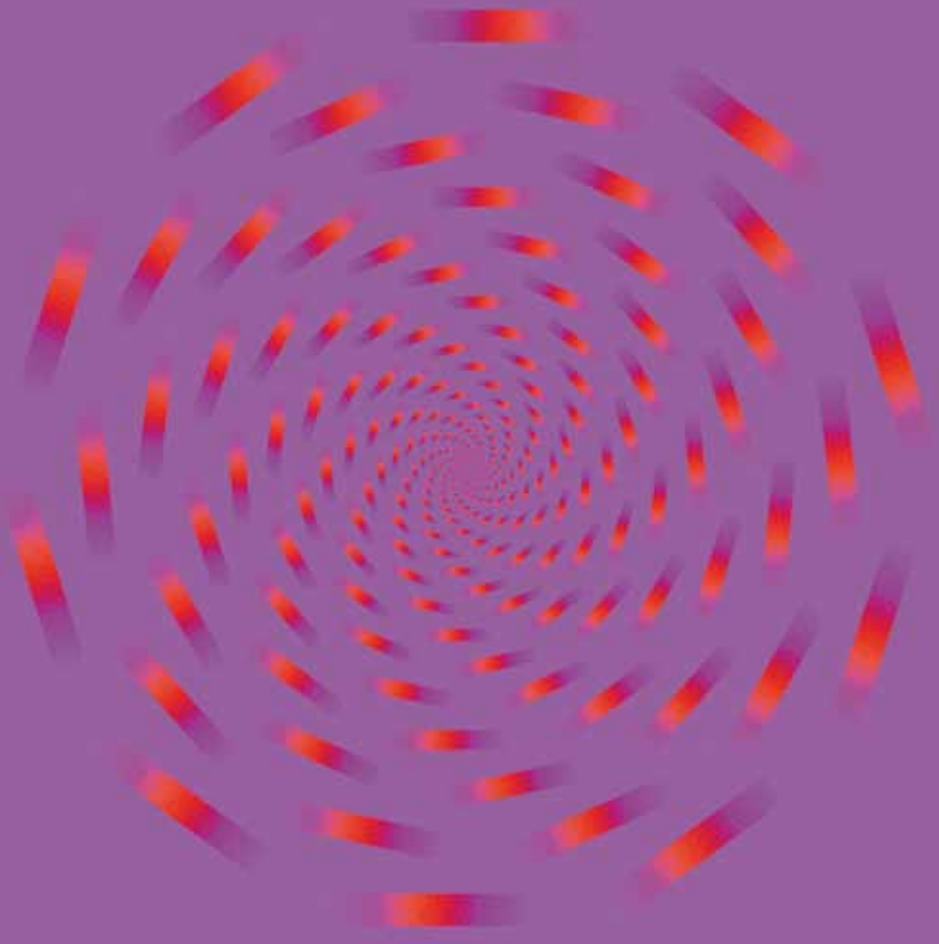


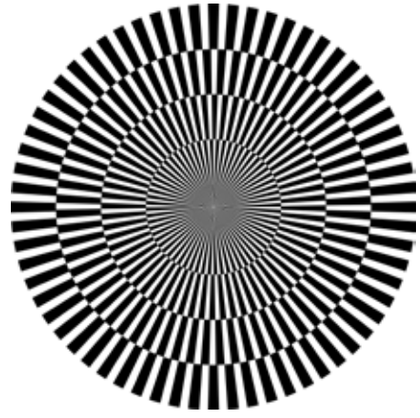
QUANTIFIED SELF

QUANTIFIED SELF

Michelle Browne, Cliona Harmey, Saoirse Higgins & Bea McMahon
in collaboration with Shimmer Research

18 OCTOBER TO 3 DECEMBER 2011

PUBLISHED BY THE LAB, DUBLIN CITY COUNCIL ARTS OFFICE



"QUANTIFIED SELF AT THE LAB IS PART OF INNOVATION DUBLIN 2011, WHICH TAKES PLACE ACROSS DUBLIN FROM 17TH OCTOBER TO 18TH NOVEMBER. THE FESTIVAL DEMONSTRATES DUBLIN'S CAPACITY TO INSPIRE, INTERACT AND INNOVATE. IN A CHALLENGING GLOBAL ECONOMIC ENVIRONMENT OUR CAPACITY FOR INNOVATION HAS BECOME VERY IMPORTANT. FOR THE THIRD YEAR RUNNING INNOVATION DUBLIN HIGHLIGHTS THE INNOVATION AND CREATIVITY THAT IS HAPPENING ACROSS THE CITY IN SO MANY FIELDS. IT WILL REINFORCE DUBLIN'S INTERNATIONAL POSITION AS A LEADING LOCATION FOR ENTREPRENEURSHIP, INVESTMENT AND CREATIVE THINKING."

John Tierney, DUBLIN CITY MANAGER

INTRODUCTION // *Sheena Barrett*

"Innovation comes from people meeting up in the hallways or calling each other at 10.30 at night with a new idea, or because they realised something that shoots holes in how we've been thinking about a problem. It's ad hoc meetings of six people called by someone who thinks he has figured out the coolest new thing ever and who wants to know what other people think of his idea."
STEVE JOBS (1955-2011) – BUSINESS WEEK 2004

The LAB Gallery shows emerging artists and emerging ideas. Increasingly, these ideas have led to collaborations and intersections with other disciplines including art, design, technology, science, astrology, architecture, dance, music and more. We have a core community of artists and we build our audiences through creating a range of ways for people to engage further.

The positive energy of Innovation Dublin provided the impetus to futher explore connections between technology and art. In recent years, *Shimmer Research* has been consistently flagged in the media as a key example of Ireland's smart economy, a positive story for recessionary times; an innovative company with growing exports. Dublin is a connected city and I knew Shimmer's Vice President, Kieran Daly. I called him to see if he might be interested in exploring the possibilities that might arise from collaborating with some Dublin based artists.

