

BOOLEAN EXPRESSIONS

Contemporary art and mathematical data

25 July – 8 November 2015

Lewis Glucksman Gallery
University College Cork

www.glucksman.org
www.georgeboole.com



Tatsuo Miyajima, *K.C.C.* (extra large), 1999,
257 LEDs, electrical circuits, aluminium panel

Artists: Darren Almond, Aram Bartholl, Mel Bochner, Hanne Darboven, John Gerrard, Sol LeWitt, Tatsuo Miyajima, Aisling O'Beirn, Matthew Ritchie, Lynne Woods Turner

Curated by Fiona Kearney, in association with The College of Science, Engineering and Food Science, and George Boole 200, University College Cork

BOOLEAN EXPRESSIONS explores the ways in which artists use mathematical concepts and systems in their work. Inviting audiences to investigate ideas of Boolean algebra, the impact of 'big data' on contemporary life, and how systems and codes support creative production, the exhibition captures the ways in which artists have used logic and technology in their artistic practices.

BOOLEAN EXPRESSIONS also commemorates the legacy of George Boole, the first Professor of Mathematics at Queen's College Cork and a pivotal figure who can be described as the 'father of the information age'. His invention of Boolean algebra and symbolic logic pioneered a new mathematics, and his legacy surrounds us everywhere, in the computers, information storage and retrieval, electronic circuits and controls that support life, learning and communications in the 21st century.

Throughout **BOOLEAN EXPRESSIONS**, the processes of calculation and computation utilised by mathematicians – and by conceptual artists – are realized through physical and performative gestures. In Boolean algebra, values are designated either 1 or 0, true or false, and this binary logic structures all computer programming. **John Gerrard's** three-screen work **Exercise (Dunhuang)** portrays a simulated maze-like desert landscape populated with the avatars of Chinese factory workers, setting off in different directions according to the algorithms used in GPS systems. Occasionally, two of these characters meet, and the participant closest to his/her goal continues as the other retires from the exercise. The passive resignation of these figures is more akin to a Beckettian play than the intense violence such encounters usually generate in video games and blockbuster movies.

Gerrard's digital worlds are framed in three brass boxes hung directly on the gallery wall recalling the austere sculptural forms of Donald Judd and the geometric configurations of Minimalist artists. **Hanne Darboven** (1941-2009) belonged to this first generation of artists who used numerical systems and notation to measure her everyday activities. *Kalendar 94* consists of 192 sheets of paper, with the artist methodically counting and marking the passage of time in a process that she equated to a sense of "responsibility, work, conscience, fulfillment of duty." This rigorous approach also informed the practice of her close friend and peer **Sol LeWitt** (1928-2007). In his celebrated wall drawings, architectural spaces are transformed into fields of grids, arcs, circles and patterns according to a precise set of instructions. For **BOOLEAN EXPRESSIONS**, LeWitt's *Wall Drawing 119* (1971) will be installed throughout September, allowing members of the public to witness the gradual accumulation of lines and arcs in the environs of the Lewis Glucksman Gallery.

Mel Bochner's seminal conceptual artworks of the 1970s also explored mathematical ideas through seemingly simple gestures and humble materials. His *Meditation on the Theorem of Pythagoras* series refers to the equation of $a^2 + b^2 = c^2$, marking out the formula on the gallery floor in arrangements of chalk, stones, glass and hazelnuts. A set of related drawings demonstrates Bochner's abiding interest in mathematics, with their diagrammatical sketches, algebraic formulas, and scribbled over equations. While of a younger generation, **Matthew Ritchie's** practice explores similar ideas and, for **BOOLEAN EXPRESSIONS**, he has produced a new series of drawings that respond to Bochner's works. Ritchie is also presenting a number of related works: *The Temptation of the Diagram*, a wallpaper installation of abstract

patterns and interlocking lines, and the film *Monstrance*, an animated exploration of choreographed performance and diagrammatical networks created in collaboration with the musician Bryce Dressner (of the Grammy-nominated band The National).

In **Lynne Woods Turner's** series of *Untitled* drawings, sparse lines and shapes are meticulously rendered in graphite and gouache on parchment paper. The images are understated yet her sophisticated handling of materials reveals a deep understanding of complex structures, bilateral symmetry and repeated motifs. **Aisling O'Beirn's** work also reveals an innate awareness of materials and, in the sculptural work *Entropy*, she uses Boolean algebra to construct a seemingly erratic yet structurally stable assemblage of salvaged timber lengths. Built by balancing these timbers to test the structure's tipping point, her work explores the ways in which physical forces interact and adapt to one another in the process of their creation.

