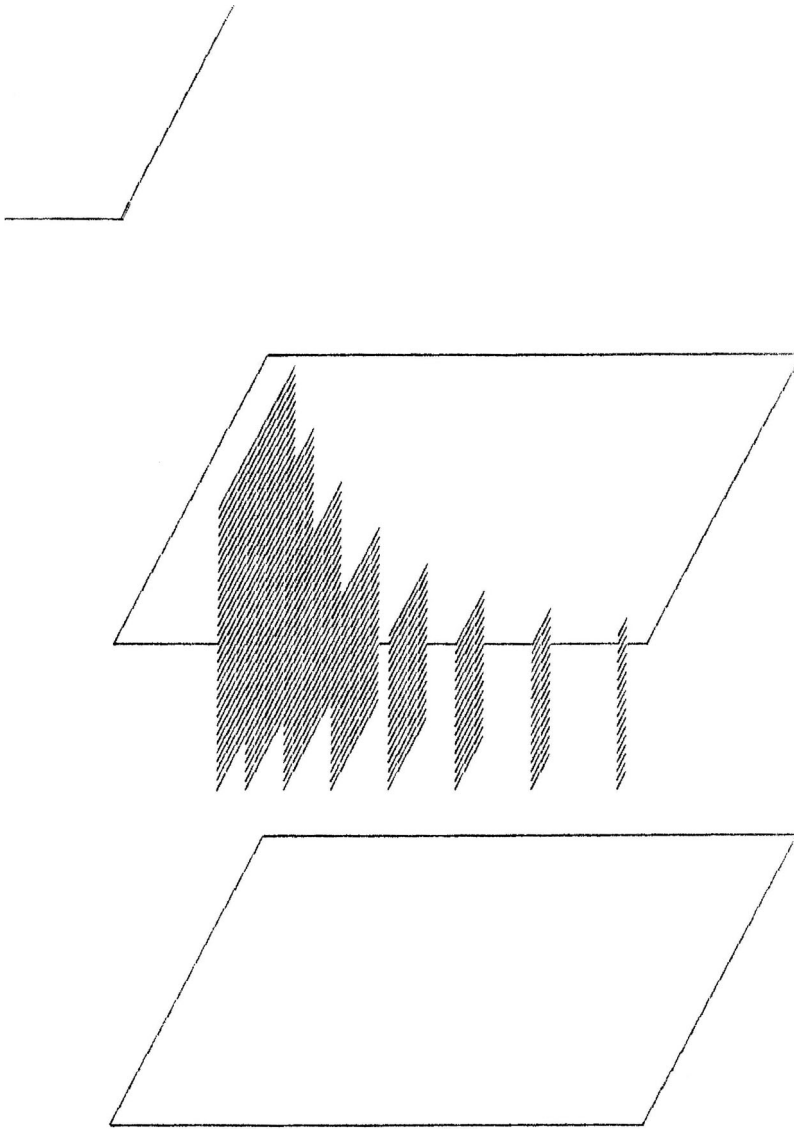


Figure 4. [Screen typestract]. 1972c. From *Like Contemplation*.

solicit particular forms of mental and bodily activity undertaken in response to it. As per the general apophatic impulse of the typestracts, the viewer's gaze is thus averted from the poem's true object.

Returning to an earlier point, even in those cases where we cannot define that state of response or orientation using a linguistic annotation, the typestracts' visual forms still invite analogies with various theories of mental and spiritual epiphany. Often they feature recurring sets of motifs or shapes which gradually shift form or position, as in the untitled typestract above (1972c [Figure 4]), from *Like Contemplation*. Minimal gesture though it is, taken in the broader context of Houédard's theological writing the incremental shrinkage of these screens seems redolent with associations of Platonic

metaphysics and Christian mysticism: the idea of reality as a projection of shadows, or the gradual renunciation of subjective sense as coextensive with some blossoming state of spiritual awareness.

The exclusively religious interpretations that tend to emerge from such ‘close readings’ offer some context, if not justification, for the dismissal of Houédard’s work as eccentrically or fatuously transcendentalist: in spite of its emphasis on the inexpressibility of the divine, and the deep scholarship on which it is based. But the typestracks always also express the more wordly, secular dimensions of Houédard’s poetics outlined earlier: its playful circumvention of the yearning towards transcendent expression in first-wave avant-garde art; its reformulation of the Sartrean relationship between being and néant; its expression of an interplay of different perceptual channels, as demanded by McLuhan’s age of electric communication; and, which is clear from the examples just given, its openness to a range of global and non-orthodox spiritualities in the context of the Second Vatican Council.

Bearing all this in mind we might return, finally, to the opening distinction between concrete poetry as exemplified by Finlay’s practice and Houédard’s. It is sometimes argued that by removing the foundational significance of language from the concrete poem, the quality which made it something of its own time and place, rather than a repetition of experiments conducted half a century earlier, was also shorn away. It seems, however, both from an exploration of the term ‘coexistentialism’ and from the richness and scope of Houédard’s poetic practice during the 1960s–1970s, that we should now acknowledge the value and timeliness of this other, coexistentialist concrete poetics, and of Houédard’s contribution to late-twentieth-century poetry and art.

Acknowledgements

All images are reproduced by kind permission of the Prinknash Abbey Trustees. Images from *Like Contemplation* and *Tantric Poems Perhaps* are reproduced with acknowledgements to Writers Forum. Dom Sylvester Houédard’s letter to Stefan Themerson is quoted by kind permission of the Prinknash Abbey Trustees and the curators of the Themersons Archive, now held at the Biblioteka Narodowa, Warsaw. Edwin Morgan’s letter to Robert Burchfield is quoted by kind permission of the Edwin Morgan Trust (charity no. SCo43142) and the Special Collections Department, University of Glasgow Library. Thanks to Sarah Hepworth and Jasia Reichardt for their assistance with the archival research which contributed to this article, and particular thanks to Hayden Murphy for lending me his copy of *A Book of Chakras*, from which I sourced the image of ‘Chakrometer’ used here. This article is an expanded version of a talk given at the 2012 launch of Nicola Simpson’s *Notes From the Cosmic Typewriter*; thanks to Nicola for inviting me to speak.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Greg Thomas is a British Academy Postdoctoral Fellow at the University of Edinburgh, undertaking a three-year research project (2014–2017) entitled ‘Judgements and Sentences: Politics in the Life and Art of Ian Hamilton Finlay’. He has published book chapters and articles on subjects including

concrete poetry and architecture (in *Spatial Perspectives: Essays on Literature and Architecture* [2015]), the Scottish sixties (*Studies in Scottish Literature* 40 [2014]), Bob Cobbing (*Journal of Innovative British and Irish Poetry* 4.2 [2012]) and Edwin Morgan (*Studies in Scottish Literature* [2012]). He is currently working on a book manuscript on concrete poetry in Britain.

References

- 'FINLAY, Ian Hamilton'. 1970. In *Contemporary Poets of the English Language*. 1st ed., edited by Rosalie Murphy and James Vinson, 368–370. Chicago: St. James.
- Gomringer, Eugen. 1956. "Concrete Poetry." Translated by Irène Montjoye Sinor. 1970. In *Concrete Poetry: A Worldview*, edited by Mary Ellen Solt, 67–68. Bloomington: Indiana University Press.
- Higgins, Dick. 1966. "Intermedia." *Something Else Newsletter* 1 (1): 1–3. http://www.prima-ryinformation.org/oldsite/SEP/Something-Else-PrePress_Newsletter_V1N1.pdf.
- Hilder, Jamie. 2016. *Designed Words for a Designed World: The Concrete Poetry Movement, 1955–1971*. Montreal: McGill-Queen's University Press.
- Houédard, Dom Sylvester. 1963a. "Beat and Afterbeat: A Parallel Condition of Poetry and Theology?" *The Aylesford Review* 5 (3): 140–156.
- Houédard, Dom Sylvester. 1963b. "Concrete Poetry & Ian Hamilton Finlay." *Typographica New Series* 8: 47–62.
- Houédard, Dom Sylvester. 14 April 1963c. Letter to Stefan Themerson. Themersons Archive. Biblioteka Narodowa, Warsaw.
- Houédard, Dom Sylvester. 18 April 1963d. Letter to Stefan Themerson. Themersons Archive. Biblioteka Narodowa, Warsaw.
- Houédard, Dom Sylvester. 1964a. 'Eyear' [lecture transcript]. Edwin Morgan Papers, Glasgow University Library. MS Morgan L/5 Box 2.
- Houédard, Dom Sylvester. 6 August 1964b. 'Paradada.' *Times Literary Supplement*: 696. <http://gale.cengage.co.uk/tls-historical-archive-19022005.aspx>.
- Houédard, Dom Sylvester. 1965. "The Wider Ecumenism." *The Aylesford Review* 7 (2): 118–125.
- Houédard, Dom Sylvester. 1967a. "Chakrometer." In Houédard, *A Book of Chakras*. Watford: Watford College of Technology. n.pag.
- Houédard, Dom Sylvester. 1967b. "Visualisation of Idapingala Staircases with Mount Meru up the Middle." In Houédard, *Tantric Poems Perhaps*. London: Writers Forum. n.pag.
- Houédard, Dom Sylvester. 1972a. "Chronobiography/Autozoography." In Dom. Sylvester Houédard: *Ceolfrith 15*, edited by Charley Verey, 26–28. Sunderland: Ceolfrith.
- Houédard, Dom Sylvester. 1972b. [Cube typestract.] In Houédard, *Like Contemplation*. London: Writers Forum. n.pag.
- Houédard, Dom Sylvester. 1972c. [Screen typestract.] In Houédard, *Like Contemplation*. London: Writers Forum. n.pag.
- Houédard, Dom Sylvester. 1987. "'What's a Door Doing Here?' A Squint at Beckett's Layered Question." *Review of Contemporary Fiction* 7 (2): 49–54.
- Houédard, Dom Sylvester. 2000. *Commentaries on Meister Eckhart Sermons*. Robertson: Beshara.
- Mallarmé, Stéphane. 1896. "Crisis in Poetry." Translated by Rosemary Lloyd. 1999. In *Mallarmé: The Poet and His Circle*, edited by R. Lloyd, 227–233. Ithaca: Cornell University Press.
- McLuhan, Marshall. (1962) 1971. *The Gutenberg Galaxy: The Making of Typographic Man*. London: Routledge.
- Morgan, Edwin. 1975. [Untitled biographical note on Dom Sylvester Houédard.] In *Contemporary Poets of the English Language*. 2nd ed., edited by Rosalie Murphy, James Vinson, and D.L. Kirkpatrick, 729–730. London: St. James.
- Morgan, Edwin. 10 January 1978. Letter to Robert Burchfield. Edwin Morgan Papers, Glasgow University Library. MS Morgan L/5 Box 2.
- Perloff, Marjorie. 2010. "From 'Suprematism' to Language Game: The Blue and Brown Poems of Ian Hamilton Finlay." In *The Present Order: Writings on the Work of Ian Hamilton Finlay*, edited by Caitlin Murray, and Tim Johnson, 85–103. Marfa: Marfa Book Company.

- Rawson, Philip. (1978) 2010. *The Art of Tantra*. Revised ed. London: Thames and Hudson. World of Art Series.
- Sartre, Jean-Paul. 1943. *Being and Nothingness*. Translated by Hazel E. Barnes. (1958) 2003. London: Routledge. Routledge Classics Series.
- Sharkey, John. 1971. "Introduction." In *Mindplay: An Anthology of British Concrete Poetry*, edited by John Sharkey, 9–22. London: Lorrimer.
- Simpson, Nicola, ed. 2013. *Notes From the Cosmic Typewriter: The Life and Work of Dom Sylvester Houédard*. London: Occasional Papers.

The Event in John Latham and Bob Cobbing

Steve Willey 

Department of English & Humanities, School of Arts, Birkbeck College, University of London, London, UK

ABSTRACT

This article documents some examples of the event-responsive poetry of the British poet Bob Cobbing (1920–2002) and compares it to the unique theory of the event structure developed by British sculptural and conceptual artist John Latham (1921–2006). It establishes points of intersection between their practices, and particularly at the level of aesthetics where very little comparative work exists. While both men are best known for their experimental 1960s work (Cobbing in relation to sound and concrete poetry, and Latham in relation to conceptual art) this article focusses on their earlier work as being preparatory to their later, more developed practice. Artistic affinities are contextualized in relation to World War II, the dialectic of romantic and classical art, and the institution of welfare-capitalism. How poet and artist both visually represented time (drawing on scientific discourses to do so) is further identified as a link between their practices.

ARTICLE HISTORY

Received 19 August 2016

Accepted 14 December 2016

KEYWORDS

John Latham; Bob Cobbing; Jeff Nuttall; sigma; event-structure; Writers Forum; Group H; Herbert Read; Artist Placement Group; Drian Gallery

Introducing events

In conversation in the 1980s Bruce Andrews suggested radical poetic activity in England was developing through Schools of Cobbing, Mottram and Prynne. Deprived of its proper context – which, though he was not anti-academic, was certainly not institutional – Cobbing's sound poetry risks the exotic; perhaps his 'school' may be comprised of those who analyse the disturbances his interventions have given rise to in a definable social field for further use. (Clarke 2007, n.p.)

What is Bob Cobbing's (1920–2002) 'proper context'? Adrian Clarke's insightful definition of the School of Cobbing as being comprised of 'those who analyse the disturbances his interventions have given rise to in a definable social field for further use' suggests one answer. But how should this 'social field' be mapped, and can the forward-facing direction of time – implied by the phrase 'further use' – be reversed or at the very least disturbed? Can a 'School of Cobbing' be retrospectively constituted? How might situating Cobbing in his proper socio-historic context lead to an increased awareness of his interventions and their significance? In response to these questions, this article argues that we reach a fuller understanding of Cobbing's work once the artist John Latham (1921–2006) is viewed as a member of Cobbing's school. Neither Cobbing or Latham would recognize themselves as

CONTACT Steve Willey  s.willey@bbk.ac.uk  Department of English & Humanities, School of Arts, Birkbeck College, University of London, 43 Gordon Square, London WC1H 0PD, UK

© 2017 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

belonging to a school, let alone the same one, and so to this extent this article is revisionist. However, such an approach is warranted by aesthetic imperatives located within Cobbing and Latham's poems and artworks.

Any historical survey of Cobbing and Latham's connections needs, at some point, to negotiate and acknowledge *Bomb Culture*, Jeff Nuttall's semi-autobiographical and impressionist account of counter-cultural activity in the 1960s. *Bomb Culture* records that Latham and Cobbing visited Braziers Park in July 1964 to take part in sigma. This gathering is one of the earliest examples of Cobbing and Latham working in the same cultural and physical space, and it is logical to begin a survey of their shared connections here. Sigma was conceived as a 'cultural jam session' by the English situationist Alexander Trocchi who hoped it would serve as a prototype for a 'spontaneous university' – 'a community of mind whose vital function [would be] to discover and articulate the functions of tomorrow ... a living model for society at large' (1964, 193). Trocchi stated in *Sigma: A Tactical Blueprint* that the mathematical term 'sigma' was chosen as the name for the event-concept because it designated the 'all, the sum, the whole'. The term also neatly expressed the larger social purpose to 'link mind with mind in a supranational (transcategorical) process' (196). Given Trocchi's definition of sigma, certain questions suggest themselves: Why did Latham and Cobbing attend the gathering at Braziers Park; what artistic principles underpinned their involvement; and how did both men approach and understand sigma's unificatory and transcategorical ambitions? Answering these questions is complicated, not least by Nuttall (also a sigma participant), whose account emphasizes its discordant realities, and places stress on the difficulties attendees had in arriving at agreed upon actions.

Nuttall reports that Cobbing interrogated Trocchi as to how sigma would be funded: 'Where is the money coming from?' ... Where is it then? ... How much? ... Trocchi hurled [a piece of] driftwood at Cobbing, Cobbing grinned' (Nuttall 1968, 214–215). Latham's intervention (documented by a photograph reproduced in John A. Walker's *John Latham: The Incidental Person – His Art and Ideas*) is also framed as a protest. The photograph shows that Latham took an aerosol spray gun and sprayed a large black circular disk of paint onto the white living room wall before sticking a black-bound book near its circumference (Walker 1995, 72). Nuttall describes *Wall Painting and Book Relief* as 'the most graphic condemnation possible of our evasive waffle' (Nuttall 1968, 217). Another participant, the poet Tom McGrath, registered violence in the gesture: 'It looked like an explosion on the wall, with cinders and ashes of black and white paint flying in all directions' (McGrath quoted in Walker 1995, 73). Nuttall's account of sigma (when taken in isolation) presents Cobbing as deliberately mischievous, an antagonistic, hectoring figure, whose concern with the financial apparatus of the sigma event was diametrically set against Trocchi's belief in the primacy of the creative-self. Latham, on the other hand, is presented as an artist who rejects language altogether in favour of direct, immediate visual expression. Elsewhere in the same account, Nuttall states, 'John Latham burned a Skoob Tower' but does not offer further comment on the meaning of this artistic intervention (Skoob Towers took the form of a stacked pile of books that Latham then set fire to). Nuttall's account is typified by a tendency to mark these kinds of divisions, and part of the joy of *Bomb Culture* is seeing how he synthesizes his own uncompromising views and those of his contemporaries into narrative form. There are, however, ways of locating coherence within the event which does not rely on

sequential, narrative time or on making sharp distinctions between artistic practices that were sympathetic to one another. Namely, by seeing Latham's use of the spray gun and Cobbing's concern with the external realities of funding as two different but intersecting attempts to enact a unifying theory of the event within the promise of sigma.

To see Latham and Cobbing's interventions this way we need first to look back to their experiences during and immediately after World War II. Cobbing was a conscientious objector. His occupations included clerical work in a hospital near Enfield, agricultural work on farms in Buckinghamshire and in Wiltshire, and from 1943 to 1947 work as an unqualified assistant teacher at Swindon High School. During his last year in Swindon, Cobbing developed close associations with Swindon Arts Centre, which was the first institution of its kind in the country.¹ Swindon Arts Centre was given government approval in 1946, the same year that the Council for the Encouragement of Music and the Arts was granted a Royal charter and reconstituted as the Arts Council of Great Britain. The state's role in supporting both these institutions was part of a policy of welfare-capitalism instituted after the war. Being a conscientious objector brought Cobbing into the orbit of early local arts centres and alerted him to this new relation between the artist and the state. Latham was on active duty during the war and had no such opportunity. He served as an ordinary seaman in the Navy on the flagship of the home fleet, The King George, and later was promoted to temporary acting sub-lieutenant on motor torpedo boats, before becoming the skipper of a minesweeper (Walker 1995, 9). Following the war, Latham attended art classes at the Regent Street Polytechnic and with an ex-service-man's education grant he applied to study full time at Chelsea School of Art. Cobbing was admitted to Bognor Training College under the Emergency Training Scheme in January 1948, where he trained to be an art teacher. Cobbing and Latham's different exposures to the realities of World War II and the new relationship between the artist and the state that proceeded it had a direct bearing on how they developed their thinking on the event. This can be seen when comparing Latham's painting *Dream of the Battle Cruiser Hood* (1956) to Cobbing's monotype *World in Ruins (Cataclasm)* (1951).

Latham's concept of the event after the event of World War II

In the past hundred years of art and science we are looking at a development that contradicts common sense and its logic ... we live within a network of contradictions ... The contradictions may be resolved ... in terms of event, rather than those of object ... Languages depend on objects (that is to say nouns, named entities), and is [are] unfitted to handle event and process. ... Art on the other hand reverses this order. Art is Event Structure. (Latham 1984, 7)

Dream of the Battle Cruiser Hood has either been 'lost or destroyed', which is somewhat fitting given that concepts of destruction and loss are central to the work's meaning. A photograph of the painting is however included in Walker's *John Latham: The Incidental Person – His Art and Ideas*, and it is this version of the work I refer to in what follows. The painting depicts the destruction of the HMS Hood by the German battleship Bismark in which over 1,400 men lost their lives. The Hood sunk within minutes of being shelled, its bow reaching an almost vertical point while it sank. Latham witnessed this destructive event from the crow's nest of the King George, and the multiple perspectives of the

¹For a useful summary of Cobbing's early activities see Beckett's (2010)

painting register Latham's elevated view. To the right of the painting smudged spray-paint depicts the outline of The Bismark as if viewed from the side. This perspective is carried into the centre of the painting where the outline of The Hood's elevated bow is faintly sketched. Further to the left, this figurative side-on view is disrupted by a large, roughly circular, spray painted zone that may resemble an explosion as viewed from above. I say 'may' as the painting registers the violent destruction of The Hood by enacting the destruction of figurative art. The recognizable shape of the ship is eclipsed by Latham's use of the spray gun.

Latham started using the spray gun to make art in 1954 and *Dream of the Battle Cruiser Hood* was composed two years later. Latham's use of the spray-gun technique was a means of negotiating the violence, damage and trauma of the War – a way of continuing to make art in its aftermath. The idea that violence needs to be negotiated over time is just one of the time-scales registered in the painting.² The Hood's disappearance into the sea – its sudden destructive transition from something into nothing – is another, as is the fact that the painting registered the sinking of The Hood five years after the actual event, and was given the status of a 'dream'. This last time-scale suggests that the painting was a record of a mental rather than a physical image. These features are significant to his wider understanding of the event, not least because Latham devoted a lot of intellectual energy to interpreting the temporal implications of his spray-gun technique. In an interview conducted in 2002, Latham stated that:

a spray gun is a very meaningful instrument for getting over what happened in painting – which was a countdown to zero. A countdown to zero starts from complete confidence in spatial appearances ... to a complete rejection of the idea that the spatial appearance of the world is anything but an illusion' (Latham 2009, 324).

In place of an illusory, spatial conception of the world, Latham proposed one based on time. He identified the 'blank unmarked canvasses' that Robert Rauschenberg exhibited with this 'state zero', and framed his own use of the spray gun as an extension: 'what was important was the blank white board, and taking the spray gun to register a history on it with discrete marks of an accretive process that had permanence' (Latham 2009, 324). The idea that spray-gun marks register a history has implications for how we can think about sigma and the history of other counter-cultural events Latham was involved in. Before exploring these implications, we need first to unpack Latham's conception of 'permanence'.

In the 1950s, and working closely with two scientists, C.C.L. Gregory and Anita Kohsen, Latham perceived an analogue between the discrete marks made by the spray gun and a quantum unit of light as described by theoretical physics:

Once a point mark has gone down, it doesn't disappear. And an inference that I drew ... was that this is an insistently recurrent event that makes it seem permanent. And an insistently recurrent event is like a quantum unit of light, it doesn't have an interval between its discrete bits. ... What we regard as time is counting. Counting via caesium atoms, clocks, days, years. And very high frequencies in the Planck world [Latham is referring here to the physicist Max Planck] give us new techniques. It goes down to something ... beyond what we can either

²*Untitled (Fallen Warrior)* (1955), and several other spray gun paintings from the 1950s depict fragmented or extended bodies – see, for example, *Figures* (1956) and *Two Figures* (1957) in [...]. These paintings also suggest that violence was a prominent theme in Latham's spray gun paintings of the 1950s.

repeat or imagine. An initial Insistently Recurrent Event (IRE) is an oscillation between nothing – the blank canvas – and a point mark, and it translates as a proto-event universe.

While Rauschenberg's paintings displayed an equivalence between art and a state of 'no action' (Latham 2009, 324), Latham believed his art works invested this very same state with activity and potential. Nothingness, for Latham, had the potential to become active, and active states had the potential to collapse back into nothing, a notion which correlates with quantum physical descriptions of the formation of the universe.

Latham's understanding of 'permanence' – a continual oscillation between nothingness and the 'point mark' made by the spray gun – informs his definition of the 'least event': 'An occurrence of not-nothing on a state of nothing, for a least instant' (Latham 1975, 191). This definition implies that there is a fundamental unit of time, which like a fundamental particle (a photon, for example), cannot be further divided, and each single point mark made by the spray gun represents an undifferentiated whole. There are two conclusions we can draw from Latham's statements on the relation between art and time (as also manifested in his spray-gun paintings). First, they offer an alternative to the narrative modelling of time that Nuttall used in his history of sigma, and second, that Latham's interest in the possibility of art to provide a universal language helps explain his interest in the unificatory promise of the sigma event in the first place. In *Report of a Surveyor* Latham argued that a 'general rule of the transition from space-based to time-based logic is that art is a contingency of the (historical and localized physical) context in which it appears' (1984, 33–34). Latham's use of the spray gun to make art has a history that stretches back to 1954, he also conceived of the technique as a way of registering history. I have attempted to recall both these histories in my reading of sigma as a site where different attempts to enact a unifying theory of the event met and intersected. For these reasons, Latham's use of the spray gun to make *Wall Painting and Book Relief* needs to be understood less as a form of dissent against sigma, and more as a complex historical record of sigma and the artistic possibilities it contained.

These contingent relations, between sigma and Latham's spray-gun technique, are further described by what Latham would later term 'event-structure', a concept he arrived at by thinking about how the spray gun produces masses of pigment through the accumulation of single marks:

Once there were three spots of paint, a 'geometry' emerged, that is, a set of points enabling subsequent judgements of relatedness, size and distance to be made. As spots accumulated, ever more complex 'events' were suggested. A hierarchy of levels (or meta-languages) also came into play. In effect, the evolution of spray painting re-enacted the evolution of the cosmos (Walker 1995, 23).

Given Latham's understanding of the relation between art and time, I suspect he viewed sigma as something akin to a meta-language, an event which allowed him to further extend his own concept of the event-structure. Walker argues that Latham's concept of the event-structure marked the translation of time 'into a geometry of space' (Walker 1995, 24), and Cobbing's attendance at the sigma event meant he became part of the event's social and temporal geometry. This in turn implies that Latham's artwork was, at least in conceptual terms, also contingent on Cobbing's attendance and his actions at sigma. To understand the significance of Cobbing's intervention, and how this relates to Latham's event-concept, we now need to look at the artistic work Cobbing was making in the aftermath of the Second World War.

Cobbing's concept of the event after the event of World War II

Cobbing was very much an occasional poet, and that is praise, responding to events to be celebrated, changes of season and invitations. If he went to a place then likely he would make a poem about it. If he did a gig, he might turn up with a dedicated pamphlet e.g. *Totally Barton* for Totleigh Barton. (Upton 2009, n.p.)

As poet, and Cobbing's close collaborator, Lawrence Upton suggests, Cobbing, like Latham, understood his creative practice as 'a contingency of the (historical and localized physical) context' in which it appeared. Also like Latham, this aspect of Cobbing's work can be traced back to the 1950s when he identified himself as a painter rather than as a poet. However, whereas Latham was interested in the relation between time, observation and destruction, Cobbing was more concerned with an aesthetics of reconstruction. This can be seen by looking at 'World in Ruins (Cataclasm)', a monotype that Cobbing produced in 1951, which was later reprinted as a poem under the new title 'Cataclasm' in *Lame Limping Mangled Marred and Mutilated: Collected Poems Volume 9* (London: David Barton, 1986). The first thing to note is the significance of the title. At first sight the two parts of the title seem to be saying something similar (a world in ruins is cataclysmic) but in fact, Cobbing's choice of word – hinting at his future fascination with wordplay – generates a positive counterpoint to 'world in ruins'. Rather than referring to a destructive event of sudden violent change as one might expect (given that the painting was made after the War), *Cataclasm* alludes to the organic process of cataclasis where new metamorphic rock is wholly or partly formed through the progressive fracturing of existing rock. In this way (*Cataclasm*) offers a solution to the catastrophic global situation registered by *World in Ruins*, and the monotype that results expresses a synthesis: a process of reconstruction occurring through an initial phase of destruction. This synthesis is figured visually in the monotype through the interaction of geometric forms (rectangles and triangles made with stencils) that construct and order space and more organic forms (splodges of unevenly applied ink applied with a roller) that collapse, fracture and reform the visual field (Figure 1).

With this monotype Cobbing was positioning himself in relation to post-war debates about art's social function. In Herbert Read's essay 'This Changing World' published in the magazine *World Review* (1941) Read is optimistic about the power of art to affect change:

The individuals in whom the spirit of modernism is embodied still survive, still work, still create ... When the cloud of war has passed, they will re-emerge, eager to rebuild the shattered world ... They will say: our *world is in ruins* ... let us direct your work and we promise you that out of the ruins a better world will emerge. (Read quoted in Stephens 2003, 134, italics mine)

Read has been described as the 'principle conduit for the reception of visual modernism in conservative Britain' (Goodway 1998, 10), and Cobbing was certainly familiar with Read's writings on art.³ The reception of Cobbing's early paintings were also aided by Read's

³Cobbing's 'The Purpose of Art' (1949) – completed during his teacher training at Bognor Training College – includes materials from four of Read's books of the inter-war period: *The Meaning of Art* (1931), *Art Now* (1933), *Surrealism* (1936) and *Unit One: The Modern Movement in English Architecture, Painting and Sculpture* (1934). For quotations from *The Meaning of Art*, *Art Now*, *Unit One*, *Surrealism* see 259, 265, 202 and 210 respectively.



Figure 1. Bob Cobbing, 'World In Ruins (Cataclasm)' (1951). Monotype. Reproduced in *Lame Limping Mangled Marred and Mutilated: Collected Poems Volume 9* (London: David Barton, 1986), n.p. Reprinted with permission of the Cobbing family.

organizational efforts.⁴ Whether or not Cobbing was directly referencing 'This Changing World' with the title *World in Ruins (Cataclasm)*, Read's ideas about art's social purpose provide us with a way of thinking about Cobbing's aesthetics as organic, and as related to his identity as an event organizer. This is important as it is Cobbing's identity as an organizer that is brought to the fore in Nuttall's history of sigma.

Across his interwar and post-war writings Read developed an influential theory about organic art. In *The Meaning of Art* (1931) Read compared the 'static harmony' of the Greek vase to the 'dynamic harmony' that the Chinese vase achieves: The Chinese vase 'is not only a relation of numbers, but also a living movement. Not a crystal but a flower' (42). A crystal's atoms are arranged in an orderly and repeated pattern while a flower's growth is more unpredictable. Read thought that this kind of distinction between geometric and organic form persisted throughout art's history. He argued that while Greek art of the classical period was at one point essentially the same as Palaeolithic and Bushman art (which Read called 'organic') they diverged when the Greeks not 'content with the vitality of nature and art' sought to 'explain it by formulas, and discovered, or thought they discovered, certain fixed ratios both in nature and art' (79). The title

⁴In May 1952 Cobbing exhibited paintings he had made in Hendon at an exhibition of amateur art that The Society for Education through Art (SEA) had organised in Manchester. This marked the first reception of Cobbing's work as 'modernist' (Bone 1952). Formed in 1940, Read had been instrumental in the formation of the SEA and became its president in 1953. Furthermore, Read's *Education Through Art* (1943) which became known for its chief tenet that every child was a special kind of artist was a key text for teachers of the visual arts like Cobbing.

'World in Ruins (Cataclasm)', with its evocation of geological fractures, and the impressionistic, unevenly distributed patches of ink on the surface of the monotype (caused by the pressure Cobbing exerted during the printing) exemplify the kind of 'living movement' and 'dynamic harmony' that Read associates with organic form.⁵

In a later text, *Surrealism* (1936), Read restaged the dialectic in terms of romantic and classical art, with Read stressing surrealism's shared affinities with the romantic. Here, he describes classicism as the 'intellectual counterpart of political tyranny' and as the 'official creed of capitalism', and declares: 'whenever the blood of martyrs stains the ground, there you will find a Doric column or perhaps a statue of Minerva' (Read 1936, 23). In opposition to this, Read defines the romantic spirit as a 'principle of life, of creation, of liberation' which he identifies with the artist. Classicism is the 'political concept of art to which the artist is expected to conform' (27). However, in the context of this opposition Read charges the artist with resolving the contradiction between 'the sensational and social world of active and economic existence ... and the world of subjective fantasy' (40). This imperative politicized Read's earlier writings on organic art and was derived, in part, from scientific epistemologies: 'physicists affirm that the whole universe is undergoing a process of continuous change [and] dialectics are ... a logical explanation of how such a change takes place' (54). He also questioned the autonomy of art by suggesting the aesthetic realm extended to the artist's life. Read argued that 'Surrealism, like Communism, does not call upon artists to surrender their individuality; but it does insist that artists have common problems to solve and common dangers to avoid, and that a certain coherence, even a certain mutuality, is one of the conditions of the efficacy of art' (60). One conclusion we can draw from all this is that through Read, Cobbing began to perceive the organization of events (and a pragmatic attitude towards them) as an extension of an organicist aesthetics conceived as a political, historical and universal project which placed the artist at the centre. Next to Latham's decisive action and inclusive theory, Cobbing's concern with the financial apparatus of the sigma event might seem unartistic, but his attitude towards the event had a unifying, universal aspect which was grounded in his understanding of aesthetics. In 1965 Cobbing was asking Latham, Trocchi and the other sigma participants to question how money and the availability of funding sources related to or fitted with their concept of the event. This was typical Cobbing. Throughout the whole of his career as a poet Cobbing tested the artistic potentialities and capacities of state-funded art structures and organizations and built, secured funding, or self-funded many of his own (HAT, Writers Forum, Association of Little Presses and Poets Conference). Like Cobbing, Latham also wanted to reconceive 'the post-1945 understanding of culture, the arts and education' which had been 'formed in the same ideological framework as the other main welfare institutions' (Sinfield 1997, 58). One of the ways that Latham hoped to achieve this circumvention was through the Artists Placement Group (APG).

⁵Titles of Cobbing's other abstract artworks from this period also come from nature: 'Shore' (1947), 'Four Stones' (1950), 'Tree-Stump, Hampstead Heath' (1951), 'Landscape with Contours' (1951), 'Flowering Stone' (1955), 'Fossil Stone' (1955), 'Excavated Forms' (1955), 'Marine Forms' (1955), 'Noxious Plant' (1955), 'Folded Landscape' (1955), 'Seascape' (1956) and 'Ice Dance' (1957).

The state, money and the event

APG was founded and co-ordinated by Barbara Steveni in 1965 and involved artists who were already working 'in terms of event rather than of the art object' (Latham 1984, 40). One of its first acts was to commission a report to 'investigate the circumstances of a state of separation between artists and industrial concerns'. This initial work was funded by the Arts Council, but when this state subsidy was withdrawn APG focussed on 'the more public and beneficial field of government departments.' An approach to the Civil Service Department in Whitehall resulted 'in the formulation of an instrument which recommended government departments to act on APG's proposals ... It was the first such instrument relating artist to government ever to be negotiated' (44). For Latham, the work of APG was in keeping with his ideas of event-structure and its unifying possibilities. Steveni helped place artists within the Department of Health (Ian Breakwell) and the Department of Environment (Roger Coward), within state owned companies like British Steel Corporation (Garth Evans), and within nationally significant organizations like London Zoo (David Toop). Latham believed the divided state in human affairs was 'generated and intensified by the media of language and money ... sectional interests determined by ... dividing media'. By placing time-based artists in direct relation to the decision-making processes of government, concepts could be formulated and implemented outside of the 'language + money' media. There is an implicit dialogue here between the processes and placements of APG and Cobbing's events, not least because they shared collaborators. Formed in 1972, abAna, a trio of Cobbing, percussionist Paul Burwell and guitarist David Toop worked to interpret 'Cobbing's visual poems through improvisation, as if they were graphic scores' (Toop 2005, 34–35). Toop and Burwell also served as directors of APG, and there are deep-felt connections between Latham's theory of event-structure and the intersubjective socioesthetic dynamics of live improvisation (Toop 2015), especially in terms of their treatment of media and time. As we will see, Cobbing's engagements with state-funded art organizations in Hendon, and the gradual evolution of 'World In Ruins (Cataclasm)' across time – from painting to visual poem to potential graphic score – are an essential historical counterpart to Latham and Steveni's sustained investigation into the relations between the artist and the state.

In the 1950s Cobbing used hire-purchase and the Local Government Act of 1948 to support his artistic activities in Hendon. By April 1953 the Hendon and District Experimental Art Club had established a lending library to encourage people to place pictures in their homes, and had £1000 worth of pictures for hire. By 1954 this library was augmented by a system of hire purchase. Cobbing used hire purchase to sell his art in response to a specifically middle class suburban trend that had been developing since the inter-war years. The first restrictions on hire purchase came in January 1952 and took the form of statutory regulations that specified the minimum down payment and the maximum period of repayment. This was at a time when it had become a relatively popular method for consumers and businesses to acquire goods. Hire purchase would have been more familiar to Hendon's residents as a way to acquire commodities such as kitchen appliances and cars. Selling art in this way undercut the idealist view of art as being somehow elevated or opposed to the commercial and industrial world, and appropriated the mechanism in the name of art.

The Local Government Act of 1948, unlike hire purchase, directly empowered local authorities to support the arts, and broadly speaking, was exactly the kind of state

provision that was meant to compensate for the disadvantages of capitalism, such as the impoverishment caused by the unethical practices of finance companies who offered hire purchase. Cobbing invoked the Local Government Act in 1956 to put pressure on Hendon Borough Council to support the work of the Hendon Arts Council to which HAT had recently affiliated. At a meeting with the Hendon Borough Council on 10 September 1956 Cobbing wanted HAC to be able to offer facilities and financial assistance to societies which could not hope to cover their expenses and to fund the Hendon Arts Festival scheduled for spring 1957. He argued that the festival – which was to fill local shop windows with art – had wide public support, and that half of the money applied for was to go towards it. Despite this, the Hendon Borough Council refused to grant the HAC money. In response, Cobbing led the Hendon Arts Council Executive Committee in calling on all affiliated organizations to strike: no subscriptions would be accepted from local societies or from associate members for 1957–1958; and no activities of any kind would be undertaken. Cobbing felt strike action was necessary because Hendon Borough Council had ‘broken faith with local societies and [had] not carried out its original worthy aims.’ Cobbing argued that the

Under the local Government act 1948 [...] the [borough] Council had power to spend money in providing or promoting entertainment [and that] it would be entirely a matter for the [Hendon] Arts Council to decide whether it wanted financial assistance or not.⁶

The strike was meant to remind the Hendon Borough Council of its own policy and commit it to using taxation to allow the members of the local community, and specifically artists, to direct the cultural life of the borough.

The episodes and tactics described above anticipate Cobbing’s engagement of structures of the state in the operation of his poetics at a national level in the 1970s (Willey 2012, 252–253). They are an important part of Cobbing’s personal history of working within state-sponsored bureaucratic art institutions until they did not, and could not, live up to his expansive artistic principles. Cobbing’s responses to institutional adversity were often funny, vital and artistic. For example, two days before the Hendon art strike Cobbing added Sergei Eisenstein’s film ‘Strike’ to the Hendon Film Society programme. This testing of the moral, economic and aesthetic limits of such structures was equalled only by his stubborn determination to remain within them to make art. It is this kind of testing attitude that is behind his probing of Trocchi at the sigma event. Such testing, of course, resulted in irrevocable inter-personal and institutional tensions, and Cobbing was often forced to find new situations, collaborators and media in which his idea of poetry could thrive. The history of the event in Cobbing’s work is somewhat defined by this poetics of survival – a working out of how an artist might function more fully in a capitalist world.

Cobbing and Latham’s counter cultural event-based connections

In the final section of this article I want to extend my survey of the event-based connections that exist between Cobbing and Latham in terms of some of the other counter-cultural

⁶Cobbing noted that in 1950 a one pence rate levied on the local community would produce £8,150, and that it was the Hendon Borough Council’s view that the sums likely to be under consideration would have a negligible effect on the amount of the rate.



