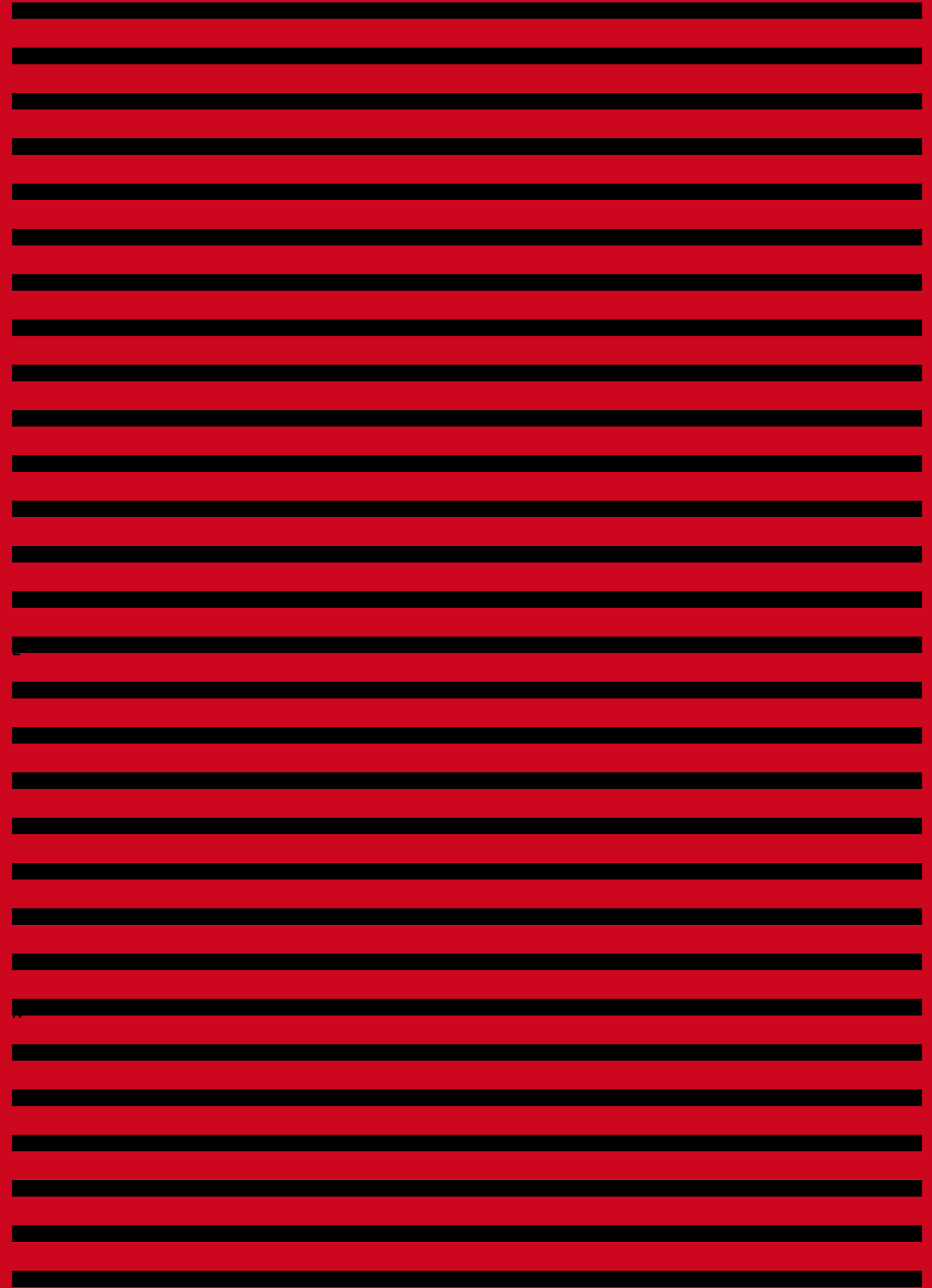




08:10:09–13:12:09

# WHAT IF...



What if you could use a lamb as a kidney dialysis machine? Or grow meat for your dinner in a laboratory without killing an animal?——From satellite communications to time-travel and invisible materials, breakthroughs in science and technology have often been driven by the exploration of fictional scenarios. Really good science fiction requires the imagining of a future society, complete with new products and services, new rules of social behaviour and new ethical dilemmas. Often the extrapolation of a current social, environmental or medical trend can help us to posit plausible alternative futures. For example what if our over-use of antibiotics were to impact on our resistance to disease to such an extent that we needed to transform our bodies into welcoming ecosystems for other species? While scientists and engineers can expand the bounds of possibility, whether through miniaturized drug delivery promised by nanotechnologies or xenotransplantation techniques whereby humans receive organ donations from other animals, in order to translate the implications of these technologies into visceral reality we require designers to design products, tools, processes and future services. ——Traditionally industrial design has come into the story fairly late in the day, when technologies have already been blackboxed, and the designer's role more one of applying a cosmetic finish to appeal to the consumer. What is exciting about the work of Anthony Dunne and Fiona Raby, and the other designers in this exhibition, is that they have brought the design process upstream and into engagement with the speculative stage in the development of new technologies, engaging in direct dialogue with scientists and engineers who do not yet know the practical consequences of their work. The result is an involvement of the designer in fleshing out the social and ethical consequences of emerging technologies before they happen, as an “early warning system” for future trends. In some ways you might say that from Barbarella to Solyent Green or Bladerunner, this is an appropriation of the job of science fiction, but there is something immediate about designing and prototyping new products and services that hits us in a different way than traditional sci-fi, forcing us to confront and discuss the possible scenarios that our technologies might engender. There is something very poignant and unsettling about the concept of an anti-smoking mask designed to protect your pet pig which is hosting your replacement pair of lungs, so that you can continue to smoke heavily as the pig lives in your house, being protected from your passive smoke until the moment of transplantation. What is wrong with this scene? Is this a world we really want to live in? By using design to ask these important questions, the projects in this exhibition appeal to us as consumers, relating more to those self-defining, moral decisions we might make in the supermarket aisle or in the doctor's surgery than to our recreational visits to the cinema.