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VOL 18 NO 3 VOLUME EDITORS **LANFRANCO ACETI, JANIS JEFFERIES, IRINI PAPADIMITRIOU** / EDITORS **JONATHAN MUNRO** AND **ÖZDEN ŞAHİN**

Touch and Go is published in collaboration with Watermans and Goldsmiths College in occasion of the Watermans' International Festival of Digital Art, 2012, which coincides with the Olympics and Paralympics in London. The issue explores the impact of technology in art as well as the meaning, possibilities and issues around human interaction and engagement. *Touch and Go* investigates interactivity and participation, as well as light art and new media approaches to the public space as tools that foster engagement and shared forms of participation.

TOUCH AND GO

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LEONARDO ELECTRONIC ALMANAC, VOLUME 18 ISSUE 3

Touch and Go

VOLUME EDITORS
LANFRANCO ACETI, JANIS JEFFERIES, IRINI PAPADIMITRIOU

EDITORS
JONATHAN MUNRO, ÖZDEN ŞAHİN

Watermans International Festival of Digital Art, 2012

***Touch and Go* is a title that I chose together with Irini Papadimitriou for this LEA special issue.** On my part with this title I wanted to stress several aspects that characterize that branch of contemporary art in love with interaction, be it delivered by allowing the audience to touch the art object or by becoming part of a complex electronic sensory experience in which the artwork may somehow respond and touch back in return.

With the above statement, I wanted to deliberately avoid the terminology 'interactive art' in order to not fall in the trap of characterizing art that has an element of interaction as principally defined by the word interactive; as if this were the only way to describe contemporary art that elicits interactions and responses between the artist, the audience and the art objects.

I remember when I was at Central Saint Martins writing a paper on the sub-distinctions within contemporary media arts and tracing the debates that distinguished between electronic art, robotic art, new media art, digital art, computer art, computer based art, internet art, web art... At some point of that analysis and argument I realized that the common thread that characterized all of these sub-genres of aesthetic representations was the word art and it did not matter (at least not that much in my opinion) if the manifestation was material or immaterial, conceptual or physical, electronic or painterly, analogue or digital.

I increasingly felt that this rejection of the technical component would be necessary in order for the electronic-robotic-new-media-digital-computer-based-internet art object to re-gain entry within the field of fine art. Mine was a reaction to an hyper-fragmented and indeed extensive and in-depth taxonomy that seemed to have as its main effect that of pushing these experimental and innovative art forms – through the emphasis of their technological characterization – away from the fine arts and into a ghetto of isolation and self-reference. Steve Dietz's question – *Why Have There Been No Great Net Artists?* [1] – remains unanswered, but I believe that there are changes that are happening – albeit slowly – that will see the sensorial and technical elements become important parts of the aesthetic aspects of the art object as much as the brush technique of Vincent Willem van Gogh or the sculptural fluidity of Henry Moore.

Hence the substitution in the title of this special issue of the word interactivity with the word touch, with the desire of looking at the artwork as something that can be touched in material and immaterial ways, interfered with, interacted with and 'touched and reprocessed' with the help of media tools but that can also 'touch' us back in return, both individually and collectively. I also wanted to stress the fast interrelation between the art object and the consumer in a commodified relationship that is based on immediate engagement and fast disengagement, touch and go. But a fast food approach is perhaps incorrect if we consider as part of the interactivity equation the viewers' mediated processes of consumption and memorization of both the image and the public experience.

Nevertheless, the problems and issues that interactivity and its multiple definitions and interpretations in the 20th and 21st century raise cannot be overlooked, as much as cannot be dismissed the complex set of emotive and digital interactions that can be set in motion by artworks that reach and engage large groups of people within the public space. These interactions generate public shows in which the space of the city becomes the background to an experiential event that is characterized by impermanence and memorization. It is a process in which thousands of people engage, capture data, memorize and at times memorialize the event and re-process, mash-up, re-disseminate and re-contextualize the images within multiple media contexts.

The possibility of capturing, viewing and understanding the entire mass of data produced by these aesthetic sensory experiences becomes an impossible task due to easy access to an unprecedented amount of media and an unprecedented multiplication of data, as Lev Manovich argues. [2]

In *Digital Baroque: New Media Art and Cinematic Folds* Timothy Murray writes that "the retrospective nature of repetition and digital coding—how initial images, forms, and narratives are refigured through their contemplative re-citation and re-presentation—consistently inscribes the new media in the memory and memorization of its antecedents, cinema and video." [3]

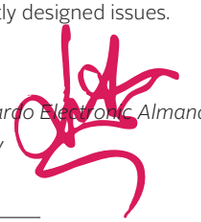
The difference between memorization and memorialization may be one of the further aspects in which the interaction evolves – beyond the artwork but still linked to it. The memory of the event with its happening and performative elements, its traces and records both official and unofficial, the re-processing and mash-ups; all of these elements become part of and contribute to a collective narrative and pattern of engagement and interaction.

These are issues and problems that the artists and writers of this LEA special issue have analyzed from a variety of perspectives and backgrounds, offering to the reader the opportunity of a glimpse into the complexity of today's art interactions within the contemporary social and cultural media landscapes.

Touch and Go is one of those issues that are truly born from a collaborative effort and in which all editors have contributed and worked hard in order to deliver a documentation of contemporary art research, thought and aesthetic able to stand on the international scene.