Figure 2. 'Untitled' by Bob Cobbing and John Latham in *Group H* (London: Writers Forum, 1969), a booklet issued at the time of Group H's thirty-sixth exhibition held at the Drian Galleries, October 1966. Reprinted with permission of the Cobbing family.

events they participated in, starting with the 36th exhibition of Group H (October 1966) held at the Drian Gallery.⁷ This event is of interest for three reasons. Firstly, works by Latham and Cobbing are featured in the catalogue which accompanied the exhibition (Figure 2). In this form and on pages reproduced with a duplicator, striking aesthetic similarities emerge between their work. Both poet and artist present wordless monochromatic visual pieces which are left untitled. Black sprays of paint (in Latham's case) and black splatters of ink (in Cobbing's) are presented on otherwise white pages, with Latham's artwork displaying a more pared-down aesthetic. A second edition of the catalogue was printed in 1969 and was circulated independently from the exhibition on what was essentially a poetry list. In this form, they both appear as page-based artists working through seemingly similar aesthetic concerns, perhaps related to the 'dirty' concrete poetry for which Cobbing and Writers Forum became well known. The catalogue's reproduction and distribution invites this conflation, and an aesthetic similarity is highlighted that would otherwise have been obscured due to the variety of both men's practices. It is often noted that Latham's artworks are not easy to place within wider narratives of contemporary art. Abstract but figurative, conceptual but also deeply concerned with gesture

⁷The Drian Gallery was known for its group shows, its international outlook and its support of modernist art. In naming the gallery, its founder, the Polish artist Wisely Halima Nalecz, followed a procedure of her own devising. She opened an art manual at random, stuck a pin at the opening and on finding the name Mondrian, sliced it in half, a procedure that faintly recalled the gallery's former life as a butcher's shop. The *Inaugural Exhibition* (23 October–11 November 1957) displayed the work of sixty one artists, and included non-figurative artist Denis Bowen, founder of the New Vision Group, leading British Modernists, Ben Nicholson, Henry Moore and Barbara Hepworth as well as modernist artists from France, Belgium and Germany (Wykes-Joyce 2009, 10).

and material, they seem to exceed and escape categories. Reading Cobbing and Latham's work through the 36th Group H exhibition suggests that Latham's work could be usefully contextualized in relation to movements in contemporary poetry, especially sound and concrete poetry.

Group H is also of interest to this survey as it grew to include key artists from the counter-cultural London scene, but still played up to an idea of rollicking suburban amateurism. Proud of its roots in London's suburbia, the genealogy of Group H reminds us how important it is to understand the experimental 1960s in terms of developments that took place a decade previous. This is how John Rowan, a member of Group H since its formation in Hendon in 1951, introduced the exhibition catalogue:

Group H, that's a laugh, twenty-odd nuts in search of a feller named Bob Cobbing the noted sound poet, bookshop destructor, film maniac, ham actor and art commando. All right, Group H the well-known local art group – since 1951 purveyors of far-out art to the burghers of Hendon and points North (is there anywhere North of Hendon) (Hendon for God's sake) with branches in the Charing Cross Road.

A review published in the weekly Whitechapel-based anarchist newspaper *Freedom* (12 November 1966) reports that the exhibition was forgotten almost as soon as it was over. The reviewer, the artist and bus conductor Arthur Moyse, presents the exhibition as a favourable alternative to the Destruction in Art Symposium, which had taken place over the preceding months: 'DIAS deserved to fail for its portentous sterility and the nastiness of its imported gimmicks ... group H succeeds within its own parochial frame of reference but history and the Town have passed it by' (Moyse 1966). Moyse goes on to suggest that it was a 'tactical failure' of DIAS that it did not incorporate and utilize the 'local talent' of Group H arguing that if they had been incorporated into the 'monied setup' of DIAS it 'could have put on an act that would have had the Town [London] kicking up its heels for at least a week.' Moyse makes geographic, nationalist and economic distinctions between the 'imported gimmicks' of DIAS and the 'local talent' of Group H, but is unaware of Cobbing and Latham's involvement in both. In critiquing the 'monied setup' of DIAS he also seems unaware of Cobbing's attempts to secure local government subsidy for Group H in the 1950s. The review further underplays the internationalist orientation of Group H members such as Jeff Nuttall, Peter Stroud, Bruce Lacey, Barry Flanagan and Nuttall, and misses the wider significance of locality to Cobbing's poetics.⁸ In other words, Cobbing and Latham's involvement in the 36th Group H event reminds us that the globally oriented events of London's 1960s counter-culture and the more locally oriented suburban experiments in art could work together, in this case to facilitate the meeting of two distinct theories and practices of the event.

As I have argued, Cobbing and Latham thought deeply about how their artistic and poetic works were contingent on wider organizational structures and theoretical frames of reference. These were meta-languages that contextualized their practices. It is significant then that the catalogue which accompanied the 36th exhibition significantly deviates from the conventions surrounding the form. These deviations are of interest to this survey. The catalogue does not reproduce the exhibition's artworks alongside explanatory notes about

⁸The contributors to the Group H catalogue were: Franciszka Themerson, Jennifer Pike, Barry Flanagan, John Rowan, Criton Tomazos, Jeff Nuttall, Alan Baker, Bob Cobbing, Kenneth Swain, Islywn Watkins, Jeff Cloves, John Latham, William Chard, David Warren, Dave Trace, Hannah Swain, Gabi Weissman. Other artists who exhibited but who were not in the catalogue included David Rothman, Brian Wall, Frank Taylor, Peter Stroud, Andrew Walters and Daniel Carter.

subject matter, material, processes employed or biographical information about the artists. Instead the artworks compiled are completely different from the ones that were displayed on the walls of the gallery. For readers who only had access to the catalogue, the page-based artworks are the principle access point to the exhibition. Given what we know of Cobbing's practice in the 1950s, we can assume that this was a considered choice. After all, the catalogue was compiled by Cobbing and published by Writers Forum (1966), the poetry press that Cobbing had founded in Hendon.

John Rowan's impressionistic, introductory essay also draws attention to the substantial differences between the gallery space and the catalogue. Here, for example, is Rowan's description of the work that Polish artist, film maker and illustrator Franciszka Themerson (another Group H artist) submitted for display:

If you thought Franciszka Themerson only did little spindly illustrations to funny books, have a look at her blood stained 'Presences' in this show. Tatters of canvas, held together with blood, pus and drawing pins make an impact that has nothing to do with funny books – unless you think Naked Lunch is a funny book.

The degradable bodily excrescences used in Themerson's 'Presences' are absent from the artwork she selected for inclusion in the catalogue. In her untitled page-based work two line-drawn, distended figures – one sitting on top of the other's back, the body of the first drawn the same size as the other's head – are stuck in a painful journey. The drawing is characteristic of Themerson's sense of the sad absurdity of human relationships, a style Rowan perhaps too quickly dismisses as 'funny' and 'spindly', especially when the drawing is read through Themerson's exile from Poland during World War II. The discrepancy in media between Themerson's line drawing and 'Presences' marks a distinction between the catalogue and the gallery space in terms of how the human body can be represented. In his introduction to Themerson's collection *Traces of Living*, Edward Lucie-Smith described Themerson's drawings as 'utterly pitiless' because of the way they leave the artist with 'nowhere to hide' (1969, 2). For Lucie-Smith, Themerson's use of unshaded, hand-drawn black lines accentuated the white of the page. In the context of the 36th Group H exhibition Themerson's technique foregrounds the materiality of the catalogue. The decision (which was Cobbing's, since he compiled and edited the catalogue) to place a drawing of two bodies – one supporting the other – as the first artwork in the catalogue seems at first to convey the expected relationship of support between the catalogue and the gallery event. However, the difference in media between Themerson's line drawing (in the catalogue) and the blood and pus of 'Presences' (in the gallery) suggests each space was distinct in terms of the artistic possibilities it offered. One reading of this differential is to see it as an example of Cobbing's event-based poetics, where an attentiveness to the externalities of the gallery event reached a point where the catalogue itself became part of the event. Or, in other words, Themerson's drawing is part of the catalogue's syntax, and the way the catalogue is organized in relation to itself, and the way it marks distance and its difference from the gallery event is instructional. Tracing the relations between different artworks in the catalogue and reading them against the catalogue's introduction and the genealogy of Group H that it documents gives us an insight into how Cobbing thought about events, and how he wanted his audience to think about them too. Many of the decisions Cobbing made about how to organize events were likely intuitive, but they also encourage critical reflection. This is the case even when Cobbing and Latham were physically absent from events that their artistic work nevertheless frames. I am thinking

here of the International Poetry Incarnation (IPI) of June 1965 hosted by Trocchi, one of the most seminal poetry readings of the 20th Century.

Latham and Cobbing's involvement in the IPI was defined by their varying degrees of absence from the stage. Latham prepared for a performance with Nuttall but never made it onstage having passed out after covering himself in lead-based paint, while Cobbing sat in the audience and witnessed Anselm Hollo, Allen Ginsberg and Ernst Jandl read from books he had published through Writers Forum. Latham's aborted performance is often commented upon in histories of the event while Cobbing's input as a publisher is seldom mentioned. Both contributions are vital however for how they invite us to rethink the centrality of live, improvised performance to the IPI and the artistic value of immediacy more generally. Writing on Latham and Nuttall's aborted performance at the IPI and its restaging at Stratford East Theatre as part of DIAS, Walker (1995) states: 'The two protagonists of the planned performance were intended to represent a Dionysian poet and an Apollonian poet. Red and blue, their respective colours, symbolized two traditions, one informal and romantic the other formal and classical' (75). By 1975 Latham had developed a third position. He began to conceive his art in terms of a 'Time-based classical' tradition. This tradition ran alongside the 'orthodox, art-historical "classical" development' described by Read, and Latham thought that developing this tradition would provide an 'agreed standard of arbitration as to how a global future [could] be organised' around art (Latham 1975, 189).

Like Latham, Cobbing used the terms Romantic and Classical art well into the 1970s. In an interview with poet and friend Eric Mottram (2000) Cobbing used the terms to describe an analogous relationship between 'clean' and 'dirty' concrete poetry:

you start splashing [paint] all over the canvas you sort of push it around and welcome the accidents. It is the classical as opposed to the romantic attitude ... In concrete there are clean and dirty ... I have always been regarded as dirty.

Another late interview, this time conducted by Steven Ross Smith (1998, 8), develops this theme in terms of artistic discipline:

one can work spontaneously, one can use what would be called "organic" form. A poem is an organism and the poet's job is to bring that organism to birth and make it as perfect as he can ... the discipline is a ... spontaneous one.

The idea that there could be such a thing as a discipline of spontaneity combines a sense of art as an intuitive process with that of rational and reflective thought. Cobbing believed that the poet had to try and make the poem 'as much like itself as possible' (Cobbing 1998, 6), and that there were many ways of 'making a poem more like its self' (1974, 59). To speak of a self in this context might seem to imply the emergence of an essence (i.e. the poem becomes self-identical when its outer layers are stripped away) but paradoxically these outer layers are conceived as different versions of the poem that are then disseminated as such. Cobbing states that there could be visual, sound, spatial and even choreographic versions of the same poem. The poem's essential life is, like Latham's art, contingent, relational and time-based.

While Cobbing's thinking around poetry was shaped by Read's writing on art, Latham knew Read personally. Read visited Latham's studio in the late 1950s, and Latham used one of Read's books in a sculpture. A document in the Latham Archive titled 'notes from a conversation with John Latham' (13 December 1958) written by Anna Barker

states: 'JL thinks that a poker went through it – HR didn't recognize it as a compliment'. Read could not have been too upset about this. In a letter to his parents (11 April, 1958) Latham writes with genuine excitement about 'a big international competition to be held in Milan where some 20 artists from all over the world are being invited to submit their work'. He adds, 'Sir Herbert Read is on the jury and has submitted my name to the organisers' (Latham 1959). This event was also significant enough for Latham to recall it in a letter sent to the director of the Tate Gallery 25 years later (Latham 1983): 'Observer I was made in 1958, and went, under the aegis of Herbert Read to the first Venti Quadri exhibition at the Ariete Gallery in Milan. Read reported that it "aroused curiosity rather than admiration" there'. Curiosity implies sceptical distance, and this rational response corresponds to one of the three levels of human self-awareness that Latham tried to both express and encourage in those that viewed the work. In each of the five mixed media reliefs that comprise the *Observer* series (1959–1960) scorched books and metal fragments are arranged in a triadic structure which Latham described (as has frequently been noted) in terms of the three different personalities of the Karamazov brothers – Mitya, Ivan and Alyosha – from Dostoyevsky's 1880 novel. Whereas in *Dream of the Battle Cruiser Hood* intersecting lines connected the figurative space-based section of the artwork to the abstract time-based zone of the spray-gun explosion, 'Observer I' expressed relations sculpturally. A metal wire joined Mitya to Ivan (the instinctive to the rational) with Alyosha (the reflective-intuitive) being positioned towards the top as if observing the relation between the two. Latham's definition of event-structure in terms of human relations, dispositions and degrees of self-awareness marks a key moment in Latham's conception of the event relative to Cobbing's.

This pedagogical dimension – the desire to instil self-awareness in one's audience through the relationships between art and event – can be seen in other aspects of Cobbing and Latham's event-based work in the 1960s. For example, Latham was actively involved in *The sTigma*, a multi-media environment conceived as a public and self-critique of sigma's idealism. It was constructed in the basement of Better Books, the Charing Cross Road bookshop where Cobbing worked as manager of the paperback department, and once Cobbing became the manager of the entire shop he hosted four performances organized by Latham. During the last of these performances, 'Wind, Foam and Dream' (April 1967), taped audio recordings of Cobbing and Jandl were played into the room as polyurethane foam was pumped from PVC tubes into books. Latham's 'book-plumbing' technique and Cobbing's tape-based work, used by Latham as an aural frame during 'Wind Foam Dream' (1965), indicates how the movement between artistic mediums, and into sound specifically, was by this point a significant aspect of Cobbing and Latham's event-based practice.

This collaborative work developed many of the aesthetic and ethical concerns that motivated Cobbing and Latham's involvement in the Destruction in Art Symposium the previous year (September 1966). For the Symposium Cobbing produced and displayed two artworks, 'Six Variations on Typestract One for DIAS' and 'Destruction in Art'. Both these works can be read as reflecting critically on the DIAS event. As well as exhibiting these works, Cobbing served on the organizing committee, and was hired as a projectionist by Yoko Ono to screen her film No. 4 (also known as 'Bottoms'). Latham's contributions were equally various. He read his paper 'Event Structure and the English Dream' at the Africa Centre in King Street, detonated a block of Chambers' encyclopaedias for his

work *Encyclopaedias over London* at the London Free School, performed *Film* at Mercury Theatre in Ladbroke Grove, a piece which further reimagined the performance he and Nuttall were forced to abandon in 1965, and he, like Cobbing, also supported Ono by hosting her for two weeks at his house (Walker 1995, 81–82). A further connection between Latham and Cobbing during this period comes via the London Filmmakers Co-operative (LFMC), an organization that Cobbing had been instrumental in setting up at Better Books, which also screened and distributed Latham's films during its early years and informed the public about new developments in film. When the Antiuniversity of London was founded in Shoreditch in 1968 (a counter-cultural institution like the one imagined by Trocchi) both Cobbing and Latham were listed as faculty members. By managing Better Books, by serving on the organizing committee at DIAS, and by founding the LFMC Cobbing's organizational efforts provided conceptual and public frames for Latham's art. Cobbing also briefly served as the Antiuniversity's administrator, and through this organization the pedagogical aspects of both Cobbing and Latham's events come strongly to the fore.

Concluding events

In the 1950s Latham conceptualized relational networks on the canvas, and by the 1960s he was working with Cobbing to create networks between people. The metropolitan, counter-cultural events in which Cobbing and Latham participated in London remind us that belief in the value of collective endeavour across national and disciplinary borders, and in art as a driver of social and political change. Like an electrical junction box, Cobbing and Latham's events were points of convergence for diverse artistic currents, making manifest the energies inherent in international artistic networks at specific points in time. They curated and created networks of correspondence and did so publically. By bringing together Latham's theory of the event with Cobbing's event-responsive poetics we see how the global ambitions of these events were negotiated at the level of the individual artist, the artwork and the poem. This shift in focus away from the art-object onto art as a network of relations and onto the supporting structures of the event-as-art can be further contextualized in terms of what Craig Saper has called 'networked art' (2001, 3–5). Drawing on the category of the 'receivable' as defined by Roland Barthes, 'networked art' denotes sociopoetic work that is 'distributed through compilations ... and in artists' networks [which] seeks to 'catch hold' of the participants', where 'social situations ... function as part of an artwork'. Cobbing and Latham's experiments promise to reverse Saper's formula; their artworks and poems catch hold of social situations. As I have argued elsewhere, this aspect of Cobbing's work is one of its most defining features across time, and culminated in late performances where he would literally 'read the room' (Willey 2013, 12). For example, in a late interview with Aleric Sumner (1999) Cobbing insisted he could read any patterned surface: 'I quite enjoy in performance ... going up to a painting on the wall and doing that. It startles people, but the painting has a pattern to it and that pattern can be interpreted in sound.' Here the external situation of the work's production – a painting hung on a wall – becomes a creative component of internal form in a poetry performance which then provides us with access back into the event.

The presentation of early paintings as poems is also related to Cobbing's conviction that visual work could be vocally sounded and to how he redefined the relation between

romantic and classical art across his career. It also mirrors Cobbing's personal transition from a painter to a poet. Given these translations and transitions, we can safely speculate that Cobbing understood Latham's paintings and the visual patterns of his other work as poetry. Rather than being isolated figures working on hermetically sealed, individual projects, Cobbing and Latham were two significant members of a larger experimental generation. Reading Cobbing and Latham's work in relation to each other, and finding novel, experimental ways to do this, honours that generation and the potential energy of their work.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Dr Steve Willey is a Lecturer in Creative and Critical Writing at Birkbeck, the Programme Director of the Joint BA in Creative Writing and English and Co-Director of Birkbeck's Contemporary Poetics Research Centre. Publications include two poetry collections *Elegy* (Veer Books, 2013) and *Sea Fever* (Knives Forks and Spoons, 2017). His monograph-in-progress, *Sounding the Room of British Poetry: Internationalising Community in the School of Bob Cobbing* is a literary history of the international poetic and avant-garde from 1945 to 2008.

ORCID

Steve Willey  <http://orcid.org/0000-0001-7393-7185>

References

- Barker, Anna. 1958. 'Notes from a Conversation with John Latham' on *Archive as Event*. <http://www.ligatus.org.uk/aae/node/1993>.
- Beckett, Christopher. 2010. "From the Bombast of Vachel Lindsay to the Compass of Noise: The Papers of Bob Cobbing at the British Library." *Electronic British Library Journal* 9: 1–39. Edited by Dr Barry Taylor. <http://www.bl.uk/ebj/2010articles/pdf/ebjarticle92010.pdf>.
- Bone, Stephen. 1952. "Amateur Artists: An Exhibition To Show the Value of Painting". *Manchester Guardian*. May 20. In *Hendon Arts Together: Press Cuttings* (1). British Library Add MS 88909/13.
- Clarke, Adrian. 2007. "Time In The School of Cobbing". *Pores* 3. Edited by Will Rowe. <http://www.pores.bbk.ac.uk/3/clarke.html>.
- Cobbing, Bob. 1949. "The Purpose of Art: Personal Study by R W Cobbing (Bognor Training College)". British Library Add MS 88909/5.
- Cobbing, Bob. 1974. repr. 1999. *Bob Cobbing & Writers Forum*, edited by Peter Mayer, produced for the 'Bob Cobbing and Writers Forum Retrospective Exhibition', Sunderland Arts Centre, November 2–November 30, 1974.
- Cobbing, Bob. 1986. 'World in Ruins (Cataclasm)' (1951). Monotype. Reproduced in *Lame Limping Mangled Marred and Mutilated: Collected Poems Volume 9*. London: David Barton.
- Cobbing, Bob. 1998. *Interview by Steven Ross Smith, Ballet of the Speech Organs: Bob Cobbing on Bob Cobbing*. Toronto: Underwhich Editions.
- Cobbing, Bob. 2000. *Interview by Eric Mottram, Composition and Performance in the Work of Bob Cobbing*. London: Writers Forum.
- Goodway, David. 1998. "Introduction." In *Herbert Read Reassessed*, edited by David Goodway, 1–12. Liverpool: Liverpool University Press.

- Latham, John. 1959. 'Letter to Mr and Mrs G C Latham', on *Archive as Event*. <http://www.ligatus.org.uk/aae/node/3456>.
- Latham, John. 1975. 'Time-Base and Determination in Events' reprinted in Walker 1995, 187–203 (see below for reference to Walker).
- Latham, John. 1983. "'Letter to the Director of the Tate Gallery' quoted from on *Tate Catalogue Entry to 'T03706 Observer IV 1960'.*" <http://www.tate.org.uk/art/artworks/latham-observer-iv-t03706/text-catalogue-entry>.
- Latham, John. 1984. *Report of a Surveyor*. Stuttgart: Hansjorg Mayer with Tate Gallery Publications.
- Latham, John. 2009. *Interview by Pauline van Mourik Broekman & Josephine Berry, Proud to be Flesh: A Mute Magazine Anthology of Cultural Politics After the Net*. <http://www.metamute.org/editorial/articles/proud-to-be-flesh-mute-magazine-anthology-cultural-politics-after-net>.
- Lucie-Smith, Edward. 1969. "Forward." In *Traces of Living: Drawings by Franciszka Themerson*. London: Gaberbocchus.
- Moyse, Arthur. 1966. "Round The Galleries", in *Freedom*, 12 November 1966, Hendon Arts Together: Press Cuttings (3). British Library Catalogue Number, Add MS 88909/15.
- Nuttall, Jeff. 1968. *Bomb Culture*. London: Paladin.
- Read, Herbert. 1931. repr. 1982. *The Meaning of Art*. London: Faber and Faber.
- Read, Herbert. 1936. "Introduction." In *Surrealism*, edited by Herbert Read, 19–96. London: Faber and Faber.
- Rowan, John. 1966. "Introduction." In *Group H*, compiled by Bob Cobbing. London: Writers Forum Quartos 2.
- Saper, Craig. 2001. *Networked Art*. Minneapolis: University of Minnesota Press.
- Sinfield, Alan. 1997. *Literature Politics and Culture in Postwar Britain*. London: The Athlone Press.
- Stephens, Christopher. 2003. "We Are the Masters Now: Modernism and Reconstruction in PostWar Britain." In *Blast to Freeze: British Art in the 20th Century*, 133–138. Wolfsburg: Hatje Cantz Publishers.
- Sumner, Alaric. 1999. "Domestic Ambient Buoys (Bob Cobbing and Lawrence Upton)" on *Riding The Meridian*. <http://www.heelstone.com/meridian/interbclu.html>.
- Toop, David. 2005. "Sound Body: The Ghost of a Program." *Leonardo Music Journal* 15: 28–35.
- Toop, David. 2015. "FLAT TIME/sounding." In *Artistic Practice as Research in Music: Theory, Criticism, Practice*, edited by Mine Dogantan-Dack, 237–254. Routledge.
- Trocchi, Alexander. 1964. repr. 1991. "Sigma: A Tactical Blueprint." In *Invisible Insurrection of a Million Minds: A Trocchi Reader*, edited by Andrew Murray Scott, 192–203. Edinburgh: Polygon.
- Upton, Lawrence. 2009. "Bob Cobbing: and the Book as Medium; Designs for Poetry." *Readings* 4. http://www.bbk.ac.uk/readings/issues/issue4/upton_on_cobbing.
- Walker, John A. 1995. *John Latham: The Incidental Person – His Art and Ideas*. London: Middlesex University Press.
- Willey, Steve. 2012. "Jade-Sound Poems: Bob Cobbing and the Poetic Institution." *Journal of British and Irish Innovative Poetry: Bob Cobbing Special Issue* 4 (2): 1–289. Edited by Robert Sheppard and Scott Thurston.
- Willey, Steve. 2013. "Bob Cobbing 1950–1978: Performance, Poetry and the Institution." PhD diss., University of London.
- Wykes-Joyce, Max. 2009. *Drian Galleries: A Short History*. London: Kizumi Art Publications.

The movement of the poem in the 1960s: from circle and line to zero and one, from concretion to computation

Bronač Ferran 

Department of Literature & the Humanities, Birkbeck, University of London, London, UK

ABSTRACT

Poetic form in the 1960s in Britain, and elsewhere, was affected by trans-disciplinary and trans-cultural influences that came fully into focus after the end of the Second World War. These were substantially iterated and theorized throughout the 1950s, paving the way for radical experiments in language during the following decade. Drawing on Paul Celan's observation that poetry maintains itself 'at its own extremity' (expanded by Lyon [1983. "Poetry and the Extremities of Language: From Concretism to Paul Celan." *Studies in 20th Century Literature* 8 (1): Article 5. Accessed September 20, 2016. doi:10.4148/2334-4415.1131] and Klink [2000. "You. An Introduction to Paul Celan." *The Iowa Review* 30 (1): 1–18. <http://ir.uiowa.edu/iowareview/vol30/iss1/2>], this article considers movement in the form and language of poetry in the post-war period. It looks at some specific examples of how this became manifest in Britain and at traversal connections to developments within other disciplines, not least in scientific and technological domains.

ARTICLE HISTORY

Received 8 September 2016
Revised 20 December 2016
Accepted 12 January 2017

KEYWORDS

Hansjörg Mayer; Max Bense; Margaret Masterman; Pierre Garnier; dom Sylvester Houédard; Bronač Ferran; typetry; code

Zero and one is everything – the whole universe – and equally the circle and line, which is the futura typeface, can express everything.¹ (Hansjörg Mayer; [Figure 1](#))

The concrete poet, by leaving the firm ground stepped over and over by abstractions, the traditional solid ground of outward meaning, dives into the mysterious region of the becoming, to return from there, trembling, with new proper names, captive of nothingness. (Flusser [1967] 2013)

We still have to come to terms with technology and poetry.² (Jerome Rothenberg)

Context

After the horrors of the Second World War, the function and role of language was subject to deep scrutiny by many writers and philosophers and particularly those

CONTACT Bronač Ferran  brona cf@gmail.com  Department of Literature & the Humanities, Birkbeck, University of London, 43 Gordon Square, London WC1H 0PD, UK

¹Hansjörg Mayer in conversation with author. September 2016.

²Poet & Polemicist: an interview with Jerome Rothenberg, 2013; accessible at: www.raintaxi.com/poet-and-polemicist-an-interview-with-jerome-rothenberg/.

© 2017 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

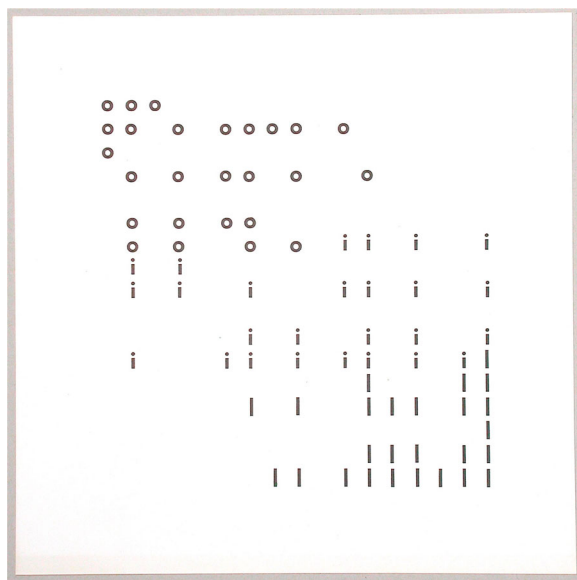


Figure 1. *oil.* Hansjörg Mayer, letterpress. 1965.

living in Germany or working with the German language. Founder of the Frankfurt School, Theodore Adorno speculated whether poetry should still be written in the face of the barbaric (1949). Paul Celan, a Rumanian born poet whose parents were killed in the Holocaust, decided to continue writing in the German language, until death by suicide in Paris in 1970. He outlined his post-war position in a speech accepting the Bremen Literary Prize, in 1959:³

Only one thing remained close and reachable amid all losses: language. Yes, language. In spite of everything, it remained unlost. But it had to go through its own lack of answers, through terrifying silence, through the thousand darknesses of murderous speech. It went through and gave no words for what had happened; but it went through this event. It went through and could resurface, 'enriched' by it all. In this language I tried, during those years and the years after, to write poems: in order to speak, to orientate myself, to find where I was, where things were going, to sketch for myself a reality.

It meant, as you see, something happening, movement, being under way, it was an attempt to find direction (Celan 1986; Fynsk 1994)

As the darkness of the 1940s proceeded into the drive for political and economic reconstruction of the early 1950s, leading figures internationally within the arts and humanities maintained a process of profound questioning. Many struggled to work out their direction, wrestling with important questions of human agency in the face of a growing scientific positivism.

New fields such as cybernetics and information science, that played an important role in the conclusion of the war, required new understanding, calling for trans-disciplinary discourses, such as those activated within the 10 Macy conferences in the United States

³This translation of Célan's speech is a modification by Christopher Fynsk of an earlier translation (see citation in references).

between 1946 and 1953.⁴ In a series of lectures, Martin Heidegger (whose name became for many irreparably tainted by his failure to speak out directly against the Nazi regime in Germany) speculated on language, poetry, technology and thinking (in a destitute time). Having fled to Brazil from war-torn Czechoslovakia, media philosopher Vilém Flusser consistently warned of the perils of mechanized thought and automated systems in relation to their neutralizing effect on human ethics and individual responsibility (1999). Throughout the 1940s, meetings of the Moral Sciences Club at King's College, University of Cambridge, brought leading philosophers Ludwig Wittgenstein, Karl Popper, G.E. Moore, Bertrand Russell and others together for intense arguments about the significance of language and the transcendence, or otherwise, of philosophy (Edmonds and Eidinow 2001).

In turn, the work of poets at the leading edges of avant-garde practices in post-war Europe combined new techniques of composition with destabilization of poetic form. Processes of linguistic decomposition came fully to the fore. In Paris, Isidore Isou and Maurice Lemaître, defining themselves as *lettrists*, built on earlier Dadaist experiments (Kac 1991) and sought to reinforce and reinvent the basic elements of language – focussing on the sound and the letter – shamanically casting off the word as if to invent new affordances, to renew language at its roots, to make a tabula rasa.⁵

Lines to constellations

Swiss poet and theorist Eugen Gomringer played an important role with respect to this experimentation. His manifesto *From Line to Constellation*, written first in German in 1954, was published by Max Bense in his journal *Augenblick*.⁶ It was first translated into English by Michael Weaver and published in *IMAGE*, a magazine edited by Philip Steadman in Cambridge (1964). The translation included the lines:

... The constellation is the simplest possible kind of configuration in poetry which has for its basic unit the word, it encloses a group of words as if it were drawing stars together to form a cluster. The constellation is an arrangement, and at the same time a play-area of fixed dimensions. The constellation is ordered by the poet. He determines the play-area, the field or force and suggests its possibilities. The reader, the new reader, grasps the idea of play, and joins in. In the constellation something is brought into the world. It is a reality in itself and not a poem about something or other. The constellation is an invitation.

Gomringer's original text had stated its debt to Stéphane Mallarmé's *Un Coup de Dés Jamais N'Abolira le Hasard*, written in 1896 (Lyon 1983). The words UNE CONSTELLATION had been spelt out in capitals by Mallarmé within his poem. Quentin Mellassoux has argued that Mallarmé's poem was based on a numerological play with the number seven (Mellassoux 2012). Whilst this theory remains in question, the poem was certainly a turning point between nineteenth-century symbolism and twentieth-century serialism and foundational in relation to the spatialist turn in the poetics of the next century (Ferran 2016). Reviewing Marshall McLuhan's *The Gutenberg Galaxy: The Making of*

⁴Macy conferences: further information about these is accessible at: <http://www.asc-cybernetics.org/foundations/history2.htm#MacyPeople>.

⁵Orson Welles interviewed Maurice Lemaître and Isidore Isou in 1955 for the St. Germain part of his *Around the World with Orson Welles* documentary; <https://www.youtube.com/watch?v=uZayMaC4RLo> (accessed 12 December 2016); see also <http://www.mauricelemaître.org/~pfs/what-is-lettrism/> (accessed 12 December 2016).

⁶*Augenblick* was a journal for aesthetics, philosophy and polemics published between 1954 and 1961, edited by Max Bense.

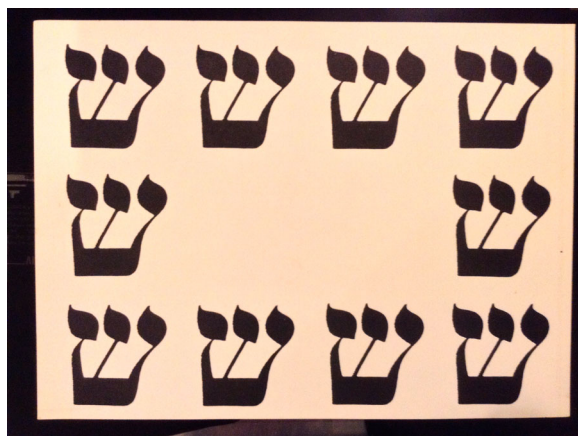


Figure 2. *Silencio* Eugen Gomringer. Hebrew characters, trans. Harry Warschauer. Openings Press 16.

Typographical Man (1962) for *Encounter* magazine, Frank Kermode described *Un Coup de Des* as ‘the first poem to take full account of the invention of printing’ (Kermode 1963).

Gomringer’s use of graphic space in his own poetry was also formative: one of his best known works, *Silencio*, made in 1952, had a single white space at the centre: like a muted nucleus around the poem was constructed. Steve McCaffery has recently argued that the historical and political context of its making within a decade of the concentration camps has often been underestimated (2013). In the mid-1960s John Furnival’s *Openings Press* in Gloucestershire, England published another version of the poem with the sign for the Hebrew sound for *sh* repeated 10 times around the void at its centre (Figure 2).

Space and time continuum

A major sensitivity among poets, writers, film-makers and visual artists from the mid-1950s to late 1960s was a preoccupation with the idea of a space-time continuum; this was imaginatively explored in various works of art in many media. This took place against a backdrop of the Space Race, when the idea of freeing the human from the earth and from gravity was growing nearer to realization, during the first years when satellites were circling the earth, a monkey was set forth into outer space and many poets simultaneously were seeking to set words free from the meshes of rhythm and meter.

The alphabet, the basis of written and spoken language in Western civilization, became a primary force and site for experimentation: its letters were disassembled, fragmented, grafted, reassembled and scattered in acts of phonetic and typographic experimentation. Performed and visual acts broke the alphabet down into bits and fragments and/or reconstructed it again to become super-signs and icons. As these decades progressed, print, tape and type machines became collaborators in the action. The poetic form itself became the object of attention, undergoing numerous acts of naming and renaming.

From information to the program

One of the primary theorists of these questions working in Europe in the 1950s whose work had significant impact on poets elsewhere, including in Britain, was Max Bense, a

Stuttgart-based mathematician and philosopher. Bense's theories combined ideas relating to semiotics (after C. S. Peirce⁷) and informational theory (after Norbert Wiener⁸). His pre-Second World War research into mathematics and aesthetics continued afterwards whilst his expertise in mathematics and philosophy infused the experimentation which his publishing, teaching and exhibition activities facilitated. Having taught at Ulm School of Design from 1954–1958 he then set up the Studiengenerale course at the Technischen Hochschule in Stuttgart. There he fostered an extraordinary range of experiments related to the stochastic and algorithmic properties of language and pioneered thinking around the idea of information aesthetics. He invited writers, mathematicians and others to events at the Studiengalerie around which a seminal network formed, with experiments with the form of the poem and poetic language closely embedded in this. On a large Zuse mainframe computer at the Technischen Hochschule in Stuttgart what is regarded as the first computer poem was created by Theo Lutz in 1959. He was a student of Bense who had suggested to him that he might use a random number generator to see what might happen. Lutz wrote up this experiment as the article *Stochastic Texts* published in *Augenblick* (1959). This work brought into the foreground underlying questions rippling below the surface of much poetic experimentation of the 1950s relating to the diminishing position of the singular auteur. What kind of poetry might be written by and with a machine?

Bense's work was exceedingly important in combining a strong theoretical framework with intensive experimentation. Frieder Nake, then a mathematician in Stuttgart, who started to make artwork with early computers, has described how the word 'program' was being investigated, shaped and tested in the Stuttgart context.⁹ Now generically and generally applied to the language of computing, it was then only beginning to have traction. Along with *Augenblick*, Bense co-edited a series of small books called *rot*¹⁰ (Figure 3).

Both provided space for circulation and cross-fertilization of theories and practice linking poetry, semiotics and theories of information aesthetics. Such dynamic interplay between theory and practice, research and dissemination was deeply radical. Bense's text *projekte generativer asthetik* published in *rot* 19 (Bense and Walther 1965) coincided with an exhibition of computer-based art work by Georg Nees at the Studiengalerie in February 1965. Within this Bense advanced the idea of generative aesthetics building on the notion of generative grammar, developed by Chomsky (1957, 1965).

Bense's influence first found its way to Britain through inclusion of his journals in the *First International Exhibition of Concrete Kinetic and Phonetic Poetry* held at Cambridge University in late 1964. This was organized by Michael Weaver, a postgraduate researcher in English Literature based at Magdalen College. He was aided by Reg Gadney (co-editor of *Granta* who included the exhibition catalogue as a supplement) and Philip Steadman, who had recently graduated in Architecture and beginning post-graduate studies. Stephen Bann, then based in Paris, helped to find works for inclusion in the exhibition and returned to Cambridge for the opening. It was to Bann that Pedro Xisto, one of the Brazil based

⁷Charles Stuart Peirce (1839–1914) was a logician, pragmatist and founder of semiotics or the science of signs.

⁸Norbert Wiener (1894–1964) was Professor of Maths at MIT and founder of cybernetics. He wrote *Cybernetics: Or Control and Communication in the Animal and the Machine* in 1948.

⁹Said by Nake in conversation with author. May 2015.

¹⁰The *rot* series of small books was co-edited by Bense and his second wife, Elisabeth. They published 52 titles including a work by Haroldo de Campos translated by Flusser. On the back of each book was this line: es gibt auch rote geheimnisse in der welt ja nur rote (Ernst Bloch).

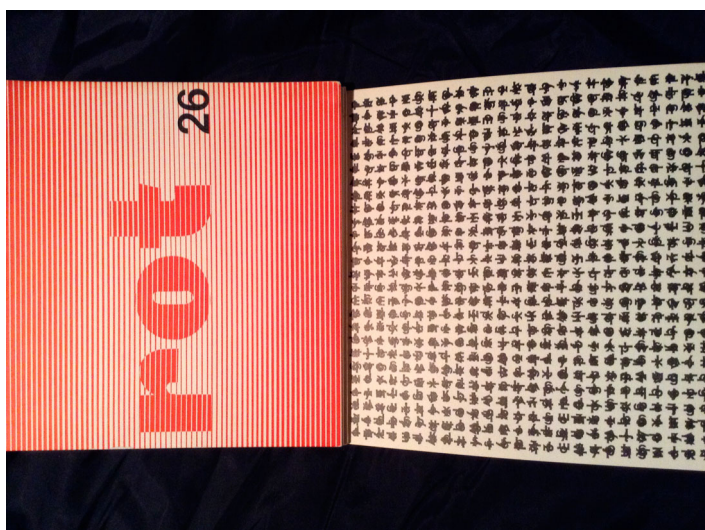


Figure 3. rot 26. *alphabetenquadrate*. Hansjörg Mayer, letterpress. 1966.

concrete poets included in this first exhibition, and an advocate of Zen Buddhism, sent the manuscript poem below a few years later. (Figure 4).