——**WHAT IF... is an exciting clash of dreams, nightmares, near realities and hyper fantasies, where designers and artists have been inspired by science and technology and asked provocative questions about the human experience. I would like to thank curators Fiona Raby and Anthony Dunne, all the designers involved and Jake Moulson and Gerrard O'Carroll for their exhibition design. Thank you to Detail Design Studio for their work on the catalogue and other materials and to the entire Science Gallery team for making this exhibition come to life. Thank you to CRANN for their support of the Cloud Project exhibit. Finally thank you to our founding partners Ulster Bank and Wellcome Trust, and the members of our Science Circle: Dell, Google, Icon, Paccar and Wyeth and our media partner the Irish Times and to DART/Irish Rail. ——What do you feel when you visit WHAT IF...? What are your own visions of the future? We hope you will respond to the questions asked in this exhibition—use the individual pieces' hashtag to comment on Twitter, or sketch your own ideas for future products or services on a postcard in the café. This exhibition is about dialogue and conversations. Which future will you choose? ——MICHAEL JOHN GORMAN, DIRECTOR, SCIENCE GALLERY.**

For a while now, we've both been very interested in the space between reality and the impossible, a space of dreams, hopes, and fears. Usually this space is occupied by future forecasts (commercial world), design scenarios (corporate world) and utopias and dystopias (literary and cinematic worlds).——It's an important space, a place where the future can be debated and discussed before it happens, so that, at least in theory, the most desirable futures can be aimed for and the least desirable avoided.——Usually when we discuss big issues we do so as citizens, yet it is as consumers that we help reality take shape. It is only when products are bought that they enter everyday life and have an effect. The act of buying determines the future. By presenting people with hypothetical products, services and systems from alternative futures people engage with them as citizen/consumers. As well as trying to reason and use our intellects we are seduced by desire and the irrational. This complex mix of contradictory emotions and responses is what it is all about.——There are no solutions here, or even answers, just lots of questions, thoughts, ideas and possibilities, all expressed through the language of design. They probe our beliefs and values, challenge our assumptions and encourage us to imagine how what we call 'reality' could be different. They help us see that the way things are now is just one possibility, and not necessarily the best one.——**As the dreams that fed the 20th century imagination begin to fade, we need to learn how to dream new dreams.**——ANTHONY DUNNE AND FIONA RABY, CURATORS, WHAT IF...

