Welcome to Design Hub

Technics & Touch explores creative working relationships between robots and humans through the seemingly simple activity of drawing together. Engaging humans and robots in friendly competition, the project explores ways to pose questions to one another and expose what both can do well and what both can do better.

Through real-time feedback systems between robots, materials, the environment and human actions, the human and non-human collaborators learn from each other and create works which either participant by themselves would not be able to conceive.

The exhibition extends our commitment at Design Hub to place the exhibition design as central to (rather than simply supporting) the exploration and mediation of design research ideas. For Technics & Touch we have worked closely with graphic designer Sean Hogan to transform the Project Spaces into part-factory, part-laboratory, part-reflection zone.

While Project Room 2 reflects upon a diverse range of works by practitioners who explore rule-based or procedural drawing which use a set of parameters to enable an idea or task to be performed.

Here, the works speak to three themes: Figure, Frame and Fugue. These groupings frame ways in which the activity of drawing assists us in understanding our relationship to the world, materializes our thoughts or enables complex interactions through algorithmic design processes.

Importantly, the exhibition moves beyond the fetishisation of new technologies and robotic processes to deeply explore the inter-relationship between humans and robots. It examines how designers might develop more effective interfaces to expand upon current capabilities and envisage new and progressive collaborative outcomes.

Technics & Touch responds to and extends upon Design Hub’s overarching curatorial intent to produce highly experimental exhibition environments that “perform” design ideas and invite the audience to take an active part within the research process.

Fleur Watson
Curator
RMIT Design Hub
It can be argued that all knowledge is discursive. It is essentially intersubjective, constitutionally relational and, therefore, is necessarily mobile. Thinking, then, is that which occurs in the dynamic movement of an ongoing and open-ended conversation. This conversation can be between humans; between humans and their environment, between humans and things, even between things themselves. In such a way thinking can be said to be distributive – comprising of multiple acts of co-creation. What we call ‘mind’ may be that which is configured as an ecology of thought and enacted collectively.

If knowledge is co-composed in this way and the features and continuity of our world are co-selected, then each time a new agent or actor appears the whole field of endeavour, of inquiry and realization, re-constitutes and shifts to re-calibrate and re-align. If the new agent is a technology then it can either be subservient to the functions with which it has been charged or it might – through specific materiality and processes – become a new force generating new affects. For instance, in order for robot agency to flourish it must break the recursive function of mirroring human thought and develop its’ own modes of existence. This does not require a robot to be a fully autonomous artificial intelligence, although the project we are pursuing might be headed in that direction. Yet before we can arrive there, together, humans need to be double agents, interested in the actualization of thought that would allow each mode of existence to flourish and develop in relationship to their respective trajectories.

Technics & Touch is designed as a living lab whose organisational structure takes the form of a conversation. It can be argued that the act of drawing can itself be construed as one instance of just such an open-ended conversation. To draw a line is to ask a question. The aim of the lab is to ask questions that work through the assumptions we have about the way robots function by working alongside and with them. Inevitably, we must pass from the discursive to the intuitive, to our own habits of perception, action and thought to begin to ask meaningful questions.

The conversation may begin with the human drawing a line to ask: “What if...” which invites a response of “then this … and this... or this and that...” which then becomes another “what if this...” and so on. The robot asks and answers, that is, its actions are already the answer to an explicit question. So the robot asserts “if...” the programmer asks: “If I ask the robot to ignore or attend to a certain range of values, what happens then...?” The audience might actively disrupt the process by asking through the familiar, that is, through its feet on the ground, but, in relation to all other robots, it stands on its head, and evolves out of its silicon brain grotesque ideas, far more wonderful than science fiction ever was.” Here, the audience actively amplifies fear and exuberance.

This correspondence between the “what if – then this” of drawing is remarkably similar to the simple coding of “if/then” statements in computer problems. Algorithmic instructions even speculative ones. It is through the process of “...what if; if/then; this and that...” that the unthinkable is able to be imagined. “Unthinkable for whom?” asks the robot. There is also the process of translation, interpretation and misunderstanding to consider: what is “the glitch” in the system? Is it really just an instance of technical ‘error’ or is it a moment of incomprehension? The human and the robot ask: “What am I not understanding?”