IMAGE offered an extraordinary platform in 1964–1965 for circulation of ideas, theories, primary documents and translations relating to concrete, kinetic and visual poetry. A relatively glossy and colourful magazine for the period, it was changing ownership when Steadman became editor. It had started as a photojournalistic magazine modelling itself on *Paris Match* and Steadman, a self-taught, talented, graphic designer, got

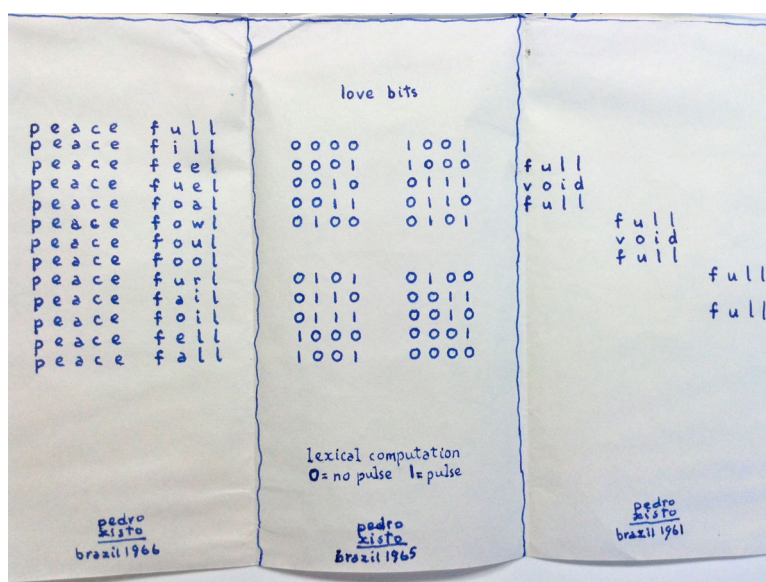


Figure 4. Manuscript poems by Pedro Xisto, enclosed in letter to Stephen Bann. 1967. Reprinted with permission of Stephen Bann and the Xisto family.

involved initially as an assistant editor; this allowed him to migrate during a transition of ownership to the editorship and, along with Bann, Gadney and Weaver – to ‘hijack’ it for experimental purposes in true avant-garde fashion. The three issues dedicated to aspects of kinetic and concrete art and poetry produced between 1964 and 1965 are now collectors’ items. Combining theory and practical analysis, they offered extremely important insights into then emerging avant-garde practices. But the new owner hoped to make it a careers advertising journal. The November edition about Parisian kinetic artists had also an ad for a career in the Royal Air Force on the back and one for the Women’s Royal Army Corps on its inside front cover. One could conclude that reading supplementary features on new forms of radar used by the British Aircraft Corporation, etc. might help students decide to go for the arts or sciences. But the experiment ended after three issues as Steadman has recalled recalled: ‘I suspect we then crashed it with the absurd combination of avant-garde art contents and careers advertising’.¹¹

The November 1964 issue also had a translation of an article by Pierre Garnier, a poet based in France, where he edited the review, *Les Lettres, Poesie Nouvelle*. This provided an important space for circulation and dissemination of perspectives internationally on where the new poetry was heading. In the text in *IMAGE*, Garnier stated his belief in the radical autonomy of language and his sense of the experimentation, taking place at its roots, as being equivalent to space exploration (1964):

Let it be understood once and for all that language is an autonomous part of the world, including the other universes, as it is included by them; hence its authenticity, and all the poets are aiming towards the ideal point where the verb creates itself.

:

These forms of poetry do not merely explore with the help of linguistic postulates fixed once and for all in the way the surrealists did, first they isolate the language, then they modify it, shuffle it in its very foundations, they even destroy it and thus create the conditions of apparition if not of a new language (therefore of a new thought and a new man) at least a new art which by disturbing the foundations of language modifies man. ... returning, without the obstacle of a language settled and compulsory, to the roots, the energies and working for it with the help of the most modern techniques, like the cosmonaut in space.

Garnier captured here one of the primary poetic impulses of the period, that is, to explore the ‘roots’, or the ‘movement of language within’ a phrase used by Ian Hamilton Finlay in a letter to Garnier from September 1963, also printed in the same issue of *IMAGE*. In this Finlay said:

I wonder if we are not all a little in the dark, still as to the real significance of ‘concrete’ For myself I cannot derive from the poems I have written any ‘method’ which can be applied to the writing of the next poem; it comes back, after each poem, to a level of ‘being’ Just so, ‘concrete’ began for me with the extraordinary (since wholly unexpected) sense that the syntax I had been using, the movement of language in me, at a physical level was no longer there ... so it had to be replaced with something else, with a syntax and movement that would be true of the new feeling (which existed in only the vaguest way, since I had, then, no form for it)

¹¹Said by Philip Steadman, in conversation with author. January 2017.

This has echoes of Celan from his speech in Bremen about poetic language as ‘movement, you see, something happening, being en route, an attempt to find a direction ...’ (Klink 2000). Garnier had asked Finlay for his views on the benefits of theory within a context where experimentation in poetry was leading into spaces that were seemingly without boundaries or clear definition. Finlay’s response above conveys a phenomenological feeling of transition as well as resistance to overlaying any constructed theory. Nevertheless he did, in the end, agree to Garnier including his name in the list of those supporting his proposal to use the term *spatialist poetry* as a common heading for the following:

concrete poetry: working the language-matter freed from all representative duties

visual poetry: the word object and centre of energy

objective poetry: poem made object through the active collaboration of painters sculptors and musicians

mecaniste poetry: or poetry of permutations

phonic poetry: direct composition on a tape therefore an objectivation through mechanical means.

phonetic poetry: based on the phonemes, sonorous elements of the language uttered by the vocal organs of man and that are interpreted on the tape recorder.

Defining each of these in his own way, Garnier described these as ‘trends’, all of which involved ‘*objectivations of the language-universe*’. His text published in *IMAGE* also refers to poems as vibrations; earlier he, with his wife and partner in poetry, Ilse, had written of how they were ‘like waves, shooting about in the universe’.

Garnier’s ‘manifesto’ for spatialist poetry as a banner over all the other genres and sub-genres had been published earlier the same year in *Silâns*, a weekly magazine edited and produced by the artist Barry Flanagan at St Martins School of Art in London. Flanagan dedicated *Silâns* to ‘concrete poetry and its relations’. The text of the spatialist poetry manifesto reached his magazine via Henri Chopin, another French poet, who interestingly had told Garnier he would not sign the manifesto. However, the article in *Silâns*, headed INTERNATIONAL REVOLUTION IN MODERN LANGUAGES, is under his name, translated by Arlette Jackson. Chopin moved to live in England from 1965 and became a well-known figure in the network of relations around poets Bob Cobbing, dom Sylvester Houédard and many others in the experimental generation. Professor Jo Melvin at Chelsea College of Art reproduced *Silâns* in facsimile in 2011. In this she describes how Flanagan joined ‘a department with a strong interest in experimentation and enquiry’ and that the magazine ‘provided a vehicle to circulate concrete poetry within an art arena’. Flanagan managed to persuade the administrative staff to help with cyclostyling the copies. Sixteen issues were produced between October 1964 and June 1965. She cites John James, a poet and friend of Flanagan, on how ‘his circle of friends and associates’ reacted to receiving it every second Monday:

copies of *Silâns*

circulate from hand to hand among the poets

his influence & practice

touching and shaping the form of the work

a consequence a continuum

a writing outside literature. (Melvin 2011)

This idea of writing being *outside literature* is a very powerful one, reflecting the state of mind of many of those who were busily making experimental poems in visual, graphic and poetic form, for publication and exhibition in autonomous, self-organized, self-generated contexts, rather than following established routes or pursuing traditional outlets. This, if it was literature, was literature at a generative extreme.

Poem as material

Traversing these extremes, was poet, typographer and publisher Hansjörg Mayer, who moved from Stuttgart to London in 1966 and began to teach typographic design at Bath Academy of Art in Corsham. Mayer's work was already combining typographic expertise at a very high level with alphabetical, mathematical and aleatory processes, so evolving concrete poetry into highly original territories.

He became a significant crossover figure, traversing developments in England and in Germany and between graphic design and concrete poetry. His work reflected aspects of the controlled information aesthetics of Bense (which he had imbibed when studying informally with him at the Technische Hochschule in the late 1950s and early 1960s) and an experimental poetics that he pioneered on his own, combining exemplary fluency in typography with chance and random processes. Aged 22 in 1965, at Bense's Studiengalerie, he was given his first solo exhibition. It was named *typoetry*, a term generated by Haroldo de Campos, a member of the Noigandres group in Sao Paulo who had met Mayer there in 1964 and who subsequently christened him a *typoet* and his work as *typophagous*. In his letter printed in the catalogue for the exhibition de Campos said of Mayer, 'he eats reality with type'.

Adept in creating works that explored the material interfaces between ink, language, paper and the machinery of print, much of Mayer's work can be seen in the lineage of construction and constructivism, with an inventive interplay between language of form and technical experimentation. Simultaneously he had shown an intense interest in deconstruction, decomposition and in the live space between the work and its making. This has contributed to positioning him uniquely in between what has been called 'clean' or purist concrete poetry and hybrid or 'dirty' intermedia forms associated with fluxus artists often using text and improvisatory performance. Among these was leading fluxist poet Emmett Williams, with whom Mayer worked closely on several publications that sit in the interface between poem and artists book (Ferran 2017).

Work by Décio Pignatari was also included in the Cambridge 1964 exhibition. He was a designer as well as a poet and had also met Mayer during his visit to Brazil at the end of 1964. In an article called The Concrete Poets of Brazil published in the Times Literary Supplement (TLC) (1964) Pignatari declared that the poet was also 'a language designer'. He also said 'the alphabet is a computer'.¹² In this he was conceptually close to Mayer who regards the language of computation and the language of poetry as closely related. Mayer's typopoetical works often deployed mathematics where he would work within a

¹²Information provided by former student of Pignatari in emailed correspondence with author. August 2016.

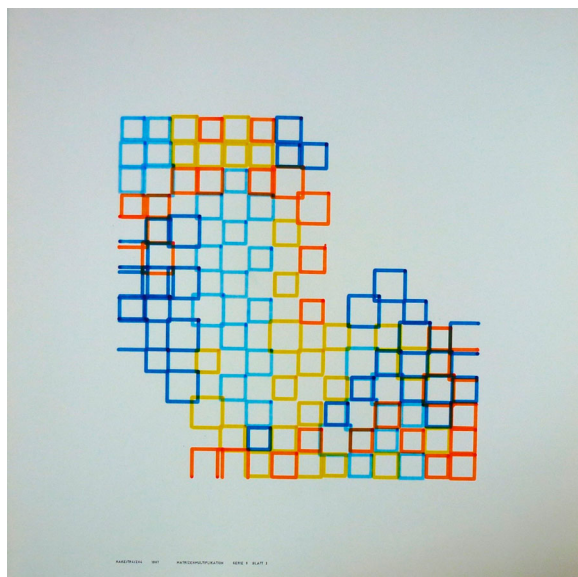


Figure 5. From *matrizen multiplakationen* Frieder Nake. Letterpress, computer plotter, program. Edition Hansjörg Mayer. 1967.

numerical constraint, usually linked to the number 26, the number of letters in the alphabet, or with subsets of 26. An early work from 1962–1963, 26 prints called *alphabet* have been much reproduced.

The radical conjunction of computation, typography and print was at the heart of a portfolio Mayer published under his *edition hansjörg mayer* imprint in 1967 with Frieder Nake. Mayer recognized that aleatory processes were at play in drawings made by the computer plotters used by Nake and so suggested they make a print portfolio together that would combine for the first time ever, letterpress typography, computer plotter drawings and a print out of a computer program. The end result was *matrizen multiplakationen*, the significance of which as an early meeting point between art, typography and computation has rarely been appreciated. At the time of writing it is on display at Tate Modern in London (Figure 5).

Mayer's imprint was an important publishing outlet for concrete and visual poetry and his use of the Futura typeface was influential on other poets who adopted it for the setting and design of their work. Stephen Bann, in his introduction to *Concrete Poetry: An International Anthology* (*London Magazine Editions* 1967), referred to Mayer as having developed a *grammar* of Concrete Poetry, bringing into clearest prominence the elements with which the poet must work. Mayer himself has spoken of Futura's uniqueness as a typeface pared to a modernist minimum, constructed of only line and circle. A related series of poem prints called *futura* were published between 1965 and 1968 featuring 26 works by various artists. Nake's *futura* was called *computer grafik*. Scottish poet, Edwin Morgan, made a work for the series called *emergent poems*. Mayer also worked on a poem print with Xisto, entirely composed of lines and circles, published as part of the *13 visuelle texte* portfolio (1964)¹³ (Figure 6).

¹³This work by Xisto will be on display in Spring 2017 at the Getty Institute in Los Angeles along with two other pieces from the *13 visuelle texte* portfolio.



Figure 6. Pedro Xisto Print from *13 visuelle texte* portfolio Edition Hansjörg Mayer, 1964.

Mayer made his condition of employment at Bath Academy of Art the purchase by its Directors, Clifford and Rosemary Ellis, of a new large proof press as well as the Futura typeface. Using this, he developed and published the third of his concrete poetry portfolios which innovatively scaled up the size of paper used for production of poems to wall poster size. He encouraged a group of graphic design students to work together with a collection of concrete and visual poets from Britain, Canada and the United States to typeset letterpress versions of poems into one 'edition' (now held by Tate as part of their Mayer collection). Poets contributing to this from the UK were Stephen Bann, Thomas A. Clark, Bob Cobbing, Ian Hamilton Finlay, John Furnival, dom Sylvester Houédard, Cavin McCarthy, Edwin Morgan and John Sharkey. An introductory text was written by Jasia Reichardt.

The work of both Bense and Mayer was included in Reichardt's exhibition *Between Poetry and Painting* held at the ICA in the autumn of 1965 which included lettrist works as well as concrete, semiotic, sound, spatialist and visual poetry. Reichardt invited dom Sylvester Houédard, a Benedictine monk and poet who produced work mainly on an Olivetti typewriter, to contribute an overview text for the catalogue. In the end this was a separate insert. Houédard had attempted the difficult task of a *Between Poetry and Painting* chronology. In this he stressed the primary influence of communication theory.

The work of both Bense and Mayer was referenced in the second of the two special features of the *TLS* published in London in 1964 focussing on literary avant-gardes internationally. Edited by John Willett and extremely wide-ranging in scope, *Any Advance the Changing Guard 2* showed intersections and correspondences between concrete and

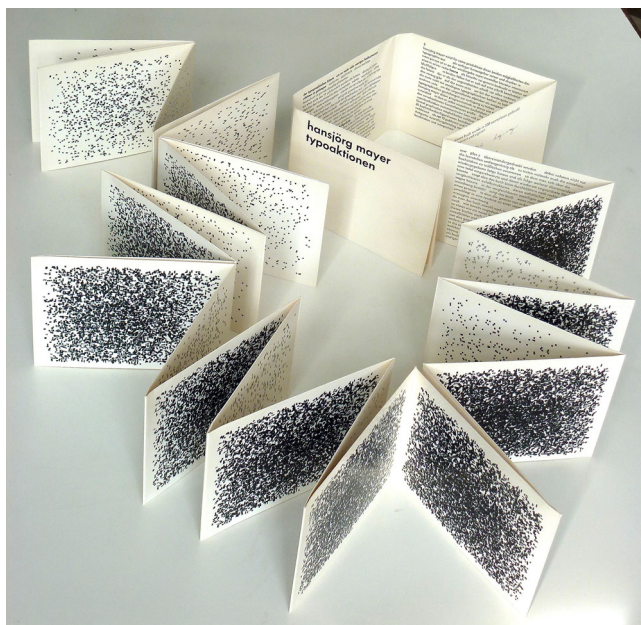


Figure 7. *typoaaktionen*. Hansjörg Mayer. Letterpress, Leporello Binding, 1967.

visual poetry with ideas from semiotics and emerging information theory. Willett made reference to the ‘text topology’ ‘word-counts’ and ‘text algebra’ of Bense and mentioned books by Diter Rot, with whom Mayer later worked very closely. He gave these as examples of those who were challenging the limitations of linear prose and aiming at a new synthesis between the literary and the visual.

In 1967 a work by Mayer called *typoaaktionen* (Figure 7) was featured on the front page of the *TLS* with a caption acclaiming it as an example of ‘radical superimposition’. In 2016 *typoaaktionen* was installed alongside *random superposition of zeroes and ones*, a new work inspired by Mayer’s original, made by a Cambridge researcher, as part of art and nanoscience exhibition held at the Maxwell Building at the University of Cambridge.

In 1964 the first of the two *TLS* features on avant-garde literatures focussed on UK and US-based writers and poets, including Houédard, who was also singularly interested in connections between computational language and poetry. He was the first in England to give lectures about concrete poetry and links to machines. His own works often called *typestracts* were usually produced on his typewriter in the small cell in the Abbey where he lived in Gloucestershire. He recognized that the movement (—the ‘turns’—) that kinetic poetry offered was a further step into a post-authorial void that Mallarmé had first signalled and that computers in potential offered a chance to take further. A prolific letter writer, he was often invited to provide introductory texts for concrete poetry festival catalogues that he wrote in characteristically hyper-textual, inventive language presciently with respect to the reductionist language now of texting and twitter.

Prompted by being published in the same issue of the *TLS*, Houédard wrote a letter to Margaret Masterman who had founded the Computer Language Research Unit in Cambridge several years earlier (Houédard 1966). His letter was subsequently published in the first issue of a new journal called *Theoria to Theory*, closely connected both to the

Language Research Unit and a group called the Epiphany Philosophers, that Masterman was part of, operating from the same address in Cambridge. Published under the heading – *Poetry Theory and Poetry Theoria*, his letter stated:

... I find all this area still unsatisfactorily mapped in british philosophy ... I mean ... if language is THERE to use ok ... but the need for new words is w/us all the time ... they don't come by analysis ... we can take the words & nonwords quark and antiquark & use them and make means things abt elementary properties ... but I'm thinking about a deeper problem (I think) abt the originating of language and communicating signs ... or does one just have to depend on the given & enlarge it?

Masterman had studied philosophy with Wittgenstein and with colleagues in the CLRU made a pioneering contribution to experimentation within the then emerging field of natural and machine language processing. In his letter Houédard also referred to the challenges of: '... getting machines to write tolerable conceptual and semantic associations & language models &c'. linking this to his experiments at the time in making in kinetic poetry with poets Kenelm Cox, John Furnival and Richard Loncraine:

... our own contribution ... here in the Cotswolds (furnival loncraine cox myself) has been (...) towards the possibility (via kinetic poetry) of machine semiotic poems in which NO lexical key is provided any more than when nice/nasty/white/&c clouds passes across ?yr sky (have the glosteshire group ('gloop') poets here produced art? Poems? Or a language? ... or is it that the poet constructs the MACHINE ... ie the machine IS the poem? ... (cf pierre albertbirot on the POET as the poem machine in grabinoulor).

Houédard also wrote a letter to Hansjörg Mayer shortly after meeting him at the *Between Poetry and Painting* exhibition opening. In this he told him about the Cambridge Language Research Project recommending that he make contact with them as they seemed to be the closest equivalent in England to what Bense was doing in Germany.

Cybernetic Serendipity, acknowledged by many to be the first major exhibition in the world of computer art, was organized at the ICA in London by Jasia Reichardt, in 1968. Reichardt recalled in the catalogue introduction that she had been inspired to do the exhibition by Max Bense when they met at the opening of *Between Poetry and Painting* at the ICA three years earlier. The exhibited works included *Computerised Haiku* which Margaret Masterman made in collaboration with Robin McKinnon-Wood, who was a founder of another pioneering organization called Systems Research Ltd. In a text published in *Theoria to Theory*, McKinnon-Wood and Masterman gave an extended account of their hypothesis and experiments (1967).

(ii) Algorithms (mechanical tricks) can also be used to produce a fully computerized poem. For instance, in the output given immediately below the machine has been (a) only to chose words beginning with the letter 's' and, (b) when there is a choice among 'S' words, to take the one whose second letter is nearest the end of the alphabet (and so recursively, if there is still a choice of words).

⋮

The fact that some of these algorithms of tricks produce quite good output highlights the known fact that traditional poetry also uses tricks of rhythm, rhyme and alliteration to allow words to combine more freely (because more mechanistically) than would be permitted by the stereotypy of prose.

VII. The role of the poet in computer poetry

It will be evident from the above that the poet programming a computer must: (i) set up the frame, (ii) create the thesaurus, (iii) devise any mechanical tricks (e.g. rhyming) with which he may desire to operate. ... He can, of course, be vastly more sophisticated than we have in setting up and varying his frame (a sonnet, for instance, is a sophisticated frame).

But the ultimate creative act, for the computer poet, lies in writing the thesaurus.

They end with a statement of differences between the concrete and the computer poet:

From the above it would provisionally appear that, whereas part of the motivation of the genuine concrete poet is to stream-line his own mind, so as to make his poem into something as like an algorithmically produced machine output as possible, the computer-poet on the contrary, tends to use the machine to create a profusion of new, surprising and unforeseen combinations of words which, without its help, he would not have thought of.

The editorial direction of *Theoria to Theory* was closely entwined with the interests of the Computer Language Research Unit and The Epiphany Philosophers, who were primarily interested in connections between religion and science. Early covers of the journal resembled visual poems (see [Figure 8](#)). In a text by Robin McKinnon-Wood called *Computer Programming for the Literary Laymen* (1967) he outlined some of the primary challenges facing anyone wishing to work with computer technology effectively in the mid-1960s. From his list he selected language as the most interesting problem and described how:

the first real development of computer languages came about when it was realised that the logic formerly embedded in a plug board by a set of physical wires could be stored in the machine's own store. From this there developed the concept of pure machine code. This is a code which on the very early machines was written directly in binary notion, that is using only noughts and ones, and this was stored in the store of the machine ...

He then outlined the introduction of punch-cards that meant there was now *a written language*, efficient for the machine but drudgery for the person writing it onto to the (then) recent stage of development – of writing assembly languages. He described this brilliantly:

An assembly language is a language in which each statement written corresponds directly with some binary code inside the machine; that is, some instruction which the machine can carry out and which it will obey whenever it is reached. In this sort of language, at least some of the characteristics of a human being are taken into consideration. For example, human beings like to write in symbols, such as sets of alphabetic characters, which can represent larger concepts than those possible in binary notation.

He then continued, explaining the limitations of assembly languages and why he and his colleagues were working on higher level programming languages to try to resemble natural languages, a challenge that is still current in the twenty-first century.¹⁴

From 1968 onwards computers began to be viewed in art as potential ideation tools, capable of process generation and not just as calculating machines. The computer artist and scientist Ernest Edmonds has written of his move between 1967 and 1968 from

¹⁴See Economist magazine, Technology Quarterly. 7th January 2017: 'Finding a Voice' on how computers "still don't understand the meaning of language.

Notes on contributor

Bronac Ferran is a curator, writer and doctoral researcher working on Hansjörg Mayer and the ‘typoetical revolution’ of the 1960s, exploring connections between code, design, language and poetry. Formerly Director of Interdisciplinary Arts, Arts Council England and Senior Tutor, Research, Innovation Design Engineering at the Royal College of Art, she has curated exhibitions about concrete and visual poetry, design and software-based art in Cambridge, Glasgow and London. She has written the first monograph about Hansjörg Mayer’s work, *The Smell of Ink and Soil: The Story of (Edition) Hansjörg Mayer* (König Books, March 2017). She guest co-edited this issue of ISR journal with Elizabeth Fisher.

ORCID

Bronac Ferran  <http://orcid.org/0000-0001-5052-3908>

References

- Adorno, W. Theodore. 1949. “Cultural Criticism and Society”, essay; reprinted in *Prisms*, 1955; also MIT Press, 1983.
- Bense, Max, and Elisabeth Walther. 1965. *Edition rot 19*. Work of Georg Nees. With text Projekter generativer Aesthetik by Bense. Stuttgart: Dr. E. Walther.
- Celan, Paul. 1986. *Gesammelte Werke*, Band 3. Suhrkamp Verlag.
- Chomsky, Noam. 1957. *Syntactic Structures*. The Hague: Mouton.
- Chomsky, Noam. 1965. *Aspects of the Theory of Syntax*. Cambridge: MIT Press.
- Edmonds, Ernest. 2013. “Moving Between Poetry and Code.” In *Visualise: Making Art in Context*, edited by Bronac Ferran, 65–71. Cambridge: Anglia Ruskin University.
- Edmonds, David, and John Eidinow. 2001. *Wittgenstein’s Poker*. London: Faber & Faber.
- Ferran, Bronac. 2016. “Re Verse Engineering: Poems on the Turn.” In *Engineering the Future*, edited by I. Papadimitriou, A. Prescott, and J. Rogers, 22–29. <https://guariento.github.io/Engineering-the-Future/04.html>.
- Ferran, Bronac. 2017. *The Smell of Ink and Soil: The Story of (Edition) Hansjörg Mayer*. Cologne: Buchhandlung Walther König.
- Flusser, Vilém. [1967] 2013. Concrete – Abstract (originally printed in the Suplemento Literário of O Estado de Sao Paulo in Da Religiosidade (Conselho estadual de cultura, Comissao de literature. Sao Paulo; English translation in *Extra-Disciplinary Spaces and De-Disciplining Moments (In and Out of the 30th Bienal de Sao Paulo)*; trans from Portuguese by Antonio Sergio Bessa OEI # 60–61 2013; 254.
- Flusser, Vilém. 1999. “Ethik im Industriedesign?” Copyright Bollman Verlag GmbH 1993; English translation “The Ethics of Industrial Design?” In *The Shape of Things: A Philosophy of Design*, 66–69. London: Reaktion Books.
- Fynsk, Christopher. 1994. “The Realities at Stake in a Poem. Celan’s Bremen and Darmstadt Addresses.” In *Word Traces: readings of Paul Celan*, edited by Aris Fioretos, 159–184. Baltimore, MD: John Hopkins University Press.
- Gomringer, Eugen. 1954. From Line to Constellation. A manifesto printed in *Augenblick* No. 2. Editor: Max Bense. Agis Verlag, Baden-Baden.
- Houédard, dom Sylvester. 1966. “Poetry Theory & Poetry Theoria.” In *Theoria to Theory*, Vol 1 First Quarter 1966, 6–9. Cambridge: The Epiphany Philosophers.
- Kac, Eduardo. 1991. Display Holography (Fourth International Symposium – Proc. SPIE 1600), edited by Tung H. Jeong, 229–236. Bellingham, WA: SPIE. <http://www.ekac.org/recent-experiments.html> as Recent Experiments in Holography and Computer Poetry.
- Kernode, Frank. 1963. “Between Two Galaxies.” Edited by Stephen Spender and Melvin Lasky. *Encounter* XX (2): 113.

- Klink, Joanna. 2000. "You. An Introduction to Paul Celan." *The Iowa Review* 30 (1): 1–18. Web. <http://ir.uiowa.edu/iowareview/vol30/iss1/2>, 6.
- Lutz, Theodore. 1959. "Stochastic Text." Edited by Max Bense. Published in *Augenblick* 4. Baden-Baden: Agis Verlag.
- Lyon, James K. 1983. "Poetry and the Extremities of Language: From Concretism to Paul Celan." *Studies in 20th Century Literature* 8 (1). Article 5. Accessed September 20, 2016. doi:10.4148/2334-4415.1131.
- McCaffery, Steve. 2013. "Politics, Context & the Constellation." *European Journal of English Studies* 7 (1): 10–22.
- McKinnon-Wood, Robin. 1967. "Computer Programming for the Literary Laymen II." *Theoria to Theory*. Oxford: The Pergamon Press for The Epiphany Philosophers.
- McKinnon-Wood, Robin, and Margaret Masterman (Cambridge Language Research Unit). 1967. "Computerized Haiku." *Theoria to Theory* Vol. 1 Fourth Quarter, 378–382. Oxford: The Pergamon Press for the Epiphany Philosophers.
- McLuhan, Marshall. 1962. *The Gutenberg Galaxy: The Making of Typographical Man*. Toronto: University of Toronto Press.
- Mellassoux, Quentin. 2012. *The Number and the Siren: A Decipherment of Mallarmé's Coup de Dés*. Translated by Robin McKay. Falmouth: Urbanomic.
- Melvin, Jo. 2011. *Silâns 1964–1965*. London: Plubronze Limited/Lethaby Press.
- Pignatari, Décio. 1964. The Concrete Poets of Brazil in *Any Advance The Changing Guard* 2 in Times Literary Supplement. Editor: John Willett.
- Steadman, Philip, ed. 1964. IMAGE Kinetic Art: Concrete Poetry issue, November.



Bridging the cultures: architecture, models and computers in 1960s Cambridge

Dean Hawkes

Darwin College, Cambridge, UK

ABSTRACT

In the 1960s a unique research centre was founded in the Department of Architecture at the University of Cambridge. Before that date research in architecture was fragmentary and consisted largely of individual studies of topics in architectural history. Under the direction of Sir Leslie Martin, who had been appointed Professor of Architecture in 1956, a group of young architecture graduates embarked on a programme of research in the newly established centre for Land Use and Built Form Studies. Informed by the interest in the idea of the 'model' that was prevalent across the disciplines in Cambridge at this time and by using the power of the University Mathematical Laboratory's 'Titan' mainframe computer, the group developed conceptual and mathematical models that operated across the range of architectural scales from building to city. This paper describes that work and sets it in the context of Leslie Martin's role in reshaping architectural education in Britain.

ARTICLE HISTORY

Received 22 August 2016

Accepted 16 December 2016

KEYWORDS

Architecture; models;
computers

Introduction

In 1956 Sir Leslie Martin ([Figure 1](#)) was appointed as the first Professor of Architecture at the University of Cambridge. There he began the transformation of the Cambridge Department of Architecture and, in a wider context, of architectural education in Britain. This essay charts these events and places particular emphasis on the work undertaken at the centre for Land Use and Built Form Studies (LUBFS), later to become the Martin Centre for Architectural and Urban Studies, in the period between its foundation in 1967 and Martin's retirement from the university in 1972. It was then that architectural studies benefitted from and participated in the interconnected themes of conceptual modelling and computer applications that were being widely explored in the university.

Early in his career Martin made distinguished contributions to architectural education and practice in Britain. He was appointed head of the Hull School of Architecture in 1934, at the age of 26 and held the post until 1939. During the Hull years Martin was joint editor, with Ben Nicholson and Naum Gabo, of *Circle: International Survey of Constructive Art* (Martin, Nicholson, and Gabo [1937] 1971). In this they brought together a remarkable collection of contributors, as the front cover shows ([Figure 2](#)), from a brilliant array of painters, sculptors, architects and writers. In 1939 he moved to London to

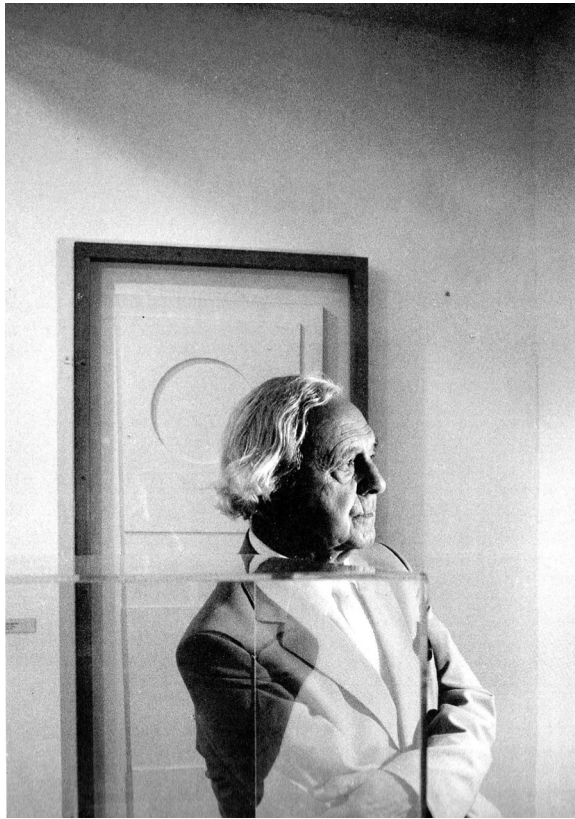


Figure 1. Leslie Martin Portrait. Photograph by Philip Sayer, 1983.

join the Architects' Department of the LMS Railway and in the post-war years he became Deputy Architect to the London County Council, where he led the team that designed the Royal Festival Hall, the centrepiece of the Festival of Britain in 1951. He succeeded Robert Matthew as Chief Architect at the LCC in 1953 and consolidated the reputation of the Architects' Department as one of the leading design offices of the post-war years.

The transformation of architectural education

In 1958 the Royal Institute of British Architects (RIBA) held a conference at Magdalen College, Oxford, to discuss the current state and future development of architectural education in Britain.¹ This was the first time the profession had held a formal discussion on the subject of education since the International Congress held in London in 1924. Fifty carefully selected delegates attended the conference. These came from home and abroad and from both education and the profession. Just three sessions were held, to discuss, respectively,

- (1) The needs of the profession and the community and the desirable standards;

¹See Martin (1958).

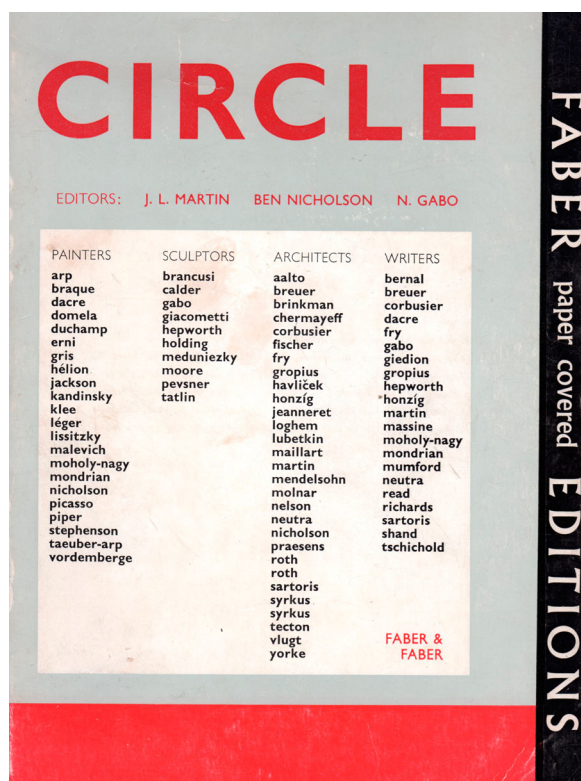


Figure 2. 'Circle' Front Cover – 1971 reprint. Reproduced by permission of Faber & Faber.

- (2) The means of education, the routes of entry into the profession and the standards that are being and could be achieved;
- (3) Developments of advanced training and research.

By all accounts Martin was one of the most influential contributors to the conference and, significantly, he was the author of the report in the *RIBA Journal*. This covers all three of the session topics, but it is the third, on *research*, that has proved to have the greatest influence on subsequent events in architectural education and which has particular bearing on the subject of this paper. The following extracts from the report convey the core of Martin's arguments on research.

The advancement of knowledge is not merely an ornament to a profession – it is its duty. This is the means by which the competence of the profession as a whole can be advanced. It is essential to improvement that a limited number of people should at some time devote themselves to advanced post-graduate study and research.

The evolution of post-graduate studies ... is a natural extension of higher standards of training within the schools. These studies are the means by which students of diversified interests extend their own minds and the boundaries of knowledge.

Research is the tool by which theory is advanced. Without it teaching can have no direction and thought no cutting edge. Without theory research is no more than a study of techniques and parcels of this or that form of knowledge. (Martin 1958)

In the decade following his arrival in Cambridge, Martin established his practice in the King's Mill at Great Shelford, four miles from the Department of Architecture. There he and his associates produced designs for a series of important buildings.² Slowly these projects began to benefit from the work of the Department's small band of post-graduate students. One of the most significant of these was David Croghan, who was working on daylight design and, as a central part of this work, designed and constructed a large 'Skydome', an instrument for measuring daylight in models of buildings, in the garden at the rear of the Department.³ Working in association with Martin's office, Croghan contributed daylighting assistance on projects such as the Manor Road Libraries at Oxford, 1960–1964, and the University Zoology and Psychology Laboratories, also at Oxford, 1963–1971. He also made a contribution on the daylighting design of the extension to the Department of Architecture that was built in 1957–1959 to the design of Colin St John Wilson and Alex Hardy (Croghan 2015). This period also saw a small increase in the number of PhD students in Architecture at Cambridge, who worked on a range of topics in history, theory and building science.⁴ The most significant event, however, occurred in 1967, when Martin obtained three externally-funded research grants to fund research teams to work on complementary projects covering three distinct, but inter-connected scales of inquiry. The projects were, in ascending physical scale: the *Offices Study* at the scale of the individual building, the *Universities Study*, where the focus was on the physical accommodation of a large, complex public institution, and finally the *Urban Systems Study* in which the focus was on the entire city. Thus began the centre for Land Use and Built Form Studies and the work moved into new methodological territory.

Background: models and computers

The background to the work of LUBFS was implicitly set out by Martin in a paper he delivered at the RIBA in January 1967 that was later published in full in the *RIBA Journal* (Martin 1967). Taking his cue from Alfred North Whitehead (Whitehead 1929) and the distinction he drew between *practical* and *speculative* reason, Martin argued that in architecture,

... the rational understanding of a problem and the extension of this into speculative '(intuitive) thought is one single process: that is, that thought and intuition are not opposed, but complementary.

In his concluding paragraph Martin made, in my view, a key statement in relation to the future work of LUBFS.

The ultimate problem for the profession is that of setting out the possibilities and choices in building an environment. And in that field the crisis will not be solved by technical advance alone or by picturesque images. At bottom it is a crisis of lack of understanding. Our task is to try to make that understanding more complete.

Armed with these broad principles and with the funding from three research grants Martin gathered a group of young researchers, all of whom, including the present

²See Martin (1983).

³See Croghan (1964).

⁴Amongst these one of the most important was Peter Eisenman, who taught in the Department and was awarded his PhD for his dissertation, 'The Formal Basis of Modern Architecture' in 1964. This was published in facsimile by Lars Müller Publishers, Zurich, 2006.

author, were architecture graduates.⁵ There was no precedent for a research undertaking of this scale in architecture. The earlier work in history, theory and building science was undertaken by ‘lone scholars’ using the methods of the humanities and applied science, but the new tasks required a completely different approach. In reviewing the situation that confronted us, Philip Steadman one of the founder members of LUBFS, has described how, as a student in the Department between 1960 and 1965, he experienced “... an orthodox Modernism, mingled with some remnants of Beaux Arts methods.” He also recalls being taught in the design studios by Colin St John (Sandy) Wilson, Colin Rowe and Peter Eisenman. He then refers to the “... intellectual ferment (in the wider university) around mathematical modelling in the social sciences ...” and, of crucial importance, to the availability of the University’s ‘Titan’ mainframe computer (Steadman 2016).

As we began our work in 1967 a number of books by established Cambridge academics from across the disciplines were identifying the potential of ‘models’ as tools in research. Mary Hesse from the Department of the History and Philosophy of Science published an elegant ‘slim volume’, *Models and Analogies in Science* (1966). From Economics came Richard Stone’s *Mathematics in the social sciences, and other essays* (1966) and Richard Chorley of the Department of Geography, in collaboration with Peter Haggett of the University of Bristol, co-edited *Models in Geography* (1967). A further inter disciplinary inspiration came from David Clarke’s *Analytical Archaeology* (1968). Hesse’s book was concerned with the debate between two conceptions of the model in the execution of science, the *abstract and systematic* versus the *mechanical*. This was distant from our more pragmatic objectives in architecture and urbanism, but provided intellectual stimulus and encouragement in finding the way forward.

Stone’s writings reinforced the ideas that systematic methods had validity across the disciplines and Chorley and Haggett’s collection of essays on the use of models in geography came closer to our territory. Of particular value was the editors’ joint introductory essay, ‘Models, Paradigms and the New Geography’ (1967, 19–42), in which they reviewed terminology and definitions across what was already a well-established field. Of particular help were clarifications such as

... a model can be a theory or a law or an hypothesis or a structured idea. It can also be a synthesis of data. Most important from the geographical viewpoint, it can also include reasoning about the real world by means of translations in space (to give spatial models) or in time (to give historical models).

Also in 1967 the distinguished biologist, turned philosopher of science, P.B. Medawar, published a collection of essays, *The Art of the Soluble* (1967). The last two of these essays seemed to me to be particularly relevant, “Two Conceptions of Science” and “Hypothesis and Imagination”. Both touched upon the question of the relation between *practical* and *speculative* reason that Leslie Martin had broached in his RIBA lecture. I was and remain struck by the following statement from the first of these:

The factual burden of a science varies inversely with its degree of maturity. As a science advances, particular facts are comprehended within, and therefore in a sense annihilated

⁵They were: Lionel March, who read both Mathematics and Architecture at Cambridge, and four other Cambridge Architecture graduates, Nicholas Bullock, Peter Dickens, Philip Steadman and Philip Tabor, plus Marcial Echenique, who had studied Architecture at Santiago, Chile and Barcelona and, finally, Dean Hawkes who studied at Manchester and came to Cambridge in 1965 to join Croghan in the daylighting research. These were soon joined by other key contributors including architects David Crowther and Walton Lindsey on the Urban Systems work and, crucially, computer scientists, Crispin Grey, Janet Tomlinson and Richard Stibbs, both from the Mathematical Laboratory, who provided vital help.



