ERNEST EDMONDS
Light Logic
2012 | Site Gallery, Sheffield, UK; Conny Dietzschold Gallery, Sydney

What are the implications of the computer for the constructivist tradition?

In November 2012, the Site Gallery in Sheffield, UK, opened Light Logic, a solo-show of pioneering computer artist Ernest Edmonds. Emerging as part of the UK constructivist movement in the 1960s working under the mentorship of figures such as Kenneth Martin, Edmonds made his first algorithmic painting piece in 1968.

The title reflects the two enduring fields of investigation that have driven Edmonds’ practice. The perception and production of light have been critical to the artist and the works stand alone as aesthetic investigations into colour.

The exhibition includes a selection of archival works. Projected light in relation to reflected light is a central concern, and linked sets of drawings, paintings and moving images are brought together. A newly commissioned generative light sculpture Shaping Space completes the exhibition. The installation records and responds to its environment. Speed, colour and shape are triggered by the movement of viewers’ bodies and the work becomes a unique, autonomous, learning machine. The art of the Constructivists becomes simultaneously humanized and mechanized.

With early works in dialogue with recent pieces, the exhibition presents the critical interests of an artist whose work predicted developments in art and philosophy in an accelerated technological world.

Funded by the Arts Council of England, the Computer Arts Society and the Henry Moore Foundation. The formal evaluation of audience experience was presented at ISEA 2013 in Sydney when the exhibition toured to the Conny Dietzschold Gallery.

Shaping Space was also presented at the PAF (Přehlídka animovaného filmu) Festival of Film Animation Olomouc (Czech Republic) in 2013.
ERNEST EDMONDS
Light Logic

Paintings and related Generative Art
(1980s)
1. Exhibition view


3. Installation *Shaping Space*
Shaping Form, digital views
1. Paintings and related Generative Art (1990s)

2. Edmonds discusses documentation with pioneer Frieder Nake

3. Ernest Edmonds, Light Logic catalogue front cover
Light Logic: Ernest Edmonds interviewed by Laura Sillars 2013, Youtube, https://www.youtube.com/watch?v=WZK0CGYAM3k
EVALUATION IN PUBLIC ART: THE LIGHT LOGIC EXHIBITION

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Abstract
This paper discusses evaluation in the context of public art. The study reported is ‘Light Logic’, an exhibition of works created by Threshold Studios, an interactive digital works by the second author. The research approach, was a combination of formal evaluation with the audiences and informal evaluation with the artists and visitors. We identified a range of digital works, prints and paintings

Keywords: Digital Art; Interactive Art; Participation; Evaluation

There are many dimensions to the question of what is evaluation in the context of public art, a term that we use to apply to art that can be freely viewed by the public. We are at an interesting point in the development of new forms of interactive art. Advances in computing technology and in the new high-risk types of art projects. This is an especially so in the digital interactive art field where practitioners are often working in collaboration with academic research. The work of researchers whose frames of reference for evaluation may arise from different values and concerns. The work may also involve risks that lead to dead ends, or outright failure to achieve the initial aims, and it is only through adopting an evaluation strategy that these kinds of experiences can be turned into positive learning. The Wellcome Trust’s advice to grant applicants, it is important to anticipate the possibility of failure when striving for innovation and thereby to learn from it.

Digital Art Evaluation Survey
Evaluation both reflects and involves many layers of richness and complexity in aims, motivations and scope. In order to better understand the relationship of the current situation with regard to the role of evaluation in public art, we have carried out a preliminary study of existing practices and the methods and documentation used to evaluate practitioners and institutions. We identified a range of methods used for gathering information of which the questionnaire survey format is the most common. Evaluation is done mainly through general questionnaires, which helps to provide feedback for the curator and the artist to measure success in terms of audience attendance and general attitudes; for example the company, Thresholdstudios uses questionnaires, social media and reviews such as the ones made by students in the blog of their gallery. The feedback from this information was used to evaluate audience responses to the work and to shape the artistic work of this with critical artists [6].

It is important to distinguish between evaluation that functions mainly for in-house purposes and that is carried out with a view to informing public art [3] and produced a guide to evaluate the role of arts which functions for individual artists and groups. We noted a difference between these relationships and individuals need to take on board when contemplating evaluation. Nevertheless, there is a considerable gap between advice and actual practice: practice requires methods and needs to be learnt and tested. Whilst the IXIA initiative is important and vast, it is often nevertheless forms only one aspect of the evaluation requirements for public art.