For this reason I wish to thank Prof. Janis Jefferies and Irini Papadimitriou together with Jonathan Munro and Özden Şahin for their efforts. The design is by Deniz Cem Önduygu who as LEA's Art Director continues to deliver brilliantly designed issues.

Lanfranco Aceti
Editor in Chief, Leonardo Electronic Almanac
Director, Kasa Gallery



1. "Nevertheless, there is this constant apparently inherent need to try and categorize and classify. In Beyond Interface, an exhibition I organized in 1998, I 'datamined' ten categories: net.art, storytelling, socio-cultural, biographical, tools, performance, analog-hybrid, interactive art, interfacers + artificers. David Ross, in his lecture here at the CADRE Laboratory for New Media, suggested 21 characteristics of net art. Stephen Wilson, a pioneering practitioner, has a virtual – albeit well-ordered – jungle of categories. Rhizome has developed a list of dozens of keyword categories for its ArtBase. Lev Manovich, in his Computing Culture: Defining New Media Genres symposium focused on the categories of database, interface, spatialization, and navigation. To my mind, there is no question that such categorization is useful, especially in a distributed system like the Internet. But, in truth, to paraphrase Barnett Newman, "ornithology is for the birds what categorization is for the artist." Perhaps especially at a time of rapid change and explosive growth of the underlying infrastructure and toolsets, it is critical that description follow practice and not vice versa." Steve Dietz, *Why Have There Been No Great Net Artists? Web Walker Daily* 28, April 4, 2000, http://bit.ly/QjEWIY (accessed July 1, 2012).
2. This link to a Google+ conversation is an example of this argument on massive data and multiple media engagements across diverse platforms: http://bit.ly/pGgDsS (accessed July 1, 2012).
3. Timothy Murray, *Digital Baroque: New Media Art and Cinematic Folds* (Minneapolis: University of Minnesota Press, 2008), 138.

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Touch and Go: The Magic Touch Of Contemporary Art

It is with some excitement that I write this preface to Watermans International Festival of Digital Art, 2012. It has been a monumental achievement by the curator Irini Papadimitriou to pull together 6 groundbreaking installations exploring interactivity, viewer participation, collaboration and the use or importance of new and emerging technologies in Media and Digital Art.

From an initial call in December 2010 over 500 submissions arrived in our inboxes in March 2011. It was rather an overwhelming and daunting task to review, look and encounter a diverse range of submissions that were additionally asked to reflect on the London 2012 Olympic and Paralympic Games. Submissions came from all over the world, from Africa and Korea, Austria and Australia, China and the UK, Latvia and Canada and ranged from the spectacularly complicated to the imaginatively humorous. Of course each selector, me, onedotzero, London's leading digital media innovation organization, the curatorial team at Athens Video Art Festival and Irini herself, had particular favorites and attachments but the final grouping I believe does reflect a sense of the challenges and opportunities that such an open competition offers. It is though a significant move on behalf of the curator that each work is given the Watermans space for 6 weeks which enables people to take part in the cultural activities surrounding each installation, fulfilling, promoting and incorporating the Cultural Olympiad themes and values 'inspiration, participation and creativity.'

Some, like Gail Pearce's ***Going with the Flow*** was made because rowing at the 2012 Olympics will be held near Egham and it was an opportunity to respond and create an installation offering the public a more interactive way of rowing, while remaining on dry land, not only watching but also participating and having an effect on the images by their actions. On the other hand, Michele Barker and Anna Munster's collaborative ***Hocus Pocus*** will be a 3-screen interactive artwork that uses illusionistic and performative aspects of magical tricks to explore human perception, senses and movement. As they have suggested, "Magic – like interactivity – relies on shifting the perceptual relations between vision and movement, focusing and diverting attention at key moments. Participants will become aware of this relation as their perception catches up with the audiovisual illusion(s)" (artists statement, February 2011). Ugochukwu-Smooth Nzewi and Emeka Ogboh are artists who also work collaboratively and working under name of One-Room Shack. ***UNITY*** is built like a navigable labyrinth to reflect the idea of unity in diversity that the Games signify. In an increasingly globalized world they are interested in the ways in which the discourse of globalization opens up and closes off discursive space whereas Suguru Goto is a musician who creates real spaces that are both metaphysical and spiritual. ***Cymatics*** is a kinetic sculpture and sound installation. Wave patterns are created on liquid as a result of sound vibrations generated by visitors. Another sound work is Phoebe Hui's ***Granular Graph*, a** sound instrument about musical gesture and its notation.

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Audiences are invited to become a living pendulum. The apparatus itself can create geometric images to represent harmonies and intervals in musical scales. Finally, Joseph Farbrook's ***Strata-caster*** explores the topography of power, prestige, and position through an art installation, which exists in the virtual world of Second Life, a place populated by over 50,000 people at any given moment.