Figure 3. TITAN computer. Cambridge Mathematical Laboratory. Copyright, Computer Laboratory, University of Cambridge.

by, general statements of steadily increasing explanatory power and compass – whereupon the facts need no longer be known explicitly, i.e. spelled out and kept in mind. In all sciences we are being progressively relieved of the burden of singular instances, the tyranny of the particular. We need no longer record the fall of every apple.

In contrast to the fragmentary state of previous research in architecture, what Martin had described in the report on the Oxford Conference as, ‘parcels of this or that form of knowledge’, all-encompassing statements such as this hinted at a new way forward.

The other significant influence on our work was the availability in Cambridge of a large mainframe computer. The background to this began in 1937, when the Cambridge Mathematical Laboratory (later renamed the Computer Laboratory) was founded, under the direction of Professor J. E. Lennard-Jones. The aim was to provide computers to serve the needs of the University. Following World War II, during which the Laboratory had worked under the Ministry of Supply, it returned to its original work with Maurice V. Wilkes, appointed Acting Director in 1946. The Laboratory built its first computer, EDSAC (Electronic Delay Storage Automatic Calculator) that first ran a programme in May 1949. Throughout the 1950s this machine was widely used by science departments in the University and was replaced in 1958 by a much-improved machine, EDSAC II. In 1964 this was in turn replaced by a much more powerful machine, ‘Titan’.⁶ This was housed in a Victorian building on Corn Exchange Street on the edge of the New Museums Site of science departments, amongst which was the Cavendish Laboratory. The machine occupied a large, air-conditioned room and was attended by a priesthood

⁶See Wilkes (1985), for an account of these events.

of white-coated technicians (Figure 3). In March 1967, the Laboratory made the first experimental runs of an on-line, multiple-access system for ‘Titan’ that allowed simultaneous access to the machine by a number of users (Wilkes 1973). This became fully operational, with 64 remote terminals made available throughout the University, in 1968, just as the founders of LUBFS were making their first, tentative steps in computing.

LUBFS – the founding studies

Before describing the work of the three founding studies at LUBFS, it is necessary to explain the origin of this title. It derives from the background research carried out by Martin and March in studies for the redevelopment of the Whitehall district of London as the centre of national government (Martin, March and Taylor, 1965). In these the properties of three distinct forms of development – ‘built forms’ – were evaluated. These were defined as *pavilions*, *streets* and *courts* (Figure 4). The studies revealed that the court form

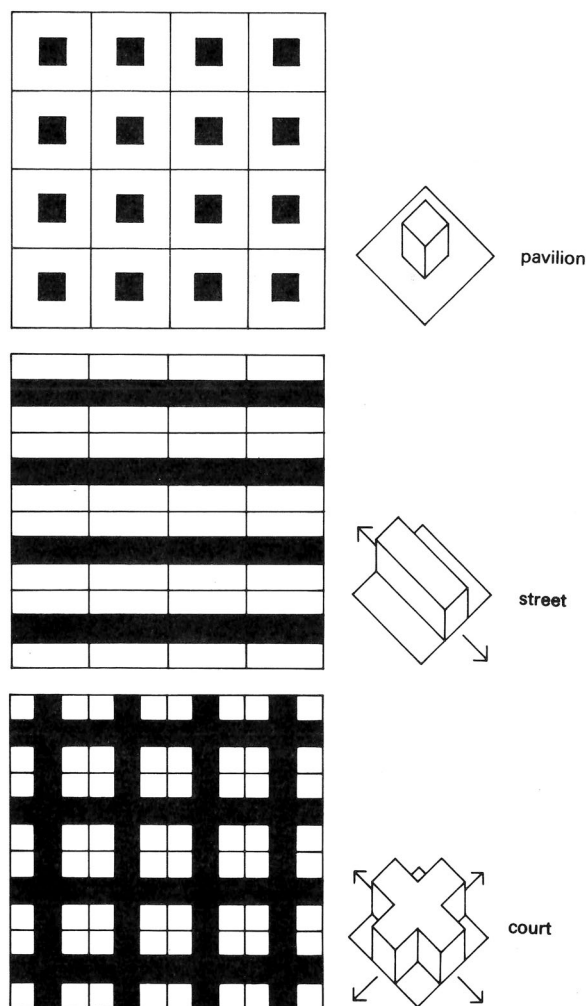


Figure 4. Land Use and Built Forms. Generic studies, 1966.

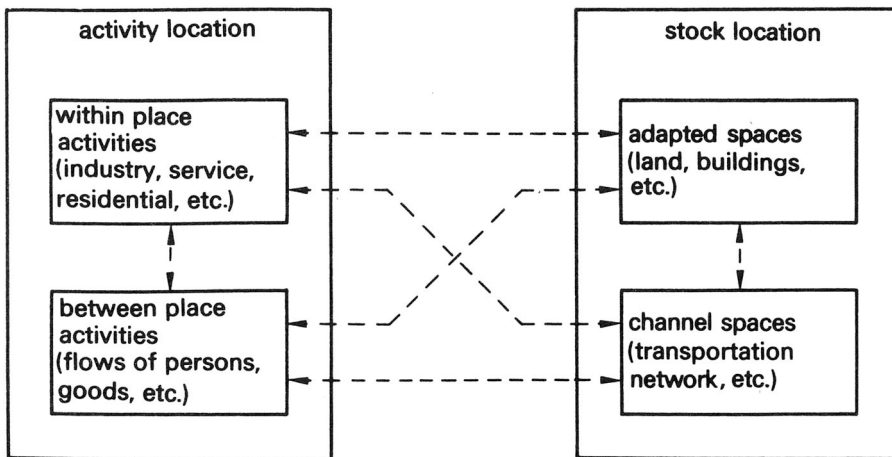


Figure 5. LUBFS. Urban Systems Study. Interaction of the components of the urban spatial structure.

offers greater land use efficiency, *density*, than a tower. In 1966 they were published as, 'Land Use and Built Form Studies', in the journal *Cambridge Research* (Martin and March 1966), thus defining the overall identity of the new centre.

The three inaugural projects that allowed LUBFS to come into being, *Offices*, *Universities* and *Urban Systems*, respectively, represented a continuum of scale from the individual building as an element of the city, to the public institution and its accommodation, to the city as a whole. This invested the work with a degree of overall coherence, which was reinforced by the shared interest within the group in the potential of models in defining conceptual frameworks across all scales of investigation and the possibilities that were offered by applying the computer to these problems.

The nature of the original work may best be represented by the system diagrams of the various models developed by the three studies. The Urban Systems Study had valuable precedent in work from North American scholars, particularly that of I.S. Lowry, whose 1964 model of Pittsburgh was an acknowledged point of departure (Crowther and Echenique 1972). At its core this model represented the interaction of activities and the building stock of a city, represented in its simplest form in a clear diagram (Figure 5). A more complex representation was given in an elegant flow diagram (Figure 6) published in the paper, 'A structural comparison of three generations of New Towns' (Echenique, Crowther, and Lindsay 1969). This presented the results of a complex analysis, made by

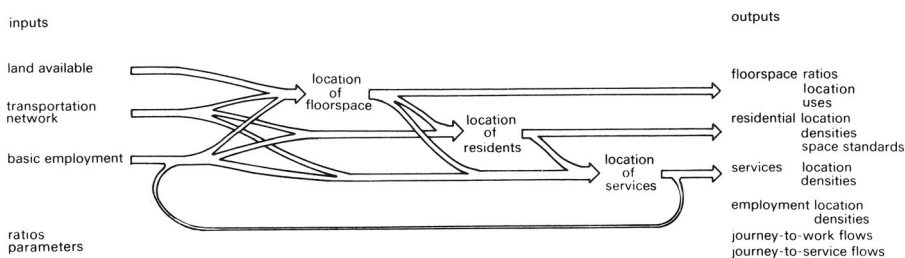


Figure 6. LUBFS. Urban Systems Study. Flow diagram of the simple static model, showing inputs and range of outputs.

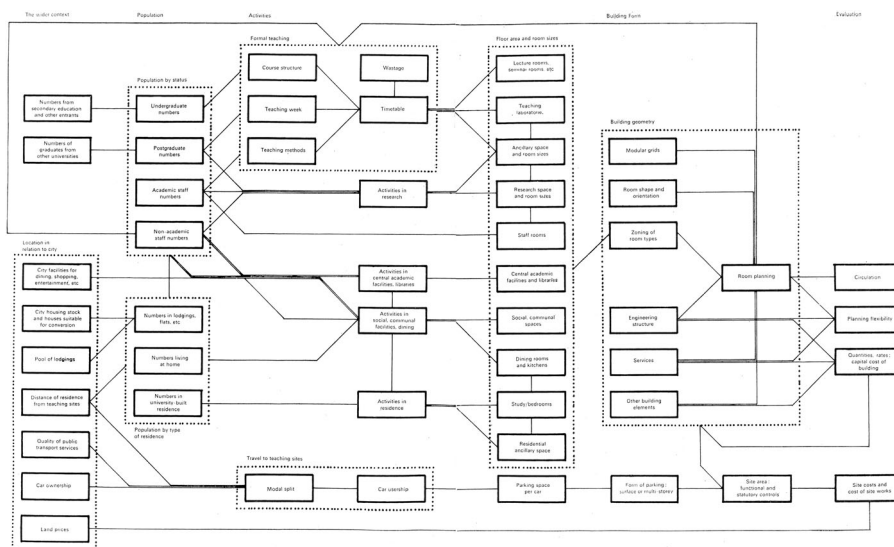


Figure 7. LUBFS. Universities Study. 'Network' drawing of a model for university planning.

running the model on 'Titan', of the implications of the different spatial characteristics of four English towns; Reading, Stevenage, Hook and Milton Keynes. A project of this scope would have been inconceivable without such computing power.

The Universities Study worked at the scale of the 'urban sub-system', which they defined as, 'the grouping of activities and buildings that are built up around the developing universities (Martin and March, 1972, 109). In the first stages of this project the team proposed a comprehensive conceptual model of the sub-system as it related to university planning (Figure 7) (Bullock, Dickens, and Steadman 1968). This identified three distinct categories of information; *The wider context*, *Population* and *Building type* and indicated connections or relationships between a complex of parameters within each. This was, perhaps, the most ambitious such representation to be produced in the early years of LUBFS. This model was never fully implemented mathematically as a computer model, but a number of what may be described as 'sub-models', conceived within the overall structure, were constructed, programmed and run on 'Titan'. One of these was a model that simulated day-to-day activities within a university. This was based on precedents on stochastic modelling of activities, most from North America. A worked example simulated the activities of a 10% sample of the students of a university of 3000 students as they moved between a number of locations over a 24 hour period (Figure 8) (Bullock, Dickens, and Steadman 1972).

The work of the Offices Study focussed on two different aspects of the design of this building type. First was analysis of route patterns in large buildings, 'Traffic in Buildings'. The second was analysis of the environmental performance of similar buildings. Philip Tabor undertook the former work. He began by making a comprehensive review of the emerging literature on the application of computer methods in the planning of buildings (see, for example, Whitehead and Eldars 1965; Beaumont 1967). He then executed an extensive series of modelling studies, using 'Titan', in which he evaluated the alternative circulation patterns in alternative building plans, each with the same floor area (Figure 9) (Tabor 1976). In this work he was assisted by Richard Stibbs, a computer scientist, who had joined LUBFS from the Mathematical

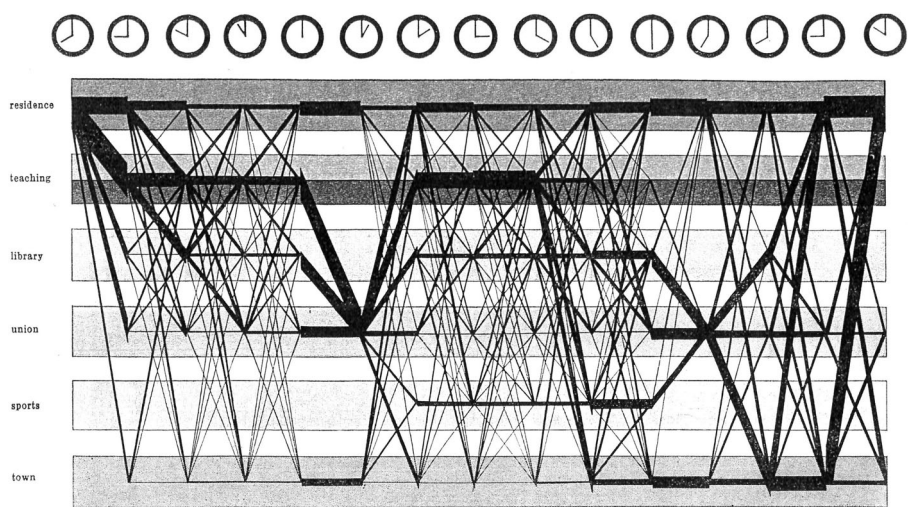


Figure 8. LUBFS. Universities Study. Diagrammatic presentation of the results of a large-scale simulation of student activities.

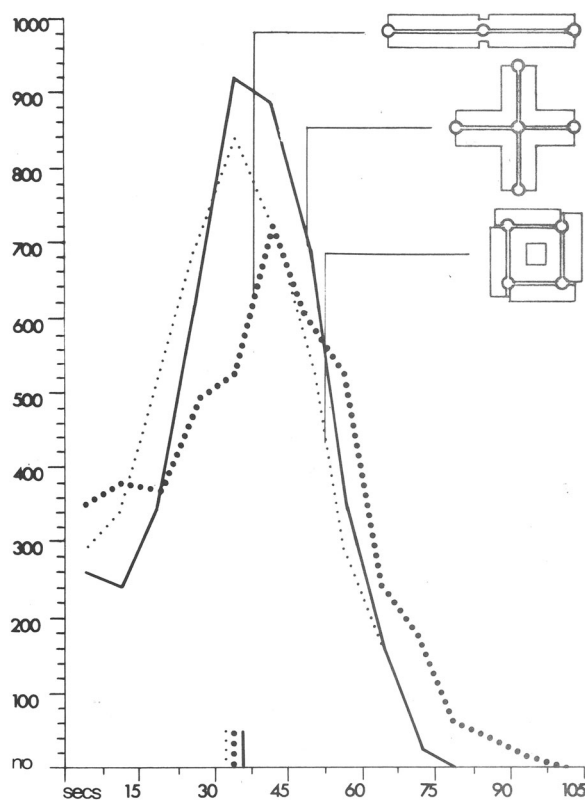


Figure 9. LUBFS. Offices Study. Graphic analysis of circulation in alternative built forms.

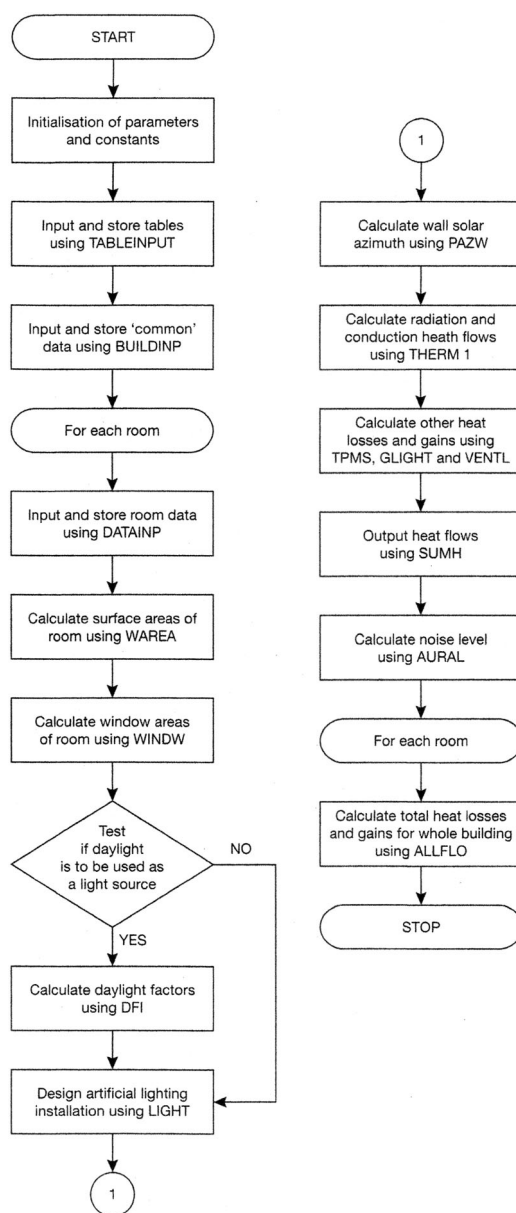


Figure 10. LUBFS. Offices Study. Flow chart of Cambridge Environmental Model.

Laboratory and played a key role in the work of the Offices Study and of the wider group. The environmental studies, that I initiated, had their basis in work in the physics of heat, light and sound as this related to the performance of buildings. Much of the fundamental work originated at the Building Research Station, a government funded research institute and which had strong groups working across the field of building physics.⁷ The outcome of this work

⁷See Lea (1971). Figures at BRS whose work was directly influential on the environmental work at LUBFS were: E. Danter for his work on periodic heat flow, R.G. Hopkinson and his group for their fundamental work on the calculation of daylight in buildings, and P.H. Parkin and H.R. Humphries in acoustics.

was the Cambridge Environmental Model, a large-scale computer model that ran on ‘Titan’ and incorporated a model of the form and construction of buildings and their immediate surroundings, a file of climate data and a series of algorithms that calculated quantities of heat, light and sound within the building described and of energy consumption totals for all seasons of the year (see Hawkes 1976). The general scope of the model is indicated in the generic flow chart (Figure 10).

Postscript

Looking back at this work after fifty years, I am struck, perhaps even surprised, by the boldness with which we young architects plunged into the uncharted waters of models and computers. As Philip Steadman has written (2016), we were all products of an architectural education, whether in the Cambridge school or elsewhere, which conformed to the general pattern that centred on the design studio, supplemented by courses in the history of architecture, building technology and professional practice. But, in the special circumstances that emerged in 1960s Cambridge, we embraced ideas and tools that were seemingly unrelated to this background. In my view and experience the enthusiasm and leadership of Lionel March, both mathematician and architect, and formally designated as Director of LUBFS, provided the day-to-day stimulus. He inspired us to read the books and to attend classes on computer programming in the strange and wonderful world of the Mathematical Laboratory. As just a small instance of the atmosphere in which we worked, I recall hurrying to show him the computer printout on the morning when my algorithm that calculated the shadows cast by the sun across the façade of a building ran successfully for the first time. He shared in my delight at this now seemingly simple task, but then a great step towards the application of the computer in architecture.

But standing behind all this was the presence of Leslie Martin. His influence, following his appointment at Cambridge in 1956 and his contribution to the Oxford Conference of 1958, established the platform from which research could move on from its previous sparse and fragmentary state. In 1973, the year after his retirement from the Department, Martin was awarded the Royal Gold Medal for Architecture by the RIBA. His address at the award ceremony on 12th June 1973 had the title, “The bridges between the cultures”. In concluding this wide-ranging review his life’s work as practitioner and academic, Martin turned to this fundamental question of architectural education.

... I know of no other university subject in which students need not start by acquiring a body of knowledge. Architecture is potentially a very complete educational process because it requires students to learn by recognising problems, by identifying them, by analysing and evaluating their various parts, and then bringing everything together in final solutions. Moreover, in doing all this, students can take part in a collective effort in which comparative analysis becomes possible. It is the work of my students, more than anything else, that has widened my understanding of the range of our subject. And when I have seen it developed by special studies at an advanced level, I am astonished by the skill and capacity that is being developed at every level. (Martin 1973)

In 1974 LUBFS was renamed the Martin Centre for Architectural and Urban Studies. This was in part in recognition of the immense contribution Martin had made to the

Department, but was also an acknowledgement that the research was expanding into new areas of study that reached beyond the original terms of reference. Fifty years on the Martin Centre has seventy researchers of whom over thirty are PhD students. The research ranges in subject from History/Theory to Sustainable Building and Cities and Transport. This marks the fulfilment of those tentative beginnings in 1967. Architecture is now a mature discipline. To return to P.B. Medawar's inspiring essay, we need no longer record the fall of every apple.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributor

Dean Hawkes is emeritus professor of architectural design at Cardiff University and an emeritus fellow of Darwin College, Cambridge. He researched and taught at the Department of Architecture at Cambridge from 1965 to 1995. He was a founder member of the centre for Land Use and Built Form Studies and Director of the Martin Centre for Architectural and Urban Studies from 1978 to 1987.

References

- Beaumont, M. J. S. 1967. "Computer Aided Techniques for the Synthesis of Layout and Form with Respect to Circulation." *PhD thesis*, University of Bristol, Department of Engineering.
- Bullock, Nicholas, Peter Dickens, and Philip Steadman. 1968. "A Theoretical Basis for University Planning." *Land Use and Built Form Studies* Issue 1. Cambridge: University of Cambridge. Reprinted in Martin, Leslie and Lionel March, eds. 1972. *Urban Space and Structures*. Cambridge, Cambridge University Press, 113–128.
- Bullock, Nicholas, Peter Dickens, and Philip Steadman. 1972. "The Modelling of Day-to-Day Activities." In *Urban Space and Structures*, edited by Leslie Martin and Lionel March, 129–157. Cambridge: Cambridge University Press.
- Chorley, Richard J., and Peter Haggett, eds. 1967. *Models in Geography*. London: Methuen & Co.
- Clarke, David. 1968. *Analytical Archaeology*. London: Methuen & Co.
- Croghan, David. 1964. "The Design of an Artificial Sky." *The Architects' Journal* 140: 215–220.
- Croghan, David. 2015. *Daylighting by Design: Some Early Examples of the Use of an Artificial Sky*. Cambridge (unpublished text).
- Crowther, David, and Marcial Echenique. 1972. "Development of a Model of Urban Space and Structure." In *Urban Space and Structures*, edited by Leslie Martin and Lionel March, 175–218. Cambridge: Cambridge University Press.
- Echenique, Marcial, David Crowther, and Walton Lindsay. 1969. "A Structural Comparison of Three Generations of New Towns." *Land Use and Built Form Studies. Working papers* no. 25. Cambridge, University of Cambridge. Reprinted in Martin, Leslie and Lionel March. 1972. *Urban space and structures*. Cambridge: Cambridge University Press, 219–259.
- Hawkes, Dean. 1976. "Modelling the Environmental Performance of Built Forms." In *The Architecture of Form*, edited by Lionel March, 185–238. Cambridge: Cambridge University Press.
- Hesse, Mary. 1966. *Models and Analogies in Science*. Indiana: University of Notre Dame Press.
- Lea, F. M. 1971. *Science and Building: A History of the Building Research Station*. London: HMSO.
- Martin, Sir J. L. 1958. "Oxford Conference on Architectural Education." *Journal of the Royal Institute of British Architects* 65: 279–282.
- Martin, Leslie. 1967. "Architects' Approach to Architecture." *Journal of the Royal Institute of British Architects* 74: 191–200.

- Martin, Leslie. 1973. "The Bridges between the Cultures: The Royal Gold Medal in Architecture Address." *Journal of the Royal Institute of British Architects* 80: 381–388.
- Martin, Leslie. 1983. *Buildings and Ideas 1933–83: From the Studio of Leslie Martin and His Associates*. Cambridge: Cambridge University Press.
- Martin, Leslie, and Lionel March. 1966. "Land Use and Built Forms." *Cambridge Research* 2.
- Martin, Leslie, and Lionel March. 1972. *Urban Space and Structures*. Cambridge: Cambridge University Press.
- Martin, Leslie, Lionel March, and Jeremy Taylor. 1965. *Whitehall: A Plan for a National Government Centre*. London: HMSO.
- Martin, J. L., Ben Nicholson, and N. Gabo, eds. 1937. *Circle: International Survey of Constructive Art*. London: Faber and Faber. Reprinted 1971.
- Medawar, P. B. 1967. *The Art of the Soluble*. London: Methuen & Co.
- Steadman, Philip. 2016. "Research in Architecture and Urban Studies at Cambridge in the 1960s and 1970s: What Really Happened." *The Journal of Architecture* 21 (2): 291–306.
- Stone, Richard. 1966. *Mathematics in the Social Sciences, and Other Essays*. London: Chapman and Hall.
- Tabor, Philip. 1976. "'Analysing Communication Patterns' and 'Analysing Route Patterns'." In *The Architecture of Form*, edited by Lionel March, 284–351 and 352–378. Cambridge: Cambridge University Press.
- Whitehead, Alfred North. 1929. *The Function of Reason*. Princeton: Princeton University Press.
- Whitehead B., and M. Z. Eldars. 1965. "The Planning of Single-Storey Layouts." In *Building Science*, edited by A. W. Hendry, vol 1, 127–139. Oxford: Pergamon Press.
- Wilkes, M. V. 1973. "The Cambridge Multiple-Access System in Retrospect." *Software: Practice and Experience* 3: 323–332.
- Wilkes, Maurice V. 1985. *Memories of a Computer Pioneer*. Cambridge, MA: MIT Press.



Art That Makes Itself and other generative beginnings: Paul Brown interviewed by Bronač Ferran

Paul Brown^a and Bronač Ferran ^b

^aDepartment of Informatics, University of Sussex, Brighton, UK; ^bDepartment of English and the Humanities, Birkbeck, University of London, London, UK

ABSTRACT

In an interview with Bronač Ferran, Paul Brown recalls his involvement with people and places formative in shaping important countercultures of the 1960s and his long-term interest in generative art processes. He describes his interests since childhood in art and technological thinking which was further inspired by the Cybernetic Serendipity exhibition at the ICA in 1968. Shortly before seeing this, he had left art school, discouraged by a tutor who, on seeing a system-based drawing he had made, told him he would never become an artist. This exit proved liberating as Brown swiftly went on to forge an autonomous route working on light-shows and other multimedia events particularly at The Blackie in Liverpool, which had links to Drury Lane Arts Lab and other centres of radical experimentation. He returned to college in the early 1970s to study art and computing which became the basis of his successful art career.

ARTICLE HISTORY

Received 6 December 2016
Revised 13 December 2016
Accepted 14 December 2016

KEYWORDS

Paul Brown; Brown & Son;
Daniel Brown; Art That Makes
Itself; The Blackie; light-
shows; computer-based art;
generative art; systems art;
fractal systems; conceptual
art; Art Concret

Interview

Bronač Ferran: Paul, along with your son Daniel, you chose *Art That Makes Itself, Brown & Son: Purveyors of Digital Images since 1968* as the title of your recent book and exhibition.¹ Was this phrase ‘art that makes itself’ linked primarily to digital technology or did it connect back also to earlier 20th century art processes?

Paul Brown: A bit of both: art, maths and physics were my three best subjects at grammar school and both my father and headmaster encouraged me to become an architect or engineer. But I was adamant that I wanted to be an artist and then, when I went to art school I felt inhibited by my own constant doubts regarding my right to make a statement. The 1960s were a time of major revolution in the arts and many traditional critical frameworks were being questioned, undermined and replaced. Art as self-expression became very unfashionable – art was about absolute values: this was a time of ‘60s grand narratives and high modernism. Conceptual Art, Art Language, Art & Destruction and, especially for

CONTACT Paul Brown  paul@paul-brown.com  Department of English and the Humanities, Birkbeck, University of London, 43 Gordon Square, London WC1H 0PD, UK

¹*Brown & Son: Art That Makes Itself* was an exhibition at Watermans Art Centre, London, 31 March–31 May 2016. Studio International's review and interviews the two artists can be seen here: <http://www.studiointernational.com/index.php/brown-and-son-art-that-makes-itself-review-paul-daniel-digital-computer>

© 2017 Institute of Materials, Minerals and Mining Published by Taylor & Francis on behalf of the Institute

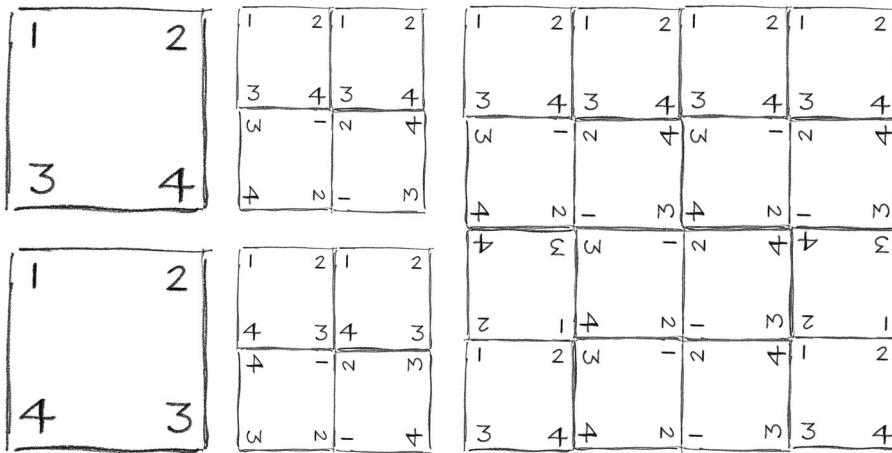


Figure 1. Untitled drawing, 1967 – redrawn 2015.

me, Art Concret emerged as the dominant dialogues that influenced my thinking during my late teens and early twenties.

One of the pieces in the show is a reconstruction of a drawing that I did during that period at art school (Figure 1). After showing it at the annual crit just a few weeks later – in the third year of a four-year programme – the head of year suggested that I wasn't cut out for a career in the fine arts and should look elsewhere for my future. You will see from the drawing that it is *very* conceptual. It is just numbers written down on a piece of paper – not a drawing in the sense of being a representation or even an abstraction – it's a symbolic image, a diagram. It is also time-based and shows successive iterations of a symbol manipulation process. This is interesting because at that time I had no idea how computers worked – it was only later that I discovered that this drawing used a similar kind of symbolic processing to what computers employ. I was very excited by this work because it showed me my own voice as an artist for the first time. So the response of my tutors intrigued me because this same drawing proved to *them* that I wasn't an artist!

I knew about computers: my father and I kept a scrapbook on technology from when I was just a toddler. When the hovercraft was invented we cut that out – Sputnik then Laika (the first dog in space) and Yuri Gagarin – all that would go in the scrapbook. And, of course, lots of cuttings about the new-fangled computing machines. In 1967 when I made that drawing I wasn't quite sure how computers would affect me but then, just a year later, I saw *Cybernetic Serendipity*.² I am typically somebody who can whizz around an exhibition in no time at all but I spent almost three days at *Cybernetic Serendipity*. Like many of my contemporaries (who I didn't get to know until later) I was completely enthralled and I also knew that I had found my medium. I started searching for an opportunity to learn how to use computers – something that wasn't that easy to find in those days.

²*Cybernetic Serendipity*, curated by Jasia Reichardt, was the first historical review of artists and scientists using computers for creative ends. Held at London's Institute for Contemporary Art in October 1968 it had a profound influence on many young people who saw it.

One of the things that attracted me to computers (getting back to answering your question) was rejection of art as self-expression. I felt that writing a program would allow me a level of detachment from the work – I was writing a logical symbolic structure and that process, that system was generating the artwork. Unlike Picasso with a pencil and paper, I was not making new unique marks. I was deliberately detaching myself from that level of personal contact with the media and that was very attractive to me. It is worth commenting that another dominant meme in the '60s was art that undermined the sense of uniqueness that was (and is still) exploited by the commercial artworld to commodify artworks – the works of the late Gustav Metzger and Stuart Brisley come to mind.

I began to explore and discovered that I could enrol as a student of art in the newly formed Polytechnics and then ask the Engineering and Mathematics Departments (computer science didn't yet exist as a discipline at many tertiary establishments back then) to teach me how to program computers and build digital circuits. As Catherine Mason relates in her book 'A Computer in the Art Room' (2008) a few artists all over the UK were taking advantage of this new opportunity. I returned to college as a mature student and did a three-year undergraduate degree at the Art School of Liverpool Polytechnic (now Liverpool John Moore's University – LJMU). David Saunders, a member of the Systems Group, taught there and introduced me to the new EXPerimental programme being set up in the postgrad department of the Slade School of Fine Art by another Systems Group member – Malcolm Hughes.

I began to develop the idea that I wrote a program and the program makes the art. Essentially I was creating a procedure – a set of rules – and it was this system that generated the artwork. This was, in fact, another important '60s meme: the Systems Group founded by Jeffrey Steele were an influential part of the global systems/conceptual movement that included artists like Peter Struycken in the Netherlands as well as US artists like Sol Lewitt (who was a major influence for me) and Dan Flavin. Then when I went to the Slade in 1977, Malcolm was head of postgraduate and almost all of our visiting lecturers were from the systems movement. The book we did that was published by MIT a few years ago (Brown, Gere, Lambert and Mason, 2009) had a chapter by me about this³. Francesca Franco is also writing about this in the book she is currently doing with Ernest Edmonds looking at links between the Systems Art and the emergence of British computer art.

BF: *Did you also see a lineage back to what Brion Gysin, Williams Burroughs and others were doing in the '50s, and to D'Arcy Thompson's book much earlier?*

PB: For a while I experimented with typographically based concrete poetry and utilised cut-up techniques. Gysin and Burroughs were influences (we called our lightshow – see below – *Nova Express* after Burroughs' book of that name).⁴ As a teenager in Manchester I hung out at the Avgard Gallery, a beatnik coffee shop – it was one of the first places in the UK to play Bob Dylan (as US import LPs) and later considered myself to be a hippie and identified strongly with the '60s underground movement. When I was younger this wasn't so much history as the contemporary world. As I have got older I

³See Brown, Paul. 2009. "From System Art to Artificial Life." In *White Heat Cold Logic: British Computer Art 1960–1980*, edited by Paul Brown, Charlie Gere, Nick Lambert, and Catherine Mason. Leonardo: MIT Press. Imprint.

⁴*Nova Express* (1964) was part of William Burroughs's *Nova Trilogy*, books made using Cut-Up experimental writing techniques, shown to him by Brion Gysin in Paris in 1959.

have become more appreciative of historical influences: Duchamp remains a remarkable figure, Malevich, Klee – I love Klee’s *taking a line for a walk* because the line is drawing itself – it is a pencil making marks guided by his hand. Going further back you have Mozart’s *Dice Game* to compose music. The generative approach has a significant history.

BF: *I’m wondering also about the use of automatic processes in surrealism, closing down conscious strategies and allowing another process to come through. Do you see this as similar or a different lineage?*

PB: I was not that sympathetic to surrealism as a young artist. I had seen the British surrealists who seemed to me to be weak and illustrative and it was only later I became aware of the more challenging European origins of the movement, Breton’s manifestos, etc. But when I studied Jackson Pollock I discovered his roots were in surrealism and his engagement with automatic drawing techniques contributed to the development of drip paintings and his contribution to Abstract Expressionism. Back then Dada was more important for me with its employment of random and chaotic processes and its flippant attitude towards the establishment.

Thinking about the influence of the subconscious: Anton Ehrensweig’s book *The Hidden Order of Art* (Ehrensweig 1967) provided a profound insight for me. Ehrensweig was a classically trained Freudian analyst. He died before the book was published and I had the first, unfinished edition though somebody has since completed it and it is still in print. The English psychoanalyst, Antony Storr credited Ehrensweig with revising Freudian theory and trying to move it away from its pathological focus. Ehrensweig himself attributed this transition to his teacher, the art therapist Marian Milner (*aka* Joanna Field). She was (*and these are my words not hers*) trying to bridge the gap between Freudian theory – based on bodily functions – and Jungian theory – based in the mind. And, of course, Jungian theory is very celebratory whereas classical Freudian theory is pure pathos: life is suffering! Milner began to build that bridge and then Ehrensweig consolidated it using the analysis of creative artistic behaviour as his study. Unlike his predecessors – like Freud himself – who analysed the overt content of artworks Ehrensweig decided instead to focus his analysis on the structure and methodology of the work. This approach fit in with then current critical frameworks informing the era of abstract expressionism such as the writings of theorists like Clement Greenberg and his contemporaries.

That idea of methodology being the focus really appealed to me. It helped me to work out this confusion that I was having about my right to actually say something. As soon as I had finished *The Hidden Order of Art* I got a piece of graph paper and started to draw. I was not concerned with making a ‘drawing’ but instead sketched an octagonal tile and then use a dice to repeat, rotate and place it within a grid. I felt that I had not imposed myself on the final image (Figure 2): what I had done was developed a process to allow the image to emerge. The more I looked at it the more impressed I became and I thought, ‘yes, something important has happened here. Something new has emerged from this process that I had not, and maybe couldn’t have, predicted beforehand’.

The next year I saw Mary Martin’s *Cross* when she was joint winner (with Richard Hamilton) of the John Moore’s Painting Prize in 1969. It caused a lot of controversy – she was the first woman to win and, of course, the work wasn’t a painting, it was a

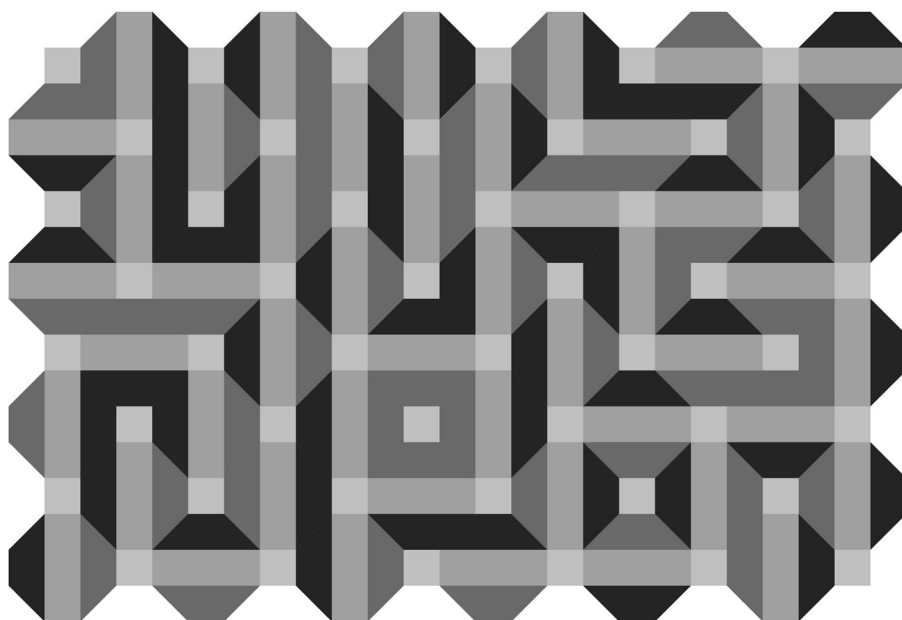


Figure 2. Untitled gouache, 1968 (redrawn 2017).

construction made from angled mirrors. But for me Cross was a revelation and further convinced me I was working along the right lines.

BF: *Did you discover Ehrensweig's book when doing your Foundation studies?*

PB: It was one of the set books we were given along with D'Arcy Wentworth Thompson's *On Growth and Form* (D'Arcy Thompson, 1917). The Foundation courses still exist but now they are not grant aided. Back in those days you had to do Foundation if you wanted to go to art school.

The Foundation movement was an acknowledgement that a lot of people teaching art in secondary schools were not particularly well qualified. I was taught by a really nice guy who had come out of the army after the Second World War and had been offered a one-year retraining to teach art and really knew very little about contemporary movements. Foundation was also influenced by the Bauhaus: you didn't choose a specialisation until the third term. So you did some fashion, textiles, graphics, illustration, printmaking and more – it was really exploratory and mind expanding. Victor Pasmore and Richard Hamilton's *Basic Design Course* at Newcastle was an influence as was the *Groundcourse* at Ealing developed by Roy Ascott who had studied with them.

I think it was very much up to the individuals teaching to select the set texts. But D'Arcy Thompson's book would have been on most reading lists because in the '60s it was incredibly influential. And, of course, in recent decades it has influenced a new generation of artists like my son Daniel (the other member of Brown & Son) as he has described in the *Art That Makes Itself* publication (Ferran 2015)

BF: *May I ask you about your relationship with your father? Was there a Brown & Son earlier as well?*

PB: We kept that scrapbook together and he encouraged me to study science and mathematics, subjects I did well at. But he was very detached and I didn't really get to know him very well at all. He didn't like the idea that I had gone to art school or my association with the underground movement – it was a fairly strained relationship. He died in 1982 but before that in 1980 I co-founded Digital Pictures (with Chris Briscoe who was in charge of the Slade's EXPerimental programme) and it was the first time he acknowledged I was doing anything that he could approve of – we were doing special effects for television and he could appreciate that.