I invited artists: Michelle Browne, Cliona Harmey, Saoirse Higgins and Bea McMahon to consider the idea. They agreed to find out more. We met together at the LAB earlier this year and discussed our approaches and the possibilities and challenges presented by working together. Shimmer Research, we learned, offered the promise to facilitate new ways of working, while also creating a particular parameter. The technology offered the artists the means to measure a range of data using wearable sensors that could then transmit the findings in real time. As such, much thought went into what made sense for each artist to measure in relation to their ways of working, how that measuring might actually work, and how these ideas and experiments might form an exhibition together.

What we soon discovered was that the technology was as much about the people as the hard and software. It emerged very quickly that *Shimmer Research* were open to the risk taking inherent in an artists practice and had plenty to contribute to the conversation, thought processes and problem solving.

Since then the processes of discussion, thinking, building and un-building, filming, gambling, walking and dressage, programming, synthesizing, reading and discovering have evolved to create this exhibition and the accompanying events programme, Quantified Self.

Technology is allowing us to see and measure things in our bodies in ever increasing detail, but has this science far outstripped our ability to understand the significance of these new observations? The idea of Quantified Self considers the idea of self knowledge through numbers. There is also a sense that it is only by sharing the measurements

with others that we can try to understand what they might mean. Einstein said "Not everything that can be counted counts, and not everything that counts can be counted". The Shimmer devices presented the opportunity to count more and the artists chose to consider in a range of ways the hierarchies of what is and can be measured and, and what that might mean.

Quantified Self is a series of collaborations, thoughts and ideas. In addition to the artists' collaboration with Shimmer, in recognition of the theme for Innovation Dublin 2011, Innovation by Design, we worked closely with designer Oonagh Young on the exhibition and booklet design. A complimentary art and science programme for secondary schools will run in partnership with the Royal Hibernian Academy. We hope you enjoy the essay by Rachel O'Dwyer who has put together an exciting range of events to provide more spaces for innovation, discussion and exchanges during the festival. Please come along and share your ideas.

Sheena Barrett, curator of the LAB and Assistant Arts Officer, Dublin City Council

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SHIMMER RESEARCH // *Kieran Daly*

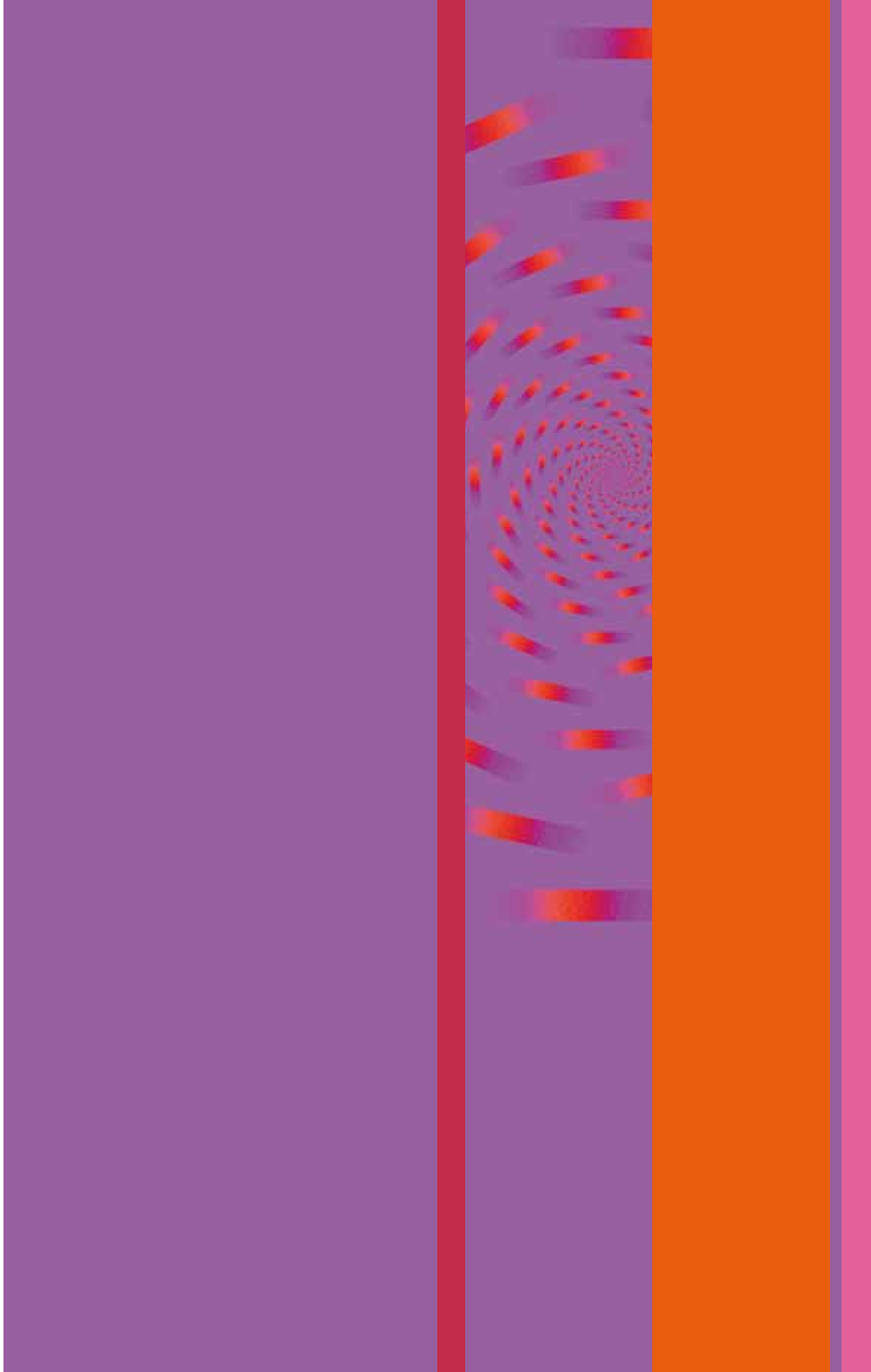
Shimmer Research develops wearable sensors that capture kinematic and biophysical data. This data can be wirelessly transmitted in realtime to relevant parties be it clinicians, caregivers or indeed presented to the wearer of the devices. The technology is used worldwide in over 50 countries for a variety of applications in areas such as academic/clinical research, healthcare, wellness and sports.