Evaluation is a need for advice and methods that address the specific needs of creative practitioners undertaking novel and often high-risk types of art projects. This is especially so in the digital interactive art field where practitioners are often working in collaboration with academic researchers whose frames of reference for evaluation may arise from different values and concerns. The work may also involve risks that lead to dead ends, or outright failure to achieve the initial aims, and it is only through adopting an evaluation strategy that these kinds of experiences can be turned into positive learning. The Wellcome Trust’s advice to grant applicants, it is important to anticipate the possibility of failure when striving for innovation and thereby to learn from it.

New techniques for maximum use with the possibility of delivering a text message by aggregating information about several events into a single SMS message.

Other evaluation methods were used to support interactive artworks in what can be considered to be an experimental work crossing boundaries between physical space of the gallery, the public street space, and the virtual space. The Blast Theory collective, whose works are hybrid forms of participatory interactive digital art, have used a format that offers an audience experience: for instance, to evaluate Day of the Figurines they carried out a public Muslim exhibition in the street, which informed the project’s development [7]. The artists claimed that this form of evaluation was used to (e.g. participants/co-creators/performers), expanded the reach of the museum/gallery space, and with it, explore new interactions and technologies.

The survey of evaluation experience was used to contribute to establishing an evaluation framework that involves institutional concerns, such as evaluating arts in workshops; ‘test performances, and observation by video and person in combination. It focuses on the process (rather than on individual performances) and used a mixture of qualitative and quantitative methods. Qualitative methods included semi-structured interviews with Threshold Studios’ participants such as ‘artists, host venues, and advisory group members’; ‘documentary analysis of 30 different works’; ‘mapping the Arts proposal, applications to the scheme selection interview notes, websites, blogs, Twitter feeds, videos and online workshops’; ‘observation of three salon workshops’; ‘test performances, and Theatre Sandbox showcase’. Quantitative methods involved the use of IShed’s evaluation and monitoring forms, completed by participants in the five introductory workshops’; ‘follow-up online survey of workshop participants six months later’. The IQ (Interactive Quality) system, originally developed to interact with job seekers, was designed to re- interrogate an answer to the question 'in your answer to the question "Is this a creative process?" in the IQ (Interactive Quality) system, originally developed to interact with job seekers, was designed to re- interrogate an answer to the question 'in your answer to the question "Is this a creative process?" in the IQ system, originally developed to interact with job seekers, was designed to re- interrogate an answer to the question 'in your answer to the question "Is this a creative process?" in the IQ system, originally developed to interact with job seekers, was designed to re- interrogate an answer to the question "Is this a creative process?" in the IQ system, originally developed to interact with job seekers, was designed to re- interrogate an answer to the question "Is this a creative process?" in the IQ system, originally developed to interact with job seekers, was designed to re- interrogate an answer to the question "Is this a creative process?" The survey of evaluation experience contributed here to establishing an evaluation framework that involves institutional concerns, such as evaluating arts in workshops; ‘test performances, and observation by video and person in combination. It focuses on the process (rather than on individual performances) and used a mixture of qualitative and quantitative methods. Qualitative methods included semi-structured interviews with Threshold Studios’ participants such as ‘artists, host venues, and advisory group members’; ‘documentary analysis of 30 different works’; ‘mapping the Arts proposal, applications to the scheme selection interview notes, websites, blogs, Twitter feeds, videos and online workshops’; ‘observation of three salon workshops’; ‘test performances, and Theatre Sandbox showcase’. Quantitative methods involved the use of IShed’s evaluation and monitoring forms, completed by participants in the five introductory workshops’; ‘follow-up online survey of workshop participants six months later’. The IQ (Interactive Quality) system, originally developed to interact with job seekers, was designed to re- interrogate an answer to the question ‘Are you able to imagine how, in the future, this evaluation framework th...
participants were asked to give written consent to the gathering of data about their activities in the study environment including specific agreement to being video-recorded. A statement regarding the anonymity of the data collected was also provided.

Information was collected by video recording whilst people freely explored the exhibition. This was followed by a semi-structured interview based on a set of pre-determined questions. Video cued recall was also used to remind the subjects of what they had just seen and done. In addition to the audience, other perspectives were included in the outcomes of the research, principally, the intentions of the creative curator and the voice of the artist. These voices in particular guided the questions that were asked in interview. The data consisted of interview transcripts and video data which was analyzed using keyword allocation and collation by two researchers acting separately. The audio and video data has provided a rich source of information about the responses and experiences of the participants.