BF: *Going back to your early works what do you feel is the relationship between what you did then and you are now doing?*

PB: It is really the same thing although it has matured significantly along the way.

BF: *What did you find in that process early on?*

PB: What I discovered was what we would now call generative, iterative or fractal systems although I wasn't familiar with those terms at that time. Benoit B. Mandelbrot's book, *Fractals: Form, Chance and Dimension* was published ten years later (1977). He would certainly have been working on these ideas before then but few people outside IBM and Harvard would have known about his work. What I discovered was that I could make a symbolic structure repeat itself and by repeating itself it would contain instances of itself and it could also reverse itself – undo its behaviour as well. It was a set of symbols that were organised according to certain principles. If you look at my work today it's the same – operations on symbolic sets although the symbols I'm now working with are coloured geometrical shapes.

BF: *So you found a method through a process. At that stage you were not using computers were you?*

PB: My father bought me a big double elephant engineer's drawing board with parallel motion. I would throw a dice and it would indicate what marks should be made. Throw the dice again: make some more marks. I'd continue like this for hours each day and some drawings would take weeks to complete. In retrospect I can see that this was in some respects similar to what artists like Kenneth Martin and Malcolm Hughes were doing but at that time I was not aware of their work. I was in Liverpool - this was just about the time I had finished working at The Blackie and doing the lightshow.

BF: *How did you get into lights as just before that you were doing drawings?*

PB: I'm telling the story back-to-front. In '67 after the college crit when I was told I wasn't the right stuff to be an artist I dropped out and together with Jim MacRitchie we formed the *Nova Express Lightshow*. We were good (unlike many lightshows back then who were only in the business for a free entry to gigs) and the bands got to know us and knew that they could trust us not to mess up their playing. We went from doing little gigs in Manchester to working throughout the North of England with most of the major bands of the day – Pink Floyd, The Nice, Coliseum, The Who, Canned Heat and many more.

I was also street-selling underground magazines such as *International Times* and *OZ* and managing a basement coffee bar we somewhat ambitiously called the Manchester Arts Lab. We showed underground movies, hosted weird bands and rented the place out to meetings of the Manchester branch of Situationist International where I played projectionist. It was just around the corner from The Twisted Wheel – the Manchester night club run by the Abadi brothers (who had been friends and contemporaries of mine at grammar school) – where DJ Roger Eagles began showing some of the USA's leading black blues players (at a time when they were unknown in white venues in the US). Later it became the venue for The Magic Village – Manchester's underground hippy HQ. Via the Arts Lab link I was invited to attend a founding meeting of the Arts Council of Great Britain's New Activities Committee where I met Bill Harpe who had recently established the Great Georges Community Cultural Project – The Blackie – in Liverpool.

Bill and I hit it off immediately. We were both suspicious that the arts lab. movement could become just another bourgeois cul-de-sac of the avant guard. He had established The Blackie in one of the most impoverished areas of Liverpool and we regularly discussed Mao's cultural revolution – where the intelligensia worked together with the disenfranchised to mutually improve their lives.

Bill had originally gone to Liverpool to direct and choreograph the opening of Frederick Gibberd's Metropolitan Cathedral of Christ The King where he commissioned Pierre Henry's The Liverpool Mass. It was a very high-tech event that pushed the boundaries of what was possible in those days and Bill was a keen practitioner and supporter of the art, science and technology convergence and knew many of the international practitioners as personal friends. At The Blackie I ran playgroups, designed and built play structures, served coffee, directed, designed and videoed mixed-media participatory events as well as regularly mopping the vast wooden floors. I also designed publications (Figure 3) and was able to work closely with visitors like: Meredith Monk and The House Company, Frederic Rzewski and Musica Elettronica Viva, John 'Hoppy' Hopkins and the Fantasy Factory, The Welfare State and many more. Liliane Lijn visited to install a laser work. Working with Bill and Wendy Harpe opened up many new horizons. After Hoppy's visit we bought a couple of Sony Backpack video systems and I began to create generative video sequences with the musician and composer Michael Trim (Figure 4) with whom I later set up *The Theatre of Mixed Means* (Figure 5) together with the poet Dave Calder, my wife the musician Chrissie Malvern Brown and the dancer Mary Copple.

At The Blackie Nova Express had a large studio space. One day I got one of the overhead projectors and a large clock glass and focussed it, put some water in and let it get up to temperature. Then I filled an eyedropper with deep carmine ink and very carefully squeezed a drop into the centre of the clock glass. I sat back watched for maybe twenty minutes as red folds of turbulence emerged and morphed and until the water became a uniform pale pink. It was wonderful to watch and again there was a beautiful insight that I didn't need to be there – I could have built a robot to squeeze the eyedropper. The art was making itself!

BF: *Did you feel you were part of the experimental lab movement such as was going on in Drury Lane?*



PB: Very much so. Bill was a personal friend of Bill Haynes who had founded the Drury Lane Arts Lab and we were all in awe of the work David Curtis was doing programming the basement cinema there. Then it all moved to Camden and became the New London Arts Lab or Institute for Research into Art & Technology – IRAT – that was also home to the London Filmmakers Coop – LFMC – and Hoppy's Fantasy Factory. It also had a pioneering computer terminal linked to the Appleton Rutherford Lab that John Lifton

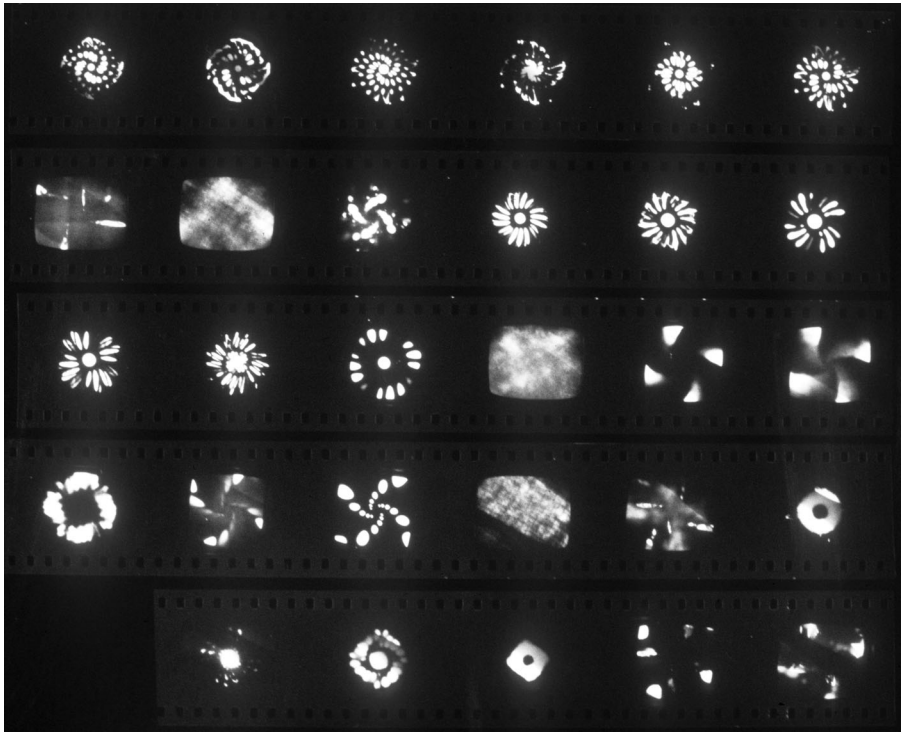
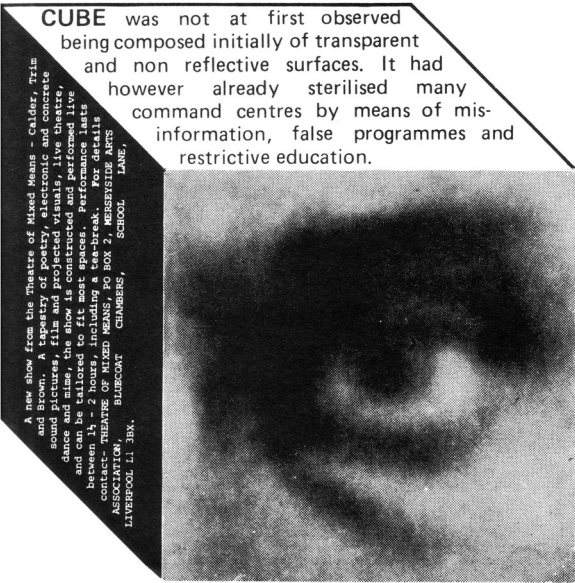


Figure 4. Still frames from Mandala, 1973.



Commissioned by MAA

Figure 5. Poster for CUBE, Theatre Of Mixed Means, 1972.

set up on behalf of the Computer Arts Society although I didn't learn about this until many years after. Then later when I went to the Slade the Postgraduate Dept. had links to the LFMC.

BF: *I get the impression of someone who didn't fit into any box. You dropped out of art school, went to Liverpool, got involved with light shows, performance, popular culture. Were you also seen as someone who was a wizard with kit, who could handle most types of technology?*

PB: I was definitely seen as a tech enabler and was regularly roped into projects because of my problem solving skills. Bill and I would regularly brainstorm possible futures: I remember one conversation I had with him where we speculated that the large windows of The Blackie could be made of liquid crystal so you could turn them off and on. This was at a time when liquid crystal cost several thousand pounds for just a few square centimetres!

It was an exceptional education – I could never have been exposed to that range of media experiences or developed those skills if I had stayed at Art School. I feel very lucky and profoundly grateful to the many friends and colleagues who supported my progress.

And then, of course, in 1974, eager to learn about digital systems, electronics and computing I returned to University but this time I was in charge and nobody was going to tell me that I wasn't an artist!

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Paul Brown is an artist and writer who has specialized in art, science & technology since the late 1960s and in computational & generative art since the mid 1970s. His early work included creating large-scale lighting works for musicians and performance groups (like Meredith Monk, Music Electronica Viva, Pink Floyd, etc.). His international exhibition record dates from the late 1960s including the creation of permanent and temporary public artworks. He has participated in shows at major international venues like the TATE, Victoria & Albert and ICA in the UK; the Adelaide Festival; ARCO in Spain, the Substation in Singapore and the Venice Biennale. His work is represented in public, corporate and private collections in Australia, Asia, Europe, Russia and the USA.

Bronac Ferran is a writer and curator specializing in text based and media works from the 1950s and 1960s. In 2015, she edited: *Art That Makes Itself – Brown & Son, Purveyors of Digital Images since 1968* working closely with Paul Brown and with Daniel Brown who designed the publication.

ORCID

Bronac Ferran  <http://orcid.org/0000-0001-5052-3908>

References

Brown, Paul, Charlie Gere, Nick Lambert and Catherine Mason. 2009. *White Heat Cold Logic: British Computer Art 1960–1980*. Leonardo: MIT Press. Imprint.

- Ehrenzweig, Anton. 1967. *The Hidden Order of Art*. Berkeley: University of California.
- Ferran, Bronac. 2015. *Art That Makes Itself, Brown & Son: Purveyors of Digital Images since 1968*. <http://www.blurb.co.uk/b/6317420-art-that-makes-itself>
- Mandelbrot, Benoit. 1977. *Fractals: Form, Chance and Dimension*. W. H. Freeman and Co, N.Y.
- Mason, Catherine. 2008. *A Computer in the Art Room: The Origins of British Computer Arts 1950 – 1980*. London: Quiller Press.
- Thompson, D'Arcy Wentworth. 1917 (1944). *On Growth and Form*. Cambridge University Press.



Systems theory, systems art and the computer: Ernest Edmonds interviewed by Francesca Franco

Ernest Edmonds and Francesca Franco

Institute of Creative Technologies, De Montfort University, Leicester, UK

ABSTRACT

This interview with Edmonds, conducted by Franco in 2016, explores how Systems art, Systems Theory, and his personal relationships with artists such as Malcolm Hughes, Kenneth Martin and Edward Ihnatowicz influenced his art practice.

ARTICLE HISTORY

Received 8 September 2016

Revised 24 October 2016

Accepted 14 December 2016

KEYWORDS

Ernest Edmonds; Francesca Franco; computational art; computer-based art; generative art; interactive art; systems; cybernetics; media art history

Ernest Edmonds has pioneered the field of computational art and contributed to the broader field of contemporary art from the late 1960s to the present. His innovative work has focused on the invention of new concepts, tools and forms over 50 years. His archives are collected by the Victoria and Albert Museum, as part of the National Archive of Computer-Based Art and Design. Edmonds' work represents one of the roots of generative art. His work not only acknowledges a historical connection, often overlooked, to the structural research undertaken by Constructivist artists in the twentieth century; it also demonstrates that the points made by this past tradition could be taken further through the use of computation and logic. By applying colour theory, computational logic and programmed systems to his work, Edmonds combined the structural research of Charles Biederman and the Constructivists with Matisse's use of colour for the first time, and took them to a new level encompassing time, colour and structure. The digital process gave generative art new possibilities and brought new opportunities for Edmonds, allowing him to create systems in which artworks have a life of their own.

Francesca Franco is a Venetian-born art historian based in the UK. The central theme of her research is the history of art and technology and the pioneers of computer art. Increasingly it concerns issues of generative and interactive art and the connections between Constructivism and Systems art in early computational art, particularly through the work of Ernest Edmonds. Her first solo authored book, *Generative Systems Art: the Work of Ernest Edmonds*, will be published by Routledge in 2017. Drawing on interviews with Edmonds and primary research in archives of his work, the book explores

the history of pioneering computer art and its contribution to art history by way of examining Edmonds' art from the late 1960s to the present day.

This interview with Edmonds, conducted by Franco in 2016, explores how Systems art, Systems Theory, and his personal relationships with artists such as Malcolm Hughes, Kenneth Martin and Edward Ihnatowicz influenced his art practice.

Francesca Franco: How did your art and systems interests start to come together and how did that lead into an interest in Cybernetics and Systems Theory?

Ernest Edmonds: In the 1960s, I was working in parallel and separately really in art as an artist and in logic as a logician. This was just a two-pronged part of life. Both things were intellectually demanding, intellectually interesting, but not connected to start with. As time moved on I happened to be working at what became Leicester Polytechnic, working on logic, and discovered that they had one computer. Out of intellectual curiosity, I taught myself how to program it, so this was a third interest closely related to logic and not at that time related to art. I was interested in the Constructivist tradition and when I was an undergraduate student, about 1963-64, I used mathematics to try to understand better a painting by Mondrian. I looked for mathematical systems underlying the painting. So I had, even then, tried to apply mathematical systems at least to understanding art and to wonder whether any of those systems were used by Mondrian. My results were inconclusive in the sense of whether they were used or not but I could grasp more about his works by looking through a mathematical window. Then, for various almost accidental reasons, I became a lecturer in Computer Science. Having taught myself how to program, the department I was working in was in need of a lecturer in Computing. There was this famous story about my using the computer to finish *Nineteen* (Figure 1).¹ At that time I met Stroud Cornock, which was important in terms of friendship, discussions and practice. I was interested in psychology, I was interested in systems and I discovered Systems Theory and the applications of Systems Theory in biology and psychology.

There was the beginning of a coming together – from logic, though Systems Theory and towards psychology which started to bring it towards the realms of art. One thing I did was look at the projects that I was setting computer science students as part of their final year degree programme. I had an idea to say to some students, would you like, as a project, to try to construct computer software that would be helpful to artists? A couple of students decided they would do this. It was just one of those things that happen; I started this discussion with students and set them on the road to talking with artists to try to find out what was useful.

Stroud had come from working with Roy Ascott so there was an indirect influence from Roy coming in here. I was also extremely aware of what was going on in happenings and the interest in participation. So at the end of the 1960s there was this confluence of logic, computing and Systems Theory with art – from the more formalized views of art-making through to theories of participation and interaction. *Nineteen*, *Communications Game*² and

¹*Nineteen* (1968–1969) embodies Edmonds's first use of a computer program in his art. A computer-program approach, which Edmonds had used in 1968 to solve a mathematical logic problem, was applied by the artist to compose his work *Nineteen*, 'in order to try to structure the work according to a set of pre-defined rules'. *Nineteen* was first exhibited in the *Invention of Problems* exhibition at the City of Leicester Polytechnic (now De Montfort University) in 1970. It was a large panel, consisting of 20 squared reliefs attached to a white supporting structure and arranged in a grid of five pieces wide by four high. Each piece shows a number of abstract shapes delineated by vibrant colours. The variety of forms and colours, and the ways the pieces were juxtaposed, created a dynamic composition that vibrates in front of the viewer's eyes. Shadows and reflections added extra depth and sophistication to the orthogonal structure making the work inseparable from its environment.

²*Communications Game* (1970) represents Edmonds's original network communication art system conceived in 1970. The work included stations for a maximum of six participants. The stations were arranged so that participants could not see one another, but could see one or two stimulus-providing units within the station. Each unit could be acted upon by the participant in response to a given stimulus. No instructions were given to participants on the manner in which the system



Figure 1. Ernest Edmonds, *Nineteen*, 1968–1969. ©Ernest Edmonds. Image courtesy of Jules Lister.

**Datapak*³ are works that exemplify this. This was the coming together, and I was not just involved with Stroud but also with other people who were interested in these boundaries. I think it was in the air at that time. If you look internationally you can see many people around this time doing these kind of things. There was this interest in bringing these things together and seeing what might flourish.

FF: Can you say what was the most important lesson you learnt from Systems Theory, in terms of your work then and over the following decades?

EE: I think probably the most important lesson was that one could understand what might look like random behaviour in terms of interactions between different systems, or one system and the outside world, you might say. So the notion of indeterminate activity could replace the notion of random activity. What this implied was that there could be structures and boundaries around possible behaviours that could be formed. You could imagine making an artwork where you did not know what was going to happen, what it was going to look like, sound like, or whatever, but you knew that it would be within a certain envelope, as

of units operated. The idea behind *Communications Game* was to see art as a communication or interaction between people enabled by technology.

³**Datapak* (1970) represents an early interactive computer-based art system. The work was an example of a matrix that consists of participants, a display, a computer installation and a designated area around the Vickers Building next to the Tate Gallery in London. **Datapak* was a system that allowed participants to have a 'pseudo-English conversation' with the computer. The results of this conversation were then processed by the machine connected to drum plotter. This was able to identify a volume of space around the Vickers (now known as the Millbank Tower) and allocate it to the active participant. Part of the output of this process was a drawing, made by the plotter, using impulses collated from the participant's data. **Datapak* represents an early investigation into the potentially changing relationship between artist and viewer or 'participant', accelerated by the intervention of the computer.

it were. You could design the envelope and then what happened actually would depend upon the interactions between the systems. This is really based on notions of open systems as against closed systems. That meant that one could work with it, one could handle it, one could design it, one could consider the aesthetics of it and it became possible to imagine using systems as a medium in which to make art. Not that I knew how to do it or what it would be like but there was this realisation that probably is the answer to your question.

FF: If you could choose examples of your works from the 1960s and early 1970s that were inspired by this notion which would you choose?

EE: OK, the first was **Datapack*, which was a joint work made with Stroud Cornock. One of the things in **Datapack*, which resulted from anyone interacting with it, was a drawing made by a graph plotter from instructions in the computer (Figure 2). We never knew what the drawing would be exactly so it was as much a surprise to me, who wrote the code, as to Stroud with whom I discussed the design; but nevertheless, we knew the aesthetic of the drawing but the particularities of it were dependent entirely on the interactions that took place.

The second example would be one of the versions of *Communications Game*. I knew that lights would flash and people would flick switches but I did not know which light would flash at which time, because that depended on what people did. I just knew the processes and the constraints on those processes.

The third example is not electronic or computer art at all, it is a thing I made called *Jigsaw* around the same time (1970) (Figure 3), which was a kind of jigsaw puzzle. I was seeing what could be done in this context without using the complexities of electronics or computers to make it as simple as possible. How could I deal with this complex notion in the simplest possible way? I came up with this idea of an artwork which consisted of pieces, apparently of a jigsaw, but that was different because it could be arranged with the pieces fitting together

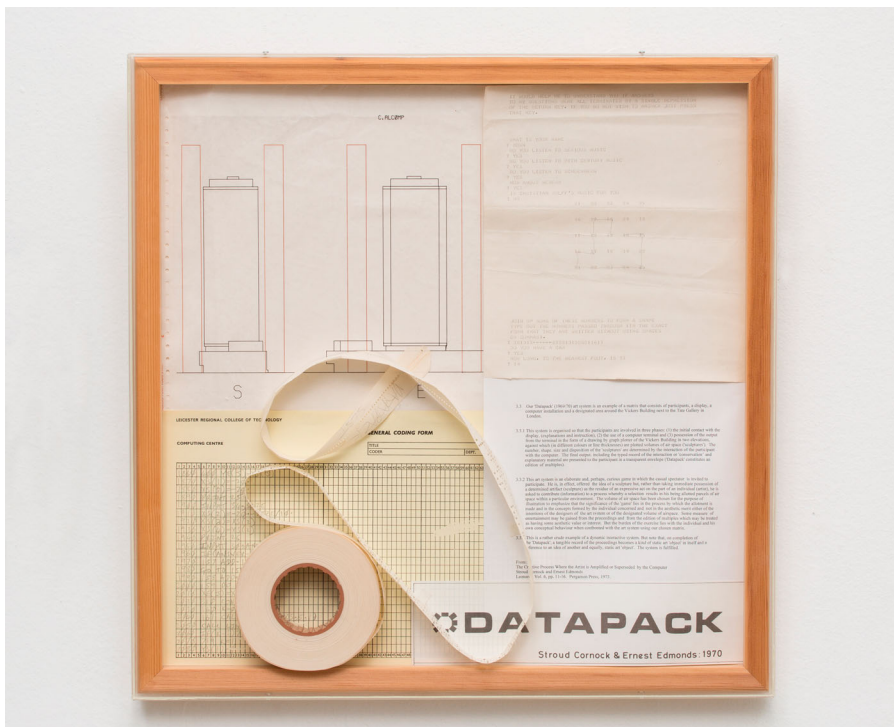


Figure 2. **Datapack* documentation material. ©Ernest Edmonds. Image courtesy of Thales Leite.

in very many different ways. There was not just one way of putting the pieces together, there were very many ways, so you could have this jigsaw on your table and you could change it. On different days it could look different, but it could still be fitted together. The fitting of it together provided constraints, so the aesthetics was determined but the particularities in which the pieces fitted were not, so that was an interesting example, I found.

FF: Not long after you joined Leicester Polytechnic, you were appointed as a Lecturer in Computer Science. What impact did that have on your art?

EE: Lots! I had already obtained access to the main Polytechnic's computer and taught myself to program it, as I said before, but any lecturer from any department could have done that if they wanted. But now, for example, I was part of the team that decided what the next computer to buy would be and what we might want to go with it. So I helped ensure that we had the kit that we used for **Datapack*. So my collaborations across the Polytechnic were enhanced. Then, ofcourse, I was in a cultural climate where working with digital technology was normal, which certainly helped in my development and construction of the *Communications Game* series of works. Later on we built a display system that went beyond what could be bought at the time.

FF: Did teaching computing have any influence?

EE: Well, it forced me to learn more. One particular thing proved very important: the student project that I mentioned earlier. They applied the methods that they had been taught, starting by finding out what the requirements were before designing anything. However, this proved very problematic because that artist/designers kept changing their minds. The important thing was that I worked out that the software design method was wrong and that for art – mine very much included – we needed an iterative process.

FF: So did you invent one?

EE: Yes. To cut it short, I described it, without any problems, to the Computer Arts Society in 1969, but the computing world was harder to convince. I eventually published the idea and it is sometimes seen as the start of what is now called 'agile programming' or 'agile design'. In fact the approach is pretty normal in much of computing today. You could say that it is a more systems way at looking at software design.

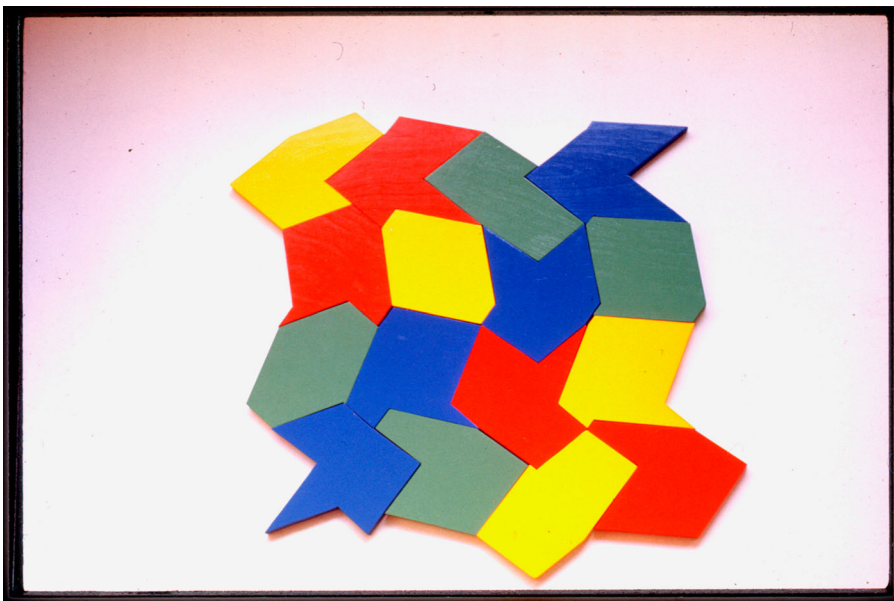


Figure 3. Ernest Edmonds, *Jigsaw*, 1970. ©Ernest Edmonds. Image courtesy of the artist.

FF: In your opinion, how important was the research into Cybernetics for artistic practice?

EE: First of all, it was particularly interesting to discover a bunch of people around Brunel University who were very active in cybernetics and, related to this, people involved in the 1968 exhibition *Cybernetic Serendipity*,⁴ Gordon Pask for example. I do not think cybernetics had a direct influence beyond what I have been talking about on my art, except to say that it was showing that you could have a respectable science about this. In other words, it could be quite formal and we could deal with these matters in quite a formal and serious way. We could investigate and question the notions about how behaviours took place. Behind all this, the whole notion of behaviour coming within the realm of art, behaviour as an element to address as an artist was exciting. Cybernetics gave a clue as to how you might be able to do that, and that you might be able to do it.

FF: How did you get to know the work of the Systems art group?

EE: Obviously I was familiar with a lot of work that was in the Constructivist tradition and used systems of various kinds, but then there was a very important exhibition, which was very revealing, the *Systems*⁵ art exhibition which toured the UK. I saw it in London and Leicester and saw it more than once in each location: an interesting essay by Stephen Bann introduced the catalogue. This was important to me because it revealed that there was a group of artists in the UK working with systems to underpin their work. All these people were in fact producing static art objects and images but they were using formal systems to generate those objects, to provide the structures behind them. Instead of just thinking about systems to produce behaviours you could use systems to produce artworks. Of course we knew, for example, perspective and so on, but this was putting it in a modern context. And it turned out that I knew some of these people, so it was some coming together.

Two of the Systems artists who were involved in that group, not necessarily in that particular exhibition, were working at Leicester Polytechnic, and became friends of mine. I got to know other people in that group over the years. So this was a very important focal point for me in terms of the development of my art. It did not stop me being concerned with behaviours and interactive art and so on, but it broaden my interest and I looked back to how the formal methods that I had used in programming to construct *Nineteen* had application beyond just the way I used it then: not just to solve an aesthetic problem but to generate an aesthetic solution, which is a rather different way of looking at the process of making an artwork.

FF: Did you make anything at the time that was directly influenced by the Systems exhibition or your interaction with these friends and colleagues at Leicester?

EE: Some of the drawings I was doing in the early 1970s (Figure 4), where I was constructing a geometric structure in which a particular line at a particular angle should occur in a particular place geometrically, and then adding to that a process structure about what order things should be done. Then, making the drawing by hand, following the procedure that was defined and obeying the geometric structures that were underlying the work. In a way, what I was doing there was going a step further than what the Systems artists were doing because as well as using the system to define the geometric structure of the work, I was using systems also to define the procedure to be used to make the work. This became

⁴*Cybernetic Serendipity* was an exhibition aiming at showing the main areas of experimentation and the creative use of technology in contemporary art. Curated by Jasja Reichardt at the Institute of Contemporary Art in London in 1968, it was introduced to the public as the 'first international exhibition exploring and demonstrating some of the relationships between the arts and technology' (ICA Bulletin, August 1968). It included sections dedicated to computer-generated graphics, films, music, and poetry; cybernetic devices and environments, remote control robots and painting machines. Among the artists participating in the show were John H. Whitney, Michael Noll, the Computer Technique Group, Nicholas Shöffner, Frieder Nake, George Nees, Bridget Riley, Charles Csuri, K.C. Knowlton and Leon D. Harmon.

⁵*Systeemi-System* was an exhibition originally organized by Jeffrey Steele in 1969 for the Amos Anderson Museum, Helsinki. From 1972 to 1973, *Systems*, a larger Arts Council exhibition, including more artists, toured the UK starting from the Whitechapel Art Gallery in London, and moving then to Manchester, Sheffield, Billingham, Newcastle, Birmingham, Leicester, Leeds, Southampton, Newport and Oxford. Artists included Richard Allen, John Ernest, Malcom Hughes, Colin Jones, Michael Kidner, Peter Lowe, James Moyes, David Saunders, Geoffrey Smedley, Jean Spencer, Jeffrey Steele and Gillian Wise Ciobotaru.

an important element for me, which came really from my knowledge of computer programming, and understanding what computer programming can do. So I now had these two elements, the geometric structure and the process of making, both embedded in a 'systems' view of making.

FF: How did you decide the angles of the lines that cross each other in these drawings? Can you tell me more about that?

EE: There were many different instructions, so I will just give you one example. It was not always done this way but I will describe one way that I did it. So maybe I have a matrix of 3 by 3 squares and I would say that the top left will have horizontal lines and that all of the squares that were on the same column or row would also have horizontal lines and so on; then maybe the bottom square in the middle would have 45 degree lines upwards and every square in that row or column should also have lines at that angle and then that would mean that the middle square in the third column would have some other line angled in another direction and that line angled would be copied in all of the row and column that was involved. So now we have a geometrical structure that is rigorously defined. If the process leads to my drawing in more than one direction in a particular square, then you get overlapping.

FF: So aesthetically, what were you looking for?

EE: A tension, really. I learnt primarily from Mondrian about asymmetry and how you can get balance with tension through using asymmetry and this was taking that notion in principle, not in detail, in another way forward. There is no real symmetry, in fact it is rigorously defined to avoid any kind of symmetry. But it is tight, and the visual tension in almost something disturbing to look at: challenging, intriguing.

FF: This reminds me of the process that Kenneth Martin used to create his works. Do you see any analogy?

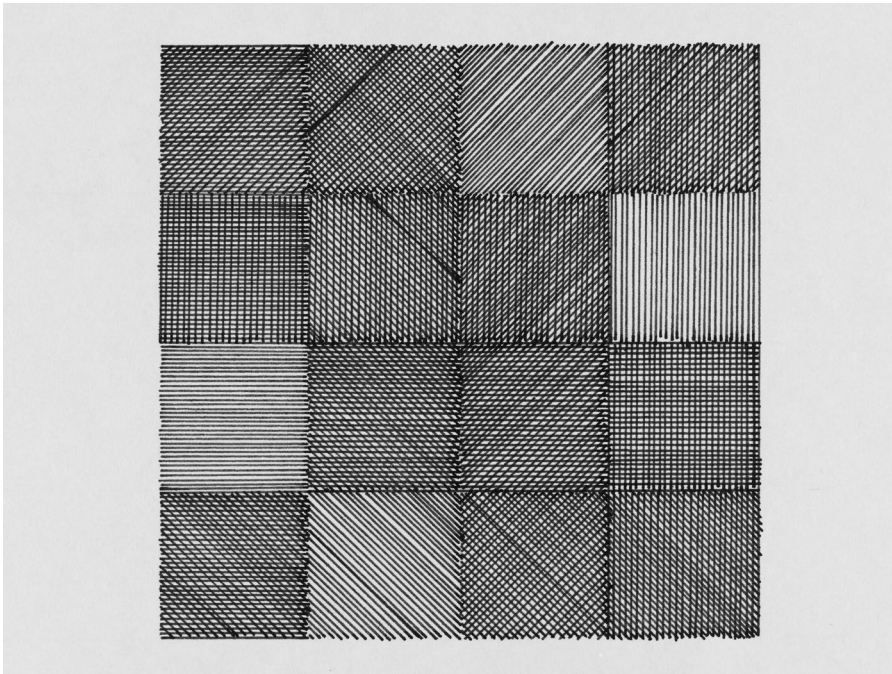


Figure 4. Ernest Edmonds, *Untitled*, 1975. Museum no. E.864–2010, ©Victoria and Albert Museum, London/Ernest Edmonds. Image courtesy of the Victoria and Albert Museum, London.

EE: This is very interesting because these notions were very imbedded in my work. It is difficult for me to recall now when I first saw Kenneth's work but it would have been almost certainly in the late 1960s. In the early days when I saw his work I was intrigued by it and loved it from the outset but I don't know that I understood it in the depth that I came to much later, especially after I met him and talked to him. So I think that the mechanics behind the magic of the art was something that I only understood later, but the fact that it was magical was obvious to me from the outset. What I think ended up appealing to me a great deal was the clarity of thinking that he had that led to the making of his work, which was something that very much was at one with the kind of things that I was trying to do using either computer programming or computational notions, mathematical procedural ways of making works using clear processes to generate the work without ornament and side parts. There was a sort of classical clarity in his work. I had added this idea of process to the systems used by the Systems artists, but Kenneth was in fact also using rigorous processes in making his works. Now, actually, he used randomness – picking numbers out of a hat kind of randomness – which I did not do, but that was a minor point. The most important point was that he was defining a systematic process of making; not just how it should look, not just the geometry, but the making process. This was very important in my drawings and in those sprayed paintings and, of course, also in the computer-based works which were time-based and interactive. In the computer-based works of mine (time-based and interactive ones), images are being made all the time so the processes of making are integral to the work. I think this approach to making was really important and his work was extremely influential for me.

FF: So I guess you felt quite relieved to see his work.

EE: Absolutely, because I felt less alone and there was someone I could learn from: the Systems art people in the first place, and then Kenneth in particular. He was not part of the Systems art group, but he made me feel much more connected and grounded in the work I was doing, and I have always felt that a historical grounding is really important for an artist.

FF: Are there any works that you recall having done under the specific influence of Kenneth?

EE: What Kenneth made me realise was that I should not give up painting, because when I first met him it was just at that time that I discovered I could do time-based work using systems. The reason for this, naturally, was to do with the development of the technology. His influence was to keep in my mind that using the same concepts and ideas, and dealing with the same aesthetics, I could continue to make paintings, make marks on canvas and produce images to deal with many of the same issues. That stayed with me, so I still do.

FF: Can you tell us about a work that still reflects those ideas?

EE: If you look at any of my recent four part paintings they all relate, not in an obvious visual way but conceptually to Kenneth and what he taught me (Figure 5). The point being that if you look at one of those works you cannot work out why this colour square is there. It actually does not matter, it is there for a very specific systems reasons and Kenneth had very good reasons for why a particular colour was in a particular place in his paintings (Figure 6).

FF: Would you like to talk about the lesson you learnt from Malcolm Hughes?

EE: I liked Malcolm Hughes' work very much. He was one of the artists in the Systems group who I admired but he was also very important as an educator and as an influence on others, because he had a strong theoretical base and a strong vision of the future. He and I had many discussions which I value greatly in which he helped me work out more precisely what I was trying to do, to make explicit what was on my mind. He helped to put the developments of work using computer programming, for example, in the context of Systems art in particular and the general development of 20th century Abstract art. Malcolm was very aware, from a long time ago, of the importance of the computer as something with potential which is why he bought one for the course that he ran at the Slade. This led to the Slade post-graduate diploma being a very important hot bed for the development of computer-based art based

upon Malcolm's vision. He got the right students, he hired the right people this was very much his way. He knew quite a lot about what we were doing in Leicester at the time and he definitely saw what we were doing as important for the future. He cemented my confidence in the developments we were engaged in as a group and my personal confidence that what I was doing was rooted and properly grounded in 20th century art.

FF: Can you tell me more about your connection with Edward Ihnatowicz?

EE: I first met Edward in 1971 at the *Invention of Problems II* exhibition and Symposium that Stroud Cornock organised at Leicester Polytechnic. That was an interesting time. I also met Steve Willats, John Lifton and many other interesting artists. Edward and I got to know one another quite well and met and had very engaged conversations about interaction and the nature of interaction as a subject of art, as a medium itself. We talked about the way that an interactive artwork could be constructed and we also talked about things that are sometimes seen as artificial intelligence subjects or cognitive science subjects, which turned out to be important to art. For example, the relationship between touching and perceiving, the way in which by acting we affect what we perceive. This was very interesting because it is something that I still have not incorporated deeply into my art, and Edward never did, but he might well have done by now had he been still alive. He was definitely very concerned with this direction. His work showed how very simple mechanisms that drove the behaviour

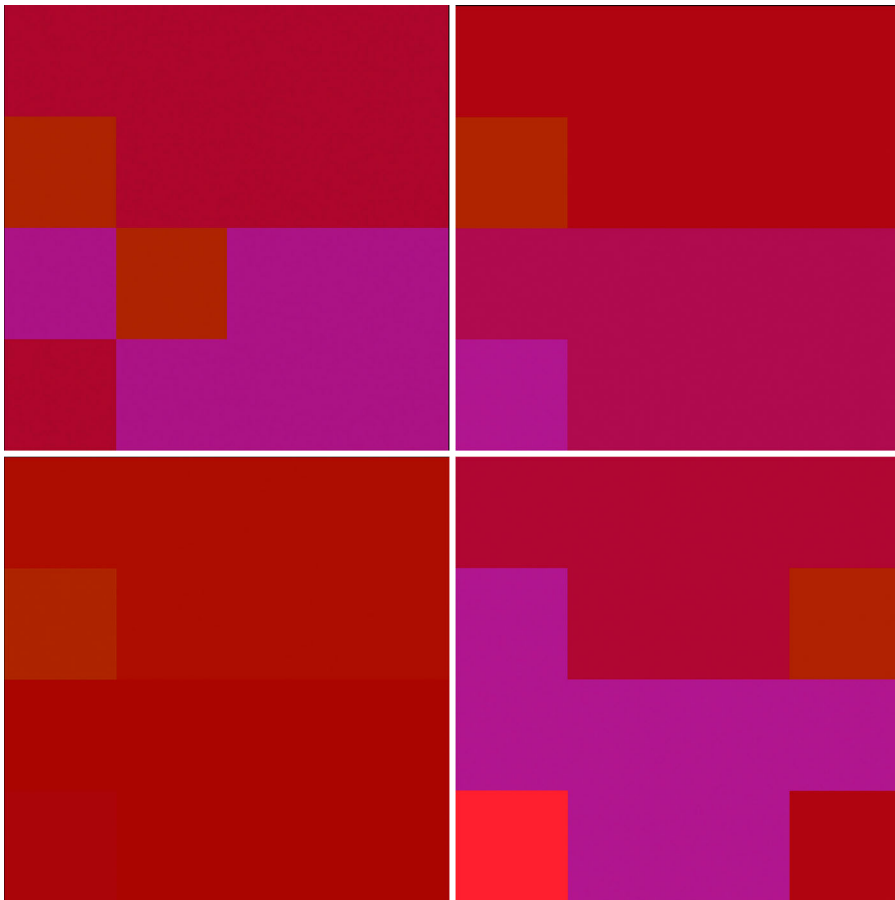


Figure 5. Ernest Edmonds, *Four from Shaping Space*, 2012. ©Ernest Edmonds. Image courtesy of GV Art, London.



Figure 6. Ernest Edmonds, *Shaping Form, 1.5.2015, 2015*. ©Ernest Edmonds. Image courtesy of Thales Leite.

of an artwork could lead to very persuasive, engaging and challenging behaviours. This is something that relates to some work by cognitive scientists, for example, that sometimes can show how it is possible to postulate that relatively simple rule based mechanisms can lead to behaviours that are seen as very natural.