Goldsmiths, as the leading academic partner, has been working closely with Watermans in developing a series of seminars and events to coincide with the 2012 Festival. I am the artistic director of Goldsmiths Digital Studios (GDS), which is dedicated to multi-disciplinary research and practice across arts, technologies and cultural studies. GDS engages in a number of research projects and provides its own postgraduate teaching through the PhD in Arts and Computational Technology, the MFA in Computational Studio Arts and the MA in Computational Art. Irini is also an alumni of the MFA in *Curating* (Goldsmiths, University of London) and it has been an exceptional pleasure working with her generating ideas and platforms that can form an artistic legacy long after the Games and the Festival have ended. The catalogue and detailed blogging/documentation and social networking will be one of our responsibilities but another of mine is to is to ensure that the next generation of practitioners test the conventions of the white cube gallery, reconsider and revaluate artistic productions, their information structure and significance; engage in the museum sector whilst at the same time challenging the spaces for the reception of 'public' art. In addition those who wish to increase an audience's interaction and enjoyment of their work have a firm grounding in artistic practice and computing skills.

Consequently, I am particularly excited that the 2012 Festival Watermans will introduce a mentoring scheme for students interested in participatory interactive digital / new media work. The mentoring scheme involves video interviews with the 6 selected artists and their work, briefly introduced earlier in this preface, and discussions initiated by the student. As so often debated in our seminars at Goldsmiths and elsewhere, what are the expectations of the audience, the viewer, the spectator, and the engager? How do exhibitions and festival celebrations revisit the traditional roles of performer/artist and audiences? Can they facilitate collaborative approaches to creativity? How do sound works get curated in exhibitions that include interactive objects, physical performances and screens? What are the issues around technical support? How are the ways of working online and off, including collaboration and social networking, affecting physical forms of display and publishing?

As I write this in Wollongong during the wettest New South Wales summer for 50 years, I want to end with a quote used by the Australia, Sydney based conjurers Michele Barker and Anna Munster

> *Illusions occur when the physical reality does not match the perception.* [1]

The world is upside down in so many alarming ways but perhaps 2012 at Watermans will offer some momentary ideas of unity in diversity that the Games signify and ***UNITY*** proposes. Such anticipation and such promise!

Janis Jefferies
Professor of Visual Arts
Goldsmiths
University of London, UK

23rd Dec 2011, University of Wollongong, NSW, Australia

1. Stephen L. Malnik and Susana Martinez-Conde, *Sleights of Mind: What the Neuroscience of Magic Reveals about our Everyday Deceptions* (New York: Henry Holt and Company, 2010), 8.

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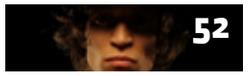
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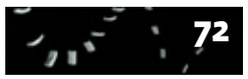
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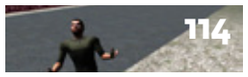
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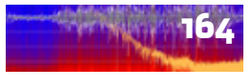
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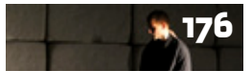
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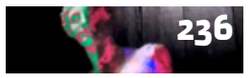
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SUGURU GOTO

CYMATICS, 2011

An Action Sharing production

by

Simona Lodi & Luca Barbeni

Simona Lodi
Co-founder and art director of Share Festival, Share Prize and Action Sharing

Luca Barbeni
Curator, Share Festival and Action Sharing

THE WORK

Suguru is a composer/performer, an inventor and a multimedia artist from Japan. Now based in Paris, he is highly connected to technical experimentation in the artistic field and to the extension of the existing potentialities in the human-machine relation. In his works, new technologies are mixed up in interactive installations and experimental performances.

The idea of *Cymatics* was inspired by the earthquake and tsunami disaster in Japan, on March 11, 2011.

Cymatics is an interactive kinetic sculpture which conveys a holistic view of nature by bringing together symbolic elements to create harmonies in a technological context.

The sculpture consists of two distinct, cube-shaped rooms, dedicated to two different material elements. Each work is created by a liquid – water and non-Newtonian fluid – and the vibration of sound. The sculpture raises a question about the casual connection between the visual and aural senses.

Cymatics creates diverse perceptual effects through the vibrations of different materials, which are placed on a plane surface activated by a vibrating motor. The vibrations are created by sound waves, with different patterns formed depending on the liquid state of the water or non-Newtonian fluid.

Two different rooms house the water and non-Newtonian fluid installations, which the public visit in succession. The first room is completely dark, while the second is pure white, lit by a strong bright light. In the middle of each room is a cube containing the vibration system and the liquid element.

Visitors can personally create their own visual patterns in each room by interacting with an interface on a tablet.

Photos by Pablo Balbontin.
Shoot at Camera di commercio di Torino, 2011.

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The sound created is not only audible, but is also perceived by visitors through their bodies as a subsonic frequency. The physical perception of the rooms is presented as a natural effect of the material elements.

Thus, visitors' experience of the works is both visual and acoustic, but also extra sensorial at the same time, at the subconscious level.

The installation makes use of cymatic, a young scientific discipline with very old roots, which explores how vibration, and hence sound, can influence matter; that is it studies the morphological effects generated by sound waves on matter.

Sound is transmitted to the human ear by air vibrations from a speaker. Electric signals are changed via the speaker's magnet into physical vibration, and this oscillating part makes it change into air vibration. By acting on a liquid in the oscillating part, vibrations that usually cannot be seen are actually seen as a physical reaction. For a periodic motion, the liquid produces a periodic pattern. If sound is simple, it will generate a clear pattern. A pattern will become complicated, if a sound is complicated. Sound and sound waves change the vibration, while the pattern changes with the vibration in the natural environment. Spectators can hear sound, but can also feel the vibration with their bodies.