The data analysis is ongoing and at this point the findings should be regarded as preliminary. Outcomes may be grouped as follows:

Curatorial Design
Most participants mentioned the following:

- the importance of an open airy and naturally lit space for appreciating the work
- the value of digital and painted forms juxtaposed in a historically accurate way
- the archival documentation for what it revealed about the artist’s way of working.

The documentation archive consisted of the artist’s working documents arranged by the curator to reveal a certain narrative. There was a timeline on a wall at the entrance to the exhibition that placed the work in relation to other developments from the 1960s onwards, which many participants commented on as being very helpful. One or two people wanted more ‘explanation’ but for this kind of work it was a surprisingly small number. The general attitude seemed to be – ‘I want to look and judge for myself first!’

There was an order implicit in the design of the spaces: main art room followed by documentation room and then hidden behind a curtain the dark interactive space. One person only opted to turn right into the documentation room before going into main open art space.

Audience Response
There was a distinction between audience response to the interactive elements and experience of the whole exhibition itself. In a certain sense, the comments about interactivity arose from an attempt to analyze it. There is a clear contrast between the ‘analytic’ comments that denote thinking about the interactivity itself rather than being immersed in it, and the ‘affective’ descriptors denoting emotional and sensory responses. For example, here is a selection of the participants’ descriptors:

**Analytic:**
- ‘Not obvious it was interactive’
- ‘Did not realise it was interactive’
- ‘Not obvious it was interactive’
- ‘How did the interaction work?’
- ‘Had a sense of being in control’

**Affective:**
- ‘Scary’
- ‘Mesmerised’
- ‘Calming effect’
- ‘Went behind the projector’
- ‘Womb space’

This suggests that a focus on the quality of interactivity by itself can be misleading especially where the audience is puzzled having had no prior experience of it. On the other hand, from the artists’ perspective this puzzlement may be a very positive element that can be exploited in some way. By contrast the felt experience of an interactive artwork or installation can work in different dimensions as the widely contrasting responses to the work indicated.

Therefore, if we only try to understand interactivity in terms of observations of what people do (their actions, movements, outward behavior) this is only a partial view of the way that interactive art engages audiences. Going further into the deeper aspects of audience response – and evaluation of interactive art in general, requires enquiry methods that are directly informed by audience experience. It means that what they experience can be elicited by observation complemented by conversations. This has implications for the way we conduct evaluation in museums and galleries and research studies.

Embedding of evaluation into practice
As can be seen from the survey, the embedding of evaluation, in some form, into curatorial and artistic practice is a growing trend. The ‘Light Logic exhibition’ case study points to the development of a framework that can be used to implement public art evaluation: in this case, the development of a guide to evaluation is being carried out by the curatorial team in collaboration with the researchers. Whilst public funding bodies need to learn about matters that influence policy, it is also necessary for both curators and artists to learn about aspects of their practice that can inform their future work and also public policy. With some of the examples from the survey, the Light Logic evaluation is leading to reflections that will have an impact on future practice.

Conclusions
The type of evaluation study described here is one in which evidence about the curatorial, artistic and audience dimensions of a public art exhibition is acquired and then used to establish the value of a particular artwork or experience. This kind of approach to evaluation lends itself to the creation of shared values based on agreed evidence because it involves an exploration of situational knowledge. The gathering of information about what takes place, how audiences respond to the art exhibition and what curators and artists learn from the design, making and reflecting process contribute to an understanding of what makes a successful or otherwise exhibition of art in the public arena. From the analysis so far, the findings promise to contribute to establishing a framework that can be applied more widely in public art evaluation.

Acknowledgements
Site Gallery team led by Laura Sillars curated and installed the exhibition. The Arts Council of England and the Henry Moore Foundation provided valuable financial support. The evaluation depended greatly on the people who conducted it: Gill Horobin, Jane Faram, Kira Askaroff and Judith Hurry.

References and Notes

**Fig. 1. Installation shots of Light Logic Exhibition © Ernest Edmonds**
Review: Ernest Edmonds – Light Logic, Site Gallery, Sheffield

Posted on November 27, 2012 by Bryony Bond

Text by Lesley Guy

Works representing 40 years of Ernest Edmonds’ practice have been selected to create an overview that shows an intense interest in research of aesthetics in light, and image making. They are not hung chronologically, which would make sense for an artist who goes back, revisits and reworks. As a result there is a bit of cross-referencing to do and as a viewer I am led back and forth eager to look and learn.

Originally a painter whose training comes from within the British Constructivist movement of the 1960s, Edmonds began using algorithms to help make aesthetic decisions, the first pieces dating from 1968.