I remember being with him at a conference and exhibition that were organized by the Computer Arts Society in Edinburgh in 1973. At the conference I was presenting my work *Communications Game* and Edward was showing *The Bandit*. And all the time we were talking about interaction and the nature of interaction and the nature of artificial intelligence and what it meant to respond to human behaviour in some ways that would seem meaningful to human beings. *The Bandit* might be said to be something moving a bit in the direction of a concern for action and perception because, as you moved it, it made a note of the movements that you made and then moved itself back repeating those motions, so you have this kind of dialogue between your actions and its actions. Or if you like, from *The Bandit's* point of view, there was a dialogue between what it was doing and what the human was doing physically. The 'intelligent' behaviour of the Bandit was very much intimately connected to movement, contact and action. This is less obviously so in SAM but Edward's thinking was very much in this direction and had he lived longer he would have made works, I think, that explored these matters.

FF: in terms of your work, how did these matters and ideas influence you at that time?

EE: I think they influenced my ideas for *Communications Game*, which I developed through the early 1970s, starting around 1970. But I was still working on these ideas at the time of the Edinburgh conference and beyond. Where the human action was integrated with the behaviour of the whole art system, the human behaviour was integral to the very nature of the artwork. But like Edward, I was influenced in a broader understanding of the field and my thinking about what might come in the future, and this did not just materialise in a fully-fledged form within the works for some time.

FF: how did your work evolve as a result of these concerns? Is there an example you could single out?

EE: those discussions with Edward were to consolidate my interest in interactive art in the sense of taking full account of modelling or using metaphors of living behaviours, so that I was not driven by the technology and by artificial intelligence. I was driven, and still am, much more by my observations and understanding of human and animal behaviour.

This interview was recorded in London in April 2016. Looking back at how Systems art, Systems Theory, and his personal relationships with artists such as Malcolm Hughes, Kenneth Martin and Edward Ihnatowicz influenced Ernest Edmonds' art practice and the development of new computer-based forms, it is also interesting to observe how influential the prospects of future technologies and their impact on our understanding of behaviour were in those days. It seems that today art is sometimes more concerned with exploiting the technologies that we have rather than with those that we might have in 10/20/30 years time.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Ernest Edmonds has pioneered the field of computational art and contributed to the broader field of contemporary art from the late 1960s. He is both an artist and a computer human interaction innovator. He was awarded the 2017 SIGCHI Lifetime Practice Award for groundbreaking work in Computer Human Interaction. He received the 2017 SIGGRAPH Distinguished Artist Award for Lifetime Achievement in Digital Art. He is Professor of Computational Arts at De Montfort University and Chair of the Board of ISEA International. Art and contributed to the broader field of contemporary art from the late 1960s to the present.

Francesca Franco is Senior Research Fellow at the CoDE Research Institute, Anglia Ruskin University, Cambridge. Her research focuses on the history of computer art and its pioneers. A major focus has been the history of the Venice Biennale culminating in a series of publications in books, academic journals and art magazines. She is currently curating an exhibition on pioneering computational art at the Fondazione Bevilacqua La Masa, Venice, opening in October 2017.



Kinetic Art

Reg Gadney

Independent Scholar

ABSTRACT

From 1962 to 1966 the author was an undergraduate at the University of Cambridge. During this period awareness of Kinetic Art grew nationally and internationally. Two student-run magazines – *Granta* and *Image* – became important platforms for dissemination of information and critical discourse about Kinetic Art in the context of other avant-garde developments. Having met several pioneers in the field in Paris before University, the author soon made contact with Professor Richard Gregory in the Experimental Psychology Department of the Cambridge Psychology Laboratory with whom he then collaborated. He worked closely also with Mike Weaver, an academic in the English Literature faculty, who initiated the *First International Exhibition of Concrete, Kinetic and Phonetic Poetry* at St Catharine's College in November 1964. They infused the Cambridge context with influences in Concrete Poetry and Kinetic Art from elsewhere. This article describes this period of early experimentation and reflects briefly on its legacy.

ARTICLE HISTORY

Received 31 May 2016
Revised 12 December 2016
Accepted 13 January 2017

KEYWORDS

Reg Gadney; György Kepes;
Frank Malina; Mike Weaver;
Granta; *Image*; Kinetic Art;
London Magazine

On coming up to the University of Cambridge in October 1962 to read English literature, the author found the University's attitude to contemporary art one of extreme indifference. The sparsely attended Fitzwilliam Museum was so poorly lit and heated it closed at 3 pm. There were some small commercial galleries offering local landscapes and floral paintings. A private patron, H. S. Ede, built Kettle's Yard out of four cottages where he offered warmth, tea and biscuits to undergraduates who could admire his collection of what philistines called 'Modern Art' by Brancusi, Ben and Winifred Nicholson, Henri Gaudier-Brzeska, Barbara Hepworth, David Jones, Miro and Henry Moore and a careful placing of pebbles and stones.¹

Sixty years ago the idea of formal undergraduate interdisciplinary research in the visual arts and sciences was unimaginable. Nevertheless in October 1963, with R.L. Gregory² and his technician Stephen Salter, the author worked on an experimental projection constructed in the Experimental Psychology Department of the Cambridge Psychology Laboratory. Using polarized light, the projection gave the impression of gravity free propulsion. There was no perceived distance of depth and the author found it 'mildly hallucinatory'.³

CONTACT Reg Gadney c/o Bronac Ferran  bronacf@gmail.com

¹Ede, Harold Stanley (1895–1990) also known as 'Jim' Ede. Ede gave the house and collection to the University in 1966. In 1970, the house was extended to include an exhibition gall.

²Gregory, Professor R. L. CBE FRS FRSE British psychologist.

³Gadney, Reg. October 1963, Author's Diary.

Before going to Cambridge, soon after leaving school, the author had spent time in Paris where he met several pioneers in Kinetic Art. His father knew Frank J. Malina, a former rocket scientist who left the U.S. after the Second World War to work for UNESCO, then became a full-time artist. Marjorie, Frank's wife, was from Yorkshire where the author's father ran a boarding school during the post-war years, attended by Malina's sons Alan and Roger. On visiting Paris during his final year at school, the author became fascinated by seeing Malina at work on his luminodyne paintings, involving light, movement and time, introduced through the use of electricity within the works. From that point 'I determined to find what was the most consequential and progressive new departure made by artists in the late 1950s' (Gadney 1964a). Whenever he had leave from army service over the next two years, he returned to Paris. He began helping Malina in the studio, meeting other pioneering figures including Frank Popper, as well as the talented artists Nino Calos and Reginald Weston (who were sometimes Malina's assistants) and Nicolas Schöffer.

Soon after coming up to Cambridge in October 1962 to read English Literature, the author founded the Cambridge University Artists Group with a group of student friends, Annette Kobak,⁴ Jonathan Bowden,⁵ Howard Brenton,⁶ and Jeremy Rosen.⁷ Their first exhibition was organized in the Rushmore Rooms, St Catharine's College in 1963 with light mobiles, paintings and their contributions to journals (Gadney 1964b). On 7 February 1963 the Shirley Society at St Catharine's College hosted a talk by the author on Kinetic Art (Figures 1–3).

Later in the year another exhibition was organized by CUAG, with sculptures as well as paintings and light mobiles. A paragraph about the group's work in *Granta*, a long established student magazine, stated that its work countered the tendencies of the University's arts faculties to be 'geared to the analysis of the dead, not the living'. In the same edition the author wrote an article about Kinetic Art. The main image on the front cover was based on Malina's *Galaxy* work and the article looked closely at his work as well as that of Schöffer:

modern visual discoveries and invention have opened new technical and aesthetic fields to the artist. Frank Malina and Nicolas Schöffer have both found the aesthetic boundaries of traditional media too narrow. Both have introduced elements of light, movement and time into their work. Although both artists' work stems from different ideas it rests in the context of modern artistic and scientific discovery. Professor Barzun's analysis of Art and Science as The Fighting Brothers is gradually being pulled apart (Barzan 1964)⁸ ... Visual reality in Kinetic Art is the movement, and subsequently the time sequence that movement offers ... the very phenomenological presence of movement on the screen attracts the viewer towards it ... (Gadney 1963a)

⁴Kobak, Annette. Author of *Isabelle. The Life of Isabelle Eberhardt*. (1991) Penguin Books. *Joe's War* (2004) Virago Press. See: Afterword. Amy Gadney: below.

⁵Bowden, Jonathan. New Zealand painter.

⁶Brenton, Howard. British playwright and screenwriter.

⁷Rabbi Jeremy Rosen received his rabbinic ordination from Mir Yeshiva in Jerusalem. He has worked in the rabbinate, Jewish education, and academia for more than 40 years, in Europe and the US. He currently lives in the USA, where he writes, teaches, lectures, and serves as rabbi of a small community in New York.

⁸A lecture on art and science given by Jacques Barzan in Cambridge on 7th May 1963 was attended by the author and noted in his diary.

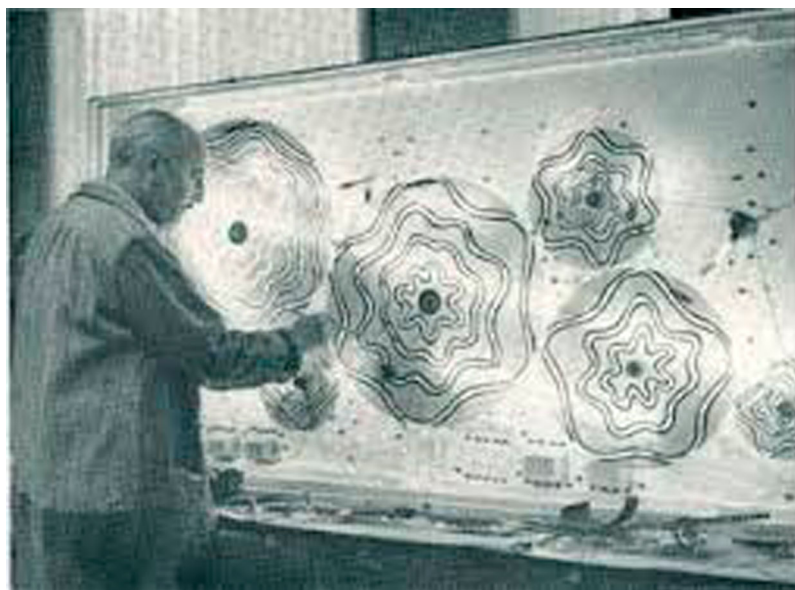


Figure 1. Frank J. Malina at work on a Kinetic Painting, made with Luminodyne system.

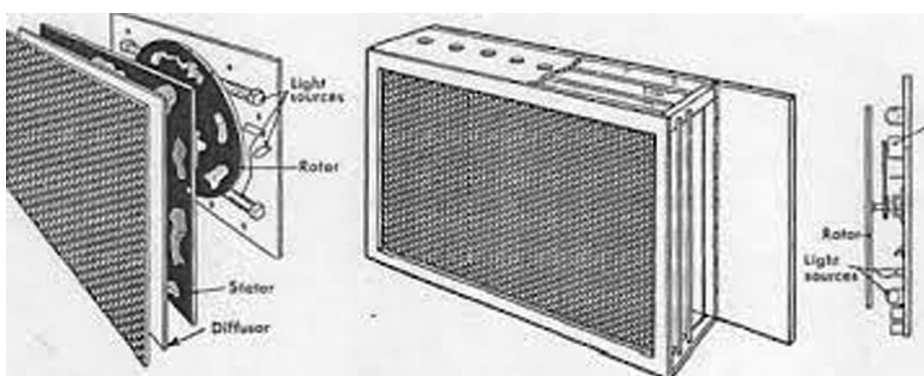


Figure 2. Diagram of Luminodyne system.

The author was persuaded in his second year to become co-editor of *Granta*. The magazine was attracting national attention due to the quality of its contributions and contributors who often went on to work professionally in the media or, like Ted Hughes, to become well-known as poets, etc. It offered an important launchpad for student writers and those visually inclined to disseminate ideas, information and images relating to trends within contemporary art and literature. It was a platform for (eventually) infiltrating the establishment with *avant-garde* ideas. But it was also perpetually in debt to its printers. The author believes he was invited as a kind of buttress between two other editors – one a Marxist and the other a poet.

Having assumed the co-editorship, the author helped to organize a fund-raising variety event featuring David Frost (a former editor) and also Frankie Howerd who tried out for the first time his persona of mocking intellectuals which became one of his most successful

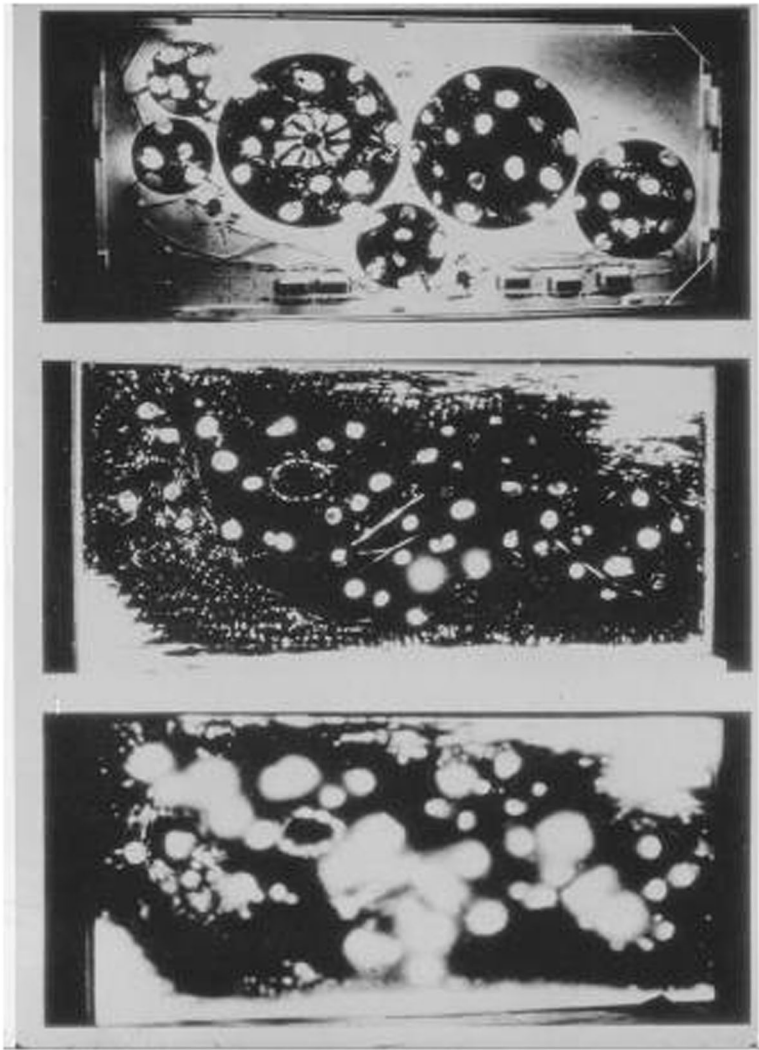


Figure 3. Kinetic Painting, made with Luminodyne system.

and enduring 'turns'. The success of this event helped to boost circulation for the journal as well as clearing its accumulated debts to the printer. The magazine was seen as encouraging a literary flowering: along with Hughes, contributors included Robert Creeley, Alastair Cooke, Thomas Clark, Terry Eagleton, Charles Harrison, Thom Gunn, Clive James and Brett Whiteley. Mark Boxer, who went on to edit the *Sunday Times's* first colour supplement, was another.

In 1964 the author and his co-editor Jim Philip, (the Marxist having already resigned) survived a protest by University dons about a nude image of lovers by Brett Whiteley accompanying a poem by Clive James (who had invited Whiteley's contribution). James fled Cambridge. The University Proctor, a Milton scholar at Kings' called John Broadbent, summoned the co-editors for a meeting, but then announced sagely: 'I am rustivating you both but consider your sentence served'. Behind the scenes, J.H. Prynne, poet and long-standing English academic at Cambridge, who had some responsibility for *Granta*,

played a role in influencing such leniency. The author still regards Prynne as ‘a golden angel ... guardian angel, a great man, liberal, kind, terrific influence. I am eternally in his debt’.⁹

An influential article about Kinetic Art was published in the UNESCO *Courier* magazine (Popper 1963). In early 1964, Popper accepted an invitation to write for *Granta*. His article *Kinetic Art and our environment* was then printed alongside numerous advertisements offering, among other things, day return train tickets from Cambridge to Oxford for seventeen shillings and six pence. There were also photographs of Susannah York, who was the author’s girlfriend for a time; and as it was the ‘Election issue’, articles on *The Conservative Case*, *The Labour Case* and *The Communist Case*.

Popper’s article proposed that Kinetic Art could help to repair a split between art and science that had existed since the Renaissance. Kinetic Art:

by introducing a definite time element into the spatial compositions has set out, both to reflect the ever-changing physiognomy of life and to create permanent artistic change. It follows that kinetic art is primarily an attempt to reconcile Art with Science ... Two methods have begun to bridge the gap: the use of scientifically inspired subject-matter or formal patterns, and secondly the reduction of artistic statements to a formula (a “scientific nucleus”) which can be multiplied as desired. Both these methods are now being used in kinetic art and their sociological consequences, especially in the latter case, are of the utmost importance. Nicolas Schöffer (with the aid of psychologists and physiologists) has created an apparatus of changing colours and luminosities with strong hypnotic effects ... Kinetic art is particularly suited to public performances ... (Popper 1964)

He referenced the author’s article in the earlier journal concluding (in bold):

Kinetic Art is an excellent illustration of the basic dynamism underlying all human phenomena. Art changes the image of Society, and Society in its turn changes the image of Art.

In August 1964, the *London Magazine*, edited by Alan Ross, published an article called ‘Kinetic Art’ by the author (Gadney 1964a). The *London Magazine* was an important context for new writing, reviews of books and exhibitions and cultural opinion. The article was based upon *Towards Kinetic Art, an Original Composition* submitted for part One of the Cambridge English Tripos, 1963/64 (1963b). Dr T.R. Henn, the author’s Tutor, approved the study as an embodiment of an original work of ‘interdisciplinary study.’ Its subject was of course art, not literature (Gadney 1964b). The author took the decision to read art history at Cambridge from 1964/66.

Various, other articles soon appeared in journals and magazines in the United Kingdom and abroad. Cambridge was becoming associated internationally with developments in Kinetic Art. In the second of two influential special issues of the *Times Literary Supplement*, Décio Pignatari, a poet and designer in Brazil, wrote that he ‘had just received a letter from Mike Weaver inviting him to an exhibition of avant-garde poetry in Cambridge.’ (1964). In the same issue dom Sylvester Houédard wrote about June 1964 as ‘foundation of international kinetic poetry fund at cambridge by mike weaver hookup/w popper, schoeffe, malina &c – & planned? autumn expo etc’ (1964). This reference was to the International Kinetic Poetry Fund that Weaver, a Research Fellow at

⁹J.H. (Jeremy Halvard) Prynne is a British poet and Life Fellow of Gonville & Caius College Cambridge where he lectured on English Literature and was University Reader in English Poetry. He retired from teaching in 2005.

Magdalene, had established to help 'those poets making poems with real movement as a basic part of their composition' (Gadney 1964).

Weaver was a very important figure with respect to drawing international attention to what was happening in Cambridge.¹⁰ He initiated *The First International Exhibition of Concrete, Kinetic and Phonetic Poetry*, held at the Rushmore Rooms, in St Catharine's (the author's college) at the end of November 1964. Permission was granted by the Master of the college to open it to the public. Works for the exhibition were posted to Weaver's rooms at Magdalene College from fourteen countries. He brought these to 'Cat' along King's Parade in a wheelbarrow. A lumidyne work from 1959 called *Oui et Non* by Frank J. Malina was included as well as a work by Nino Calos.

Most of the works shown were concrete poetry related. As Ian Hamilton Finlay's *Poor. Old. Tired. Horse.* magazine had shown in the concrete issue (Finlay 1963) a close connection existed between the concrete and the kinetic through optical designs that conveyed visual movement. A considerable correspondence about the exhibition took place between Weaver and Ian Hamilton Finlay.¹¹ A four-page pull out catalogue listed artists and artworks by country of origin (Granta 1964). Its visual editor was Philip Steadman who was also involved in making the exhibition happen. A work of Kinetic Art by the author was included in the exhibition.

On 8 November an issue of the magazine *Image* was published, with the subtitle *Kinetic Art: Concrete Poetry*. This included a text by Weaver called *Concrete and Kinetic: The Poem as Functional Object* and also *Kinetic art – a note* by Frank Popper. The author's contribution *Introduction to Kinetic Art* led into a series of texts appraising the kinetic artists Nicolas Schöffer, Frank Malina, Gregorio Vardanega, Martha Boto, J-M Cruxent, Andree Dantu, Knud Hvidberg, William Soya and Nino Calos. His introduction explored the relationship between art and science, referencing Jacques Barzun¹² again and 'what may be called ill-timed attacks on the attention paid to science by some contemporary artists and critics' (Gadney 1964). He also referenced an article about Kinetic Art by art critic Guy Brett called 'The New Synthesis between Art and Science', in *The Times* in May 1964.

The author's conclusion was that:

we cannot pretend that a complete synthesis has yet been arrived at; because scientific aspirations are in essence different from artistic ones. Moreover, there is at present little evidence of a welding of scientific and artistic method and theory ... As I have already pointed out, the relationship of science to kinetic art is a technological one. Kinetic art has nothing in common with 'priestly' art, with superstition, or with absolute scientific theory. It is more than a rider of Rosenberg's 'tradition of the new' simply because it leans heavily on existing phenomena, on aesthetic elements which are not in essence derivative of art history. (Gadney 1964b)

¹⁰Weaver, Mike. Professorial Fellow, Linacre College, Oxford taught American Studies including American Cinema at Exeter and Oxford Universities for 30 years, with ten years as a Visiting Tutor in Film at the Royal College of Art. He is the foremost scholar of the works of William Carlos Williams. See: *William Carlos Williams; The American Background* (Cambridge, 1971) Weaver, Mike, "Paul Strand: Native Land", *The Archive* 27 (Tucson, Arizona: Center for Creative Photography, University of Arizona).

¹¹Ian Hamilton Finlay Collection, Department of Special Collections, MS 48, Kenneth Spencer Research Library, University of Kansas Libraries. Acquisition Information. Purchase, Mike Weaver, 1965. Purchase, Stephen Bann 1966, 1967, 1969. Dr Weaver subsequently gifted the purchase price of \$100 to Finlay.

¹²A lecture on art and science given by Jacques Barzun in Cambridge on 7th May 1963 was attended by the author and noted in his diary.

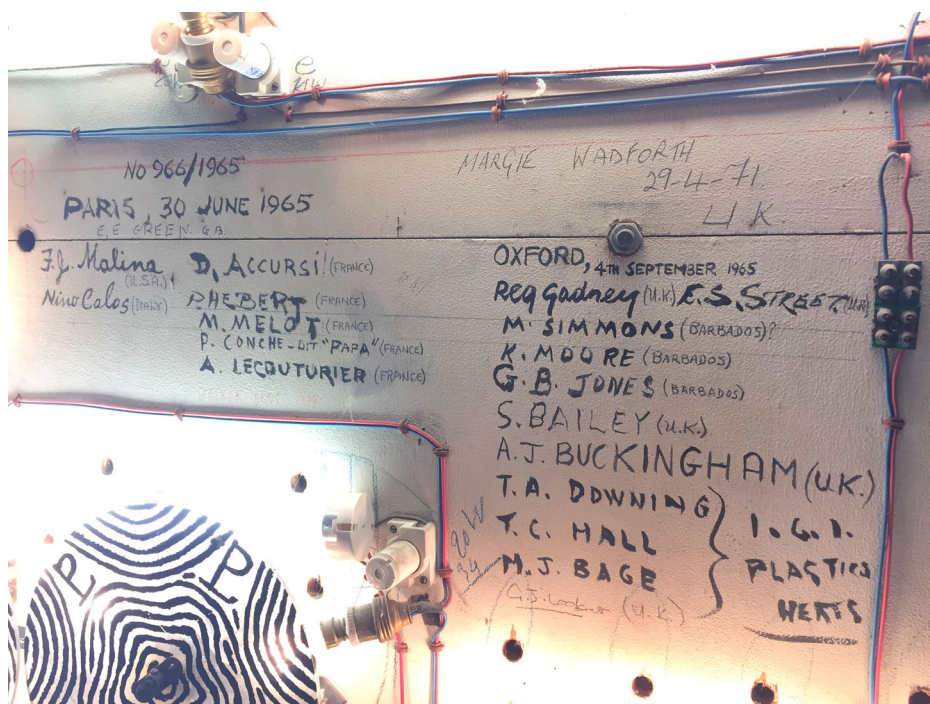


Figure 4. Back of 'Cosmos' Kinetic Art mural with signatures of assistants including Nino Calos and Reg Gadney. Photo: Matthew Collier.

In February 1965 Mike Weaver and the author gave an evening presentation at the ICA in London on *The Relations between Aesthetics of Kinetic Art and Concrete Poetry*. In September 1965, he helped Frank Malina install a large Kinetic Art mural called *Cosmos* in the entrance lobby of Headington Hall in Oxford, then owned by Robert Maxwell (whose Pergamon Press published the first editions of *Leonardo Journal*). The building is now owned by Oxford Brookes University which hopes to display it publicly from 2018/9. *Cosmos*, though mostly switched off, is still working perfectly (Figures 4 and 5).

The author also contributed to *Four Essays on Kinetic Art* (Motion Books,¹³ 1966). With Nicholas Humphrey,¹⁴ and other friends, he constructed a 12 by 10 feet screen projection for a concert party at Finella, the home of Phillip¹⁵ and Margot Bowden.

Back in Cambridge, the artist Anthony Stern¹⁶ introduced Syd Barrett, then a student at the Cambridge School of Art, to the author. Stern recalls:

¹³Motion Books was a name invented for this publication, edited by the author, Bann, Popper and Steadman.

¹⁴Nicholas Humphrey co-edited the *Granta* November 1963 issue. He is a well-known writer and researcher in areas of consciousness. One of his publications is *Soul-Dust: The Magic of Consciousness*; information at <http://press.princeton.edu/titles/9398.html>.

¹⁵Frank Philip Bowden (1903–1968), physicist and physical chemist. In his *Strangers and Brothers* series of novels, C. P. (Baron) Snow, a close friend from student days at Cambridge, 'drew on Bowden as the prototype of [Francis] Getliffe, the gifted, wise and sensitive scientist'.

¹⁶Anthony Stern (b.1944) first started making films at Cambridge, working as assistant to the avant-garde documentary filmmaker Peter Whitehead. He developed the concept of the impressionistic documentary with the making of 'San Francisco' cut to a version of 'Interstellar Overdrive' performed by Pink Floyd. He won awards for cinematography at the Oberhausen, Melbourne and Sydney film festivals.



Figure 5. Frank J. Malina: 'Cosmos' (1965) Photo: Matthew Collier.

There was a man at St Catharine's College called Reg Gadney, who made light boxes in his room. He showed us these things — they were like huge television screens behind which there were a series of mechanical gadgets and light projections. These were the sort of ideas that later became a part of psychedelia, and which the Floyd used in their light shows. Syd and I were fascinated.¹⁷

¹⁷Blake, Mark. 2007. *Pink Floyd, Pigs Might Fly*. Aurum Press, 32.

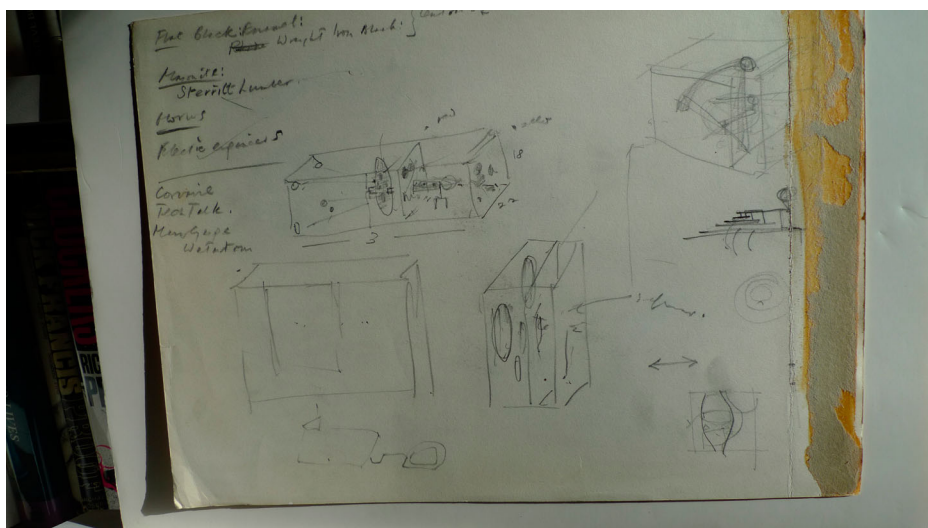


Figure 6. Reg Gadney: Working Drawing for Light Projections (1964).

The work Syd Barrett admired, which no more exists, was based on this working drawing: (Figure 6).

In November 1964, at the author's suggestion, John Kirwan of the Cambridge University Society of Arts, invited Frank J. Malina to give a talk as 'the subject of Kinetic Art is causing considerable excitement in Cambridge at present, especially since the *Image* devoted to it, came out' concluding his letter by telling him, 'our general theme is to be concerned with four dimensional art, which includes movement and weathering'.¹⁸ Malina finally gave the talk in Cambridge on 11 February 1966 and received a warm welcome.

For a short time, an increasing number of articles were devoted to Kinetic art as well as exhibitions were organized in London and elsewhere (Gadney 1965a, 1965b, 1966). The dedicated art space called Signals, preceded by the Centre for Advanced Creative Study, was developed by Paul Keeler, described in *Image* as doing 'pioneer work' (Gadney 1964b). However, this proved temporary. The author began to sense that, as an interdisciplinary subject, Kinetic Art was, as in the Chuck Berry lyrics of the time, 'runnin' wild' with no particular place to go.'

After 1966, the sundry Cambridge critics and theorists went their own ways in academia. In 1966, the author was the recipient of a Josephine De Karman Fellowship Trust scholarship to study at MIT. The trust was established in 1954 by Dr Theodore Von Karman, first director of the Guggenheim Aeronautical Laboratory at the California Institute of Technology. Appointed a Research Fellow at MIT's School of Architecture and Planning, the author worked with Professor György Kepes on the planning for the Center for Advanced Visual Studies (CAVS). Below is an extract taken from his course notes for a lecture on Light Mobile Techniques and Applied Theories for MIT architectural students as well as a drawing for a light work made by the author while in Boston: (Figures 7 and 8)

¹⁸Letter now in Malina's archive in Paris; original copied to the author.

beneficial to talk about kinetic art in general. As the name kinetic art implies itself, ~~kinetic art~~ → it is concerned with motion. Motion, in my view, should not be added as a quality or an appendage, but should be the substance of the work itself. The history of the development of kinetic art is really the history of how motion changed its role in visual art from being simply a quality added to subject matter, then later to abstract compositions which were static, to assuming the role of the substance of the work itself. In simpler terms when we look at a ~~work~~ mobile it is the motion which concerns us first, then the other elements it affects such as composition, colour and form. (SLIDES 1 → 6)

Figure 7. Screenshot of Lecture Notes by Gadney (1966).

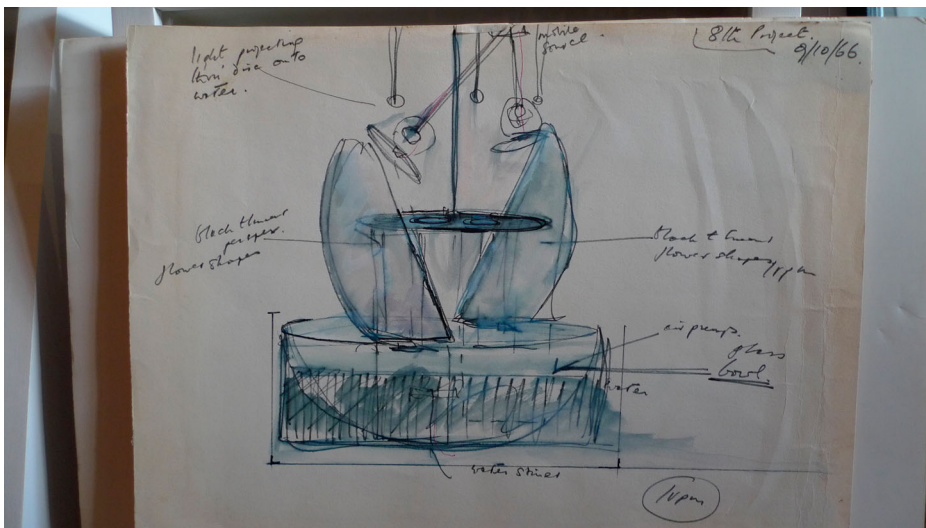


Figure 8. Reg Gadney: Working Drawing for Kinetic Art Work (1966).

The CAVS, now the ACT Fellows programme, was finally founded in 1968 with Professor Kepes as its director. The CAVS sought to encourage collaboration among artists, scientists and engineers, and served as a precursor to the MIT Media Lab.

Kepes, like Malina, constructed light projections whilst pursuing his work as a painter. In the 1930s, Kepes worked closely in Chicago with Laszlo Moholy-Nagy, teaching design at the New Bauhaus (later the School of Design, then Institute of Design, then Illinois Institute of Design or IIT). In 1944, his *Language of Vision* was published (Kepes 1944 [1995]). Used the world over as a college textbook, it reveals Kepes's indebtedness to the Berlin-based Gestalt psychologists. He declared that 'Visual communication is universal and international; it knows no limits of tongue, vocabulary or grammar, and it can be perceived by the illiterate as well as by the literate.'

The book predates other influential texts on the same subject such as Paul Rand's: *Thoughts on Design* (1946), László Moholy-Nagy's *Vision in Motion* (1947) and Rudolf Arnheim's *Art and Visual Perception* (1954).

In *The New Landscape in Art and Science* (1956) Kepes drew connections between 20th century artwork and scientific images made with 'high tech' devices: x-rays, stroboscopic photography, x-ray machines, electron microscopes, sonar radar, high powered telescopes and infrared sensors. His books and teaching exerted a wide influence on the practice of MIT architecture, planning and visual art students.

György Kepes and Malina believed in interdisciplinary practice. The creative use of light, the employment of technology to produce translucence and transparency are the main working elements their work has in common. Kepes put his views forward in his books and Malina through the journal he founded in 1968, *Leonardo Journal of Art and Science*, now looked after by an international network of people led by Roger Malina.¹⁹

It may well be that Kinetic art, the art of light and movement, is now or was then not really a 'movement' at all. Even the expression the *avant-garde* to which its practitioners believed they belonged has lost currency. If anything it belonged and still belongs to a wider vibrant territory, which continues to capture the imaginations of the new generation of artists and researchers who have studied the articles that appeared in the 1960s magazines in Cambridge (Figure 9).

Amy Gadney's work marks an important interdisciplinary watershed. She employs the practice of engaging with unlikely objects, amplifying their obscurity drawing out new, unexpected perceptions of life and meaning. These were issues discussed in the Cambridge magazines of the 1960s and a consideration of her work shows the extent of the influence the articles exerted.

For example, in works such 'Ghost Load', Gadney combines her abstract painting practice with appropriated techniques used by Kinetic artists of the 1960s and 1970s who used sealed boxes, cogs and gears to trick the eye. In Gadney's case, light, movement and optical illusion are enhanced by the latest electro-luminescent technology. She constructs generalized replicas of discarded objects, explained only by their titles and presents them as newly ready-made pieces that fit the exact dimensions of the original. Matt, frosted acrylic shells prevent all reflection, and all corners are smoothed down to blur lines; the original materiality becomes nothing more than the air taken up by the items and operates like a memory, a phantom of their original form:

Once we've found words for things, our understanding becomes over-shadowed by the language we use. This work is about suspending the moment before definition and category, when things are subtle, strange and obscure, when we're not sure of what we're looking at and when our experience feels alive with potential.

'Ghost load' is a term taken from theatre jargon, used in relation to the superstition of ensuring a theatre space never goes dark. By leaving on a light of the lowest possible wattage the visiting souls would be kept from injury. Through the transformation of *venustas* ('beauty') by altering *utilitas* ('usefulness'), Gadney creates uncanny versions, or 'ghosts', of something that only exists in our imagination.

The artist encourages us to rely on our intuition, our pre-language understanding of things – or that which is beyond translation into words – to interact with the object through sensing it, discovering both the empirical and the abstract.

¹⁹Roger Malina, son of Frank J. Malina, is an astronomer, Executive Editor of *Leonardo Publications* at MIT Press and Distinguished Professor of Art and Technology at University of Texas in Dallas, U.S.



Figure 9. Amy Gadney: Kinetic Artwork (2014).

In his article for the London Magazine over 50 years ago the author stated:

The spectator's perception has been freed from the confines of the traditional stasis; and if the elements of Kinetic art that have so far appeared do become consequential, it will necessitate a radical alteration of the established universal philosophies of art. (Gadney 1964b)

He now sees in the everyday screensavers on our computers a direct legacy and lineage of the Kinetic Art pioneers.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributor

Reg Gadney is a writer and painter. His work is represented in public and private collections in the UK, USA, Canada, Norway, Japan, Australia and New Zealand. He has written 14 novels of which

the latest, *Albert Einstein Speaking* will be published by Canongate in October. He was educated at the Dragon School, Stowe and St Catharine's. He was a Research Fellow at M.I.T. and later Deputy Controller of the National Film Theatre. He then became a part-time Tutor at the Royal College of Art and was subsequently Senior Tutor, Fellow and Pro-Rector of the College. He has lectured at Oxford and Cambridge, Harvard, MIT, the Hermitage Museum in St. Petersburg and at the Academy of Arts and Sciences in Moscow.

References

- Barzan, Jacques. 1964. "Science, the Glorious Entertainment": see Chapter 10, *The Treason of the Artist*. Secker & Warburg.
- Finlay, Ian Hamilton. 1963. *Poor. Old. Tired.. Horse. (P.O.T.H.)*. Edinburgh: The Wild Hawthorn Press.
- Gadney, Reg. 1963a. "Kinetic Art." *Granta*. November 30th. Modern Art issue. Volume 68. Number 1231. pp. 24–26.
- Gadney, Reg. 1963b. *Towards Kinetic Art an Original Proposition for Cambridge Tripod (unpublished student work)*.
- Gadney, Reg. 1964. *Varsity*. Cambridge. 25 January. pp. 10–11.
- Gadney, Reg. 1964a, August. "Kinetic Art." *London Magazine* 4 (5): 37–45.
- Gadney, Reg. 1964b. "Introduction to Kinetic Art." *Image*, Kinetic art: Concrete poetry: 8. November 1964. pp. 23–26.
- Gadney, Reg. 1965a. *Mosaic*. Magazine of the Jewish Youth Council. Summer Issue 1965. No.13. p. 21.
- Gadney, Reg. 1965b. *Image*. October pp. 28–33.
- Gadney, Reg. 1966. *Image*. n.d. pp. 23–26.
- Granta. Catalogue Supplement. November 28 1964. Vol. 69. No. 1240. 1st International Exhibition of Concrete, Kinetic and Phonic Poetry. St Catharine's College, Cambridge. pp. i–iv.
- Houédard, Sylvester dom. 1964. *Paradada*. In 'Any Advance the Changing Guard' TLS supplement, edited by John Willett. Reprinted in 'Astronauts of Inner Space, an International Anthology of Avant-Garde Activity' edited by Jeff Berner., Stolen Paper Review Editions, 1966. Accessed December 12 2016. <https://loriemersondotnet.files.wordpress.com/2011/10/astronautsofinnerspace.pdf>.
- Kepes, György. [1944] 1995. *Language of Vision*. New York: Dover Publications, 13.
- Pignatari, Décio. 1964. *The Concrete Poets of Brazil*. In 'Any Advance the Changing Guard', TLS supplement, edited by John Willett. Reprinted in 'Astronauts of Inner Space, an International Anthology of Avant-Garde Activity' edited by Jeff Berner, Stolen Paper Review Editions, 1966. Accessed December 12 2016 <https://loriemersondotnet.files.wordpress.com/2011/10/astronautsofinnerspace.pdf>.
- Popper, Frank. 1963. *Movement and Light in Today's Art*. Paris: UNESCO Courier. August.
- Popper, Frank. 1964. *Kinetic Art and Our Environment*. Cambridge: Granta. April 12–13.