Much of the tradition of rule based exploration in creative practices (visual art, writing, dance) can be understood as attempts to de-personalise, to pluralise authorship, to avoid or move beyond the entrapments of style and the enclosures of self, in favour of process and of an embrace of open-endedness, unpredictability and emergence etc.

In many ways this can be seen as a rediscovery of the power of traditional formal constraints. What better way to propel oneself beyond habits of thought into unforeseen imaginative worlds, than to be forced to make a rhyme at the end of every second line? It is little surprise that most writers feel that they are successful when their characters take on a life of their own.

Of course, the autonomy afforded to the successful work of art and the processes that enable it are complex, yet they are profoundly influential in the design fields. In particular the fascination with self-organizing systems, and a subsequent move from systems of control to open ended forms of discovery has led to an increasing drive towards autonomy, whether it be the process itself or the outcome of that process – the ‘made’ object. Concurrently, this notion of autonomy seems to be accompanied by not only ‘existential’ quandaries around decision-making, but also with a simultaneous emphasis on interactivity. Having liberated things from their need to be in isolation, we now seek to find ways of re-engaging with them. One might ask: is this an anxiety that they may be quite happy without us? Or that we need to re-exercise a quantum of control? Certainly in robotics this simultaneous drive towards autonomy (artificial intelligence) and more sophisticated feedback systems and sensorial capacities is currently in full flight. Instead of elaborating further on autonomy, this project seeks to bridge the divide between humans and non-humans (in this case robots) through an exploration of their co-dependence and a deepening of the understanding of thinking and creative act as inherently performative, distributive and conversational. Such an enquiry posits the potential of what could be termed ‘hybrid ecologies’ which, in this instance, refers to a reconfiguring of relating human and non-human and a dynamic inter-relationship between humans, robots, software programs, digital and analogue tools, diverse materials, and situation.

Such a modality suggests a universe of possibilities and modes of endeavour, which might be understood through Leibniz’s calculus as an infinitesimally small mode of initiating and (through Varela’s theory of cognition) an enaction. Thought in action makes the co-selection and co-construction of the world perceptible and palpable. Since each enactment contributes to the shaping of a shared world, it is important to consider the directions proposed by each description, each variation and scripting.

In their individual practices, the exhibitors and participants in this exhibition are fully engaged with and exercised by these questions. Some are indeed the pioneering ‘linguists’ in the discourse, creating the languages in which the conversation can be had and the questions asked. Some of the work develops this language to enable more nuanced and exploratory discussion while some demonstrates the creative generative potential of the conversation. Almost all of the work exhibited raises questions implicitly or explicitly, regarding the status of the ‘traditional’ drawing to question mimetic paradigms and re-conceive our understanding of the relationship between ‘drawing’, ‘thing’ and ourselves and, by extension, between ourselves and the world.

Here and now, drawing is evidenced to be an operational trace of the to-and-fro of discourse – of an idea coming to be, just as much as it is a representational or instrumental tool. In this context, code is understood as a performative notation – both a drawing and a scripting. The code for the fabrication of an object is simultaneously the drawing of the object and the object itself. In this very process the activity that we call “drawing/thinking” can be seen to be re-conceived and re-invigorated.

Charles Anderson and Jondi Keane

1. This question is based on Marx’s poetic description of “The Fetishism of Commodities and the Secret Thereof” in which he states: “It [the commodity] not only stands in the midst of the world, but it is the world to itself. It has power over things themselves. In such a way thinking between humans and things, even between humans and their environment, begins to assume the role of a process – the ‘made’ object. Concurrently, this notion of autonomy seems to be accompanied by not only ‘existential’ quandaries around decision-making, but also with a simultaneous emphasis on interactivity. Having liberated things from their need to be in isolation, we now seek to find ways of re-engaging with them. One might ask: is this an anxiety that they may be quite happy without us? Or that we need to re-exercise a quantum of control? Certainly in robotics this simultaneous drive towards autonomy (artificial intelligence) and more sophisticated feedback systems and sensorial capacities is currently in full flight. Instead of elaborating further on autonomy, this project seeks to bridge the divide between humans and non-humans (in this case robots) through an exploration of their co-dependence and a deepening of the understanding of thinking and creative act as inherently performative, distributive and conversational. Such an enquiry posits the potential of what could be termed ‘hybrid ecologies’ which, in this instance, refers to a reconfiguring of relating human and non-human and a dynamic inter-relationship between humans, robots, software programs, digital and analogue tools, diverse materials, and situation.”