MICHAEL JOHN GORMAN<sup>MJG</sup> AND ANTHONY DUNNE<sup>AD</sup> + FIONA RABY<sup>FR</sup>

**MJG** Why are designers getting so interested in science?

**AD/FR** At a bioart event a few years ago, we came across an exhibit by Oron Catts and Ionat Zurr showing a piece of ‘victimless meat’ or ‘disembodied cuisine’ as it’s also known, a 3 cm disc of meat grown in a laboratory from cells removed from a living animal. The animal wasn’t harmed producing this piece of meat. It was a classic fusion of science and art—strange and thought provoking but disconnected from everyday life. We wondered how designers might deal with this subject. They might ask, what if this meat was available in a restaurant? Could you eat yourself, a lover, or someone famous? The type of debate generated by this shift from the abstract world of labs and galleries into an imaginary commercial context engages people’s imaginations in very different ways from art and science. Designers would naturally explore economics, materiality, ethics, aesthetics, and technology to ensure their story was plausible, but in doing so, they would also focus the debate on a very different set of issues. ———For us, this is one of the strengths of design, it can pull new technological and scientific developments into imaginary but believable everyday situations so that we can debate the social, cultural and even ethical consequences of new technologies before they happen, and try to ensure that the most desirable futures are realised. And, it can do this with intelligence, wit and insight. ———Although in many cases we can’t design actual bio- or nano-products yet, we shouldn’t let that stop us from getting involved. We can use design to inspire, raise awareness, stimulate discussion, and provoke debate, all of which can help achieve technological futures that reflect the complex, troubled people we are, rather than the easily satisfied consumers and users we are supposed to be.

**MJG** Why design things for a society that doesn’t exist yet?

**AD/FR** Clearly, the world is not in a good shape and there is plenty of scope for making things better, but using design to solve problems is not always possible, especially when we are facing such an extreme and complex situation. Another approach is to try and change human behaviour to fit the limitations of the planet rather than modifying the environment to suit our unlimited material needs and desires. To do this you need to stimulate the imagination as well as engage the intellect. The design proposals in WHAT IF... probe our beliefs and values, challenge our assumptions, and encourage us to imagine how things could be different—that how things are, is only one possibility, and probably not the best one.

**MJG** How does your work and the work of the designers included in WHAT IF... relate to science fiction? Are these just thought experiments?

**AD/FR** There are many connections with science fiction but probably more with the softer more socially oriented science fiction of writers like JG Ballard, and others such as Margaret Atwood and Michel Houellebecq who would not regard themselves as science fiction authors, but frame some of their stories within the larger social and political consequences of scientific research unleashed on society through the market place. ————Like Sci Fi, many of these projects extrapolate tendencies present but not yet visible in today's society, and of course they are amplified for dramatic effect. ————This approach has also been described as producing props for non-existent films as they invite you to assemble a film in your head, your own film, whether it is utopian or dystopian is up to you. ————The design ethos underlying many of the projects in WHAT IF... connects with the tradition of visionary architecture going back hundreds of years and radical design thinking from the 60s and 70s which was abandoned in the 80s when design became an almost purely commercial tool disconnected from any broader social context than the market place.

**MJG** What are some of the broader implications of the individual pieces of work on show in WHAT IF...

**AD/FR** All the designers in this show are united by a desire to go beyond what 'is' and explore what 'could be' but it's interesting that none of them present what 'should be'. Rather than pushing their own moral convictions on to the viewer, or trying to persuade us to adopt their vision, their ideas are presented in ways that allow us to draw our own conclusions. ————There are many ways of asking 'WHAT IF...': Sascha Pohflepp for example, uses a counterfactual approach for his Golden Institute for Energy, where he sets up a scenario based on what might have happened if Jimmy Carter won a second term and radical green policies had been encouraged instead of investment in the Star Wars programme. For his BuyProduct project, Dot Samsen applies a *Reductio ad Absurdum* approach where, by following the carbon credit idea through to its logical conclusion, he exposes its absurdity and impossibility. Michael Burton presents a cautionary tale in his Future Farm, which, probably more than any others in the show, is clearly a future very few of us would wish for; and, rather than presenting a specific vision, Cat Kramer and Zoe Papadopoulou have designed a platform where visitors are drawn into a live discussion with experts and activists about the pros and cons of nanotechnology while enjoying different forms of technologically enhanced ice cream.

