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Catherine Mason *Editor*

Creative Simulations

George Mallen and the Early Computer Arts Society

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Foreword

I first met George Mallen through our joint interest in the EVA London Conference on *Electronic Visualisation and the Arts*, initiated in 1990 and led by our mutual colleague Jim Hemsley. George remains an honorary member of the EVA London organisation committee to this day due to his long-term support for this conference series. Some of the conference's committee meetings were held at the offices of George's company, System Simulation Limited (SSL), which undertook IT projects, especially concerning culture, heritage, the arts, and museums. The offices were in Covent Garden, close to the previous BCS (British Computer Society) London offices where EVA London conferences were held for many years. They were at the top of a building just to the north of the restored historic market building, reached through intricate winding corridors. SSL subsequently moved, and the building was gutted for a new Apple Store, continuing its IT connections in a more public role.

George was always contemplative with words of wisdom coming from his years of experience. His modesty belied his contributions to digital art over his career. With Alan Sutcliffe and John Lansdown, he was instrumental in co-founding the Computer Arts Society (CAS) in 1968, now a Specialist Group in the BCS and the umbrella organisation for the EVA London Conference. He was able to bridge the fledgling field of digital art with practical software development. CAS organised *Event One* in 1969 at the Royal College of Art (RCA) in London, one of the earliest digital art exhibitions. It was a great pleasure to see George at *Event Two* in 2019, also at the RCA, celebrating the fiftieth anniversary of *Event One*, with an exhibition of both historic and new digital art. It is to be hoped that this can be continued in 2069 with *Event Three* to celebrate the centenary of *Event One*, but this will have to be left to the next generation!

I commend to you this book celebrating George Mallen's life and work. Catherine Mason has drawn together experts with first-hand knowledge of George to record various aspects of his contributions, as well as providing additional chapters and commentary herself. Some of the chapters include earlier material by George himself, with introductions by Catherine to set the scene. George is a person who never pushed

himself to the foreground due to his natural modesty, but this book sets that straight by providing a very apt celebration of George's career, especially concerning digital art. Readers can pick and choose from this smorgasbord of delights covering George's multifaceted interests. I hope that you enjoy the selection and learn more of George's lifetime of contributions.

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Preface

Long before artificial intelligence text generators such as OpenAI's ChatGPT and Google's Bard ('your creative and helpful collaborator, here to supercharge your imagination, boost your productivity, and bring your ideas to life'[1]) there was Robin Shirley's poetry program BARD, invented in 1968. Shirley, an early member of the Computer Arts Society (CAS), using equipment that would be considered primitive today, wrote his own algorithms in Algol for mainframe computers. His computer-assisted compositions heralded the future, a future visible today in aspects of technologically mediated art.

There is a more than fifty-year history of digital art and an important part of that history is British. It originates in the somewhat forgotten science of cybernetics. The postwar study of how machine, social, and biological systems behave offered a framework for art production in which artists could consider new technologies and their impact on life. Concepts of behaviour and process, media dexterity, interdependence, and co-operation began to enter art from the early 1960s onwards. The adoption of digitally driven tools allowed simulation of biological systems and a hitherto unheard-of degree of collaborative meaning making for art. George Mallen and others in CAS saw art as a system involving feedback between machine and creator and creator and audience. Their work demonstrates, through interactive (and occasionally didactic) applications, that computer arts could consist of more than graphics and could have a greatly amplified role, one that was integrated with societal concerns.

Today, computers affect nearly every aspect of life, one that is lived in an increasingly hybrid manner, mediated through screens. Therefore, it is timely to focus on Mallen, a pioneer of creative computer systems since 1962, as the last surviving founder of CAS and founder of System Simulation Ltd., one of the longest established software companies in the UK. Mallen was immersed in numerous CAS exhibitions and events from 1969 onwards, and the ground-breaking *Ecogame* project of 1970 led by him involved many CAS members. A very early example of computer technology into art, *Ecogame* was a simulation model of an economic system, dealt with

[1] Quoted on website: https://bard.google.com/

opportune issues of ecology and environment, and was the first multi-player, digitally driven, interactive gaming system in the UK. It employed technological systems informed by principles of cybernetics to consider how to extend the meaning and functionality of art. *Ecogame* was about handling information in a visual way that encouraged participants to consider the repercussions of their decision making on the group. *Ecogame*, and a belief in a positive 'human machine interrelationship' and what that might look like, runs as a common theme throughout this book.