ACTION SHARING

Cymatics is the second project to be produced by the Action Sharing platform. First launched in 2007, the aim of Action Sharing is to connect and bring together representatives from the field of scientific experimentation, from the world of art and creativity, and from the education sector, to produce complex works of art that are also an opportunity for technical and scientific research. Action Sharing has created a programme 'shared' with the local Turin territory to create a multidisciplinary platform that is also interdisciplinary at the same time. The goal is to build a bridge between art and science and technology, as an opportunity for knowledge growth and artistic creation.

THE CONCEPT

The heuristic model used is that of assigning a specific role to artists, scientists and technicians within the laboratory, so as to promote critical analysis and contribute to the art-technology debate by building on a cultural experience that is unique in Italy. It is an occasion for direct dialogue between knowledge, perception, aesthetics, technology, science and communication.

The specific field of study of the Action Sharing platform is focused on the relationship between art, science and technology. As that relationship has gradually emerged and been accepted in each of the respective fields, remediation has taken place, [1] falling within the same aesthetic framework comprising other forms of artistic expression tied to computers, such as digital art, net art, multimedia and electronic art, all of which are closely tied to representation, though they use completely different approaches to expression and different tools. By straddling the line between various disciplines and making use of living, organic matter, computerized tools, and mechatronic robots, the projects developed by Action Sharing defy precise categorization, as they fall within a specific artistic theoretical framework that embraces both art and technology. From a critical point of view, Action Sharing takes its inspiration from an aesthetic movement that ever since the end of the 1960s has focused on the idea of developing collaborations between artists and engineers. The movement reached its highest

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level of practical expression in Experiments in Art and Technology (E.A.T.), an association founded to foster such collaborations, established by the extraordinary Bill Klüver, an engineer who in 1960 had worked on a project by Jean Tinguely, and Robert Rauschenberg in 1967 after the enthusiasm generated by *9 Evenings: Theatre and Engineering*, a series of performance art presentations that united artists and engineers in New York City. [2]

It would be a nightmare to attempt to taxonomize such art, as Jens Hauser puts it, as can be seen from the critical debates and texts of curators, scholars and artists of the calibre of Jens Hauser, Roy Ascott, Peter Weibel, Gerfried Stocker, Franco Torriani, Piero Gilardi, Jill Scott, and Edward A. Shanken, to name but a few. But is it more important to give a label or to promote an art that goes beyond the boundaries of disciplinary fields and experiments in a syncretic way with different forms of artistic expression? This is the issue that interests us. Collaboration between the worlds of science and technology and art, and hence between very different disciplines, opens up new opportunities, which by becoming integrated and hybrid enrich knowledge and research, and hence provide new tools for art.

The issues raised and tackled by each Action Sharing project are more ingenious, and at the same time subtler, in both an artistic and scientific-technological sense, than in other approaches used in the contemporary art industry. Artists that normally perform on stage and exhibit in museums and art galleries can now find here in Italy, thanks to Action Sharing, new space for creative work in the research centers of corporations and universities, where together with engineers and computer scientists they can open up new, innovative approaches that are based on the intersection between art, science and technology.

Such an approach concentrates on the social front, focusing on artistic practices and on the very role of art in the historic, economic and technological context, instead of art in isolation (as in the Romantic myth). Towards the end of the 1960s, however, an anti-technology ideological stance came to the fore, as the fear emerged that technology would do away with the creative act of the artist. This leads us to question whether there might be limits and tools or methods and processes that are acceptable, and others that are off-limits due to a fear that they overstep the line of technical-scientific dissemination, thus losing sight of the proper aims of art.

Art inspires and is inspired by the technologies of its time. It makes use of them with the greatest cultural freedom, maintaining a critical and political distance, as well as a poetical divide. Rather than being enslaved by technology, art questions and shapes its potential prospects, developments and paradoxes. As Suguru Goto says, "Today, the relationship between art and technology is a much closer one than it ever was in the past. Likewise, technology is generally regarded as something that enriches our lives, but this does not always apply in the case of art. However, in some cases, technological developments can trigger new artistic genres. For instance, technological progress has led to the creation of multimedia art and interactive art, and artists have been able to profit from this development. In recent times, this interaction has been increasingly apparent in music. Although technology does not invent a new art form by itself, it offers musicians many new choices. In this sense, the artist's function is no longer that of conveying traditional values and thoughts. The artist is an intermediary who offers his audience new values and perceptions based on his interaction with technology.

An attitude of naive optimism towards technology is no longer possible. Rather, the artist should consider how he can confront technology, while remaining aware of its dangers. Technology itself does not create a new sensibility, but the interaction between humans and machines can do so. Once we accept the notion of interaction, we can exploit the new possibilities it offers better. The artist will no longer express his traditional thoughts and emotions, but interact with the machine."

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SOME BACKGROUND

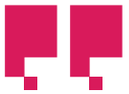
Action Sharing was founded in 2007 by Simona Lodi and Chiara Garibaldi. The platform responded to the need to create a productive arm of Piemonte Share, which for seven years now has produced the Piemonte Share Festival, dedicated to art in the digital age.

The conditions for the project's development came from the local context. It is no coincidence, in fact, that the project was established in Turin, a city whose system is changing profoundly, as a completely new approach is taken to the expertise of the past, such as in the automotive sector, for which the city as an economic unit has now become a global player.