We are very excited to partner with Dublin City Council / The LAB as part of Innovation Dublin. The process has been engaging from the outset and working with groups from outside our natural domain has helped us look at the shimmer technology through a different lens.

Our view is that innovation happens at the intersection of different disciplines. When we think about this internally we cluster different groups within the company to generate new ideas – moving outside of the organisation and working with the artists has highlighted the limitations of our traditional approach. The path from concept to the realisation of work for the *Quantified Self* exhibition has altered the way Shimmer views our technology and reinvigorated our approach to innovation.

We look forward to continuing the relationship with both The LAB and the wider artistic community and are energised by the possibilities these engagements open up.

Kieran Daly, Vice President, Shimmer Research



RISK // *Michelle Brown*

Risk developed out of a residency in The Leitrim Sculpture Centre in Manorhamilton. My work is often developed from research into our built environment. I am interested in the way the design of our environment and the social structures that are put in place impact on the way we live. Leitrim has the highest number of ghost estates in the country and the centre of the town of Manorhamilton is marred by an unfinished development that was to generate a new commercial and residential centre for the town. During my time there I met one of the developers of this failed project who owes over €10 million to the bank. I grew interested in the people who have taken these risks in society; what kind of people are they and what is their relationship to risk? I was interested in the comparative potential of the shimmer technology and how I might plot or compare my performance of risk against these entrepreneurs of society. As an artist who works with performance I was also interested in the surface presentation of a performance and what lies beneath the outer image of the performer. I am also interested in the face-to-face encounter inherent in performance. We are social creatures and tapping into these basic human characteristics, how we interact with each other, is of great interest to me. Often I engage the participation of members of the public to realise my work.

For this exhibition I set out to find participants from the Dublin context to engage with these themes. Jay Bourke (restaurateur and hotelier), Simon Kelly (developer) and Goff Lalor (Investor/developer) are all Dublin based business people who have won and lost financially during the boom and bust of the Irish economy. This artwork engages with how these people respond to risk-taking. It considers entrepreneurship and the gamble that is taken to generate business in the economy. For this work the participants and the artist played a game of Texas Hold 'Em poker. Quite often poker is about bluffing, sizing up your competition and betraying nothing during the game. Texas Hold 'Em is characterized by a greater number of opportunities to bet or raise the stakes as the cards are revealed over the course of a hand. In many cases the game is won or lost on the last card turned.

During the game the players were monitored with a shimmer device that tracked their stress levels using GRS (galvanic skin response, which is used in lie detection tests). The data was recorded and translated into movement through a sculptural work consisting of a chair on the end of a diving board. This image comes from a site specific work made for Manorhamilton called Disappointed Bridge, which was sited hovering from the 2nd floor of the unfinished building. The chair moves according to how each person responded to the game. The chair references the human scale of the risk, the person that takes this leap into the void. This more poetic representation is played alongside documentation of the game, juxtaposing the internal response of the participants with the outward projection of the players during the game.

MICHELLE BROWNE *is an artist based in Dublin. She studied Sculpture and History of Art at the National College of Art and Design, Dublin. Her practice is fundamentally performance-based. Browne has performed and exhibited both nationally and internationally, most recently taking part in Performance Laboratorium, Austria; Transmuted International Performance Festival, Mexico; Right Here Right Now Irish Performance Art Kilmainham Gaol, Dublin; European Performance Art Festival, Poland; and The National Review of Live Art, Scotland. In 2009 she was commissioned to make Mind The Gap, a participative public art project, for The Absolute Dublin Fringe Festival. In 2011 she presented solo exhibitions in The LAB, Dublin, Riverbank Arts Centre, Newbridge and Leitrim Sculpture Centre, Manorhamilton.*

Michelle also works as a freelance curator and is the founder of OUT OF SITE, a festival of live art in public space in Dublin running from 2006-2008. In 2009 she curated Vital Signs, an exhibition of arts and health in context for the Arts Council and Create and in 2010 she was invited to curate TULCA Season of Visual Art in Galway. She is the recipient of the NCAD Student Prize, The RDS James White Art Award, The Arts Council of Ireland Artist Bursary 2008 and 2010. She has written for Circa Art Magazine, Visual Artists News Sheet and Create News.

For more information go to www.michellebrowne.net.

Risk
Photo by Eileen Carpio
2011

Risk
Video still from DVD
2011

Cliona Harmey

Working on this project it was interesting to get a glimpse behind the scenes at a technological facility and also to have the luxury of working closely with engineers and technologists to realize what was in a sense quite a modest project: the translation or modulation of the human pulse to light. This is done by attaching a sports pulse sensor to the shimmer which then modulates a light. The pulse sensor works by emitting a small light against the users skin, this is emitted at two wavelengths which are absorbed differently depending on the amount of oxygen in the blood. A pulse reading is then calculated and this reading is taken into the physical hardware circuit which then modulates the lights on the sculpture. In a sense the output display directly mimics the way that the information is read.