This book, full of important precursors, attempts to give some historical perspective to the current high attention surrounding contemporary digital arts such Generative Art, Crypto Art, AI Art, interactive and immersive environments such as Virtual Reality, Artificial Reality, Mixed Reality, and so on, being used by artists today. The crucial role of cybernetics and simulation in the innovative early work of George Mallen and the CAS is revealed, detailed, and contextualised. Drawing on previously unseen archival and interview material, it is evident that the cross-disciplinary, collaborative art projects described throughout this book contributed greatly to Britain's later leading role in the production of digital arts and high standing in the contemporary art world.

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This book is dedicated to George Mallen.

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Editor and Contributors

About the Editor

Catherine Mason (b. 1969) is Independent Art Historian and Author who has been researching the history of computer and digital art since 2002, when she joined an Arts and Humanities Research Council-funded group at Birkbeck, University of London—The CACHe Project (Computer Arts, Contexts, Histories, etc.), working with Dr. Nicholas Lambert. Her books include the solo-authored *A Computer in the Art Room: The Origins of British Computer Arts 1950–80* (JJG: 2008) and the co-edited *White Heat, Cold Logic: British Computer Art 1960–1980* (MIT: 2009). Currently she is writing a chapter for the forthcoming Bloomsbury Encyclopedia of New Media Art and researching the American artist Robert Mallary. She is on the board of the Computer Arts Society.

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Chapter 1
Introduction

Nick Lambert

The International Federation for Information Processing (IFIP) might seem an unpromising place to begin planning an arts organisation, especially one with a ground-breaking proposition. Yet it was at IFIP Congress in Edinburgh, in August 1968, that the plans were laid for an organisation that was arguably ahead of its time, had an international impact and still exists to this day.

This is the Computer Arts Society and its three founders met as a result of a message on a bulletin board (still at that time a physical structure, not an online group) from Alan Sutcliffe, a programmer at International Computers Limited and an enthusiast for early computer music. He piqued the curiosity of two other pioneers in creative applications for computing: the architect John Lansdown, whose interest encompassed computer-generated dance and performance as well as the drawing studio; and George Mallen, who was working with the cyberneticist Gordon Pask at Systems Research in Twickenham. The Society (CAS for short) was incorporated as a special interest group within the British Computer Society, thereby providing it with access to the BCS's support and membership; and Alan adroitly steered it so it maintained an outward-facing mission.

The landmark *Cybernetic Serendipity* exhibition had just opened at the ICA in London, and this spurred the nascent Computer Arts Society to plan their own show, which eventually materialised as *Event One* at the Royal College of Art in March 1969 (See Chap. 2 this volume for an analysis of this exhibition.). The interest garnered by that exhibition led to further engagement with early computer artists in the UK and abroad, with CAS starting a monthly programme of talks at John Lansdown's architectural practice in Russell Square, and the Society's magazine *PAGE* became a place for impassioned debates about the computer's role and legitimacy as an art medium. The early involvement of the radical artist Gustav Metzger as Editor of

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PAGE informed this discussion, and he helped connect CAS to digital artists in Central and Eastern Europe, as well as the USA, Japan and South America.

Though based in the UK, CAS was far from parochial and served as a point of contact between many other digital arts researchers and artists from the late 60s to early 80s. It went on to develop important exhibitions and enabled computer artists to display and explain their work (See Chap. 5 this volume for the main exhibitions of the 1970s.). Just as importantly, it had an educational role by partnering with Time Sharing Ltd. and other computer service providers in the early 1970s to offer programming courses. As a result of these efforts, more creatives were introduced to the computer as a tool.