Paintings were made in response to digital works but then the digital solutions eventually became the medium. For the artist this was a breakthrough, ‘like the move from tempera to oil paint’. The work evolved into painting that is not about paint.

The first piece I encountered was in the entrance of the gallery, Colour Net, which is connected to the work projected on the window outside. The images we see on the screen are Edmond’s, however, Sean Clark has designed an app that allows visitors to interact with and change the way the image appears on the screen. As a result it will be evolving throughout the show.

The most impressive of these is the specially commissioned light sculpture, Shaping Space, 2012, that fills the second gallery. Again, the cameras analyse audience movement, which subtly affect the pink and red shapes on the two screens. Events are set in motion, in time, not to be undone but will go on to influence the way the next set of events – movements are received/interpreted and used to create the light/colour shapes. Like a primitive eye reading the environment this artwork flickers into life and lives. It is like a person storing up a lifetime of experience – taking every interaction with it. It is beautiful.

As a painter, I must confess that some of the work rubbed me up the wrong way just a bit. It reminded me of the first time I looked at Mondrian and was disappointed by roughly painted edges. Jasper A and B illustrate the point made about needing a new medium. Looking at the awkward gaps between the painted forms, it is clear that paint just isn’t working anymore. I can see the appeal of moving from static to time based work. The video work Jasper, 1988 delivers the same set of overlaid squares in motion with more success. The risks are greater though: if you don’t programme well, the whole thing falls apart.

Looking around, I become aware of gaps in my art history knowledge, particularly around computer art and the British Constructivist movement of the 1960s. Why did I not know about this? As if aware of this gap, Site Gallery is seeking to put Edmonds’ practice in context, make it known and appreciated in the scheme of tech developments and, most importantly, Contemporary art (see the very useful timeline on the wall).

It feels like an important work for the reason that digital technology is something we now take for granted. This show attempts to highlight these developments, from the code being punched out on cards and handed into an expert with a room sized computer – to anyone who has a smart phone, being able to create sound and image and getting it published in a matter of minutes.

On top of all this, it is a beautiful exhibition; the space is clean and bright emanating beauty, colour, light and order. Not to be missed!

Ernest Edmonds – Light Logic is on display at Site Gallery, Sheffield until 2 February 2013.

Lesley Guy is an artist, writer and curator based in Sheffield. She is Co-Director of Bloc Projects, an artist led contemporary art space and Content Curator for Akinweb.
When visionary engineer J.C.R. Licklider published Man-Computer Symbiosis in 1960 — a paper outlining how man’s intellectual productivity can, and should be significantly increased when partnered with a computer — the creative problems of contemporary artists were perhaps furthest from his mind. But during the 1960s, a digital fever struck the art world. Large numbers of enthused European and North American artists, curators, and theorists focussed their attention on the creative potential of computing. Software, systems, and concepts were tried and tested, and a decade’s worth of activity culminated in two landmark exhibitions: Jasia Reichardt’s Cybemetic Serendipity at London’s ICA and Jack Burnham’s Software: Information Technology at New York’s Jewish Museum.

Two artists with retrospectives currently showing in the UK caught that initial wave of innovation: German born and New York-based Manfred Mohr, and British born, and still UK-based Ernest Edmonds. Originally a painter with Constructivist sympathies, Edmonds turned to computer-aided algorithmic painting in 1968. Light Logic, his career-long retrospective at Site Gallery Sheffield, UK, combined early ‘70s works and original punch cards with a new motion sensitive installation and later video pieces. Edmonds’ essential project is an investigation into the variant formal possibilities of a two-dimensional square. In each work, the internal bounds of that shape are divided into sectors made visible by the distribution of colour, or the placement of a line. This is a process facilitated by programs designed to filter through combinatorial permutations, defined by Edmonds, until a suitable variation is found and then rendered by hand. A collection of numbered ink drawings from 1974 and 1975 capture the result of this procedure in the exhibition’s only monochrome (black and white) works.

Mohr’s engagement with computing and generative processes began with nocturnal usage of the automated drawing machines (or plotters) of Paris’ Meteorological Institute in 1969. Teaching himself the programming language FORTRAN IV, Mohr set about creating algorithms that would result in a series of values the machines would render as forms. The results are delightfully complex images containing an internal logic and symmetry that is both mystifying and simultaneously intuitive, like complex contrapuntal-music. In that sense looking at Mohr’s plottter drawings is similar to listening to Bach’s masterful variations on a single theme in the Musical Offering.