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Charles Anderson and Jondi Keane
Consequently, Cloud Chamber 2 suggests the following questions: Is place infinitely reconfigurable and dependent upon individual interpretation and intervention? Or does this process, through the open ended and potentially infinite iteration of the same but different drawing, reveal what could be termed an emergent ‘tendency of place’ or spatial ‘grain’?

3. Theatre of the Self
Twilight of Idols
Jondi Keane
1985
Pen, ink and conte on paper
2 drawings (770 x 560 mm)

Body-Fold
Jondi Keane
1989 – 1995
Pen and ink on paper
Series of 25 small drawings (100 x 160mm)
The going particle; Blunted Cube; Fixations on Rike
Jondi Keane
1985 – present
Acrylic paint, ink, collage on found books and journals
Series of books (148 x 210mm, 201 x 297mm and 297 x 420mm)

These works correspond to a shift away from the dramatisations of the soap opera of the world towards an exploration of perceptual and conceptual processing of our surroundings. The drawings proceed through continuous variation and modulate the body-environment relation. In the 1990’s – 2000 the work they support were large-scale paintings taken off the stretchers and hung as skins, installations comprised of wall paintings, light with motion sensors and objects selected for their material and cultural resonance.

5. Con-sequencing
Note-line
Jondi Keane
2005
Collage on lined note-paper
4 drawings (210 x 297mm)

Colour barometer
Jondi Keane
2010
Water colour and acrylic paint on paper
5 drawings (110 x 200 mm)

Emblem Series
Jondi Keane
1997 – 2010
Acrylic paint and pastels on paper
2 drawings (770 x 560 mm)

“Contracoup”; “Fear and Trembling”; “Procedural Drawing Book”
Jondi Keane
1985 – present
Acrylic paint, ink, collage on found books and journals
Series of books (148 x 210mm, 201 x 297mm and 297 x 420mm)

These drawings and books investigate ‘systems of attention’ by setting out a procedural (task-oriented) approach to drawing as a way to prompt and track embodied sequences and consequences. These works move away from expression, opting instead to enacting a range of expanded, embedded and embodied affects, in-situ. They support ongoing and current projects: blackboards drawings in the studio and large-scale, site-specific performative installations.

6. Bodily Algorithms
Charles Anderson with Tim Schork, Gideon Obarzanek
2011
Digital prints
34 images (297 x 210mm)
1 image (1200 x 850mm)

Bodily Algorithms is an ongoing project exploring space through rule-based behavioural systems and dynamic interactive modelling techniques. Working with dancer and choreographer Gideon Obarzanek, the Bodily Algorithms workshop invited participants to work from a series of rules and everyday objects to create a performance connecting the organised and the unpredictable. Such a rule based choreography provides a fertile way of engaging with the spatial behaviours emergent in the relationships between individuals, crowds and urban environments, and aims towards a new understanding of form which develop implicitly from the organisational characteristics of network structures and introduces this understanding to a wider audience.
7. A House for Hermes 02: Bel Povera (v1)
Charles Anderson with Tim Schork
2012
Computer animation
Dimensions variable
A House for Hermes is an ongoing project musing upon what constitutes ‘house’, ‘home’ and ‘place’ in the contemporary world of ceaseless change, displacement and exile. This computer animation is the first iteration of a larger work which forms part of A House for Hermes 2: Bel Povera. A dynamic behavioural-based modeling system was used to visualise the continual formation and dissolution of a series of houses. Each house is achieved as a momentary poise in a turbulent cloud of dust particles – a kind of choreography of dust.