The Society was especially active in the years from 1969 to 82, growing both by word of mouth and by connecting to early computer graphics courses at the RCA (due to its connection with Patrick Purcell), the Slade School of Art, Middlesex Polytechnic and other institutions. Indeed, many CAS alumni had educational roles and also played major roles in developing the UK's computer graphics industry. Its trio of founders all made key contributions in the arts and in other fields, and the Society's wide-ranging remit to support all manifestations of computer art—visual, sonic and performative—ensured its ongoing relevance. As George Mallen later recalled:

> It was a very exciting and energizing time. The Computer Arts Society played an important role in bringing together programmers, computer graphics technologists, and artists working in many fields. Those of us involved benefited greatly from the interdisciplinary community so created. (Mallen and Wyvill 2016)

CAS was closely connected with the company founded by George, System Simulation Ltd., (Fig. 1.1) which was initially based above an antiquarian bookseller in Twickenham, before moving to John Lansdown's architectural practice, then Southbank House and later also employed Alan Sutcliffe. It was actively involved in graphics development during the 1970s, although it later branched out into information management systems, with a speciality in the museums and galleries sector, now the mainstay of System Simulation's work. The company achieved a significant milestone by producing the control panel graphics for the landing sequence of the Nostromo spaceship in Ridley Scott's *Alien* in 1979. This was a major collective effort that engaged Alan, artist Colin Emmett, the computing power of the ATLAS Rutherford Lab at Didcot, and Brian Wyvill, Tony Pritchett, amongst others. Following this, the company went on to develop the animated 3D logo for Channel 4, involving Tony Pritchett, but handed over most of the graphics side of the business to Chris Briscoe and Paul Brown and their recently formed company Digital Pictures Ltd. in the mid-1980s.

The pioneering phase of the Computer Arts Society came to a close around 1984, curiously just as the first computers pitched towards creatives (the Apple Mac, Atari ST and Commodore Amiga) were reaching a wider market. This broadening of access to computer graphics, the growing acceptance of digital imagery in design and film and the emergence of early online forums marked a significant change. The questions discussed by the Society about the digital medium were increasingly

Fig. 1.1 Photograph of the Directors of System Simulation Ltd. by Robert Lansdown. (Left to right: Mike Stapleton, George Mallen and R John Lansdown), taken in London outside Lambeth Fire Station, near to SSL's offices in Southbank House c. 1984–86. © Robert Lansdown, reproduced with permission

relevant but its founders went different ways. However, an archive of exhibition material and documents from CAS's most active period was retained at System Simulation. These artworks and materials were donated in 2007 to the Victoria & Albert Museum, nearly 200 items, and helped to form the core of their now extensive digital art and design holdings.

In 1999, John Lansdown sadly passed away and a research project was set up to identify and collect the archives of British pioneers of computer art, CACHe (Computer Arts, Contexts, Histories, etc.) under the auspices of Birkbeck, University of London. With Catherine Mason as researcher, the project ran from 2002 to 2005. I joined the team just as I finished my Ph.D. on the history of computer art, which was heavily informed by my reading of *PAGE* and its contributors. In fact, George was deeply involved in setting up CACHe, meeting with Paul Brown in 2000 to discuss what might be done with the significant collection of artworks and memorabilia that had accrued from the activities of CAS between 1968 and 1985 and which had been stored in Lansdown's basement lockup.

A meeting of interested parties took place at George's offices at System Simulation in Covent Garden. Bronać Ferran, who was then head of Hybrid Arts at the Arts

Council of Great Britain, brought their attention to the recently established Arts and Humanities Research Board (later Council). George knew Charlie Gere—then a lecturer in art history at Birkbeck College and George, Charlie and Paul subsequently prepared a successful application to the Board. System Simulation was the Project's Industry Partner.

One of the advantages of studying contemporary art is engaging with living artists and thereby better understanding their approach and motives. I was lucky enough to know two of the founders of CAS—George Mallen and Alan Sutcliffe—along with Gustav Metzger, but sadly not John Lansdown, whom I encountered only through his archives and writings. Alan was always larger than life, looking in later years like an Old Testament prophet and often proclaiming his thoughts about computer art. He enthusiastically participated in events organised by CACHe and subsequently by CAS after it was re-established circa 2005. By contrast, in his later years Gustav was always reserved but when we talked he answered every question, after a thoughtful pause, with something thought-provoking. His final project, "*Null Object—Gustav Metzger Thinks About Nothing 2012*", was a joint piece with London Fieldworks and supported by CAS.