Light Logic at Carroll/Fletcher gallery in London presented works from Mohr’s early plottter drawings to recent video pieces, providing a compelling insight into the development of his singular art. The basement galleries presented an array of early plotter works like P-18 Random Walk (1969), a chart that traces out intersecting lines against a black background, and P-18 “White Noise” (1971), a series of small angular forms arranged like a hieroglyphic alphabet. The most striking piece in this space is a 16mm film titled Cubic Limit (1973-74). In 1972, Mohr decided to focus his investigation on one geometrical form and chose the cube. Cubic Limit is an animation of a three-dimensional cube that is rotated, multiplied, divided, and abstracted for four minutes. There is something luminously supernatural about the film, capturing, as it does, a digital process transferred to an analogue broadcast medium. Whereas digital film often flattens what it depicts, cellular has a tendency to round out, or materialise objects it projects. Watching the film unfold within the darkened gallery space there are moments when the cube seems to hover as physical matter in air.

Shaping Space, Ernest Edmonds, 2012

Shaping Forms, Ernest Edmonds, 2012

One and Zero, Ernest Edmonds, 2012

Cubic Limit, Manfred Mohr, 1972

Who’s Afraid of Red, Yellow and Blue (2012), a two-screen installation at Carroll/Fletcher gallery in London presents works from Mohr’s early plottter drawings to recent video pieces, providing a compelling insight into the development of his singular art. The basement galleries presented an array of early plotter works like P-18 Random Walk (1969), a chart that traces out intersecting lines against a black background, and P-18 “White Noise” (1971), a series of small angular forms arranged like a hieroglyphic alphabet. The most striking piece in this space is a 16mm film titled Cubic Limit (1973-74). In 1972, Mohr decided to focus his investigation on one geometrical form and chose the cube. Cubic Limit is an animation of a three-dimensional cube that is rotated, multiplied, divided, and abstracted for four minutes. There is something luminously supernatural about the film, capturing, as it does, a digital process transferred to an analogue broadcast medium. Whereas digital film often flattens what it depicts, cellular has a tendency to round out, or materialise objects it projects. Watching the film unfold within the darkened gallery space there are moments when the cube seems to hover as physical matter in air.

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002 Mohr began to use color in his works. The ground floor provides an overview of this development from the five canvases P-709-B5 (2002), LCD monitors showing slow-mo exploded views of cubes in pieces like P-1411c (2010) and P-777 (2004). A set of lacquered steel wall-based pieces are also displayed, and both P522d (1997) and P-511J (1996) are angular distortions of a cube that have an affinity to what graffiti artists is for in ambitious abstracts and burners.

Light Logic, and One and Zero revealed man-computer symbiosis for early practitioners was a process of delegated number crunching, at the Harris in Preston, UK, artists including Mark Amerika, Sophie Calle, Korean Lee Yongbaek, and Japanese multimedia artist Takahiko Limura revealed a more irreverent, hude, and improvisatory contemporary relationship to digital technology. The curatorial process behind Digital Aesthetic the third and final in a series of exhibitions the museum organized in collaboration with the University of Central Lancashire, UK – began with premise, or rather the truism, that digital technologies have become a ubiquitous, essential, and inescapable feature of modern life in the clogged world. From this point of departure both established and emerging international artists who engaged with the digital were invited to take.

erika’s offering The Museum of Glitch Aesthetics (2012) made use of the museum’s traditional mahogany frame and vitrine environment by ing small LCD video screens of glitched, stuttering footage and framed still images, similarly treated, amongst its permanent displays. Americ’s ekt sought to represent the life and works of a fictional artist named “the artist 2.0”. These interruptions to the museum’s narrative functioned like instances of noise within a fixed system, an attempt to glitch the collection. Other artists dealt with visual distortions. Limura’s A I U E O NN (1993/2012) used multiple screens to display warped variations of his head pronouncing one of the Japanese vowels, whilst Mary Lucier’s North Dakota Mandalas (2004) used processed film footage of four geographical locations to create a psychedelic installation of kaleidoscopic landscapes balance the artists within Digital Aesthetic 3 showed a playful engagement with the digital, and it was left to art-sleuth Sophie Calle to turn to a mediation on voyeurism with Unfinished (2005) a video work made from ATM security photographs and stolen surveillance tapes.

Loosely book-ending a historical narrative of digital art, Light Logic, One and Zero, and Digital Aesthetic 3 showed that artists’ relationships with quires has evolved from delegated arithmetical tasks to today’s collaborative engagement with software, apparatus, and the ever presence of tal media.