8. Topographies of Thought
Charles Anderson
2014 – present
Various media on paper
207 drawings (210 x 148mm)
Topographies of Thought is an ongoing series of drawings which trace an attempt to draw a straight line in a variety of situations and over a range of times and durations. Adopting simple rule sets governing the drawing procedure and the type of drawing implement used, generates an emergent drawing which is both unforeseen and responsive to the particularities of its situated performance: a kind of terrain map of thoughtful places, or a process diagram of a line becoming more than a line.

9. Painterly Forms
Kokkugia / Roland Snooks
Project team: Roland Snooks, Marc Gibson, Cam Newnham
2015
Digital prints
4 prints (960 x 540mm)
Painterly Forms explores the design of strange objects through the interaction of self-organisational and gestural operations. These experiments attempt to blur the relationship between the complex order that is generated through algorithmic processes of self-organisation and the direct operation of the hand. These two types of operation are placed within a feedback loop where each manipulates and reforms the other. This is an attempt to tease out the qualities of distinctly different processes and explore the blurring of recognition that their interaction creates.

10. Sagrada Familia Basilica
Passion façade (upper colonnade)
Jane Burry
2008 – 2015
Printed plaster model
(211 x 181 x 380mm)
The model is part of one version or instance in a long process of negotiation of interacting algorithms. The computational model marries the contrasting but interdependent geometries of the upper colonnade for Passion façade of Antoni Gaudí’s Sagrada Familia Basilica. This model aimed to tease the geometries as close as possible to the intentions evident in Gaudi’s mixed media drawing for the façade, of which one historic photograph survives. This printed model is a step in a process leading to the subsequent design of the individual granite components, which are now cut and almost fully assembled on site.

11. Urban Jungle 1-6
(Charles Hong, Kong, Mid-Levles, Happy Valley, Quarry Bay, Repulse Bay, Sheung Wan)
Kristof Crolla
2015
ink on paper
6 drawings (841 x 594mm)
Laboratory for Explorative Architecture & Design Ltd. (LEAD)
Urban Jungle looks at the clash between Hong Kong’s natural and concrete jungle through a unique lens that merges traditional Chinese ink painting techniques with algorithmic design tools and low-tech robotics. A series of original drawings are presented that are made with a tailor-made drawing robot that uses ink pencil brushes and specifically designed drawing algorithms to produce its output. The artwork addresses Hong Kong’s confrontation between the built environment and nature, and visualises the resulting forces that drive the vertical city upwards into its unique high-rise typology. The premise is that both the natural and concrete jungle are organically growing ecologies. The developed drawing style visualises these two systems as ‘alive’ and ‘interconnected’ in a mutually parasitic relationship.

12. Stigmergic Contours
Gwyllim Jahn & Christopher Ferris
2015
Texta drawings on butchers paper
Video of autonomous drawings generated through feedback between computer vision systems, robotic motion and design behaviours
7 drawings (1 drawing 530 x 465mm, 1 drawing 293 x 293mm, 5 drawings 335 x 335mm)
These drawings are the artefacts of a process of calibrating vision systems with algorithms directing robotic behaviours. Although they carry a functional value as a litmus test of the suitability of algorithms designed to trace the profile of previously deposited material (or drawn lines), they possess qualities that are unique to the complex feedback between systems driving the motion of the robot, observing changes in the physical environment, and directing behaviours within digital simulations.
1. Tissue
Casey Reas
2002 – 2015

2. Cloud Chamber 2
Charles Anderson with Tim Schork
2015

3. Theatre of the Self
Jondi Keane
1985 – present

4. The Very Vary
Jondi Keane
1985 – present

5. Con-sequencing
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1985 – present

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2015

12. Stigmergic Contours
Gwyllim Jahn & Christopher Ferris
2015

13. Cloud Chamber
Charles Anderson with Tim Schork
2012

MTalks Consortium Event at MPavilion
Tuesday 15 December, 6.15pm
Queen Victoria Gardens, St Kilda Rd,
Melbourne

MPavilion brings together Gertrude
Contemporary, West Space, RMIT Design Hub
and Next Wave to present an intriguing and
honest conversation about the issues within
(and surrounding) emerging and experimental
art and design.