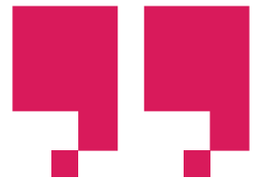
The Torino Chamber of Commerce has embraced Action Sharing as a channel for investment in this new vision of culture, where art is not confined within the walls of art galleries and museums. In this vision, art is opened to the business world and to scientific-technological research.

The first project produced as a pilot by Action Sharing was the Orchestra Meccanica Marinetti (Marinetti Mechanical Orchestra) by artist Angelo Comino–Motor in art. The aim was to create a mechanical orchestra, in which mechatronic technologies played a dual role: as a language of creative expression, and as a stimulus for both the business and academic research worlds to explore new solutions which could then be re-sold to the market. A secondary objective that was achieved was that of creating a broad, interdisciplinary creative community – something of great long-term value for the local territory itself.

The Orchestra Meccanica Marinetti consisted of two percussionist robots that played steel drums 'live,' under the direction of a performer. The orchestra, whose name pays tribute to the futurist poet Filippo Tommaso Marinetti, represents a bridge between the city of Turin's industrial past, and its future as a city of knowledge, driven by transformations currently underway.



Rather than being enslaved by technology, art questions and shapes its potential prospects, developments and paradoxes.



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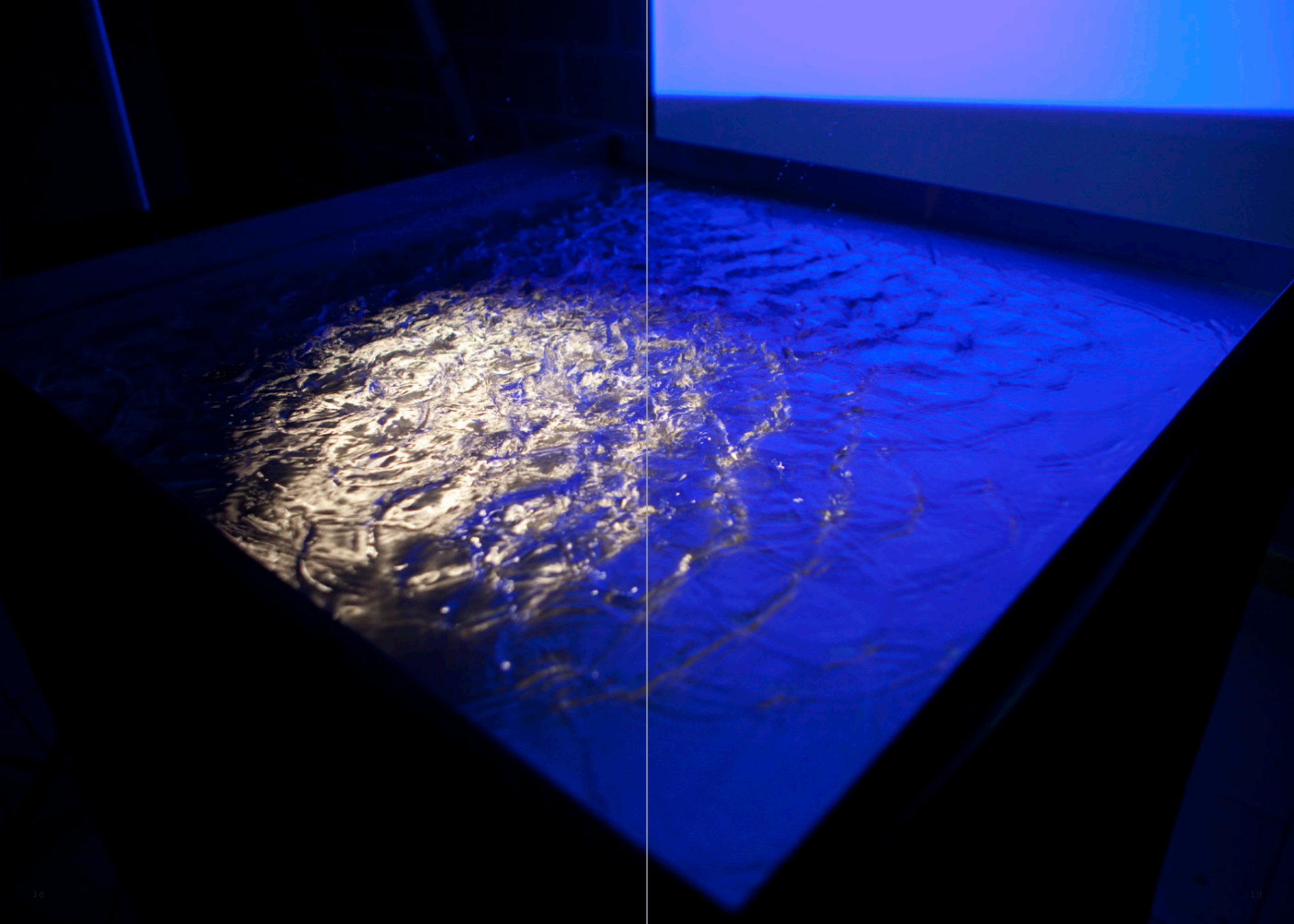

THE FORMAT: COMPETITION AND JUDGES

The Action Sharing 2 competition was launched in 2010, organized by Simona Lodi, artistic director, Chiara Garibaldi, general director, and Luca Barbeni, in production.