A journey – crossing boundaries

G. L. Mallen

System Simulation Ltd, London, UK

ABSTRACT

Dr George L. Mallen writes about his introduction to computer simulation in the early 1960s and his work with Gordon Pask, founder and director of System Research Ltd, a convergence point of cognitive science, computer technology and art. In 1969 Mallen co-founded the Computer Arts Society and helped to organize Event One at the Royal College of Art which brought computers into the art school. In 1969 he formed System Simulation Ltd and in 1970 developed ECOGAME, a system dynamics model of a hypothetical national economy, implemented at the First European Management Forum, the predecessor of the World Management Forum. Some of the ECOGAME technology was also used by Stafford Beer for the government economic decision room he designed and implemented for the Allende government in Chile in 1972–1973.

ARTICLE HISTORY

Received 13 August 2016

Accepted 13 December 2016

KEYWORDS

George Mallen; Gordon Pask;
ECOGAME; Stafford Beer;
Computer Arts Society; Event
One; System Simulation Ltd

Beginnings

With the benefit of hindsight growing up after the end of the Second World War was a privileged time. So much was new – not the austerity, that was ‘normal’ – but social change, men back from the war, end of empire, National Health Service, council house building – my generation got used to change and possibly took the progress made for granted. In my idyllic part of the Scottish Borders the progress was evident. Dad back from his work on radar knew about the technological revolutions under way. The Spitfires and Blenheims which we came to know during their training sorties from Charterhall aerodrome during the war were replaced by the Vampires and Meteor jets of the Royal Air Force and very occasionally USAF Sabres. So I became obsessed by aircraft and, at 17, won a place as a Student Apprentice at the Royal Aircraft Establishment (RAE), Farnborough. Bliss!

After graduating, in 1962, I was offered a position in the Maths Services Department of RAE and worked on a computer simulation project exploring future air traffic control regimes (a) for the twin runway operations at Heathrow and (b) for the supersonic Concorde. That experience of working on designs for future systems was inspirational and led me to look for wider applications of simulation techniques. By a variety of happy accidents I was put in touch with Gordon Pask, a leader in the interdisciplinary world of cybernetics and head of an independent research company, System Research Ltd, based in Richmond, Surrey. I joined him in October 1964.

Gordon Pask and System Research Ltd 1964–1970

My role in System Research Ltd as Research Associate was to lead a project to analyse decision-making in crime investigation. This was funded by the Police Scientific Development Branch of the Home Office and ran from 1964 to 1970. I proposed a simulation approach and SIMPOL (SIMulation of a POLice system) came into being. This entailed the creation of an information management game in which subjects, usually experienced CID officers, ran a simulated CID team in a fictitious regional police force. Profiles of the detectives were created characterizing different capabilities and the simulator operators learned these characteristics and followed a set of rules to retrieve information from a crime dataset. The fictitious town had a small criminal population and scenarios of their criminal behaviours were developed. These resulted in crime reports which were fed to the CID officer managing the simulator, who then had the task of allocating his team to investigate the reported crimes. When allocated to a crime the operators ‘playing’ the detective team then used defined rules to access the crime information derived from the criminal activities scenarios.

Over several years, and many runs of the simulator, we recorded the decisions taken by the subjects and used these to create a model, initially flow diagrams, of the decision processes. My goal then was to build a computer model to replicate the behaviours we observed in the simulator. The results from the project were reported back to the Home Office and we believe had some influence on the implementation of local intelligence gathering when police started operating panda car patrolling. The BBC TV team producing the popular ‘Z-Cars’ police series visited our office in Richmond to see how we had developed the various community and crime scenarios. I like to think I could see some of our work in the later series of ‘Z-Cars’. Following that the BBC ‘Tomorrow’s World’ did a piece on the project which was broadcast in 1967 I think. Unfortunately the film I had of the broadcast, given to me by the BBC, has been lost and the BBC archive does not have a copy.

However, my fondest memory of the project and perhaps the greatest tribute to its realism, was the day we were raided by the local Richmond CID. To accommodate the simulator we had rented extra office space on the top floor of System Research’s office. This was above some other offices and, it turned out, the voices of our simulator operators carried down the stairs. Our good, alert and civically minded neighbours below concluded we were planning a heist at London Airport (several of our crime scenarios involved incidents at the airport local to our fictitious town) and reported this to the local police. Thus, in the middle of one simulation run, several genuine CID officers bounded up the stairs and demanded to know what was going on. Our subject in that run happened to be a Detective Chief Superintendent from the Home Office Scientific Development Branch. So all was explained and smoothed over but a wonderful validation of the project’s realism.

My colleague on the project, Mike Elstob, and I then later used the SIMPOL project as basis of our PhD programmes in the 1970s.

Besides the police project I was involved in other System Research projects, particularly the development of a computer model of Gordon Pask’s psychological learning theories. Gordon was a great gadgeteer and had built adaptive teaching machines, for example, to train teleprinter operators, and he used these as a way in to understanding human skill

learning processes. He had set out his theories in a range of reports and publications and I tried to distil these down to a form that lent itself to computer modelling. To summarize, the theory was that sophisticated skills are built from the successful repetition of distinct component sub-skills. So, for example, in learning typing, success in finding a key leads eventually to the ability to locate the key without looking at the keyboard. The subskill of finding keys then gets consolidated into the ability to find groups of keys in forming words. I was able to develop a dynamic model of this process which gave a reasonable replication of some of the learning experiments.

System Research was a small operation, only two or three full-time Research Associates and two or three technical assistants but because of Gordon's reputation it was amazingly well-connected. Many luminaries of the AI and cognitive science worlds visited and were entertained by Gordon's somewhat eccentric hospitality. He ran his life on a 36-hour rhythm which meant sleep times and meal times seldom coincided with those of us on normal 24-hour diurnal rhythms. Nevertheless the theories and ideas which came of the resulting late night conversations were intellectually very stimulating, if physically demanding.

Around in early 1964 Gordon had given a lecture on systems theory and cybernetics at Ealing College of Art. This had a major impact on some students there and several found their way to visit System Research to pursue conversations and thoughts. Steve Willatts was one of these and I subsequently assisted on one or two of his projects. Up till then I had had very little contact with the art world. But the 1960s were the 1960s and discipline boundaries were breaking down. System Research became a convergence point of cognitive science, computer technology and art. One project was with theatre director and writer, Joan Littlewood. She, Gordon and architect Cedric Price had conceived the notion of the 'Fun Palace' which would be an interactive environment allowing audiences to participate, through instrumented chairs, in on-stage productions. Sadly the technology of the time was not up to it and the 'Fun Palace' remained as just a vision. But other art connections emerged. One of the RAs at System Research was Mark Dowson who provided much of the electronic expertise for Gordon's projects. Mark also worked with composer Peter Zinoviev in Putney developing his Electronic Music Studio music synthesis system and on a visit to the studio in Putney I met Alan Sutcliffe. At that time Alan was running a software group in International Computers Ltd (ICL) offices in Putney but he also had a strong interest in computer-generated music and was a frequent visitor to Zinoviev's studio. We had in common the fact that we were from technical backgrounds and were getting involved in crossing technology/art boundaries.

In early 1968, an invitation to Gordon arrived to create an exhibit for Jasia Reichardt's planned Cybernetic Serendipity project at the Institute of Contemporary Arts. The response to this was the 'Colloquy of Mobiles' an interactive sculptural concept which involved a pair of almost life-sized Hieronimous Bosch-type figures hanging as mobiles but controlled by various electronics to rotate and dance around as spectators entered its orbit. The system was built by Mark, assisted by Tony Watts from Gordon's initial conception. My role was in getting the system to the ICA and helping with the installation. It proved popular when it worked, but was a mite unreliable.

The Computer Arts Society and Event One 1969

Alan Sutcliffe and I were both members of the British Computer Society (BCS) and through this we met John Lansdown who was developing ideas for computer-aided architectural design for his architectural practice in Russell Square. Subsequently we all met at the 1968 IFIP (International Federation for Information Processing) Congress in Edinburgh. Following a lecture by, I think, Tom Kilburn, whom Alan knew, the idea of forming a Computer Art Specialist Group was mooted. When we got back to London a proposal for creating the Group was presented to the BCS and was accepted. Alan was Chair, John was Secretary and I was Treasurer.

The time was ripe for bringing computing from its roots in science, technology and commerce into the arts and culture world. Computer graphic technology was developing rapidly at that time and this spearheaded the culturization of computing. The first meetings of the Computer Arts Society (CAS) were held in informal pub venues but it soon became apparent that these venues were not really suitable for the Society so John Lansdown volunteered to host the meetings in his architectural practice's office in Russell Square. This worked very well and enabled the Society to focus on activities, putting on exhibitions and events and starting up its PAGE quarterly journal. Thus it was that Event One at the Royal College of Art (RCA) in 1969 marked the emergence of CAS into the wider world.

Event One was designed to demonstrate that computers could influence all the arts and a wide range of exhibits and performances were planned and implemented. This was ambitious but it worked. Run over three days in the downstairs gallery at the RCA it attracted an audience happy to pay an entrance charge and engage with the novelty. The breadth of exhibits and projects displayed was, in my view, a great tribute to the creative energies of the artists, scientists and technologists and to their willingness and enthusiasm to collaborate across the discipline boundaries. I wrote the following for the Event One Catalogue 1969:

Computers in Architecture and Sculpture – George Mallén

Among a civilisation's most lasting effects are its sculpture and architecture and therefore, inescapably its technology. What will the twenty-fifth century scholar have to remember our explosive epoch by? Unarguably, our spirit is of scientific method and its technology – we seek to control by understanding what our medieval counterparts sought to control by worship. Sculpture, which preserves ideals of form, and architecture, which seeks to fuse function with form, have themselves become fused in the lawful harmony of engineering. Perhaps Concorde will be remembered (like Chartres?) as an expression, a symbol – something men needed to do.

What of computers? At one level they are tools. They make very complex projects possible by dint of enormous calculating power. As it is in his nature, man will play with this power. He will use it to produce marvellously varied drawings and animations and shapes. By the laws of probability, some of these will be acceptable as 'Art'. This acceptance is, of course irrelevant. What is interesting are the drawings and shapes and the processes of their construction.

At quite another level, the computer allows the control of very complex processes. In this area, their potential is but dimly understood. Many questions are asked, but as yet, few answers have emerged. The creative processes of artists are thought to be extremely

complex. How may computer technology be harnessed to assist, to inspire, to improve these processes?

Current experiments in music, drama and dance (the 'dynamic' arts) mentioned elsewhere in this booklet, are exploratory first steps.

That was 1969 and these first steps have, over the succeeding decades, led to the now flourishing worlds of digital art. Not least, the computer-generated art works which the CAS collected now form the basis of the national computer-based art collection held at the Victoria and Albert Museum. Perhaps it was part of the last flourish of the 1960s cultural revolution before the onset of the grimmer 1970s, but it will be the job of historians to unpick the threads and influences at work.

System Simulation and Ecogame

Involvement in the arts scene was, for me, a life-changing experience and opened up many new opportunities. In 1969, I left System Research Ltd and set up a new company System Simulation Ltd (SSL) with Mike Elstob. Mike later went to the Cybernetics Department at Brunel University. Bernard Scott carried on the work at System Research further developing the learning models and went on to develop Conversation Theory with Gordon.

System Simulation's first contract was with the Home Office for a final report on the SIMPOL project. By the time that was done we had received a commission from IPC (International Publishing Corporation) where Stafford Beer, who had originally put me in touch with Gordon Pask in 1964, held a senior post.¹ At that time IPC was a conglomerate of some 80 different publishing houses each with its own financial planning systems. Our commission was to provide a financial planning system that could be used across the company. The result, CABS (Computer Aided Budgeting System), was written in FORTRAN, and though not graphically based (our computing was then on time-sharing systems accessed from teleprinters and low speed modems) it turned out to be a precursor to spreadsheets. CABS was installed in the mid-1970s and we were amazed to discover, when we next had contact with IPC in the mid-1990s, that it was still in use.

Our next project was a contract from Professor Frank George's consulting firm to undertake a systems based approach to understanding navy procurement processes in the Ministry of Defence. The project was co-ordinated by Philip Rawson, Professor of Naval Architecture at University College, London. By that stage, the Computer Arts Society, following the publicity aroused by the Event One exhibition of Computer Art at the RCA, had become more widely known. In late 1969 it was approached by the British Equipment Trade Association (BETA) to design a computing based theme exhibit for the Trade Fair, Computer 70, planned for Olympia in late 1970. The intermediaries were two highly creative artists, John McNulty and Anthony McCall.² John wanted a Buckminster Fuller type geodesic dome as the centrepiece and Anthony wanted to

¹Stafford Beer (1926–2002) A captain in the British Army during the war he recognized the value of applying operational research in non-military contexts. Wrote *Cybernetics and Management* (1959). In 1961 he established SIGMA the world's first operational research consultancy and coined the term 'data highway' when working later in the 1960s for the International Publishing Company. He rose to international fame advising President Allende in Chile in the early 1970s on how a cybernetics based control system might manage the country's economy.

²Anthony McCall studied graphic design and photography at Ravensbourne College of Art from 1964–1968 and worked on various catalogues for art exhibitions, for example, for ICA's *Apollinaire 50th* anniversary exhibition in 1968. He became a leading member of the London Film-makers Co-operative. In 1973 he moved to New York where he made performances

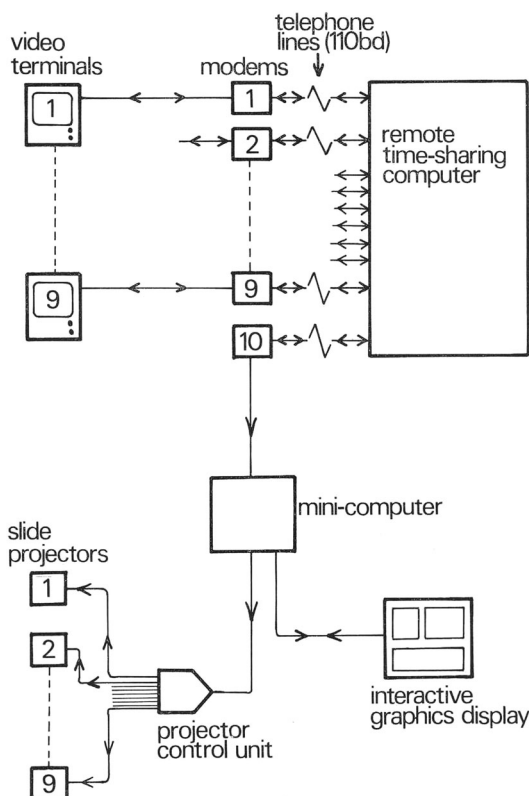


Figure 1. Hardware layout of the Ecogame system.

display computer graphics inside the dome. At that precise time I had been developing some ideas for using Jay Forrester's System Dynamics computer modelling in the further development of the learning model. In discussions about the proposal we came up with the idea that we could devise an interesting and future looking interactive exhibit if we could get some graphics terminals and hook them up to 35 mm slide projectors. John Lansdown had been in touch the American graphics company Tektronix for equipment for his architectural practice and Tektronix welcomed the opportunity to show case their latest graphics terminal at the exhibition. A second American interactive graphics manufacturer Idiom came on board, again to show case their technology. Finally I think it was John McNulty who had contact with an electronics company, Electrosonic, in south London, which had developed an interface for controlling 35 mm slide projectors from a computer. BETA accepted our proposal to build an interactive game which could run inside the geodesic dome. The heart of the game was a system dynamics model that I developed of an hypothetical national economy which was controlled by three players seated at three Tectronix terminals each with slide projectors projecting images of how the model economy was faring on to screens suspended above the terminals. These images were photographs collected or taken by Anthony McCall. So, for example, if the

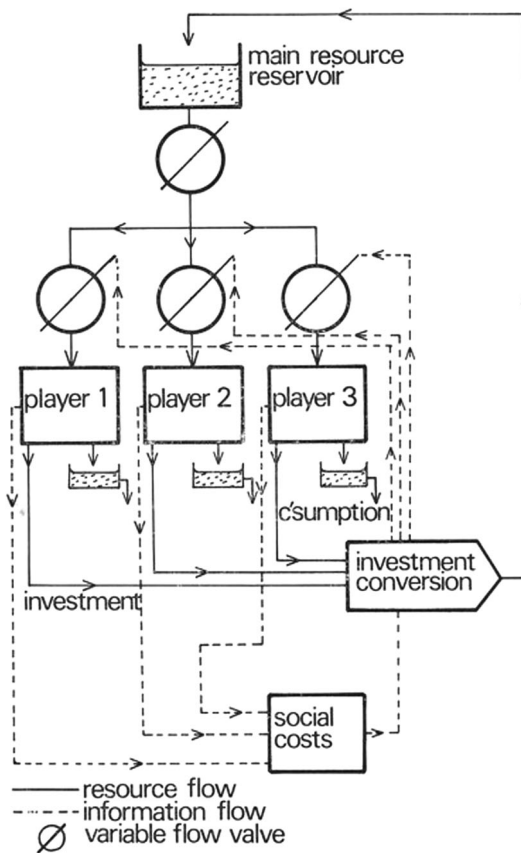


Figure 2. Economic flow diagram for Ecogame.

model economy was performing well and creating wealth, colourful images of happy citizens, elderly folk or families at play were selected. If, however, the economy was being run down, black and white images of dole queues or civic unrest would be selected. So spectators could see how things were going by the mood of the projected images. We called the system Ecogame (Figures 1 and 2).

Ecogame generated considerable interest and I was interviewed by the Sunday papers. Unfortunately the Sunday they were due to publish articles on Ecogame there was a newspaper strike and the articles did not appear in England, though I think one appeared in Scottish papers. Nevertheless, there was sufficient publicity to attract the attention of staff at the Swiss business school, Centre d'Etudes Industrielle (CEI), who were about to launch the European Management Forum in Davos in January 1971. We had a visit from CEI and as a result SSL was commissioned to implement a version of Ecogame at the First European Management Forum. So we got a budget, reassembled the team and committed to getting all the kit to Davos for the Forum and running a daily session of Ecogame for the senior business people and politicians who attended the Forum. It was deemed a great success and contributed something to the overall success of the Forum which went on to evolve into the World Economic Forum which is now held annually in Davos. The Ecogame project had impact beyond Europe, however. Stafford Beer, saw

the project in operation at Davos and later used some of the technology for the government economic decision room he designed and implemented for the Allende government in Chile in 1972–1973.

Back at home System Simulation began to develop a computer graphics application business. Alan Sutcliffe joined us from ICL and did our initial computer graphics work on an animation for bits of a TV advertisement for Gilbeys Gin. John Lansdown developed these methods further and developed many early computer animations for ad agencies in London. I was offered a Research Fellowship at the RCA to study decision-making in design processes and that began another chapter in my journey through interdisciplinary worlds.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

G. L. Mallen is founder of System Simulation Ltd, a long established software development company specializing in multimedia information management systems for the culture sector. He is also co-founder of Business Futures Network, a spin off from Stanford Research Institute, advising corporates on emerging markets and technologies. His first work in computing was developing simulation models of air traffic control systems at the Royal Aircraft Establishment, Farnborough. Subsequently he developed simulation tools for studying human learning and decision making with Gordon Pask at System Research Ltd. In 1968 with John Lansdown and Alan Sutcliffe he was a founder member of the Computer Arts Society. He set up the first Computing Activities Unit in the Royal College of Art. This led to projects in film and TV, including computer graphics sequences for Ridley Scott's *Alien*. George was the founding Head of the Department of Communication and Media, latterly the Media School, at Bournemouth University, which went on to house the National Centre for Computer Animation. Throughout he has led System Simulation to establish itself as a leading supplier of collection management systems and tools for major museums, galleries, archives and digital image libraries.



The Conceptual Designer in 1965: Stephen Willats interviewed by Bronač Ferran

Stephen Willats

Interviewer: Bronač Ferran  *

ABSTRACT

This text is drawn from an interview with Stephen Willats by Bronač Ferran in summer 2016. Questions set by Ferran were answered by Willats who, working with the transcription of the interview edited it further, adding new answers to new questions. Ferran then revised her questions. In the interview Willats reveals why he came up with the concept of the Conceptual Designer, the evolution of his Shift Boxes and Visual Automatics works, how cybernetics, media theory and design communication impacted on his practice, the influence of Ross Ashby's homeostatic network thinking, the development of Multiple Clothing and self-organizing furniture, his time at Ipswich School of Art devising problem situations and socially engaged solutions with students and the creation of Control magazine.

ARTICLE HISTORY

Received 28 July 2016

Revised 16 December 2016

Accepted 20 December 2016

KEYWORDS

Stephen Willats; Conceptual Designer; shift boxes and visual automatics; control magazine; Ipswich School of Art; multiple clothing

When did it all begin and why?

1965, the year when I came up with the idea of the Conceptual Designer, seems to me personally and in retrospect the defining year of the decade. It represented a shift from the rebelliousness of the late nineteen fifties and early nineteen sixties, that was primarily against the confined determinism of established English norms and values, and towards a more complex, fluid and positive vision of a new society. This new vision lasted till the early nineteen seventies when it seemed to finally peter out.

During the mid nineteen sixties, I felt that the inherited *modus operandi* of art practice was really very constricting in relation to the society I saw opening up around me. I felt that artists should divest themselves of all previous practice, history and precedent. They should go back to zero and start again. Considerations such as composition of the audience, context, language and meaning then immediately become crucial variables in the making of new work.

I had come to the conclusion that so called 'traditional art' was not only stuck or looking backwards but that it was completely redundant. I remember being visited in my studio at London Mews, Paddington, by people like Edward de Bono and Desmond Morris who talked about ideas of a new open creativity and at that time I also met some great people working in advertising. So I decided to go and work in the atmosphere of my friend Dean Bradley's 'Design Communications', an advertising agency in Barret

CONTACT Stephen Willats  stephaniewillats@btinternet.com

*Bronač Ferran is a writer and curator.

© Stephen Willats 2017. All Rights Reserved.

Street, off Oxford Street. But I didn't contribute to their programme of work. They just gave me bench space and I did my own work there. It was like using it as a studio. I was in the creative ambience of this young forward-thinking agency, meeting all these creative wild people. I felt I was on an active quest to seek out other territories of information and models of communication not only in advertising theory, but also in learning theory, semiotics, educational psychology, games theory, cybernetics, etc. So there was for me no taboos or limits to where I might go. Then the idea of becoming a Conceptual Designer happened quite suddenly. In a way it was in a moment of desperation.

How did this all relate to your role or position as an artist?

To sketch out some of the background to this and particularly to relinquishing the authorship of the 'artist', I need to go back a couple of years to 1963 when I had started to be invited to contribute to various kinetic art group exhibitions. I felt I was being misrepresented as my work had really nothing to do with kinetic art. So the reception of my work was being conditioned by the context in which it was being presented and the intention and reception were not connecting in the way that I had hoped.

In terms of what I was presenting, a year or so earlier I had done some research and development at the National Physics Lab where Christopher Evans, one of the first ever popular scientists, who was very receptive to working with artists, was based. Then I had developed a series of works titled *Shift Boxes and Visual Automatics*, which were based on random variable theory and probability theory. A fundamental idea of these works was to present a viewer with a truly random perceptual situation, which cognitively the brain could not accept as it looked for order. So the viewer was programmed to look for order and to look for probability. And when there was no order they tried to create it. These works were presented with a series of lights that flashed on and off but the lights weren't just ordinary lights. They were shaped in the form of an arrow, that is a very important directional symbol, deep in everyone's subconscious (Figures 1 and 2).

My idea was to present this work in darkness so that viewers only had the concentrated and articulated area of the work in front of them and so they wouldn't respond to anything else around it. I made a series of these works and what I was tried to do was to be rigorous. With each one there was an optimum period to look at the work. During this durational period what inevitably happened was that, before long, viewers started creating patterns, or sequences that don't actually exist, which eventually broke down into disorder.

What I sought to do was to tell viewers something about how you create order when there is no order. This is actually a very fundamental cognitive realization.

So these works had certain conditions – but I was unable to find anywhere to present them.

The only place that I could get included in were those exhibitions of Kinetic Art but, as previously stated, they had nothing to do with Kinetic Art. I always thought Kinetic Art was about the aesthetics of light and movement, and things like that, but these works of mine were pragmatic, functional tools to be used by the viewer. I was always uncomfortable in exhibitions like the one in Brighton called K4 in 1967.¹ I was deeply involved in a

¹K4 was an immersive audio visual installation organized by the Advanced Studies Group at Hornsey College of Art at the West Pier for Brighton Festival in 1967 which included works by Delia Derbyshire and an appearance by Pink Floyd. It was held in parallel with a Concrete Poetry exhibition organized by Stephen Bann. See http://brightonfestival.org/news/festival_fifty_five_shows_from_1967/ (accessed December 12, 2016).

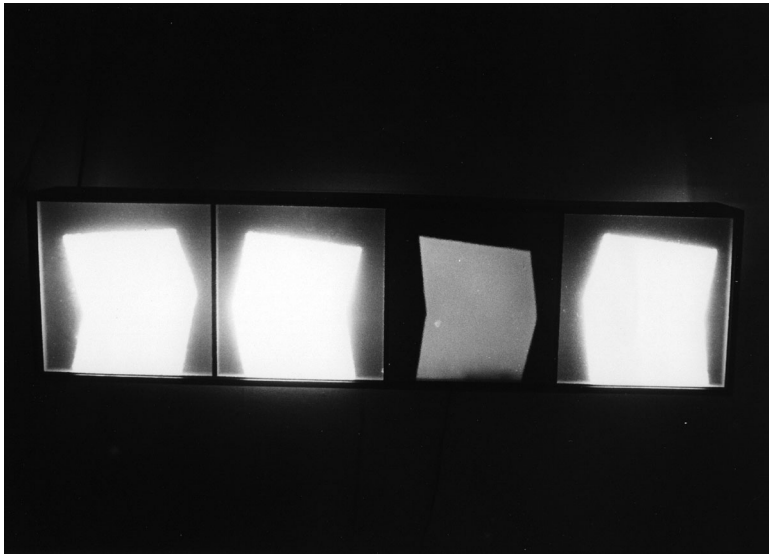


Figure 1. Shift Box No 1 1964 (Copyright: Stephen Willats).

programme of building these Visual Field Automatics works. I was making at the time six Visual Automatics and three Shift boxes, so it was a lot of work. But I couldn't find anyone to finance them (Figure 3).

Around this time I also did a project with Mark Boyle at the ICA.² His idea was to create a floor grid using provided media items ranging from musical instruments, to light projections and films and the idea was that people would simultaneously and spontaneously enact performances in this grid. I devised a decision-making flow diagram which enabled people coming into the ICA for the 'happening' to decide where they wanted to go in the grid, and who they wanted to be with, and also they could record their reactions and responses to what they did. Again this was all to do with random variable theory.

But despite activities such as these, I generally had that feeling that art practice in general was not going anywhere. It was really difficult to know where to place these works. The traditional gallery world at the time was not only very academic, but socially quite small compared to today. There were very few possibilities to present a truly avant-garde art practice and the public galleries were primarily interested in historical shows. So being firmly in the margins, I thought I had to do something to change the prevailing acceptance of art as a hierarchical, monumental agent of hierarchical immortality, reflecting really the norm of exclusivity and the power of the possessive object and things like that. This I thought was absolutely inappropriate to the new world that was emerging.

Who or what were the other important influences?

At the same time this world was throwing up all kinds of genuinely exciting people speculating on new visions of reality, like Marshall McLuhan, for instance. People of my

²Mark Boyle was an artist well known for his series of earth probes and lightshows made with Joan Hills and other close collaborators in the 1960s.

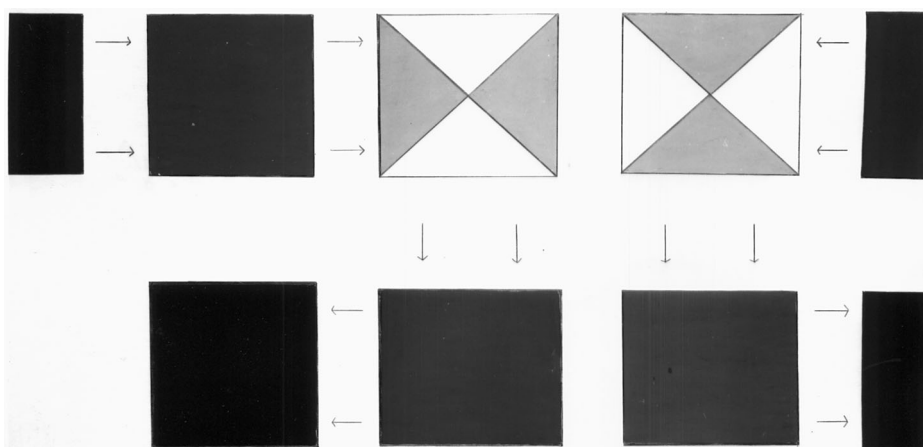


Figure 2. *Drawing for a Project No 15 1965* (Copyright: Stephen Willats).

generation felt that another kind of society was really emerging, which was going to be based on ideas of exchange and feedback, mutuality and self-organization and this is why Ross Ashby's model of the Homeostat, a self-organizing network, becomes so

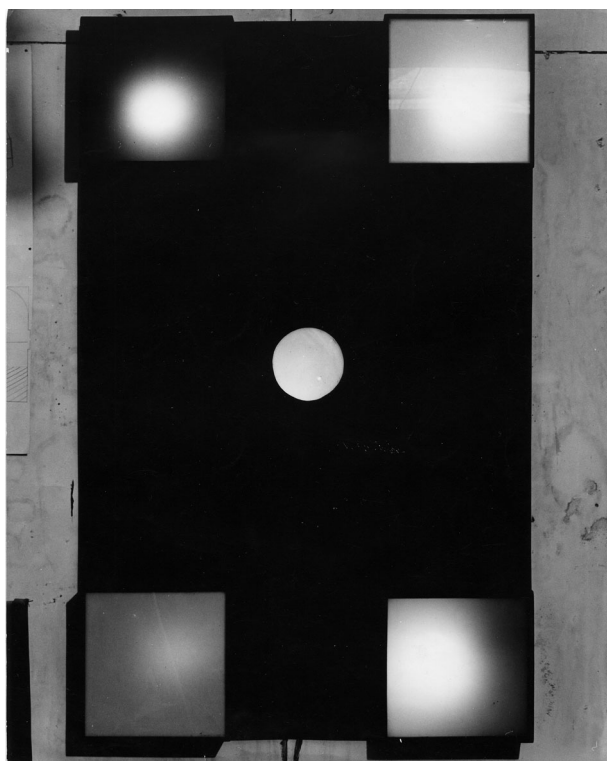


Figure 3. *Visual Field Automatic No 1 1964* (Copyright: Stephen Willats).

interesting.³ My contribution to the development of this wave of optimism for the new society was to invent the Conceptual Designer.

However I do feel it is difficult *now* to really get the spirit of then. We all felt – the people I associated with – that we were really on the ball. We were really fast-moving modern people and it was great to be modern and it was exciting. We thought we were going places no one else had been to. That again was truly thrilling. Until I did projects like the West London Social Resource project or the Social Resource Project For Tennis Clubs in the nineteen seventies, I didn't get that feeling back.

Just to give you an illustration of the mid nineteen sixties open atmosphere I remember I got contacted quite out of the blue by a couple in advertising who lived on the edge of Shepherds Bush and I remember I went to their flat and found this incredibly stylish modernist couple, this elegant, glamorous man and woman who wore fabulous designer clothes living in this really modern apartment with wonderful furniture, everything was just fabulous. There were no corners to the rooms, everything was rounded, with carpets that went all the way up the walls. I do remember this experience. Everything was blue and white, the furniture was white and the walls were blue. This lady wore a chainmail type dress and very expensive 'Courreges' boots⁴ and this guy wore a sharp Mr Stephen's style suit with a shirt that had high rounded collars. It was like a film, but everything was for real. I went in there and they were smoking big dope joints, which was quite outrageous at the time. They seemed spaced-out but not cognitively out of it so you could still have a lucid conversation. They said they had got in touch with me because they felt that the ideas I was dealing with were relevant to this idea of being 'modern', of *today*, and we subsequently had this great exchange of ideas. I don't know who these people were. In fact, I wish I could find out. I mean, what happened to them, who knows?

So I had come up with the term the Conceptual Designer to make a break with the idea of the artist. I entered a period of theoretical speculation about the function and meaning of this new person. An outcome of my thinking was that all cultural activity was a product of society, there was no unique authorship in reality, so from that moment my work was largely anonymous and this lasted up until the seventies. I had lots of visitors to my studio, other artists, academics and the like. At that start of my day as the Conceptual Designer I put on a white coat, so as to ritualize the period of speculation, to free myself from past ties (Figure 4).

Here cybernetics was undoubtedly an important influence, especially with models of feedback and self-organization in decision-making. These ideas stimulated different aspects of the Conceptual Designers production.

How did you decide what to do with this concept?

I was looking to find ways of intervening in society, intervening in its interpersonal fabric, so that people could express something of their personal self-organization. It was linked to

³W. Ross Ashby (known as Ross) was a psychiatrist and pioneer in cybernetics, the study of complex systems. His books *Design for a Brain* and *Introduction to Cybernetics* were landmark publications (see <http://www.rossashby.info>; accessed December 12, 2016).

⁴André Courrèges was a French designer whose Couture Future collection in 1965 started a trend for A-line dresses, plastic boots and vinyl jackets, with geometric forms and bright colours connected to a 'space age' aesthetic.



Figure 4. Stephen Willats as Conceptual Designer, in his studio at London Mews. 1966 (Copyright: Stephen Willats).

the idea of intervention in everyday life, but it wasn't only like that. The idea was to intervene within an accepted fabric of interpersonal relationships.

From the initial speculative exploration, a number of outcomes were established. Working with my partner Felicity Oliver, I initiated Multiple Clothing, based on the idea was that the language of clothing was culturally innate. It was something that everybody responded to without having to write a thesis about it. I also created the Coreee

Design, variable self-organising furniture, started the magazine *Control* and set up an educational course at Ipswich School of Art and Derby School of Art.

The series of Multiple Clothing were like works. The idea was that when you put them on, then you changed yourself into this work: you became the work and when you interacted or you had relations with other people this would animate/initiate the work also – so the pieces all had this possibility of change within them and so you could change your identity and transform yourself. You bought it as a kit and you could then make it into a dress or a long dress or a jacket. In a way it was unisex, though we weren't particularly thinking along those lines. As part of the drive to get it into the fabric of society I contacted various leading boutiques at the time like Countdown in High Street Kensington, Biba and places like that. Either my partner or myself went along to the various boutiques and tried to persuade them to take these pieces so they were on the rail as a kit.

They were for sale but not at art prices. The idea was to go beyond the art gallery realm into another way of thinking – which was about the presentation of an art work into society, into another way of thinking and using associations of High Street fashion consumerism as a starting point for engagement with the work.

There were some drawings for each design and some Gestetner literature which went with each piece which told you how you might use it. The idea behind each Multiple Clothing Design was that you became the active agent in the design when you put them on and for the limited duration when you activated the work. You could wear them wherever you wanted, but you probably wouldn't wear them all the time. They'd be something you would put on for a few hours and then take off.

The other thing I developed as part of the Conceptual Designer was Coreee furniture, self-organising furniture that could become different things, which I made with Felicity Oliver in my studio/workshop at London Mews ([Figure 5](#)). We made it all ourselves and so it wasn't very well made. Often it didn't last long before it broke down. But I had some till 1974 and also I have a recently re-made Coreee Design that could last a hundred years. Anyway you could sit on it and use it as part of daily life. It could become a bed, a table or a work unit and different things like that. We also made a vacuum-formed helmet which had a set of coloured visors and also shopping bags. Apart from the shopping bags it was a commercial failure. We didn't have the PR and marketing resources to successfully launch this kind of project.

One other interesting thing about Multiple Clothing was its use of plastic, which was then a new material and seen as modern and sophisticated. Marshall McLuhan was one of the very big influences on me. I was always very interested in his graphics which I thought were important and I have all his books. He made the very important observation that the fabric of things reveals or reflects an ideology and so plastic was very interesting because it denoted a certain level of society in its manufacture and creation. You needed to have chemical industries to create plastic so it needed a modern sophisticated society to make it, not like wool or other natural materials. So we thought of ourselves as 'thrusting creatives' not reflecting the past and only going forward.

How did you apply these ideas to your work in art schools?

Another aspect of the Conceptual Designer was teaching. In fact this turned out to be the principal means of financing the Conceptual Designer production. But of course it also

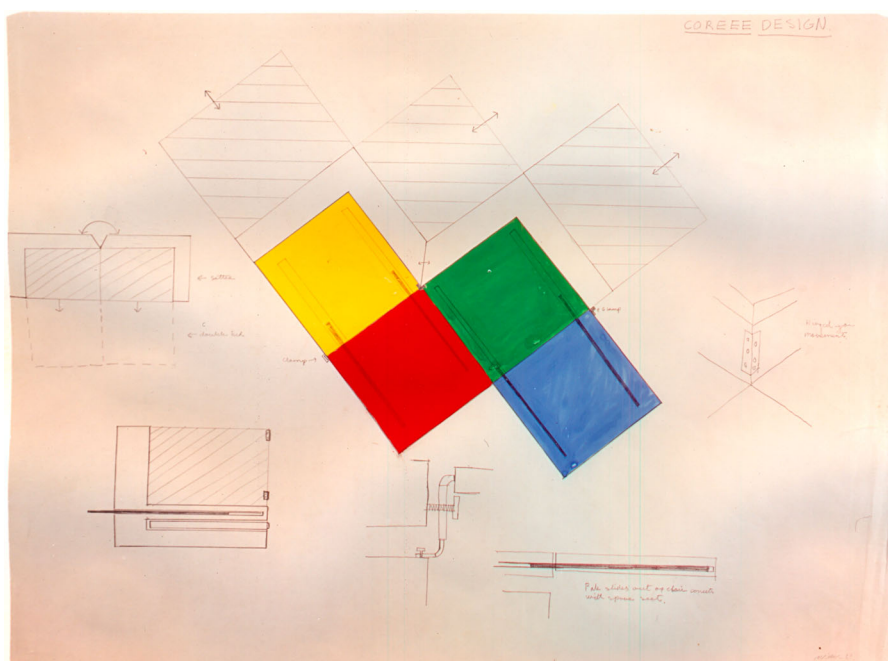


Figure 5. *Coreee Design* 1965 (Copyright: Stephen Willats).

informed it. The teaching I did at Ipswich School of Art was through a contract given to me by Roy Ascott, who I knew as a course leader from Ealing. During a conversation I had with him at a private view at the Hamilton Gallery about teaching, he suddenly offered me an opportunity to teach at Ipswich. It turned out to be a finite contract that lasted for a year. But it had a very profound effect both on myself and the students I was working with which I think some of them never really got over. It took place mainly in some old unused studios that I had to myself above the local High Street Museum situated next to the Art School proper (Figure 6). What is important about it is I think is the idea of educational practice reflecting a different ideology of society. The underlying principle of my educational ideas was of self-organization based on one-layer networks between people, reflecting mutualism and co operation between participants. Some of the students who took part went on to other art schools afterwards and found they couldn't continue in the traditional studio practice they found there because they had had such a personal freedom in a very different kind of creative situation. So I think it was about this idea of creativity within mutualism and also the idea of extending the number and richness of variables available to the creative thinker.

We did all kinds of projects. For instance one of them was do with random variables and resulted in the students making balloons with cans of paints underneath, with a hole in them and these were floating across the town of Ipswich, leaving a wandering line which went at random around various places.

One of the weekly tasks the students were set was to disrupt normal life systems. The idea of disrupting normality was to do with random variables again: we got a map of Ipswich, one of the students was blindfolded and had to throw a dart into the map and



Figure 6. Stephen Willats with his students at Ipswich College of Art. 1966 (Copyright: Stephen Willats).

where the dart fell the students had to go and dig a hole. That was the idea and one fell rather conveniently inside an old cemetery and the students went along and started digging a deep hole and of course the grave-diggers came along to see what the competition was. It was all very interesting. I have got some recordings of people talking about what happened. It was all fascinating especially as the next dart went right into the middle of Barclays Bank and the student group went along there with pickaxes and things like that to dig a hole in the bank. Naturally the police were called but this was Suffolk and such was the status of the art school, they weren't prosecuted or anything – just told not to do this sort of thing again.