My first meeting with George was in the spacious offices of System Simulation when it was based at the corner of the Covent Garden palazzo, just opposite the market, in a prime location now (quite appropriately) occupied by the Apple Store. I was impressed by the industry of the System Sim software developers that I encountered. George had a quiet but precise manner that befitted his role as Director, and the company's lengthy client list demonstrated its success. The treasure that George unlocked for Catherine and myself was the mysterious plan chest containing the heart of CAS: all the assembled artworks and documents that would later be bequeathed to the Victoria & Albert Museum, ultimately forming a major part of the new national archive of Digital Art. Some of these are reproduced throughout this book.

In subsequent meetings, George enthusiastically recalled the many successes of CAS but was also clear-sighted about some missed opportunities and was insightful into the reasons for its eventual quiescence. I came to realise that his career threaded through so many institutions, activities and key moments that he seemed omnipresent. His essential contribution to the Society was a deep understanding of systems and how things interacted, be they computers or people, and how to connect them.

George's early work after receiving his physics degree in 1962 was as a Scientific Officer at the Royal Aircraft Establishment, Farnborough, working on early digital simulations of air traffic control systems. His subsequent connection with Gordon Pask came about through George's interest in the simulation techniques that he was working on at the RAE for the use of twin runways at Heathrow, by predicting the landing patterns of airliners. George's mathematics tutor at Brighton Polytechnic, the cyberneticist Richard Goodman, put him in touch with Gordon Pask in 1964. At that time Pask was developing a project with the Home Office to use cybernetics to teach police investigative techniques, and George developed a simulator for it, which formed the basis for his Ph.D.

Working with Pask at Systems Research, George developed learning models and worked on various simulations including an analogue hydraulic computer, filled from

a tank on the roof, that memorably drenched a group of American clients when they came to visit. As the firm was based in Richmond, George and his wife Sarah moved to Twickenham and still live in the area nearly six decades later. When *Cybernetic Serendipity* was staged in 1968, George assisted with Pask's famous installation *Colloquy of Mobiles,* and although he was mostly involved with transporting the fibreglass sculptures, he relished the opportunity to connect with artists at the show. George found it extremely stimulating to be working with people outside the scientific world, having grown up in technological research environments. This engagement with creativity would develop further, and George was most intrigued by Edward Ihnatowicz's audio-responsive sculpture *SAM* (Mallen 2018).

Following the fortuitous meeting at IFIP in 1968, George developed the Computer Arts Society's rationale with the other founders, and through Patrick Purcell, he started to engage with the Royal College of Art, where the *Event One* exhibition was held in 1969. His growing interest in computer simulations that combined cybernetic concepts with computational intelligence led to the development of *Ecogame* (1970), initially for *Computer 70* at Olympia, and subsequently for the first World Economic Forum in Davos. At the core of this was Jay Forrester's concept of System Dynamics encoded as an economic system, within a real-time simulation where decisions by a number of players led to various societal consequence. This was not merely a collaborative digital artwork, it was also a pioneering immersive multimedia environment controlled by a time sharing computer, partly entertainment, as well as a serious reflection on ecological impacts, hence its name. As George later said:

> There is a third area of computer science which is beginning to attract the artist [after the use of the computer as a design tool, and as an interactive agent]. This is the use of the computer as a medium for modelling complex systems. Techniques of simulation are emerging rapidly as powerful new aids to decision and planning in many large organisations. At the same time, there is a growing realisation that simulation models used in a game context offer an important new educational tool. It will be fascinating to see what the artist can make of this new medium. (Mallen 1973)

Ecogame was influential in its own way: there was an invitation from the United Nations to present it at a conference in Stockholm about the environment, though funding was not forthcoming. When it was later shown at Davos, the game's control system influenced Stafford Beer in his ultimately ill-fated design for the Chilean government's computer room. Working on the project spurred George to found System Simulation in 1970, and he parted company with Pask. He went on to establish closer links with the Royal College of Art where he joined the Department of Design Research and subsequently initiated the Computer Activities Unit, bringing in Brian Reffin Smith and Brian Wyvill to teach computer graphics to RCA students, subsequently becoming Research Director of the Department. Here he continued to introduce artists to computing, despite the active hostility by some towards digital technology, which George put down to the computer's links to corporate finance and industry. He saw one of his challenges as breaking this fear down (Mallen 2018). This period is described by Stephen Boyd Davis in Chap. 7.