**MJG** What are your own future scenarios? Where does the design on show in Science Gallery belong?

**AD/FR** Imagine a world where design like this was commonplace, expected, even demanded, by an informed and intellectually engaged citizenship. A world where new roles, contexts and methods for design were celebrated. ————Where each profession had sectors dedicated to speculation: speculative ethics, speculative economics, speculative medicine, speculative law, speculative social and political sciences, each tracing trajectories through possible realities, creating surprising interactions, highlighting where it is we should be going rather than stumbling around, searching for quick fixes to the far from perfect system we exist within now. ————Where there was a government department for future speculation, a ministry of public debate, university degrees in catalytic design, and secondary school classes in critical thinking. ————Where design was a medium to help us think, imagine and speculate about how the world could be. This is where the design in WHAT IF... belongs.

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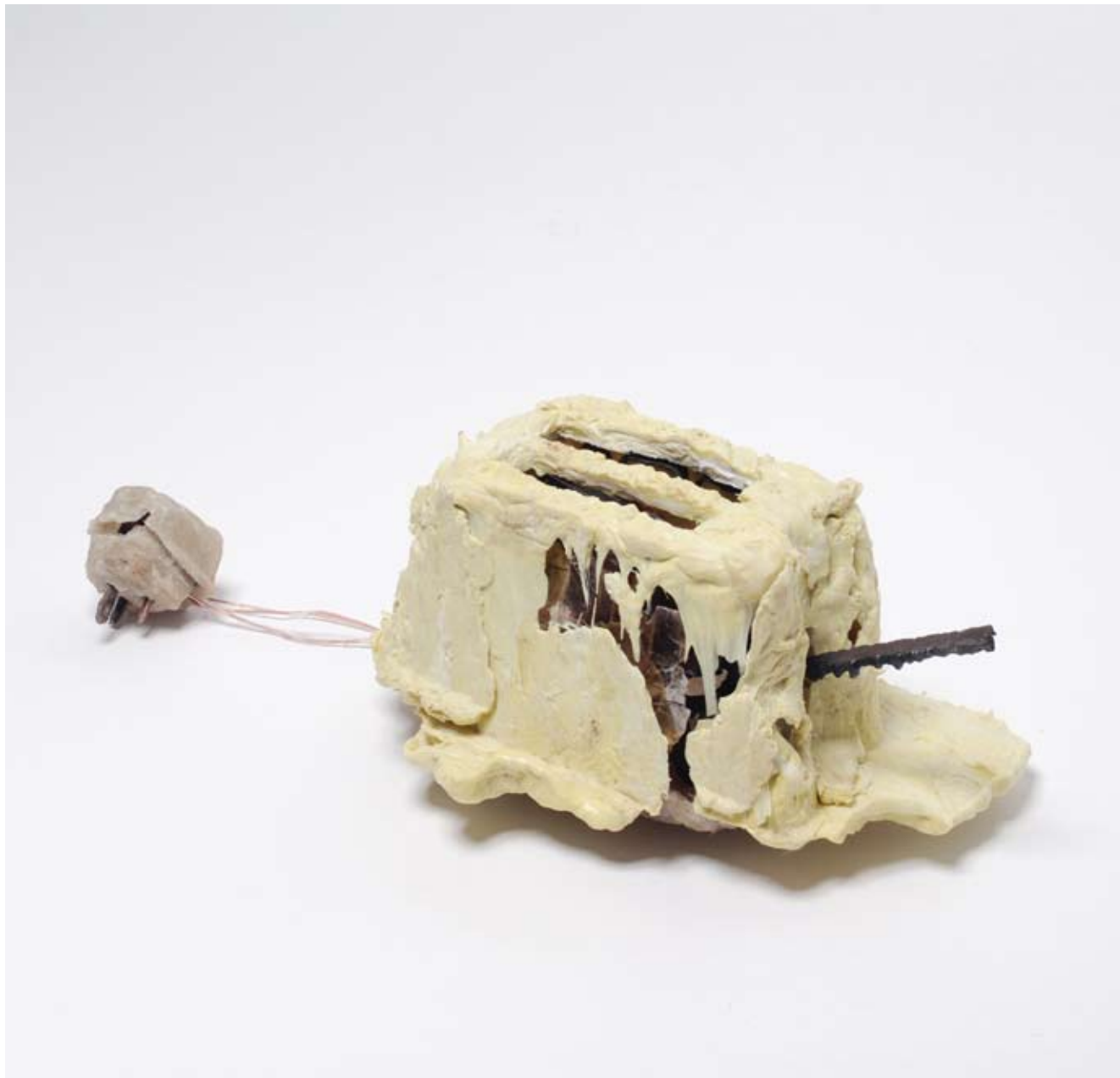
THOMAS THWAITES—CHRIS WOEBKEN—TOBIE  
KERRIDGE—NIKKI STOTT—IAN THOMPSON—  
JAMES KING—ALEXANDRA DAISY GINSBERG—  
ZOE PAPADOPOULOU—CATHRINE KRAMER—  
SASCHA POHFLEPP—DOT SAMSEN—NELLY  
BEN HAYOUN—DUNNE & RABY—WILL CAREY—  
NICOLAS MYERS—JAMES AUGER—JIMMY  
LOIZEAU—MICHAEL BURTON—MATHIEU  
LEHANNEUR—ELIO CACCAVALE—REVITAL  
COHEN—SUSANA SOARES