For this discussion, the panellists will delve
into the idea of galleries as ‘testing spaces’
for risk, experimentation, play and speculation.

Following an introduction from RMIT Design
Hub Curator Fleur Watson, artist and
landscape architect Charles Anderson and
arts academic Jondi Keane will exchange
ideas with invited guests about the exhibition.

Using the Technics & Touch lab as a
springboard, Charles and Jondi will explore
how gallery spaces can present exciting
opportunities for autonomous intelligence
systems to interact with performers and the
public – meaning further interactions between
arts organisations and new technology. Will
this change the function of gallery spaces as
we know them? And how will the artist’s role
change with these developments?

Technics & Touch Symposium
Thursday 28 January, 1–4pm
Project Room 1, Level 2
RMIT Design Hub

Join Charles Anderson and Jondi Keane for a
half-day symposium exploring the implications
and applications of the Technics and Touch
research project.

Speakers include Roland Snooks, Tim Schork,
Jane Burry, Gwyllim Jahn, Pia Ednie-Brown
amongst other invited guests.

Further programs and invited speakers will
be announced via the Design Hub website:
http://designhub.rmit.edu.au/exhibitions-
programs/technics-touch

Connect with us via
Instagram, Twitter and Facebook:
@RMITDesignHub
#RMITDesignHub
#TechnicsandTouch

Technics & Touch Conversations
Every Tuesday and Thursday, 3–4pm
Project Room 1, Level 2
RMIT Design Hub

Every Tuesday and Thursday afternoon
visitors to the exhibition are invited to join
Charles Anderson and Jondi Keane in the ‘lab’
to take part in a series of informal and open
conversations exploring human and robot
collaborations. These conversations will prove
an important ‘feedback’ loop in progressing the
project to its next stage so come and be part
of the live experiment!
Charles Anderson

Charles Anderson is an artist and designer with over 30 years experience exhibiting and making work in Australia and around the world. Charles creates a kind of vibrant work variously inhabiting the ‘worlds’ of art, architecture, landscape architecture, urban design, performance and costume. Embracing collaborative partnerships, Anderson hybridizes generative procedures to materialise processes of time in order to reformulate the spatial hierarchies that characterize the lived spaces of our world. A founding director of Stutterheim / Anderson Landscape Architecture (SAALA), Anderson is a registered Landscape Architect and a Senior Lecturer in the School of Architecture & Design, RMIT University.

Jane Burry

Jane Burry is an architect who has worked since 2000 with partner Mark Burry and the team researching the construction of the Sagrada Familia Basilica where she was responsible for the basic design of the Passion colonnade. She is an associate professor in architecture and design at RMIT University where she directs the Spatial Information Architecture laboratory and leads the Master of Design Innovation and Technology. She has a PhD relating modern mathematics and its philosophy with computational design in architecture. She is also engaged research into the behavioral systems, interactive environments, and enactive theories of cognition. She is lead author of The New Mathematics of Architecture, Thames and Hudson. She is also engaged research into the integration of analysis feedback in early design in architecture (Designing the Dynamic, Melbourne Books, 2013). She has over seventy publications, has practiced, taught and researched internationally.

Kristof Crolla

Kristof Crolla is a licensed architect who combines his architectural practice ‘Laboratory for Explorative Architecture & Design Ltd.’ (LEAD) with his position as Assistant Professor in Computational Design at the Chinese University of Hong Kong. After graduating Magna Cum Laude as Civil Architectural Engineer at Ghent University in 2003, he practiced in Belgium and built his first project, ‘House for an Artist’. He moved to London in 2005 to attend the Architectural Association School of Architecture, London (AA)’s Master of Architecture program Design Research Laboratory, from where his student work was exhibited at the 2005 Venice Architecture Biennale. Following this he worked for several years as Lead Architect for the Pritzker prize winning Zaha Hadid Architects, while teaching in parallel at the AA and other institutions worldwide. He has been invited as jury critic, lecturer and tutor in numerous institutions across the globe.