In my previous work I have often attempted to turn technologies back on themselves and also to return very fast technologies to a more phenomenal or slower human pace. Often I combine elements of older technologies (parts of cameras, lenses, supports, bellows, filing systems etc) with newer technologies (live data/ camera feeds) to make sculptural works. These assemblages also combine elements from existing mass produced systems many of which are modular and because of modern standardized sizes very often they neatly slot together. This process in some ways mirrors the way that computer hardware is assembled from many different mass produced components with modern and legacy systems overlapping.

My initial research was informed by reading accounts of medical imaging developments and attempting to in some way abstract these into material sculptural works. Some of my initial research for this project focussed on the story of the accidental discovery of the xray by Roentgen. Roentgen was an avid photographer and the xray's link to a photographic worldview and processes seems very clear both in terms of the xray apparatus and also the type of flattened images of the body which it produced. With this project I attempted to consider how some of the newer medical technologies are facilitated by ethereal digital material whilst maintaining a link to optical imaging. I also found it interesting the way that newer technologies sometimes loop back on old ones and maintain a connection with older systems. The xray is of course still used in medicine but in industry it is also used to check the miniature circuit boards and hardware which are used to create the medical sensors as used at *Shimmer Research*.

CLIONA HARMEY *is interested in the histories, artifacts and hybrid forms of technologies. Her current work combines sculpture and live data feeds. It often reflects on histories of communication systems from shipping to flags and signals. She is based in Dublin and is currently a Lecturer at the National College of Art & Design and has exhibited in curated shows in Ireland and internationally. Recent shows include a solo show as part of* Unbuilding *at The Mermaid,* Moody *at Trajektor Art Fair Brussels,* Essomenia *at Peoples Park and* The Material Consequence *at The Bluewall Gallery. In Summer 2011 she co-curated* Transference *for Blackchurch Print Studio with shows at Broadstone and Monster Truck.*

Silver
wooden hoop & laminate, felt, waxed discs
2011

Watch
plastic found materials, custom aluminum, leds, electronics
2011

132 BEATS PER SECOND // *Saoirse Higgins*

'....matter thus resolves into numberless vibrations, all linked together in uninterrupted continuity, all bound up with each other and travelling in every direction like shivers through an immerse body.'

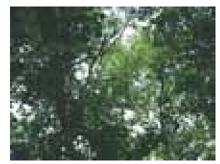
MATTER AND MEMORY - PROFESSOR HENRI-LOUIS BERGSON

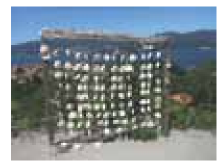
'132 beats per second' looks at the micro and the macro in the world and the power of man and technology. While I was walking as a pilgrim on the 'Camino de Santiago' from Portugal to Galicia in Spain (240kms in 10 days) I began thinking about how beautifully simple the experience was - powered by my feet I can go far on this earth. I felt the power and energy of my own body capable of changing the world. On 21st July, while I walked from Valença, in Portugal to Redondela in Galicia, the very last Space Shuttle landing was taking place. I was struck by the disparity between my technology (my walking boots and an accelerometer strapped to my chest) and the mighty force and effect of this last trip of the Space Shuttle. As I walked along at 5kms an hour I thought about the Space Shuttle perhaps symbolising the end of an era in technophilia. I imagined my analogue body power slowing the Space Shuttle down to my walking pace. Maybe my desire was to slow this troubled world down to become more in tune with our bodies.... the thought that we, as individuals, have an effect on the world, and that cumulative, quantitative actions can power global ones.

The Space Shuttle accelerated to a speed of 28,800 kms an hour to reach its orbit. The fastest man on the planet- Jamaican sprinter Usain Bolt ('lightening bolt')- can run 37.57 kms an hour. I took 6 hours to walk 31km at 5kms an hour, according to my sensor.

'According to an international study commissioned by the British Council urban populations are walking faster and faster, and putting their health in danger in the process. Dublin walkers are the fifth fastest in the world at 5.97 kms an hour over 60 feet. "The key conclusion is that the world is speeding up," says Professor Richard Wiseman, who headed the study.'

BBC NEWS 2ND MAY, 2007.





132 beats per second
video stills and photos
2011

SAOIRSE HIGGINS *is a digital media artist from Dublin. She is the programme leader for the new BA Creative Multimedia at MMU. Her background is in product design with a Masters in Interactive Media from the Royal College of Art, London and an MSc in Media Arts and Sciences from MIT Media Lab, Boston.*

Saoirse is interested in revealing some of the connections between our visions of the world we live in, our expectations for the future and the technology we use to help us with this. She explores the contested spaces of public-private, man-machine, man-nature. Saoirse has shown her work at the Thessaloniki 2nd Biennale *and at festivals and galleries such as* Montreal Film and New media festival, Transmediale, Siggraph, Exit Art *and* Location One gallery, *New York. She has held residencies at* e-Mobilart Lab, Disonancias *in Bilbao, Spain,* Location 1 Gallery *in New York and the Banff Centre for the Arts, Canada. She is also a member of the international artist group-* The Grafting Parlour.

www.alumni.media.mit.edu/-saoirse/
www.thegraftingparlour.org/
www2.media.uoa.gr/-charitos/emobilart/

ONE LETTER POEM // *Bea McMahon*

One letter poem[1] is a projected moving image and sound work. Footage, shot in one take, of a horse and rider performing a dressage routine was synchronized in post-production with an electronic sound track. Shimmers attached to the horse during filming generated the data that was converted into the aforementioned sound track.