The CACHe Project's research into the archives of System Simulation showed that George was a prescient explorer of simulation within the arts and a key figure

in the evolution of CAS during its formative years. I recall his evident satisfaction at the range of activities the Society developed and promoted, not least the *Interact* exhibition at the 1973 Edinburgh Festival that featured the work of another cybernetic artist, Stephen Willats (See Chap. 6 this volume for a discussion between George and Stephen.). It was gratifying, therefore, when George became actively involved with the "reborn" Computer Arts Society that restarted in 2006 at the conclusion of the CACHe programme, and continues to this day remaining part of the British Computer Society, now the Chartered Institute for IT.

The Society actively explores the history of computer art with the Computer Arts Archive whilst also providing a forum for contemporary artists; it sponsored the aforementioned project with Gustav Metzger, as well as *Event Two* in 2019 at the Royal College of Art, fifty years after the first CAS exhibition in 1969. CAS partners with the annual EVA London conference that hosts practitioners of electronic visual arts, plus theorists, gallerists and museum specialists. The Society has also supported the Lumen Prize for Art and Technology, which offers a valuable insight into contemporary international digital arts practice.

In September 2019, following *Event Two*, I presented George with the title of CAS President Emeritus to mark his long and fruitful association with the Society, (Fig. 1.2). The continuing success of both CAS and System Simulation show that his instincts when CAS was founded in 1968 were correct: that the field of computer arts would develop and eventually change the arts and humanities fundamentally. George's first simulations of 1962 provided his key insight: the process of digitisation in the arts is unstoppable, and the computer is no mere tool, but rather an extension of the imagination; at its core is the use of the computer as a modelling medium, just like the human brain (Mallen 2018).

Fig. 1.2 George Mallen (right) awarded President Emeritus of the Computer Arts Society by then Chair of CAS Nick Lambert (centre) at an event in 2019 whilst Sean Clark, present CAS Chair, (left) looks on. Photograph courtesy of Graham Diprose, used with permission

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Nick Lambert (b. 1976) is an Associate Research Fellow at Birkbeck, University of London. He was formerly Chair of the Computer Arts Society, a specialist group within the BCS/ Chartered Institute for IT. His research interests include the impact of digital technology in contemporary art and visual culture; the evolution of computer art and the uses of virtual reality for cultural heritage. He has developed art works for immersive environments and previously directed the VASARI Research Centre at Birkbeck, University of London. He also works closely with the Lumen Prize for Art & Technology, and is a co-chair of the Electronic Visualisation and the Arts conference.

He has engaged with artists and theorists in this field over many years and written on the history of computer art, the evolution of interfaces and display technologies (including most recently: 'Digital Roadtrips: The shifting landscape of digital art shows' in *Museums and Digital Culture,* ed. Tula Gianini & Jonathan Bowen. Springer: 2019).

Chapter 2
A Major Step Forward: The Computer Arts Society and *Event One*

Catherine Mason

See Fig. 2.1.

2.1 Introduction: The Society

As the name suggests, *Event One* was the first major public activity of the Computer Arts Society (CAS). Conceived in 1968 and officially launched in 1969 at *Event One,* CAS was the first practitioner-led group in Britain created, "to promote the creative use of computers in the arts, and to encourage the interchange of information in this area" (Mayne 1969). This chapter examines the concepts behind the early aims and objectives of CAS through this exhibition staged over a weekend in March at the Royal College of Art, London (RCA). It takes as a starting point a short paper I wrote on the 40th anniversary of *Event One*, in 2009 (Mason 2009). The present chapter expands on several points made therein and presents new research. *Event One* drew participants from the realms of architecture, fine art, computer programing, music and filmmaking amongst others and offered a range of visitor experiences from sculpture and graphics to live performance and workshops (Fig. 2.1). It set the wider agenda for the Computer Arts Society but more than that it heralded the collaborative, cross-disciplinary nature of working which came to signify the early period of media arts in Britain, where interactivity and process were as equally valued as object.

CAS arose out of the optimistic cultural climate surrounding the ground-breaking exhibition *Cybernetic Serendipity* in London. Held at the Institute of Contemporary Arts in the summer of 1968, *Cybernetic Serendipity* was the first comprehensive international exhibition in Britain devoted to exploring the relationship between new computing technology and the arts. Uniquely in the UK in a gallery setting, it

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