Attracting entries from artists all around the world, the ideas competition was an open call for art projects that make syncretic use of mechatronic elements, building connections between the various areas of interest focused on by Action Sharing – art, music, drama, performance and dance.

The panel of judges, consisting of Guido Bolatto, Massimo Banzi, Federico De Sario, Bruce Sterling, Pietro Terna and Andrea Tonoli, declared the Japanese artist Suguru Goto and his project *Cymatics* winner of the 2010 Action Sharing Prize.

The open call format was chosen to make participation in the competition as open and directly accessible as possible for artists, without setting a specific theme. Instead, focus was placed on the use of certain technologies, as identified by the Polytechnic of Turin.

Suguru Goto proved to be the right artist for the competitive production initiative because he imagines a process that expresses a heightened awareness of the problems of environmental disharmony, presenting us with a vision rooted in Japanese philosophy, where elements representing nature and technology do not contrast or conflict, but instead coexist in mutual harmony. His project made use of the technical applied research elements requested by the Interdisciplinary Mechatronics Lab (LIM) of the Polytechnic of Turin.

CYMATICS: THE PROJECT CONCEPT

Materials such as water and non-Newtonian fluid are brought together into spaces where they are transformed by sound waves into shapes and forms.

From a formal point of view, the project was found to be complete and consistent, and capable of conveying its message tied to a harmonic vision of the elements of nature, demonstrating the morphogenic effect of sound waves (cymatic).

Suguru imagines a process that expresses a heightened awareness of the problems of environmental disharmony, presenting us with a vision rooted in Japanese philosophy, where elements representing nature and technology do not contrast or conflict, but instead coexist in mutual harmony.

The project shows the presence of syncretism in its ability to use different media and languages in reconciling elements belonging to different disciplines and styles.

Water: When medium-frequency sound is produced, concentric circles are formed in water at regular intervals. The interval between circles becomes shorter as the frequency increases.

Non-Newtonian fluid: A specific feature of non-Newtonian fluid is that is has variable viscosity depending on the shear force applied. To create non-Newtonian fluid, substances such as corn starch and water need to be mixed. Form gives rise to unpredictable structures when sound (vibration) is loud and at a low frequency, generating patterns akin to monstrous beings. The spectator is taken by surprise when the strange form takes on extravagant shapes.

Tracing a thread from Pythagoras' famous statement that geometry is solidified music takes us to 1787, when the German jurist, musician and physicist Ernst Chladni published his "Discoveries in the Theory of Sound." He and other thinkers laid the foundations for the field of physics that later would come to be called acoustics, the science of sound.

Chladni's greatest achievement was that of devising a way of rendering the effects that sound waves have on physical matter visible, and discovering their tendency to create geometrical patterns, thus establishing the science of cymatics. Two hundred years on, Suguru Goto has created an interactive kinetic sculpture based on his theories.

This field of study based on vibrations sensationally demonstrates the relationship between form and frequency – the relationship that lies at the heart of all existence. Sound generates shape. Recent studies of wave movement confirm that there is a nexus between waves, substance and form, which affects all living organisms.

Research and experiments involving wave frequencies all confirm, without exception, the studies and experiences of ancient civilizationss, which believed that every sound, and hence every vibrating wave, was connected with a spatial form, which it generated and kept alive and in movement.

The rooms designed by Suguru are spaces for communication experience. Each room, like nature itself, conveys a message; it is when communication matches the environment that the environment can communicate in a non-verbal way, through movement, gestures, positions, smells and visions of the place of interaction. Even if we cannot understand the intrinsic essence of the relationship between sound, matter and human interaction, the reaction to interaction can be analyzed. The spectator's interaction with sound and matter provides us with the tools for this analysis. Once an outcome is obtained from the observation of relationships, the feedback of that outcome into the system generates communication, while at the same time creating a viewpoint for observing communication.

PRODUCTION AND INNOVATION: APPLIED RESEARCH REPORT.

Suguru originally started testing this by himself alone. It took about one year to get sufficient results, before he then started working with Action Sharing and the Polytechnic of Turin. Work got underway in February 2011 when the artist Suguru Goto came to Turin for an initial encounter with the engineers Andrea Tonoli and Andrea Festini from the Polytechnic of Turin's Interdisciplinary Mechatronics Laboratory (LIM). In that first meeting they looked at the feasibility studies for the project and the first testing stages that would be carried out over the following nine months, while identifying the equipment and costs needed to produce the cubes for the two stage works.

The next step involved launching production of prototypes on the basis of Suguru Goto's blueprints, with the specialist craftsman Silvano Bauducco engaged for the production of wood and iron stage elements. The prototypes were then used to test the shakers utilized by the LIM, after which the engineers and the artist began calculating the specifications for the project, and laboratory trials were run on the basis of test data.

Manufacture of the two cubes for the stage works was then begun. Chiara Garibaldi, as director of works, and Luca Barbeni, as production co-ordinator, supervised the activities of the LIM and the craftsman Silvano Bauducco, as they jointly worked on the initial mechatronic assembly of the water cube.