The arrangement of the Shimmers was 12 motion sensors on the horse's legs, 1 on the spine of the rider, and one monitoring the horse's heartbeat. A few Shimmers didn't come on (the rider's spine being one of them) but the amount of data used to create the sound track had to be substantially pared back anyway. Eight shimmers - the 4 x-axes of the hooves, 3 y-axes of the shins and the horse's heart-beat were used to generate the sound. As part of the experiment I had wished to include the rider's movements and heart rate in order to see if a sonic sense of intent or communication between horse and rider could be captured. The two hearts would have had to share a frequency and a technical glitch meant it wasn't to be.

Dennis McNulty and I worked on translating the data into sound. He created Max/Msp patches to filter noise from the data and then built a picture of the horse in motion with sine waves as sonic blocks. Sine waves were the only way we could get a sense of movement into the sound score – other wave forms, like saw tooth or square waves, hid the detail of movement recorded by the shimmers, and any form of triggered sounds obliterated it altogether. To assign pitch values to the sine waves we began with 440 Hertz and multiplied and divided up and down the joints of the horse's legs in keeping with a Pythagorean spirit:

"the whole universe is arranged according to attunement, and the attunements is a system of 3 concords. The fourth the fifth and the octave, and of these 3 concords the proportions are found in the four numbers 1, 2, 3, 4"

What became significant in making this work is the type of relation possible between the data collected by the Shimmers and the horse, the horse as a measured being or as a symbolic 4-legged form. What became apparent to me (and this is just a feeling) was that the data sat firmly outside of the horse/symbol; it had no penetrative qualities. I thought about it a little more and remembered George Boole, who severed the relationship between symbols and things (in Cork in the 19th Century). With his symbolic or Boolean logic, and idempotent operators that don't leave a trace on their subjects, he paved the way for the computer revolution of the 20th century.

And so, by casting the horse in the role as a missing letter from some alphabet and by digitally inserting a hole into the arena with the horse, I wanted to invoke something that falls between Simone Weil's chagrin at Boole's destruction of the relation between a sign and the thing signified , and Emily Dickinson's poem "To fill a gap." I also wanted to add an element of danger to the poem - in the form of a potential accident in which the horse falls into the digital hole. The Italian phrase *Traduttore traditore* or "translator, traitor" perhaps sums up this work; where a lacuna is created by the act of representing measuring reality and the thing itself is left in an unutterable and unreasonable state.

"Measure [is] a form of insight that has to fit the overall reality in which man lives" - Werner Heisenberg

1. The title is inspired by Ian Hamilton Finlay's revolutionary concept of *One Word Poems*
2. Simone Weil, *translated by Arthur Wills*; Gravity and Grace; (New York: Putnam:1952); p.209
3. http://www.repeatafterus.com/title.php?i=6214

Exhibitions include Warp and Woof *(with Anna Barham) at the Centre for Contemporary Arts, Glasgow 2011,* <trinity> *at Flat Time House, Peckham, London 2011,* Nothing is Impossible *at The Mattress Factory, Pittsburgh 2010,* Two-fold *at the Green on Red Gallery 2010,* Third Sinop Biennial, *Turkey 2010 and* The Curated Visual Artist's Award, *The Douglas Hyde Gallery (Dublin) 2008. She has been awarded a residency at the Rijksakademie van beeldende kunsten, Amsterdam beginning in 2012 and received the Curated Visual Artist Award in 2007. She is represented by the Green on Red Gallery, Dublin and is included in the collections of the Irish Museum of Modern Art, the Office of Public Works and the Arts Council of Ireland.*

One letter poem
Video stills
2011

SECOND NATURE: A RESPONSE TO *QUANTIFIED SELF*

Rachel O'Dwyer

The Information Age, a term variously applied by critics to new modes of economy, sociality and governance emerging alongside the confluence of digitally networked media, does not refer to the proliferation of computational technologies so much as the conflation of life itself with informatics. Immaterial commodities in the form of information, knowledge and culture succeed the material good as the primary centre of economic value. Sovereign power, concerned with the administration of bodies and the calculated management of life is contingent on the parallel flow of psychographic and biometric information through networks. Identity itself becomes inflected with technoscientific processes involving the aggregation, filtering and manipulation of data, such that broader economic, civic and social quanta are increasingly central to the production of subjectivity. To speak of a 'self' then, is already to speak of a quantum, a politics of the body that draws the subject into conference with an expanded metrics of value.

The show *Quantified Self* brings together a number of artists working across media and performance with *Shimmer Research*, developers of wearable sensors with multivariate applications to kinematic, biometric and context-aware data. Forming part of the remit of *Innovation Dublin*, artists were invited to collaborate with Shimmer technicians to speculatively engage the capabilities of the wireless platform.

What emerges is a practice that is at once akin to the organising principles of the Knowledge Economy and separate from these. Where art is an expanding constituent in this economy as a cultural commodity, an affective force, and increasingly a component in what constitutes innovative models of research and development, the artist is charged with drawing these sentient objects into a realm where their connections with others can begin to make sense. At the same time, the fluidity of associations that gather together around these objects trouble the limits of statistical representation.

The development of widespread quantification techniques are historically contingent with the intensification of the body as both an object of knowledge and an element in the relations of power. It's tempting to situate this process in recent cybernetics and an epistemic practice that treats both biological and mechanical apparatuses as variously sensing and actuating systems. The quantified self has a broader legacy. Such histories are difficult to unpack. Two narratives emerge in a processual fashion; on one hand the gradual distribution of physiological and psychophysical processes across technical apparatuses[1] and on the other, the statistical representation of the body as a mechanism that is, in many ways, a reflection of the mechanical nature of media itself.[2]

1 The literal application of human and animal body parts in mechanical processes is a feature of early media. The first ear phonoautograph, developed in 1874 by Alexander Graham Bell and his assistant Clarence Blake a predecessor of all modern audio technologies, used excised human ears appended to a stylus in order to trace the mechanical vibrations of the inner ear as etchings on paper. (Jonathan Sterne, *The Audible Past* (London, Duke University, 2003).