The legacy of Boole's algebraic system is realized in works that explore the digital era and its impact on our everyday lives. **Darren Almond's** paintings *Stream* and *Chance Encounter 004* portray sequences of numbers, fractured and fragmented by the artist's use of several distinct panels to create large, black-and-white compositions. Seemingly created by chance and reminiscent of abstracted digital clocks, Almond's practice reflects upon our modern age, how we are subjected to timetables to become victims of our own technological progression. In **Aram Bartholl's** work, the CAPTCHA codes used for online password verification become sculptural objects. His series *Are You Human?* renders these randomly generated strings of numbers and characters as physical forms - a rusted steel monument presented prone on the floor or a laser-cut aluminium relief that hovers against the gallery walls. This interest in permanently capturing the ephemeral elements of the digital world is also seen in a body of work by the acclaimed Japanese artist **Tatsuo Miyajima**. His wall-based sculptures use a range of high-tech components, including LEDs (light-emitting diodes), electrical circuits and microcomputers to illuminate the act of counting. Repeated rows, grids and networks of numbers, flashing in continual and repetitious – though not necessarily sequential – cycles from 1 to 9, represent the relentless calculation inherent in computer data banks. While employing new media technology in his practice, Miyajima's work also points to more philosophical mediations on time and being, and the exhibition closes with his 2004, *Counter Window*, a liquid crystal glass display with an internet content time controller that evokes

digital clocks, Marcel Duchamp's famous *Fresh Widow* sculpture, and in the context of this exhibition, the George Boole Window in the Aula Maxima, UCC.

The mathematician Blaise Pascal wrote that "Reason's last step is the recognition that there are an infinite number of things which are beyond it." Perhaps, this is also the point where science turns to art. **BOOLEAN EXPRESSIONS** considers these connecting moments between contemporary art and mathematical data, and in doing so, explores the very processes of deliberation that connect artistic and scientific modes of enquiry.

The exhibition is accompanied by an extensive programme of curated events, talks, art courses and workshops as well as an accompanying publication featuring information on the artists and the exhibition and commissioned essays by Lucy Dawe-Lane and Brian Fay.

BOOLEAN EXPRESSIONS: Contemporary art and mathematical data is supported by University College Cork, The Arts Council Ireland, Science Foundation Ireland and private philanthropy through Cork University Foundation.



Notes on the artists and artworks:

BOOLEAN EXPRESSIONS features works by Irish and international artists. The artists **John Gerrard** and **Aisling O'Beirn** will be present for the press preview 11-12:30 Friday 24 July 2015.

Darren Almond (Born 1971, UK) was shortlisted for the 2005 Turner Prize, and has works in important international collections such as the Metropolitan Museum of Art and the Saatchi Collection, London. Almond's works explore concepts of the finite and infinite: 'I love the abstract quality of maths and the idea that within the abstract realm everything needs to be in balance. You need to have nothing otherwise you can't have anything.' – Darren Almond.

Aram Bartholl (Born 1972, Germany) explores the influence of the Internet on our everyday lives and spaces. With a degree in architecture from the University of Arts, Berlin, Bartholl focuses on the interrelations between the digital world and our physical surroundings. Bartholl initiated the Dead Drops project (www.deaddrops.com) that invites people to drop and find files on USB flash drives embedded into walls, buildings and curbs in public spaces. This offline filesharing network has been set up in cities around the world including New York, Paris, Prague, Vancouver, Vienna, Zurich and now Cork!

Mel Bochner (Born 1940, USA) is a leading American conceptual artist based in New York. His *Meditation on the Theorem of Pythagoras* was a response to a visit to a temple in Metapontum, the city where Pythagoras is said to have died. Bochner's work does not function as an accurate representation of the mathematics, more an evocation of the idea that mathematics is also a cultural, symbolic language. The artist had visited the deserted temple on a cold and wet day in 1972, finding it little more than a few reconstructed columns, some ancient debris, and scattered building stones. Nonetheless, he strongly sensed the presence of Pythagoras and had the urge to commemorate that feeling. Remembering his 10th-grade geometry ($3^2 + 4^2 = 5^2$, or $9 + 16 = 25$), Bochner gathered 50 small stones from the temple debris and laid them down. But when he created his pattern, he found that he had three stones left over. Finally, it dawned upon him that the surplus came from counting the corners of the triangle twice. "What I had stumbled upon was that physical entities (stones) are not equatable with conceptual entities (points)," Bochner said, "or the real does not map onto the

ideal. That's "why the title of the work is *Meditation on the Theorem of Pythagoras* and not simply Theorem of Pythagoras," Bochner noted, "and also why art is not an illustration of ideas but a reflection upon them."

Hanne Darboven (1941-2009) is a German conceptual artist whose work will be the subject of a major retrospective *Enlightenment* at the Haus der Kunst, Munich from 18 September 2015. In 1966, Darboven moved to New York City where she met artists Sol LeWitt, Carl Andre, Mel Bochner and Joseph Kosuth. During this time, Darboven started to design geometrical drawings, permutations, diagrams and her first calculations on graph paper. After the death of her father in 1968, Darboven returned to Hamburg-Harburg where she lived and worked in her family's house until her death in 2009.