Another one of the other student projects involved creating rafts which they set off into the sea at Aldeburgh. Each raft had a group of students on it and they developed their own visual language codes which were based on Suffolk Medieval folk law but updated. Suffolk

was then very isolated and they took these medieval language codes and they developed them into clothing which was quite frightening to me as they were based on expressing basic fears or basic emotions around birth, life and death and they developed this music and ritual performances which were absolutely stunning and which they played out on the rafts. The music was quite punk like in a way. It had this sort of medieval drum rhythm, beautiful exciting music! Each group made their raft and then attempted to communicate with each other out at sea.

Did you follow any sort of programme when teaching them?

At the start of the year I developed a sequence of weekly problem situations: Week 1, Week 2, Week 3, Week 4 and then gradually we moved from experimental solving of specific problems such as feedback, random variables, probability theory etc. to more complex social issues.

As the year progressed, the problem situations given to the students got more socially engaging, taking them out of the art school studio environment directly into the fabric of the surrounding community, and while all the students work was collective and collaborative, small sub groups of five or six students would take the problem situations into different directions. This all built up to the final project where the students group was split into two groups of approximately ten students and asked to go back to zero and rethink the role, function and means of practice of the artist and develop a work that would express the outcome.

One group developed a project/work for residents of a new housing estate on the outskirts of Ipswich, which made up of overspill from East London. From their discussions and research into advertising theory, and learning theory they established that they needed to ascertain the existing language codes of residents, i.e. their Restricted Codes as defined by Basil Bernstein, the Educational Psychologist who was fashionable at the time.⁵ The students wanted to extend the access and meaning of an artwork, to extend the idea of the Conceptual Designer into lives of people living on this new estate so they initiated a doorstep interview procedure asking the occupants about shape and colour preferences, etc. From all this data they found that one strong need for these newcomers was a map of where things were. The students referring again then to the gathered data from the questionnaire, constructed a series of sign posts made from the researched Restricted Codes and these stayed there for several weeks. This was an important lesson for me as it told me that when there was a meaning, a function and language which was understood by the audience, people were not alienated and would accept the intervention.

The other group developed work for individuals living in a block of flats, the context for presentation being their living rooms. Again the ideas of Basil Bernstein were applied with a survey, and the idea of the function of a work of art was a paramount question. From the results of this, the students developed individual works for the residents. If they did not have the personal expertise then they asked other students from graphics, painting and sculpture departments to help. Of course these projects also held important learning for me.

Ipswich was a terrific year and a fabulous period as it enabled me to develop further the idea of the Conceptual Designer into an educational practice. Then unfortunately the

⁵Basil Bernstein was a sociologist researching linguistics at the Institute of Education at University of London whose class-related language and code theories received considerable attention in the 1960s.

Ipswich School of Art closed down all the courses that Roy had started or facilitated. But it had a big impact on what the students went on to do, some went into graphic design (and that kind of thing) and indeed Brian Eno was one of the students.⁶ I think it was a conceptual design approach applied to education because the idea was that theory proceeded practice and that the conceptual work had to have a function and meaning in society.

I was then offered another job, one day a week, at Derby College of Art, where I could develop a similar course. In terms of designing this, I had some confidence about going in my own direction. I had experienced at first hand Roy's *Ground Course* at Ealing⁷ as a student and I also knew about what Victor Pasmore,⁸ Harry Thubron⁹ and Tom Hudson¹⁰ were doing in other art schools so I felt I wasn't unknowledgeable.

How might one connect what you did within the teaching context to other areas of your work?

The making of a symbolic environment that functions as a model of a possible society is a thread running through my work including what I did in the teaching experiments. Thus I came to see the idea of simulation as a dynamic model that could represent a conceptual social state powerfully. Through personally engaging with the simulation, people can acquire the concept, ethos and vision behind the model through direct experience, rather than through referential experience, as in a classic picture. I see this split between actual and referential experience as the big difference between the seventies and the sixties. The sixties were all about phenomenological experience. So the idea of dynamic interactive modelling for me goes right back to 1958 when I did the art society feedback drawings (Figure 7).

But what happened with the Conceptual Designer was that, after nine months or so, I lost confidence as quickly as I had started because, in those days, things were moving fast and there was no hanging around.

However, in the meantime I had opened myself up and got involved with all kinds of practitioners elsewhere, graphic designers, psychologists, electronic engineers, cyberneticians, philosophers, advertising executives – all kinds of people – including concrete poets such as dom Sylvester Houédard¹¹ and John Sharkey,¹² so it was like a freedom of being open ... So the moment stimulated a new kind of freedom which I have tried to maintain ever since.

⁶More about Brian Eno, including influence on him of time at Ipswich at: <http://thequietus.com/articles/02159-on-some-faraway-beach-the-life-and-times-of-brian-eno-reviewed> (accessed December 12, 2016).

⁷The '*Ground Course*' was developed at Ealing School of Art (Ealing Technical College & School of Art) by Roy Ascott in 1961. His approach drew on the '*basic course*' experience in Newcastle with Pasmore (see below). Ascott brought '*Ground Course*' approaches on to Ipswich School of Art.

⁸Victor Pasmore was an artist and architect associated with post-war abstraction and constructivism in Britain. From 1954 to 1961, drawing on Bauhaus influences he designed what became generally known as the '*basic course*' at Newcastle University.

⁹Harry Thubron was an artist, sculptor and radical educationalist in art and design contexts promoting experimental, interdisciplinary and basic course methods. He was Head of Fine Art at the Art Colleges of Sunderland (1950–1955), Leeds (1955–1964) and Lancaster (1966–1968).

¹⁰With Pasmore and Thubron, Tom Hudson was an artist who helped to radically shake up British art and design education: see: <http://www.independent.co.uk/news/obituaries/obituary-tom-hudson-1137423.html> (accessed December 12, 2016)

¹¹The work and relevance of dom Sylvester Houédard is addressed at length elsewhere in this journal.

¹²John J. Sharkey (2015) was a poet who worked at the ICA during the 1960s. He co-organised the Destruction in Art Symposium in 1966 with Gustav Metzger and compiled *MIND PLAY*, an anthology of concrete poetry in 1971.

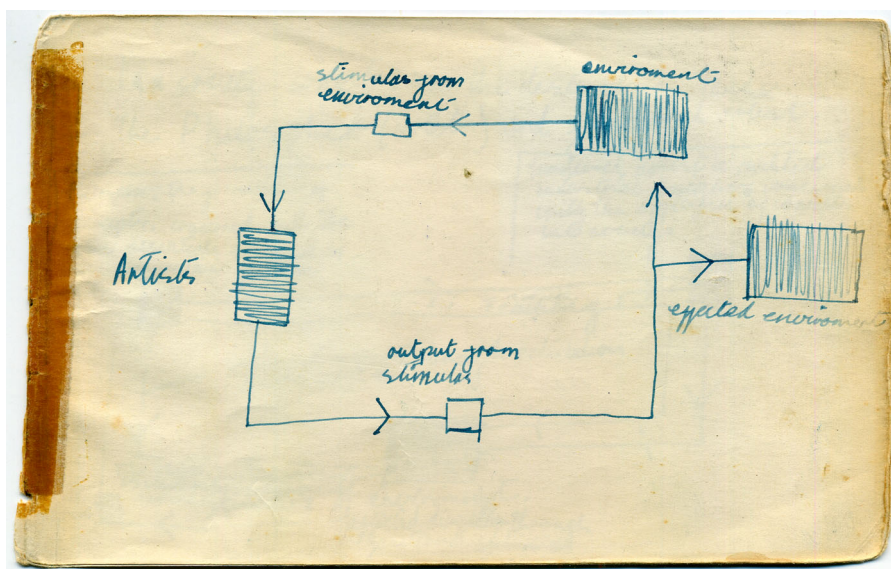


Figure 7. Notebook with Art Society Feedback Drawing 1958 (Copyright: Stephen Willats).

Where does Control magazine, your ongoing project, fit within this history?

The other major outcome from the decision to become a Conceptual Designer was the start of the magazine *Control*, which came out of a lunchtime discussion I had with fellow staff members at Ipswich School of Art. Everyone was moaning that there was not a magazine around in the UK looking at what we considered was the new attitude in art practice and culture. The magazines which were published catered for reviews of West End Gallery exhibitions and studio pottery, so from this discussion there emerged a determination in me to do something about this and to create a vehicle for the 'new attitudes' to be expressed between practitioners, and also to create a territory for the reception of my own ideas.

As I mentioned above, Dean Bradley a graphic designer was a friend of mine and consequently he was the help I needed to get the first issue published. He designed the logo *CONTROL* and laid out the texts, marking up the 'settings', and then contacted someone he knew in the printing world who visited me and agreed to take the job on, and from these contacts 500 copies were delivered.

Control was seen as a philosophical work, like an art work. As you can see from the first issue there is no date, address or authorship. It was meant to free float in time (Figure 8).

In the middle Dean Bradley had inserted a purple spot which matched the spot on the cover, the idea was that the reader put the spot on the wall, and then sitting on a chair directly under the spot read the texts inside, so this was a conceptual work. In the editorial the idea of the Conceptual Designer was introduced to the world. I distributed copies myself around London bookshops such as Better Books, where I made a special display around the wall as a line of the front covers. Issue One of *Control* sold reasonably well enough for me to consider an Issue Two, though when it appeared, while maintaining

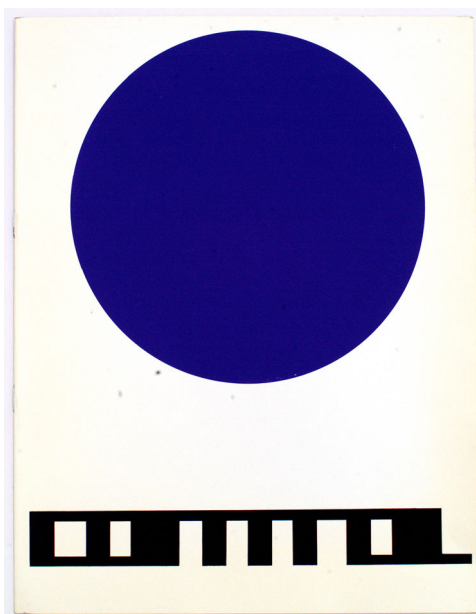


Figure 8. Control Magazine Issue One 1965 (Copyright: Stephen Willats).

the direction of the first Issue, I had already decided to revert to myself as an Artist again and hang up my white coat. Subsequently Control has gone on to develop and evolve and is still published today.

Stephen Willats.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Stephen Willats born in London in 1943, is acclaimed internationally for artwork situated consistently from the early 1960s outside of what he calls the norms and conventions of an object-based art world. His solo exhibitions have taken place in leading museums from Whitechapel Gallery in London to Museo Tamayo Arte Contemporáneo, in Mexico City. He has pioneered working with art at the intersection with other disciplines, not least cybernetics and computational thinking. His contribution to the Conceptual Art exhibition at Tate Britain in 2016 was critically praised. He launched the magazine Control in 1965. Issue 20 was published in February 2017.

ORCID

Brona Ferran  <http://orcid.org/0000-0001-5052-3908>



The potential of destruction in art and science

Neal White

Centre for Research and Education in Arts and Media, University of Westminster, London, UK

ABSTRACT

Artist and researcher Neal White argues for the potential role of radical engagements in science by drawing on the work of pioneers of conceptual art: John Latham (1921–2006), Gustav Metzger (1926–2017) in the UK, and György Kepes (1906–2001) and Robert Smithson (1938–1973) in the US. Starting with destruction as a positive force in artistic practice, White examines the ideas developed by these artists as a conceptual framework for thinking through time, chemical process and event structures within the context of the Cold War. In further examining the social context and contemporary landscape of cultural forms servicing science in terms of the communication of ideas, or underpinning further a knowledge economy, he argues for artists to engage science on their own terms, through a renewal of radical practices. This would in turn create new and critically framed work of benefit to culture and society more generally.

ARTICLE HISTORY

Received 2 January 2017
Accepted 4 January 2017

KEYWORDS

Art and science; destruction;
John Latham; Gustav
Metzger; critical practice;
Cold War

Introduction

This paper draws on the encounters between UK artist Neal White (b.1966) and the late British artist John Latham (1921–2006) in order to explore ideas and contemporary forms of practice between artists who have shared interests in science, its developments and impact. The prominence of science-driven activity in the cultural sector provides a context for the discussion of a renewed interest in some key artists in the early Cold War period, 1947–1972, including Gustav Metzger, Robert Smithson and György Kepes. Whilst emphasizing shared concerns around the potential of destruction, in the archive and in terms of formal artistic process, the paper also argues for a deeper understanding of the vision and values that these artists bring. In doing so, it points to a contemporary landscape of art and science that might contribute to society beyond the current cultural/scientific spheres, addressing broader questions and concerns that are considered urgent for scientists and artists alike.

A perspective on art, science and culture

In the last two decades, we have seen the continuing growth of a cultural phenomenon in which art is exhibited in a scientific context. This has happened largely through

CONTACT Neal White ✉ n.white@westminster.ac.uk  Centre for Research and Education in Arts and Media, University of Westminster, London, UK

© 2017 Institute of Materials, Minerals and Mining Published by Taylor & Francis on behalf of the Institute

organizations with impressive amounts of funding supporting refined and engaging art gallery spaces: from the Wellcome Trust in London, to the Science Gallery network working out of Trinity Dublin, through to landmark architecture initiatives such as the Art Science Gallery in Singapore. The often seductive and spectacular¹ exhibitions curated in these environments perform a contemporary take on the Wunderkammer, or cabinet of curiosities, and are designed to appeal to mass audiences with titles such as the ‘Institute of Sexology’ – subtitle ‘Undress Your Mind’ (Wellcome Trust, 2014), through to ‘Fat Lab’ and ‘Life Logging’ (Science Gallery Dublin 2014–2016) and revisit historical works, as in ‘Da Vinci: Shaping the Future’ (Singapore 2014–2015). With richly illustrated catalogues and advanced media strategies, all attract very large numbers of visitors, perpetuating the media focus on science that has developed its very own cultural plaudits. For many artists, this sector also represents a rich and rewarding space within which to operate.

The emergence of such vibrant cultural activity in the late 1990s has not been without criticism. Among many artists working in this period, there was a view that the forms of funding were only made available to those who supported the ‘positivist’ science agenda. The view became synonymous with institutional critique in visual art, a long and well-documented area of practice in which the dominance of certain cultural forms, represents control over artistic freedoms. Art and Science in this respect can be problematic, from restrictive practices on artists working in labs, through to the broader agenda of life science corporations/charities, many of which were linked with the essential life support offered by military spending on research of all kinds. Whilst today it is argued a new wave of critics, curators and artist challenge this purely positivist approach, it has been difficult for those working within this space to shake off these pointed accusations. Even today, in appropriating more critical voices within the agenda of public understanding and science communication, the dissent has not abated – and other views of the relationship between art and science are being valued. Many of these values stem from a critical relationship developed by artists working in the UK and USA in the Cold War period (1947–1991).

The potential of destruction

The early Cold War period gave rise to artistic practices that engaged with science and over recent years, these pioneers have started to come to prominence in the West, notably in the UK and US. In part this was due to their radical and critical approach that tore into modernist ideas and the privilege of aesthetics over other values in art. Further to this, there was recognition by a younger generation of artists, critics and curators of the critical and conceptual shifts that occurred during this period.² In the following short sections, a personal and historic account of some of the range of these practices sheds light on what is now termed as art in the expanded field, or post-conceptual art (Krauss 1979; Osborne 2013) being practised in art and science today.

In April 2016, a John Latham retrospective at The Henry Moore Institute, entitled ‘A Lesson in Sculpture with John Latham’ included a re-staging of a performance of one of his most infamous series of works by the author (this work was called ‘Neal White

¹Referencing Guy Debord and his critique of the mass spectacle (see Debord 1967).

²This includes artists such as the author, who has a background working with new technologies.

realises a Skoob Tower'). A key part of Latham's early oeuvre from the 1950s, the 'Skoob' (the word 'books' spelt backwards) tower performances consisted of a tall column or tower of books, usually Dictionary Volumes, which were then set alight in a public space. Having remade Latham's work on several occasions the approach to remaking this work has been shaped both by a familiarity with Latham's work, but also as an ongoing exploration of the artist archive, and the role of events, including destructive acts through practice led research.³ In particular, the work follows a line of personal enquiry started in 2004–2005, having made a piece of work that campaigned for the restoration of a series of 'destroyed' public sculptures made by Jacob Epstein on the Strand, London. The project, entitled *The Third Campaign* (2004–5) was conceived as an exhibition that would become an artwork within the archive of the Henry Moore Institute. It included a campaign film, letters to those involved and props, and now resides within the archive as intended.

The 'Skoob tower' further addresses the significance of what might be termed as destructive events in historical and cultural terms, addressing what it is that can be preserved – artworks or events – within the institutional archive. As Latham commented to me whilst I was working on the Third Campaign, the project was more than a polemic; it was conceived as an interruption to the stability of the archive, an insertion of work into official records and into cultural time. Marking a decade since Latham's death in 2006, the proposal to perform the 'Skoob tower' in 2016 was made as a tribute to his ideas, in the context of his notion of 'event structures' that are also relevant to the archive. The work was commissioned on the agreement that it would eventually be interred within the Henry Moore Institute itself, as a new work entitled 'The Archive in Ashes', which is now ongoing.

My own interest in Latham's work and his ideas did not emerge out of a formal academic study of Latham, but followed an introduction in 2003 to John Latham and his life-long working partner Barbara Steveni. At this initial meeting, showing them a book I had jointly authored with the writer Lawrence Norfolk (Norfolk and White, 2001) became a powerful catalyst. Within this short work, the 196 pages are numbered as divisions of a single second, one second being the time over which a sneeze was recorded, captured by an advanced laser camera at a laboratory in Oxford. Linked to the first ever piece of copyrighted film in the US, which was a 45 frame film of Thomas Edison's assistant sneezing (1896), the book meditated on the filmed fragments of a one second sneeze today and the progress of technology from the chemical to the digital, referring both to the speed of the recording, and the disintegration of meaning into code. The book was itself a piece of time. In formal terms however, and unknown at the time of the first meeting with Latham, the spray of the sneeze we photographed and which features on every page approximated Latham's own early work, 'One Second Drawing', created for the Cosmologists Christopher Gregory and Anita Kohsen in 1954 (1959; Walker 1995)⁴. It was through this work that John Latham had developed his own vision of art, a vision informed by science that shaped his entire life. He called it the 'quantum of mark'.

³Firstly at Portikus in Frankfurt as part of a joint show with John Latham and sanctioned by the Latham Foundation following specific historical research of previous events.

⁴Asked to produce a mural for an event at their home, Latham decided to use a spray gun as an experiment. Having made a one second spray with this new technology for artists, he realized that the image not only resembled a cosmos of tiny blobs on the wall, but spoke of the event, the spray and the end of the spray. Latham often referred to this as the most important discovery in the development of his ideas about time.

Latham, who had his own intimate engagement with ideas emerging in theoretical and experimental physics, recognized parallels between his ideas and those in the book I left with him. This was the start of a short but deep journey with Latham at his home, Flat Time House, Peckham, London. Exchanges took part through both rational and intuitive means, an approach to art that would allow for both textual descriptions, as well as ‘event-based’ works such as the ‘Skoob tower’ were discussed, and we planned for what was needed in order to explore “the unspoken” in science now. It was, we agreed, a form of practice and research that required art to embody ideas and knowledge beyond linear and rational language. Without anticipating the effect, Latham’s ideas shaped my own approach, as it had done for so many others, before and indeed since.

Latham had largely developed the ideas we were discussing after he had made his single spray paint gesture and following his exchanges with Gregory and Kohsen (1959); together they formed the Institute of Mental Images, later publishing a journal called *Cosmos*. In this period, where many ideas and possibilities were still open for exploration, from cosmology through to extra sensory perception, the distinct approach between instinctive, logical intuition and rational forms of enquiry were both real and urgent projects. Latham referred to how these ideas could be explored by different people using Fyodor Dostoyevsky analogy of the Brothers Karamazov.⁵ Whilst the psychophysical cosmologists had developed their proposition through a schematic they termed the ‘O-Structure’ (1959), Latham reworked this diagram with their initial input over many years before settling on the ‘Basic T Diagram Roller’ (1991) as a method of articulating his ideas. With this vertically striped roller blind, he was not only able to translate further these ideas, but to extend his own thoughts about scientific discoveries, from quantum theory through to string theory, and most importantly to find a new means to communicate how his ideas intersected with such approaches, through art.⁶

Latham’s plan for the the ‘Basic T Diagram Roller’ work involved positioning it on the wall so that it could wind and unwind. As intended, it would be read along the horizontal at the top as the moment ‘now’, and as the fabric unwound against the vertical surface of the wall, the viewer could see through the canvas to traces of the event now; a schematic that reveals both history and present through time/movement. The stripes spaced along the horizontal were described as time bases; the amount of time an object exists for being the distance from left to right in the schema. Starting on the left with the letter A to Z on the right – that is, the distances represent very small amounts of time (the smallest measurable by science, to very, very large amounts of time – in other words from quantum to cosmic scale in one schema, unfolding simultaneously). The artwork was therefore neither formally an aesthetic representation, or a non-representational abstract system, but a schematic or diagrammatic reading of time/space. Our insistence on reading matter as a quality of space and not time was perceived by Latham as a habit. Objects, particles, even institutions and governments could be understood better using ideas of a unified theory of existence that bridged science, art and religion.

⁵The three Karamazov brothers, Mitya, Ivan and Alyosha, were used as examples of people with different perspectives on the universe: biological, rational and intuitive.

⁶Seen as a seminal work at a number of scales and exhibitions throughout his career – most notably as a large scale version acquired by Tate Britain as exhibited in the recent ‘Conceptual Art’ Display at Tate Britain, 2015.

Latham's approach to books, the destruction of which features so heavily in his work, is not about making destructive acts or critiques of literary forms, but instead should be seen as the adoption of a new order for knowledge building on an older forms (of language, mainly). The approach was pivotal to understanding the work 'Still and Chew', which made Latham's name in 1966–1967, and has at its centre the destruction of Clement Greenberg's book on 'Art and Culture' by a group of mainly art students who were invited by John Latham and Barry Flanagan to a party, and on entering were asked by Latham to chew pages of the book and then spat the remains into a still. Latham was due to return it to the Library at Central School of Art, where he was working, but presented a vial with the chewed contents instead. He insisted that Greenberg's book, the epitome of abstract expressionism that criticized process-based art, was still there, in essence. He was released from his duties, and instead of being placed back in the Library the remains of the book were acquired by the Museum of Modern Art in New York.

Whilst Latham's application of thinking through *event structures* was seen repeatedly in his formal production of art, he also applied his unified theory of time more widely, primarily to social situations through the Artist Placement Group [APG], founded in 1966 with Barbara Steveni and others (for more on APG, see Walker 1995; Hudek and Sainsbury 2012). In this respect, the artist's ability to construct art through events meant that new ideas about time, our impact on society or even the environment, could be shared in a variety of contexts; from industrial to governmental through to science and technology. His work in this area included re-designating slag heaps as sculpture for the Scottish Office – as in the Niddrie Woman (Richardson), and the 'Big Breather' (1972), a nine-metre high sculpture conceived to display tidal power in the ocean, and intended as a prototype for producing tidal energy.

Whilst APG enjoys a significant and ongoing legacy,⁷ Latham's own hopes to engage scientists in his ideas (after Institute for the Study of Mental Images), and in particular theoretical physicists, were less fruitful. Despite his ongoing attempts, and the countless works of art that have considerable reputations in the art world, his engagements with the world of science were frustrating. Ongoing conversations and public events with Professor Chris Isham at Imperial College, London (such as "The Universe as "Event Structured"", 2000), were productive, but led nowhere consequentially. This area was in fact to be one of the most frustrated dimensions of Latham's narrative, and an area we discussed together at length. His ideas, although hugely attractive to critical and creative thinkers, simply bewildered the rational mind, particularly of those who were the gatekeepers of science and were invested in science communication. In collaboration with Ian MacDonald Munroe, Latham submitted a proposal to NESTA to develop his ideas for application in computational space using the concept of 'evenometry'. It was thwarted at a second stage of assessment, which left him disappointed, if by then resigned to such outcomes. But it was his relationship to both scientific institutions and to industry that was not only misunderstood, but became a point of severe criticism from other important

⁷Between 2005 and 2009, I sat on the Board of O+I, the organization that followed on from APG in 1989. Whilst O+I was closed in 2009, in 2016 as part of the exhibition '9Events' at the Royal College of Art with artist Tina O'Connell, we organized an 'Incidental Meeting' with Barbara Steveni and the O+I Board, inviting others interested in this legacy. We are now working on a project called the 'Incidental Unit' with Barbara Steveni and a growing number of artists and incidental persons (around 25) to take some of the original ideas forward.

figures of this period, in particular the artist Gustav Metzger and other members of APG, that still marks out important differences in approach.

Gustav Metzger was a Jewish migrant to the UK whose political views in the Cold War era were far more explicit than Latham (who often refused to be drawn on the subject of political ideas). Metzger's attitudes to science seem in part to have been shaped by the trauma of the reality of the Holocaust including the use of eugenics. His attitude to art drew on this energy, but was applied as a constructive force. He confronted head on abstraction and modernism and through his own 'Auto-Destructive' art in the early 1960s, examined the potential of violent (often chemical) action/reaction through actions and happenings that explored social and political structures, revolution and change, war and catastrophe. In one of his most notable early works in 1961, 'South Bank Demonstrations' Metzger sprayed acid onto nylon as part of a performance in which the artist is himself dressed in semi protective clothing, including a gas mask. As the ideas at play in this work were developed, in 1966, Gustav Metzger organized with John Sharkey, the International event, the Destruction in Art Symposium (DIAS).⁸

Although Latham was part of the same experimental scene as Metzger in the UK, appearing in DIAS in 1966, Metzger and Latham's attitude towards science as both a moral project, and as a rational form of enquiry, were very different. As a more radical political figure, Metzger and others in associated peace movements wanted to draw attention to science's destructive power in the service of war, and capital, or political ideology, evident in the burgeoning and all-encompassing nuclear arms race that defined the Cold War. As a member of the Committee of 100, Metzger's anti-nuclear links and political aims were clearly stated. His artworks in their day were seen as radical and controversial although as much for their formal conceptual impact as their political messages. Their appearance as fleeting 'events' can nonetheless be read as performative and political, rather than as part of a broader conceptual engagement with scientific ideas or unified theories, such as Latham's on time. Mayer's work outlined in the starkest terms, the consequences of an absence of a moral social context in science's progressive agenda, but also perhaps the perils of developing grand narratives or unified theories.

Latham's work, like many of Metzger's works involving chemical processes,⁹ was formally destructive: they shared a formal approach which was schematic, and to some extent drew on the theoretical approach to ideas being developed in science at the deepest level. Latham's engagement was not just with science's agenda, but with the structures, syntax and language upon which science and indeed belief systems rely. In this respect, it could be argued that this early work relates directly to the philosophical engagement by artists working today, questioning how art can address material forms, shaped by conceptual art, and considered in an expanded field. This includes work which may impact on the world beyond art, in terms of science, our environment or our ethical approaches to technologies ranging from clinical to genetic manipulation of life itself.

⁸Destruction in Art Symposium was a month-long programme running up to 30th September, 1966 in London. At the final event, among the works performed were Latham's 'FILM', and Ivor Davies' 'Silent Explosion'. Others that took part in the events included Günter Brus, Barbara Gladstone, Hermann Nitsch, George Maciunas, Biff Stevens, Peter Wiebel and Yoko Ono.

⁹Liquid Crystal Environment (1965, 2005) is one example of Metzger's more playful projects involving projected light to create an immersive installation. Familiar to those of us who saw similar projections at discos in the 1970–1980s, Metzger developed the psychedelic effect following a lecture demonstrations on auto-destruction at Cambridge University (1965), organized with the Society of Arts and entitled 'The Chemical Revolution in Art'.

In the next section, the ideas and critical approaches to art developed both by Latham and Metzger are further expanded, drawing on an institutional perspective in Art and Science in the US from around the same period. In doing so, we begin to point to the emergence of a 'relational field' of critical practices which today draw on artists shared language with science, that of computing and applied technology.

From a new landscape in art and science

The emphasis on destruction in the previous section and the overlaps between the work of Latham and Metzger was not their concern alone. In the height of the Cold War, the nature and duration of art itself was also being questioned. In the US, artists were dealing with art and its dematerialization, as highlighted by curator and critic Lucy Lippard who featured many (including Latham) in her canonical book, 'Six Years; The Dematerialization of the Art Object from 1966 to 1972' (1973). Within this group of artists was Robert Smithson, an artist who dealt with dematerialization by engaging with the language of cybernetics, borrowing the term 'entropy' to extend his own ideas of time with his own 'Land Art'. As a result of this work, and Smithson's outstanding gallery practice that linked site and non-site, he came to the attention of György Kepes, a Hungarian-born artist and academic interested in art and science but coming from what we might see as the scientist's perspective. The following account of these two artists speaks to other agendas between art and science that are still at play today.

In 1951, the term 'A New Landscape of Art & Science' was used by Kepes as the title for an exhibition in which he described a unified field driven by new scientific developments and instruments that could benefit artists and scientists alike. György Kepes's background in Hungary, and teaching with Moholy-Nagy at The New Bauhaus, Chicago (1937–1943) shaped his vision that led to the founding of the Center for Advanced Visual Studies at Massachusetts Institute of Technology (MIT) in 1967, arguably the first art and science initiative within a University in the West. Here, fuelled by his exposure to a multitude of advanced optics, new temporalities and extended soundscapes, Kepes' vision is illustrated in the section headings under which the 1956 catalogue for a 'New Landscape in Art and Science' was organized: Image, Form, Symbol; The Industrial and then New Landscape; Things, Structures, Pattern, Process; Transformation, Analogue, Metaphor; Morphology in Art and Science, Symmetry, Proportion, Module; Continuity, Discontinuity, Rhythm, Scale. Kepes' motivations at this point are persuasive, the work beautiful and his attitude optimistic.

Kepes's exhibition that was recently re-presented at Tate Liverpool (2015), and his overtly visual engagement with art and science has been criticized as a 'utopian' or naïve agenda that whilst based at MIT overlooked the damaging relationship that his vision shared with the US military, specifically through the funding he received (John R. Blakinger, 2015). However, it is both marked and important here because of one specific criticism that today speaks of the ongoing questions that surround art's relationship with science, and parallels the criticism we see in the work of Latham and Metzger.

In 1969, having invited Robert Smithson to take part in an exhibition for the US pavilion at the São Paulo Biennale, using some of the new technologies Kepes was entranced by, Robert Smithson replied to Kepes to decline his involvement. Within this letter he stated:

To celebrate the power of technology through art strikes me as a sad parody of NASA. I do not share the confidence of Astronauts. The rationalism and logic of the engineer is too self-assured. Art aping science turns into a cultural malaise [...] If technology is to have any chance at all, it has to become self-critical. If he wants teamwork he should join the army. A panel called 'What's Wrong With Technological Art' may help.

Smithson, as we see from his interest in Cybernetics, was not opposed to science and technology as an idea or metaphor, but was critically opposed to its application in war and conflict. His views were shaped not only by the context of the Cold War, but the more specific ramifications of the Vietnam War on his generation. His desire was to move away from such loaded contexts; as with Metzger, he believed that work with science and technology was to be complicit. Unlike Metzger however, Smithson was not guided by any overt political positioning, but a suspicion and mistrust of the application of science under the banner of research, a criticism that still resonates today across a wide range of artistic practices that deal with or use technology to convey meaning.

As Latham, Metzger and Kepes spelled out, artists have wider responsibilities. Whilst Kepes identified in an overly deterministic way some of the landscape of what art and science might become – he also correctly identified how artists might bring us closer to issues of environment, ecology – what we might now call reflecting on our Anthropocene, questioning the techno-sphere, becoming post-human – all part of the contemporary art discourse. The situation in which we live now may still have echoes of the Cold War, and the Anthropocene itself is marked by many scientists as emerging from the nuclear age. But how does this play in the contemporary context of art and science – specifically in the context of other catastrophic scenarios, those that are post-nuclear such as global warming? In the final section, some parallels are drawn between the artists we have examined and the future ability of critical art to address issues with science, rather than perform uncritical services.

New potentiality

In a recent article 'From Organisation to Network: The MIT Center for Advanced Visual Studies', Melissa Ragain (2015), highlights the work of Stan VanDerBeek, one of Kepes selected artists in residence, who recognized the increasingly social role for the artist.

... the artist 'must find ways to come out of his isolation from his community. He must find ways to unite technology and the human condition He must find ways to investigate, to document, to decorate, to criticize, to love ... and add meaning to the life we are all shaping.' (Ragain 2015 cited in Stan VanDerBeek 1967)

As artistic engagements with society including science continues to evolve and spread, we might add that in a period of post-nuclear catastrophe, in which nuclear threats compete with environmental change and other human-driven conflicts, art and science has to take its responsibilities beyond the service-driven agenda of communications and public understanding alone. Part of this is a collaborative approach to art-making, one in which artists and scientists once again work together in forms of interdisciplinary research that move beyond current models and modes (see also Barry, Born, and Weszkalnys 2008). In this respect, we must first think through how science might be more critically aware, and what role artists might play – hacking into the thinking, practices and data that science produces.

Firstly, if we consider the area outlined in the opening section, and that of Kepes, where a *positivist* attitude toward science shapes art, it can be argued that this approach is characterized by a philosophical and empirical assertion in which science-driven cultural forms both service and confirm scientifically claimed insights, communications and technologies to a wider public. This includes science as either a force for good or a morally neutral force, but is nonetheless part of military concerns, from defence/weapons systems development to cyber security and intelligence gathering, for example. On the other hand, it embraces life sciences, clinical research and advances in health and well-being, whilst often ignoring the multitude of diseases and conditions for which drugs are not developed, or new treatments and applications which test ethical limits without prejudice – yet test the limits of our ethical frameworks. Science is not neutral, and one of the steps we need to take together is to rethink the ways in which we allow for engagement with the issues described. In this respect the work of artists who draw on other models of thinking in order to construct new visions and applications need to be supported. A number of marginal institutions and organizations are now emerging that might drive this forward, such as Rich Pell's Center for Post Natural History, in which the full potential of human impact on life is explored through a factual, evidence based approach.

Secondly, as we see an increasing interest in a *disruptive* (innovation-led) approach from design within what we term as the knowledge economy, pointing to a creative/industrial encounter in which 'research and development' of science is applied through new technology, we must determine to what end is 'disruption as innovation' productive? As defined by the science/design sector, innovation currently works to identify and support creativity in respect of ideas of service to the aforementioned knowledge economy, such as service innovation, technology interfaces, human-centred design etc. It is not however a neutral form of disruption, but openly positioned to disrupt into a market economy as part of its agenda to increase new forms of market growth. Whilst there are some alternatives emerging internationally to this commercially-driven agenda (e.g. some EU funds for Universities encourage socially-engaged projects and the Biodesign Challenge run by Genspace in New York involves art and design students worldwide) several questions remain. For example: how do independent artists have access to these opportunities and how might highly critical practices coincide? What will government, science and capital really be prepared to support and what kinds of constructive future can it envision?

If we are to take on board the ideas of a critically informed experimental generation – that of Latham, Metzger, Kepes – we must find ways to support *critical inquiry in art and science*: investigations into the ideas, impact, scale and range of science, from artists who might promote a philosophy of time through to the non-technological implications of entropy. We must embrace the potential of destruction not as an act in and of itself, but as vehicle towards new ways of thinking. In this respect, the drivers towards an economic utilization of knowledge for power might be subtly moved away from their own destructive paths, not their intention, but the affect of walking blind into future catastrophe. It is in this respect that the University sector, which today fosters artists working with science and scientists, may have some role to play, not as a corrupting power base – as with Kepes, but one modelled from investigation of emerging and urgent matters of interest to scientists and artists alike. For example, artists who work with topics ranging from environmental data – such as Tom Corby (UK), through to

environmental health – Natalie Jermijenko (USA), or even as marginal critically positioned institutions, such as Symbiotica (AU) based at the University of Western Australia are all exploring models to make this happen. In some cases however, the Universities also need to embrace non-academic methods, risk-taking and ‘undisciplined’ modes of engagement with the public. Office of Experiments¹⁰ founded in 2004 whilst in conversation with Latham, seeks to undertake this kind of research with academics within the University, as well as artists, activists and enthusiasts working in the public realm.

The relational field of critical art and science has long been shining a searching and unforgiving light onto science, its practices and, in many cases, limitations in vision, language or application of values. Today, those that carry these critical ideas forward are not engaged in this interdisciplinary project to produce better science, greater insights into or communication of scientific ideas, but examine science as an epistemological framework to better understand our social, ethical and environmental consciousness, to extend art’s range, its language and vision into areas beyond the display function, or the spectacle of the museum. In this respect, whilst Kepes’ vision of art and science in the University was flawed, other forms of critical art and science practices that emerged during the 1960–1970s point to alternative modes of practice – often radical and even destructive in their initial appearance. Kepes pointed to the compulsion of artists to draw on emerging ideas in science and technology in order to take their own vision forward. Today, the adoption of computer technologies within science and the ubiquity of computers within the creative space of artists and public alike makes hacking into other disciplines a viable artistic strategy. As we have learned, hacking disciplines can lead to a form of destructive art; a constructive critical response to the rationality of the scientific/technical – key to the very context in which our current slow burn yet auto-destructive instincts play out on a global scale. As these artists remind us, there is a choice.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Neal White is an artist and researcher. For over 20 years, his work has critically explored art as a collaborative endeavour. As a co-founder of Soda, an art and technology group based in London (est. 1997), and founder of ‘Office of Experiments’ (est. 2004), an artist research network with academics, architects and activists, his interest in science and technology has led to Internationally recognized exhibitions and publications in the UK, Europe and the USA. In addition to his own on-going artistic practice, he is currently working on art-led research projects relating to the environment and Situated Knowledge with Arts Catalyst, and ‘Psychodata’, with support from the Austrian Science Fund.

¹⁰Office of Experiments was founded by Neal White in 2004 whilst working on a project with Danish architects N55. It has since undertaken a range of projects that examine the ethical and critical spaces, enclosures and networks of science. As with ISMI and other artist led institutions, it is a non-legal entity, a network of actors interested in subjects ranging from ethics and data science through to activism and citizen science. It draws together disparate individuals to form a unified field of practice, one that allows for different ideas and theories to come together in new and experimental forms.

References

- Barry, A., G. Born, and G. Weszkalnys. 2008. *Interdisciplinarity and Society: A Critical Comparative Study – Research Themes and Projects – Technological Natures: Materialities, Mobilities, Politics – Research*. Oxford: School of Geography and the Environment, University of Oxford.
- Debord, G. 1967. *The Society of the Spectacle*. Translated by Fredy Perlman and Jon Supak. Detroit: Black & Red, 1970; Rev. ed. 1977.
- Gregory, C. C. L., and A. Kohsen. 1959. *The O-Structure. An Introduction to Psychophysical Cosmology*. Church Crookham: Institute for the Study of Mental Images.
- Hudek, A., and S. Sainsbury. 2012. *APG Limited*. London: Raven Row.
- Kepes, G. 1956. *New Landscape in Art and Science*. Chicago: P. Theobald.
- Krauss, R. 1979. "Sculpture in the Expanded Field." *October* 8 (Spring): 30–44.
- Lippard, Lucy R. 1973. *Six Years: The Dematerialization of the Art Object from 1966 to 1972*. London: Studio Vista.
- Norfolk, N., and N. White. 2001. *Ott's Sneeze*. London: Bookworks.
- Osborne, P. 2013. *Anywhere or Not at All: Philosophy of Contemporary Art*. London: Verso.
- Ragain, M. 2015. "From Organization to Network: MIT's Center for Advanced Visual Studies." X-TRA. <http://x-traonline.org/article/from-organization-to-network-mits-center-for-advanced-visual-studies/>.
- VanDerBeek, S. 1967. "Re:Vision." *Perspecta* 11: 113–119.
- Walker, J. A. 1995. *John Latham: The Incidental Person – His Art and Ideas*. London: Middlesex University Press.