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**WHAT IF... WE TRIED TO MAKE A TOASTER FROM SCRATCH?**



Twitter hashtag:  
**#toasterSG**  
[www.thomasthwaites.com/thomas/toaster](http://www.thomasthwaites.com/thomas/toaster)

**THE TOASTER PROJECT, 2009**  
 THOMAS THWAITES

— Thwaites went on a quest to build an electric toaster from scratch, seeking iron, copper, mica, nickel and crude oil (for the plastic case) from disused mines in Britain, then attempting to process the materials at home. This nine-month process to make a simple toaster is absurd, but so too is the massive industrial activity we pursue to achieve additional comforts at ever lower prices.

— The laboriousness of producing even the most basic material from the ground up exposes the fallacy of returning to some romantic ideal of a pre-industrialised time. But at this moment in time when the effects of industry are no longer trivial for the environment, the throwaway toasters of today seem unreasonable.



**WHAT IF... NANOTECHNOLOGY ALLOWED OBJECTS TO CHANGE SHAPE AND FUNCTION AS NEEDED?**

**NEW SENSUAL INTERFACES, 2007**  
 CHRIS WOEBKEN

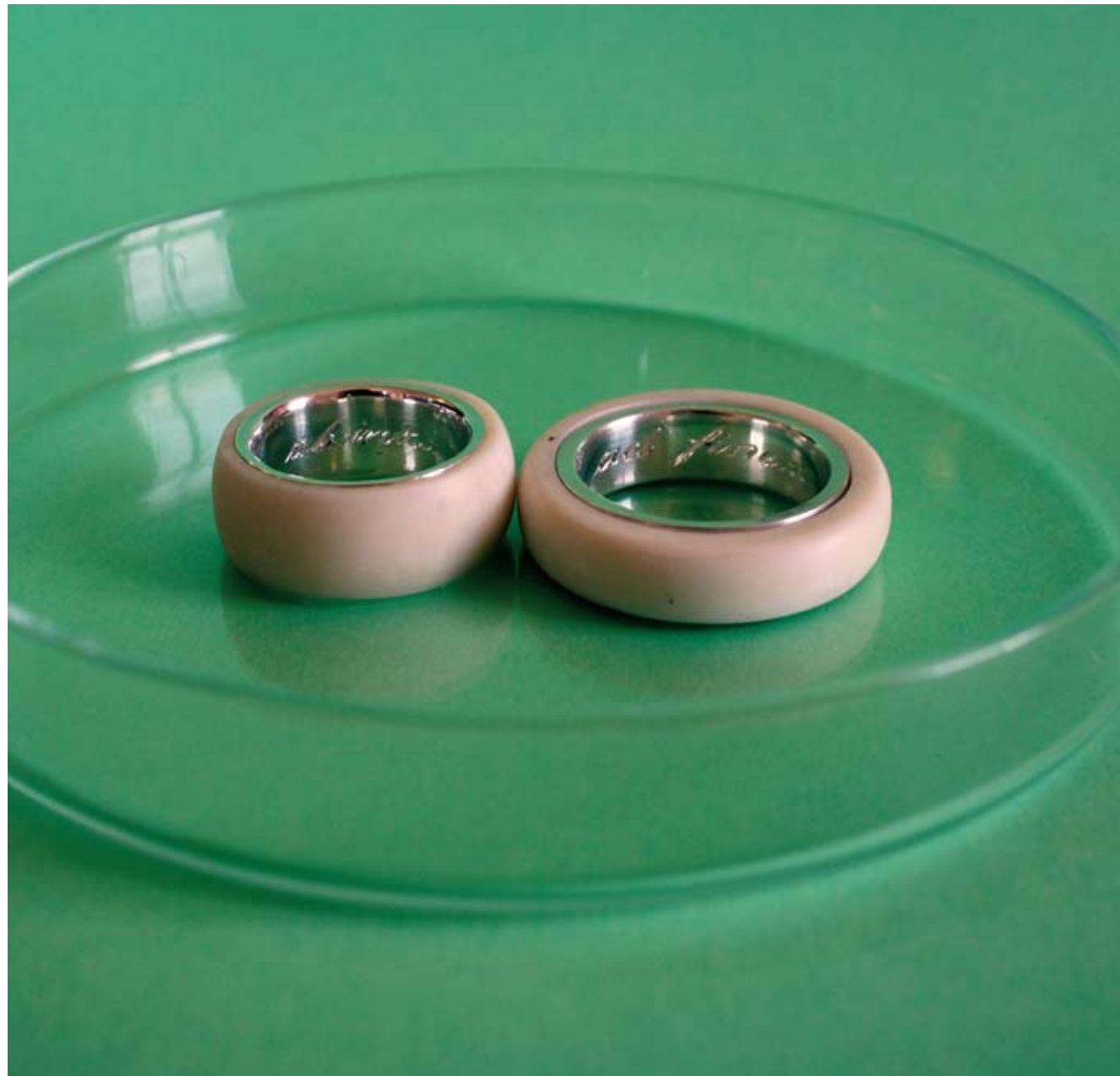