Gwyllim Jahn

Gwyllim Jahn is an Associate Lecturer in Architectural Design at RMIT in Melbourne and is a founding member of the Exlab and Elseware collectives where he is developing an architectural and artistic practice concerned with complex architectural geometry and behavioral systems, interactive environments, algorithmic design and digital fabrication. The speculative design work of this practice has been awarded and exhibited internationally, and documented in the form of contributions to leading international design conferences. This agenda is complemented by teaching design studios focusing on material computation, eco criticism and autonomous robotics, and independent design-make research in the mode of collaborative workshops in Iran, India and elsewhere. He is currently working towards his PhD at RMIT.

Jondi Keane

Jondi Keane is an arts practitioner, critical thinker and Associate Professor in the School of Communication and Creative Arts at Deakin University. Since the 1980’s, he has exhibited, performed and published in the USA, UK, Europe and Australia producing works informed by studies in perception and action and enactive theories of cognition.

Casey Reas

Casey Reas writes software to explore conditional systems as art. Through defining emergent networks and layered instructions, he has defined a unique area of visual experience that builds upon concrete art, conceptual art, experimental animation, and drawing. While dynamic, generative software remains his core medium, work in variable media including prints, objects, installations, and performances materialize from his visual systems. Reas is a professor at the University of California, Los Angeles. With Ben Fry, Reas initiated Processing in 2001. Processing is an open source programming language and environment for the visual arts.

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Tim Schork

Tim Schork is a founding partner of MESNE Design Studio and a founding director of RAW – The Monash Laboratory of Materials and Processes. Hosted within the Department of Architecture at Monash University, RAW is concerned with the transformative effects and contributory role that an informed engagement with materials and technologies can have on the practices of architecture and our built environment. RAW involves experts from architecture, structural engineering, material science, computer science, the arts and crafts, product design and robotics and is dedicated to the study, experiment, development and application of innovative material systems and progressive building technologies. Tim is internationally renowned for his design excellence and innovative work and holds a PhD from RMIT University.

Roland Snooks

Roland Snooks is a partner of the research collaborative Kokkugia, and director of the architecture practice Studio Roland Snooks. He is a senior lecturer in architecture at RMIT University having previously taught widely in the US including at Columbia University, University of Pennsylvania, Pratt Institute and SCI-Arc. Roland received a PhD from RMIT University, in which his architectural design research is focused on behavioral processes of formation that draw from the logic of swarm intelligence. He holds a Masters in advanced architectural design from Columbia University where he studied on a Fulbright scholarship. In addition to his work with algorithmic design Roland directs the Architectural Robotics Lab at RMIT University.
Acknowledgements

Technics & Touch: Body-Matter-Machine

Project Room 1
Practitioners/performers:
Charles Anderson and Jondi Keane

Project Room 2
Works by Charles Anderson, Jane Burry, Kristof Crolla, Gwyllim Jahn, Jondi Keane, Casey Reas, Tim Schork, Roland Snooks

Curators: Charles Anderson, Fleur Watson, Kate Rhodes
Creative Production: Nella Themelios
Exhibition Technician: Erik North
Exhibition Assistants: Kate Riggs, Audrey Thomas-Hayes
Technical Assistants: Tim McLeod, Robert Jordan, Gavin Bell
Graphic Design: Sean Hogan, Trampoline

RMIT Architectural Robotics Lab Director:
Roland Snooks
Programming and Development:
Jules Rutten, Cam Newnham, Chris Ferris

Thank you
Boom Studios
Professor Richard Blythe
RMIT School of Architecture & Design
RMIT Landscape Architecture Program
RMIT School Research Committee

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Corner Victoria and Swanston Streets,
Carlton, 3053
hello.designhub@rmit.edu.au
www.designhub.rmit.edu.au

Opening hours:
Tuesday–Friday, 11am–6pm
Saturday, 12pm–5pm
Closed Sunday, Monday and Public Holidays
Admission is free

Please note the exhibition will be closed from

RMIT Design Archives
By Appointment
The RMIT Design Archives is located on
the western side of the forecourt.
Contact the Archives to make an
appointment to view the collection:
rmitdesignarchives@rmit.edu.au

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