2 Linda Williams, 'Film Body: An Implantation of Perversions', in *Explorations in Film Theory: Selected Essays from Cine-tracts*, ed. Ron Burnett, (Indiana.: Indiana University Press, 1991), 46-71.

In Quantified Self this mutual contingency is traced through visual culture, in particular the by turns honorific and repressive[3] legacy of the photographic image. Here, glimpses of archival references in the character of Muybridge or Bertillon[4] resurface through the lens of pervasive media. Photographer Eadweard Muybridge's *The Horse in Motion* (1878) pioneered successive exposure techniques to reduce the equine gait to a series of discrete postures performed against a grid-like background. This was later expanded to a photographic study in human motion of all kinds and subsequently quantified under a graphic notation system for eight fundamental systems of progressive motion. As well as influencing contemporaries such as Etienne Jules de Marey, Muybridge's imagery had a practical application in biomedical science, anthropometry, engineering and artistic endeavours of the time.[5] Taking the earlier practices of photographers such as Muybridge and Marey to their biopolitical conclusion, the work of husband and wife team, Frank and Lillian Gilbreth, informed scientific management through a time-lapse analysis of the production line. The physical routines of workers were abstracted from the factory to the photographer's studio. Repetitive actions were captured and subsequently broken down into discrete increments. Once stratified, the body in motion could be reassembled against a Taylorist managerial model concerned with economy of movement and the efficient application of the labouring subject. The outcomes are at once quantitative analyses of the body and seductive images, where aesthetics, in this instance, are part of a broader rationale that transmutes life from the qualitative towards the quantitative, which is to say from nonmedia to media.[6] Control is no longer exercised *on* the body as *through* the body.

In *Sliver, Watch* and *Instrument* Cliona Harmey teases out the social construction of biomedical imaging techniques. This process culminates in a series of objects that draw together traces of measuring and recording apparatuses around the grain of an antiquated medical photography. Engaged with the circuitous and nonlinear histories of science and technology, Harmey's practice frequently challenges the grand narratives that clothe media archaeology. For *Quantified Self* the focus is on the mutual progression of x-ray imaging and early photographic apparatuses. Here, the uncoupling of functional components from their position among a complex assemblage returns the solid objects of today to fluid states where their connections with absent bodies can begin to be glimpsed. If we allow that pervasive media devices embody corporeal postures that may normalise some relations and discourage others, these sculptural objects in turn anticipate and guide the posture of the user. They ask that we adopt a position specular to the object and submit our own selves as a unit of measure.

One letter poem is a moving image work by the artist Bea McMahon featuring a choreographed dressage sequence. Dressage involves the framing of equine gaits and routines. The work seems to echo the earlier stop-motion techniques of Muybridge, not only for its subject matter, but also for the situation of animal and rider within a grid like alphanumeric arena. Aggregated data produced by a pulse rate monitor and accelerometers appended to the animal's limbs are used to synthesise an audio track which accompanies the dressage sequence. Kinematic movement is mapped to oscillating sine waves. These in turn are additively combined in a system based around Pythagorean divisions of the octave. This poem is written twice over, once in code, and again in natural language.

In his essay *The Body and the Archive,* theorist Allan Sekula describes the many ways in which the early photographic image was tied up in the reduction of bodies to a numeric or textual shorthand that assisted in the statistical management of the labouring subject.[7] Flesh becomes code, part of a heterogeneous assemblage that is variously transferred, invested and exchanged. At the same time, the reproduction of the body by means of various imaging techniques across x-ray or cinematography resists quantisation, because the image is not a conventional lexical unit. While the affective object embodies a practico-symbolic power that may rationalise and individuate controlling interests, it makes itself open in turn to an array of shifting significations. Both Harmey and McMahon play with the implantation of symbolisms that frustrate the dominant lexicon - the poetic, circumstantial, and idiosyncratic elements that escape circulation within a binary system. The vast concatenation that we call the body, while increasingly subject to quantification, frustrates attempts to discretise, compress or smooth the contours of the self.

The proliferation of the network as a dominant organisational logic, and its technological deployment through vast assemblages of sentient media, brings the quantified self to the fore. We encounter its hypertrophy in the convergence of sentient systems with networking capabilities, a sociotechnical condition commonly known as ubiquitous computing. Ubiquitous Computing references a model of computation where cognitive technologies migrate from the traditional desktop framework to become nested in everyday contexts. Contemporary innovations such as mobile Internet devices, locative media, ambient interfaces, wireless sensor networks and the 'Internet of Things' all fall within this remit. [8]

If anything is new, therefore, it is the spatiotemporal extent of such complex mediations; the easy reproduction and transmission of what we might here call 'self-generated content' that facilitates its circulation in distributed networks of value and abstraction. Now more than ever the subject is constituted within the network. The micro-integration of cognitive technologies into personal networking devices advances a situation in which the body is an instrument not only in the instantiation of knowledge or external power relations, but in self-production and a labour theory of value that extends to the substrate body. Cognitive techniques are increasingly distributed and chemical fluctuations no longer confine their routines to a subcutaneous system. It follows that we can trace the computational imaging of the DNA

3 Allan, Sekula, 'The Body and the Archive', in *October* Vol. 39 (Winter, 1986) 3-64.

4 At a similar time and situated within a broader practice of anthropometry concerned with the statistical management of populations, Alphonse Bertillon developed an empirical system to correlate the physiological dimensions of Parisian criminals with a photographic database, in an attempt to catalogue repeat offenders. The system consisted of eleven precision measurements of the body thought to remain constant in adulthood, which were in turn associated with a photographic record of the offender.