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In the meantime, testing was conducted for the second element chosen, the non-Newtonian fluid, for which further specifications and feasibility studies were needed. The result was a positive outcome for the prototype used.

The LIM identified the need for four voice coil actuators to make the water cube work; they were positioned beneath the steel basin located at the top of the cube.

To achieve the outcomes desired by the artist, a conical structure proved necessary, instead of the circular basin designed for the water cube. A subwoofer cone was found to be the best conical structure for transmitting the sound waves required for the project.

Feasibility studies and tests confirmed the need to use four conical elements, positioned at the top of the non-Newtonian fluid cube.

Once the specifications were completed for both cubes, the next, final stage of the project was begun, involving the composition of music. The artist used Max/MSP/Jitter software to compose music for the inaugural exhibition of *Cymatics*, held at Palazzo Birago di Borgaro in Turin.

The architect Chiara Garibaldi was in charge of designing the exhibition spaces and overseeing their production. Taking into consideration the artist's description of the rooms housing the water and non-Newtonian fluid cubes, she identified the best scenic, structural and chromatic solutions to create the two rooms for the kinetic, multimedia sculptures.

The room housing the kinetic water sculpture was painted all black so as to create a completely dark room, inviting the spectator to concentrate exclusively on the water's surface.

Via tablets contained in a console near the cube, the public could interact with the work by choosing a track, and then stand back to watch the original geometric patterns generated in the water.

At the same time, spectators could also hear the sound produced through the water and, via a camera positioned on the wall, observe the oscillating patterns from different perspectives, as they were captured and reproduced on a screen on the wall in front of them.

The room housing the kinetic non-Newtonian fluid sculpture was instead painted all white, with spotlights placed on the ceiling so that spectators would be dazzled by the glare of the light.

On the top of the cube in the room, four subwoofer cones were filled with a mixture of water and corn starch.

Sound and vibration were transmitted to speakers positioned on the front wall, thus amplifying the sound effects produced by the non-Newtonian fluid moving inside the cones.

CONCLUSIONS

The work raises a question about the casual connection between the visual and aural senses.

In Japan, where the artist was born, it is believed that aesthetics and ancient philosophy seek harmony with nature. This belief is still alive and strong today.

On the other hand, as industrialization and technology march forward in contemporary society, there is much debate over the need to think more about ecology. The concept used by the artist for Cymatics revolves around the idea of "music to be seen and visibility to be heard." In other words, the underlying idea on which the entire project is built focuses on the relationship between hearing nature and giving visual form to its elements, and the effects of such perception on people who interact with the work.

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Nature can be heard and listened to, but the sound it emits can also be heard by the body as vibrations, and seen through video screenings, as in the case of the sculptures. The complexity of human perception thus finds sensorial acknowledgement in the interactive installation, as the artist reflects on and explores just what it is that sparks the encounter/clash of the visual and aural senses.

Introducing artists to technical-scientific contexts is always a great challenge, especially considering that there is no standard model, and in Italy not even a precedent, to call on to foster co-operation, encounter and dialogue. If we compare the difficulties faced, however, to the benefits obtained, what clearly emerges is how the process enables artists to acquire knowledge and, in this case, produce a work of art, while forging a great occasion for opening science and technology up to a much broader horizon of potential, for the future of knowledge sharing. ■

LINKS

http://www toshare.it
http://www.toshare.it/?page_id=328&lang=en
http://www.toshare.it/cymatics/
http://www.toshare.it/OMM/

CREDITS

Photos by Pablo Balbontin. Shoot at Camera di Commercio di Torino (2011).

ENDNOTES

1. Jay D. Bolter and Richard Grusin, *Remediation, Understanding New Media* (Cambridge, MA: The MIT Press, 1999).
2. Edward A. Shanken, "Art in the Information Age: Technology and Conceptual Art," *Leonardo* 35, no. 4 (2002): 433–438.

BIBLIOGRAPHY

Roy Ascott (Edward A. Shanken, ed.), *Telematic Embrace: Visionary Theories of Art, Technology, and Consciousness* (Berkeley: University of California Press, 2003).

Jay D. Bolter and Richard Grusin, *Remediation, Understanding New Media* (Cambridge, MA: The MIT Press, 1999).

Nicolas Bourriaud, *Relational Aesthetics* (Dijon: Les Presses du Réel, 1997).

Oliver Grau, *Virtual Art: From Illusion to Immersion* (Cambridge, MA: The MIT Press, 2004).

Oliver Grau, ed., *Media Art Histories* (Cambridge, MA: The MIT Press, 2007).

Jens Hauser, ed., *L'Art Biotech* (Nantes: Filigranes Éditions, 2003).

Christiane Paul, *Digital Art* (London: Thames & Hudson, 2003).

Frank Popper, *Art of the Electronic Age* (London: Thames and Hudson, 2003).

Edward A. Shanken, "Art in the Information Age: Technology and Conceptual Art," in *Conceptual Art: Theory, Myth and Practice*, ed. Michael Corris (Cambridge: Cambridge University Press, 2004).

Edward A. Shanken, "Art in the Information Age: Technology and Conceptual Art," *Leonardo* 35, no. 4 (2002): 433 – 438.

Jill Scott, ed., *Artist in Labs, Processes of Inquiry*, Pap/DVD, (Wien, Springer-Verlag and Zürich, HGK, 2006).