John Gerrard (born 1974, Ireland) is showing his work *Exercise (Dunhuang)* in Ireland for the first time. The production of Gerrard's digital work is a highly labour-intensive, collaborative approach, with each piece typically taking between six months and a year to complete. For *Exercise (Dunhuang)*, Gerrard worked with Irish actor Conor Lovett, a specialist in Beckett's theatre, performer Emmanuel Obeya, and dancer Esther Balfe, to create a simulation of the human body that is forlorn, comic and wonderfully mortal, different to the adrenaline-fueled demi-god avatars that appear in most video games.

Sol LeWitt (1928 – 2007) is a pioneer of Minimalist and Conceptual Art. A prolific artist, he produced more than 1200 wall drawings in his influential career. The wall drawings evoke the tradition of Italian fresco paintings, and are determined by linear systems that must be realised according to strict material and spatial parameters. LeWitt compared his role to that of a composer who creates a score, with the wall drawing like a performance that will vary slightly each time it is executed.

Tatsuo Miyajima (born 1957, Japan) is currently Vice President of Kyoto University of Art and Design, and one of Japan's most distinguished contemporary artists. Miyajima's LED numerals have been presented in grids, towers, complex integrated groupings or circuits and as simple digital counters, but are all aligned with his interests in continuity, connection and eternity, as well as with the flow and span of time and space. Although Miyajima's work is indebted to the Serial art of the 1970s and to the use of numerical systems by other artists, the artist himself spoke of his work as addressing humanist ideas within Buddhist philosophy. Miyajima's

counters never register zero, because the artists considers the idea of zero is a purely Western concept.

Aisling O'Beirn (born Ireland) is a Belfast-based artist whose work has recently explored the mathematical concepts and biography of 19th century Irish mathematician, Richard Hamilton. For **BOOLEAN EXPRESSIONS**, O'Beirn installs a new sculpture in Gallery 2, based on Boolean algebra. A film of the artist, in the process of creating the work will be shown during the exhibition run, giving audiences an insight into the process of making and remaking a sculptural work to completion, suggesting both the problem-solving of mathematical deliberation and the imaginative form-shaping of artistic practice.

Matthew Ritchie (born 1964, UK) is an artist whose practice centres on drawing, even though his work often finds ultimate expression in painting, sculpture, moving image and installation. Ritchie often collaborates with other artists, musicians, scientists and philosophers. His film *Monstrance* which is shown in the Glucksman's Sisk gallery features singer Shara Worden and a score by Bryce Dessner, of music band The National, who is curator of the *Sounds from a Safe Harbour* festival (<http://soundsfromasafeharbour.com>) in Cork in September 2015.

Lynne Woods Turner (born 1951, USA) considers the mathematical geometries at play in nature and explores the beauty of repetitive patterns. Turner's meticulous lines are drawn freehand and bear witness to the mark-making of the artist, even as a delicate, tremulous presence. This is the first time Turner has exhibited in Ireland.

It is possible to arrange for press interviews with the curator and some of the participating artists. For further discussion of the exhibition, press images or more detailed information, please contact:

Chris Clarke, Senior Curator, Lewis Glucksman Gallery, University College Cork.

exhibitions@glucksman.org / +353 21 4901844

Notes on events in the exhibition:

The Lewis Glucksman Gallery makes great art available to everyone. A wide range of events and activities are programmed for all abilities throughout the exhibition run. You can view the entire programme in our seasonal brochure at <http://glucksman.org/CurrentBrochure.pdf>

To celebrate World Statistics Day: make yourself a live statistic on the gallery walls!

The United Nations recognised the extraordinary global impact of the work of George Boole at a plenary session of the General Assembly in New York this week as it designated 20 October 2015 as World Statistics Day. The Glucksman invites you to mark your birthday and gender in the gallery to create a statistical wall drawing that represents visitors to the museum. Take a picture, tweet it with #GB200art and we will create a digital collage of all the photographs posted online.

To learn about art and technology: Perspectives - Art and Technology.

Can computers create works of art? How do mathematical ideas guide artistic practice? What kind of technologies are artists using today? And how does our new digital world influence and change human behavior? You can explore these ideas and more in a series of free lunchtime talks at the museum during October 2015.

For all the family: Family Sundays - making art together

Bring the whole family along to the museum on Sunday afternoons from 3-4pm for a free art workshop! Led by practicing artists, these fun and interactive events invite children (and their parents!) to learn all about making art. This season, we'll be looking at creative ways to make art from numbers and geometric shapes! Sunday afternoons from 6 Sept – 8 Nov 2015.

The Lewis Glucksman Gallery is open :

10 am – 5pm Tuesday – Saturday

2 – 5pm Sundays

Closed Mondays.

Admission to the Glucksman is free / Suggested €5 donation.

www.glucksman.org