5 Muybridge informed painters of the time such as Edgar Degas.

6 Alex Galloway, *Protocol: How Control Exists After Decentralisation*, (London: MIT Press, 2004).

7 Sekula, 'The Body and the Archive', op.cit.

8 Adam Greenfield, *Everyware: the Dawning Age of Ubiquitous Computing*, (London: New Riders Publishing, 2006).

helix via the Eclipse MV/8000[9] right through to the use of DNA strands as a new kind of computational machine some fifty years later.[10]

If biomolecular computation still retains an aura of the technological sublime similar to cultural imaginaries of cyborgs and space travel, subcutaneous processes have nonetheless intensified with the economic and political concatenations of the knowledge economy. Today the metabolics of the body are part of a speculative index of statistical and behavioural factors that inform the market. This goes beyond the metrics of social production associated with web 2.0.. Along with the mercenary psychographic and relational metadata that users produce in everyday activity, biometrics now inflect the global economy. The result is that physiological and biochemical fluctuations are increasingly influential market factors in much the same way as physical and circumstantial dynamics. [11]

Risk by Michelle Browne appears to directly reference the many ways in which the body becomes a vital agent in financialisation, attracting and individuating variable forms of value that capitalise on diffused desires of sociality, expression and relation. Exploring the biological composition of risk, the piece documents a poker game that took place at the Jackpot Card Club, Montague Street on the 11th of October 2011 between the artist, hotelier Jay Bourke, property developer Simon Kelly and investor/developer Goff Lalor. Using Galvanic Skin Response (GSR) to monitor physiological reactions to the game, the collated data is subsequently fed back into a chair positioned at the end of a diving board structure. Motorised elements in the sculpture translate the physiological responses of the players into a kind of object-oriented data visualisation. What manifests might be thought of as a poetic visualisation of financial exchange structurally akin to the oscillating peaks and troughs of traditional fiscal infographics.

Documenting a journey by foot from Camino de Santiago in Portugal to Galicia in Spain, Saoirse Higgins in turn explores the complexity of the networked self. Using a variety of locative media, *132 beats per second* is a multimedia work in which the artist's peripatetic journey through space moderates the playback of synchronous mobilities occurring on a micro and macro scale; the bell-beat of an insect wings positioned against the anachronistic spectacle of a space shuttle launched into the sky. Documentary materials from the artist's walk accompany these moving images, in the form of sensor readings taken throughout the exercise, and maps documenting the chosen route.

While the choice of materials are in some ways reminiscent of the sovereign overtones that accompany locative media, in this particular case the artist appears to assert the primacy of individual agency within a broader spatial epistemology. This begins with the body, with a chorus of footsteps whose intertwining paths weave spaces together.[12] If anything draws the multivariate responses in the show together, it might be the metronomic application of the bodies of those who engage the work. Not only as a unit of measure - matter as data, but as bodies that matter, that metre interaction.

The question remains what the consequences of these responses might be for those in a position to shape the trajectory of network cultures. If media art is fully inflected with the logics of a biopolitical economy, it is necessary to rethink the more traditional status of media art as commentary or critique. In some ways the interests through which the show is borne out seek to call these works into the realm of utility, of value, where cultural practices are charged with the rationalisation of technological innovation and public investment.

But the full extent of *Quantified Self* cannot be scaled to a quantifiable system. Far from reducing the vast concatenations of the body to an indexical trace, the four artists demonstrate the complexity of representation, dissemble systems and multiply meanings through counter-histories and the 'resources of fiction'.[13]

Acknowledging the affective force of cultural imaginaries to constrain or enable sociotechnical instantiations, the coincidence of technological and artistic disciplines can also be powerful, provocative and productive tools. While this sometimes means that a work is absorbed into the very logics it's challenged to engage, this is also the focal point at which immanent forms of measure might occur.

RACHEL O'DWYER *teaches on the MSC for Interactive Digital Media in the Computer Science Department of Trinity College Dublin and is currently undertaking a PhD in the Department of Electronic Engineering of TCD in network media, funded by the Irish Research Council for Science, Engineering and Technology (IRCSET). She is founder and Editor in Chief of Interference, an online peer reviewed journal of audio cultures. She is a curator of the Dublin Art and Technology Association (DATA 2.0) with artist Benjamin Gaulon. Her practice based work includes design for locative media, audio installation and ambient interfaces. She has curated various panel discussions, workshops and exhibitions on subjects such as mobile computing, contemporary soundscape ecology, network cultures and electromagnetic spectrum within Dublin and internationally. She has published essays on audio culture and various aspects of technology studies with a particular focus on mobile sound and network cultures.*

9 Bruno Latour, *Science in Action*, (Cambridge, Mass.: Harvard University Press, 1987) 1.

10 The past two decades have seen significant advances in the domain of biomolecular computing such that the building blocks of life provide a conduit for algorithmic processes. Each strand may be correlated with a computational problem, and exposing these to chemical reactions causes an exponential number of simultaneous calculations to occur. (Leonard M. Adleman, 'Computing With DNA: The Manipulation of DNA to Solve Mathematical Problems is Redefining what is meant by 'Computation" in *Scientific American*, August 1998, 54-61.)

11 According to studies by the Department of Physiology Development in Neuroscience, University of Cambridge, testosterone is an integral variable in the financial market, such that the surplus production associated with mercenary erotic experiences and stereotypical city boy behaviours are considered an efficiency boost. Similarly, risk manager and professor of the 'science of uncertainty' Nassim Nicholas Taleb has spoken about the importance of emotional kicks and adrenalin fluctuations to same. (Tiziana Terranova, 'New Economy, Financialisation and Social Production in the Web 2.0' in *Crisis in the Global Economy*, (Los Angeles: Semiotext(e), 2010) 153 – 170.)

12 Michel de Certeau, *The Practice of Everyday Life*, trans. S. Randall, (Berkeley: University of California Press, 1984),97 .