Peter Weibel and Jeffrey Shaw, *Future Cinema* (Cambridge, MA: The MIT Press, 2003).

Stephen Wilson, *Information Arts: Intersections of Art, Science and Technology* (Cambridge, MA: The MIT Press, 2002).

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SUGURU GOTO

in conversation with

Paul Squires

In a gallery is a massive, almost overwhelming, box with an inviting little door. Stepping into this room gives the guest the ability to control nature – to move liquid simply through controlling sounds that the liquid 'hears.' While this may seem to be the preserve of science and fiction – if not science fiction – it isn't. The room holds Suguru Goto's work *Cymatics*.

Cymatics is an installation which plays carefully with nature. While this play is overtly natural, the way in which nature is manipulated in the work, through a computer, is highly covert.

Suguru Goto is, in his own words, *"... a composer, a performer, an inventor and a multimedia artist and a Japanese artist."* Now based in Paris, a common thread running through his work is an experimental use of technology in art, and the pushing of the boundaries that define the relationship between man and machine. These ideas surface in work which mix installation and performance.

A kinetic sculpture and sound installation, *Cymatics* expresses Goto's vision of nature through symbolic elements within a technological context; the work creates a space that is, as Goto says, *"... metaphysical and spiritual at the same time. A place where art is a bridge between the material and the spiritual, between technology and nature, and between the humanities and science."* As Goto's homeland of Japan has a strong history of combining ecology and technology in a harmonious co-existence, *Cymatics* invites the viewer to explore what is essentially a natural phenomenon – though accentuated by technology – that is rarely encountered.

In the work, sound waves transform water into geometric shapes. The result is something of an orchestration of nature; hence, 'Cymatics.' Goto started development by considering music that could be seen, and images that could be heard, creating a performance that both challenges and immerses the senses. The sound is generated by a user-controlled computer, with the output – speaker vibration – expressed as a wave motion as it is transmitted to a liquid. The liquid makes a pattern which vibrates; the pattern itself is determined by the configuration of the software at the time. By contacting a liquid during oscillation, vibration becomes visible as a physical reaction to sound. This results in a simple pattern for simple sounds, and a complex pattern for complex sounds. As Goto confirms, the results can be staggering to watch. *"It is interesting to closely observe this natural phenomenon which is artificially made. The complexity of perception is recognised anew here, and it is re-expressed on this work as an interactive installation."*

In developing *Cymatics*, Goto spent a year on his own, testing the system to deliver the right results, before winning the Turin Chamber of Commerce *Action Sharing* project award, which led him to finish the work in conjunction with the city's Polytechnic University. This enabled him to fully test the system with the University's mechanics department. Such is the delicate, intricate nature of the work that galleries are usually requested to build a space specifically for it, in order for the elements to work correctly and for the audience to truly appreciate the experience. Goto is adamant that producing *Cymatics* required as much knowledge of computing as it did of mechanics and sound design.

"The problem confronting artists who work with interactive media is the use of commercially-produced computers. Very few of them build their machines from scratch. Individuals tend to purchase computers that have evolved from marketing strategies, while institutions equip themselves with larger computers in accordance with their administrative requirements. Yet these commercially-produced devices are aimed at the mass market, rather than at the individual artist who wishes to develop original ideas based on an imaginary world of their own making. Even if the artist knows how to program a computer, their possibilities are limited by the computer's operating system and by the power of the machine. [The artist] might create a controller using sensors and a circuit of their own design, but these signals end up being treated by the computer. The artist has to be aware of the fact that creativity is always reliant on commercial considerations."

The complexity of perception is recognised anew here, and it is re-expressed on this work as an interactive installation.

"Likewise, we have to be selective with regard to the overwhelming mass of information surrounding us. Otherwise, we will succumb to the totalitarianism of the media. If we are to retain a certain amount of individuality, we have to be aware of these manipulative processes. This is not the case with many artists, which is why many artistic creations are banal and conformist."

"We are living in a time when technology is accessible to all. The computer may be regarded as the symbol of our democratic society, inasmuch as it is a product that is available world-wide. At the same time, it can be an instrument of power and authority." Goto cites the changing relationship between artist and technology as being most evident in music, where technology has offered musicians many new possibilities. In surrendering the limit of possibility to the machine, the artist becomes *"... an intermediary who offers their audience new values and perceptions based on their interaction with technology. Artists should rather consider how they can confront technology, while remaining aware of its dangers."*

Next for Goto is further work with robots, where he has been building a robot orchestra, as well as creating an interface for a project where sound and video are controlled by virtual music instruments in real time. Goto's *RoboticMusic*, shown at the 2009 Venice Biennale, firmly positioned the artist in this area. Goto's ability to connect the natural and the artificial across physical and sensory experiences is something to sample, particularly if it opens up an understanding of the sensory perceptions that often lay dormant within us. ■

Paul Squires is the Managing Director of Perini, an integrated digital business based in Oxford. It comprises of three brands, Perera (an agency covering digital, mobile and social media); Xpeso (an online display advertising solution for publishers), but is perhaps most well-known for Imperica, an online magazine covering the intersection of art, brands, advertising, and digital culture.

With its long-form editorial proposition that puts people first and is not afraid to be controversial, Imperica has covered topics including automata, dubstep, Facebook, photography, and cats with thumbs. www.imperica.com

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