13 "When all else has failed the resource of fiction can bring—through the use of counterfactual history, thought experiments, and 'scientifiction'—the solid objects of today into the fluid states where their connections with humans may make sense." *Bruno, Latour, Reassembling the Social: An Introduction to Actor-Network-Theory,* (Oxford: Oxford University Press, 2005), 97.

Jennifer Brady
Technology Autonomous
Video stills
2011

EVENTS

All events take place at the LAB, are *free* but places must be prebooked by emailing: artsoffice@dublincity.ie

October 26th

SECOND NATURE

Time: 18.30 – 20.30

Description: This series of presentations provides a public overview and insight into some of the issues engaged by the show *Quantified Self.*

With the proliferation of intelligent systems for the monitoring and aggregation of human-generated content, including psychographic, geographic and biometric data, we are faced with a number of interrelated issues. How have bodies across history influenced not only cognitive processes but the ongoing design of sentient systems? What new forms of self-knowledge might emerge through networked and pervasive media? As life itself is integrated with artificial systems concerned with storage of information, processing and decision making, what might the future implications be for human cognition?

This event features a number of short presentations from experts in areas such as artificial intelligence, embodied cognition, philosophy, anthropology, art and computer science. This will include Kieran Daly from *Shimmer Research*, Dr John Kelleher (DIT) speaking on the embodied turn in Cognitive Science, Tim Stott (DIT) who will provide an overview of Foucault's theory of Biopower, Dr. Cathal Gurrin from DCU's lifelogging research lab, Musician Mark Linnane, and *Quantified Self* artist Michelle Browne, among others in areas such as biomedical science, biometric identification and neuroanthropology.

November 2nd

HISTORICAL FAILURES, SCIENCE FICTIONS AND TECHNOLOGICAL FUTURES

Time: 18.30 – 20.30

Description: An evening of artists' film screenings followed by conversations with *Quatified Self* artist Cliona Harmey and artist Jennifer Brady in relation to innovation.

Technology Autonomous- the film shot in the Dublin Institute of Technology's optics research laboratory documents the construction of a holographic image, while a voice off screen recites extracts from Dennis Gabor's 1972 book *The Mature Society: a vision of the future*. In the text, Gabor, the inventor of holography, describes his vision of future technology. The electronic score by Andrew Fogarty was produced from a collection of sound recordings of various motors and synthesizers. [Film duration 5 min 6.]

November 9th

DRAWDIO WORKSHOP

Time: 14.30 - 16.00

Places: 12 only

Description: Workshop with artist and designer Benjamin Gaulon

This workshop allows participants to make a musical instrument through drawing patterns using an ordinary pencil. Based on the popular Drawdio, this workshops uses an Arduino (a popular Open Source Microcontroller) and a graphite pen to generate various electrical modulations converted into musical tones by an Arduino board.

This workshop is open to anyone with no electronic or programming background and is a fun way to experiment and learn the basics of Arduino and physical computing.

Participants are asked to bring their own laptops where possible, ideally with free software Pure Data http://puredata.info/downloads and Arduino http://www.arduino.cc/ pre-installed.

November 16th

BODY RHYTHM WORKSHOP

Time: 18.00 - 20.00

Places: 12 only

Description: Workshop with artist and designer Benjamin Gaulon

This workshop will allow participants to use biometric data to control their computer. The material covered will teach participants the basics of biometric sensing and actuating systems through the use of Pure Data audio processing software and Arduino (a popular Open Source microcontroller)

This workshop is open to anyone with no electronic or programming background and is a fun way to experiment and learn the basics of Arduino and physical computing. Participants are asked to bring their own laptops where possible, ideally with free software Pure Data http:
//puredata.info/downloads and Arduino http://www.arduino.cc/ pre-installed.

November 23rd

'GOITE (come here)'

Time: 19.30

Places: 12 only

Description: Networked performance of music and dance with Maria Coleman and Emma Meehan -

Using the Body Response System (BRS) developed by Coleman, this piece will see Emma Meehan improvising with the system, where her physical movements trigger audio and visual responses. Creating an playful, intimate atmosphere, the audience will also be invited to get in on the action.

Coleman is a new-media artist and musician based in Donegal. She collaborates with dance and theatre practitioners to create experimental, playful multimedia shows based around movement and interactivity. Currently completing a PhD entitled 'Body Responsive Media Environments' in the DIT, she combines installation techniques begun during her Fine Art degree from LSAD, with music and media technology skills learned in MMT, Trinity College.

Emma Meehan has a background is in physical theatre and movement, and has worked as a performer with numerous Irish companies. She have recently submitted her doctoral thesis at Trinity College, Dublin, on the performances of Irish experimental dancer and choreographer Joan Davis. Alongside this research, Emma has been training with Davis and devising her own work using Davis's somatic movement approach.

November 30th

MAKING THINGS PUBLIC

Time: 19.00 - 20.45

Description: Panel discussion
This panel will explore some of the issues emerging around a society increasingly contingent on the economy, governance and politics of information. The discussion will address the ethico-political implications of pervasive computing, engaging issues such as digital policy, dataveillance, internet censorship and copyright.

In light of this broader discussion, we turn our attention to cultural practices as a way of tactically engaging with the politics of information societies. Art becomes a strategy for making things public: dissembling complex systems, visualising and representing information and providing a meta-commentary which might bring public issues to the fore.

Panel members include Minister for Communications Eamon Ryan discussing digital policy, Professor Rob Kitchin from NUIM and recent author of Code/Space (MIT Press, 2011) , Quantified Self artist Bea McMahon and Dr. Aphra Kerr from the Department of Sociology in NUIM working across new media and gaming. The session will be chaired by Dr. Michael John Gorman, director of the Science Gallery, Trinity College Dublin .

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