— Rather than focusing on the current development of nanotechnology, such as creating lighter and stronger materials, this project focuses on exploring its potential further, creating more manipulative prototypes such as organic electronics. — What does organic computing look like and how will our relationship with these products change? Can organic electronics with biosensors open up new possibilities for sensual and poetic designs?

— Seeds contain material and information needed to grow organisms as well as algorithms for device networking. Using seeds as a simulation for smart dust, it allows one to easily visualize new interactions such as breaking, sharing, throwing away and mining data. These new interactions not only generate new behaviors but also redefine existing stereotypical electronic products.

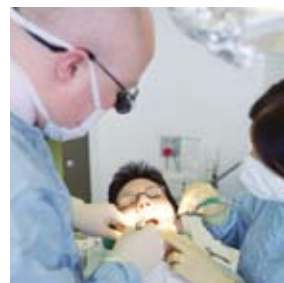


Twitter hashtag:  
**#sensualSG**  
[www.woebken.net](http://www.woebken.net)





**WHAT IF... HUMAN TISSUE COULD BE USED TO MAKE OBJECTS?**



Twitter hashtag:  
#biojewelSG  
[www.biojewellery.com](http://www.biojewellery.com)

**BIOJEWELLERY, 2003–2007**  
TOBIE KERRIDGE  
NIKKI STOTT  
IAN THOMPSON

— Bone tissue cultivated outside a patient's body will soon be used in reconstructive surgery. As the bioscience behind this application develops, the promise of the technology provokes curiosity and speculation about alternative uses. Biojewellery explores such an alternative, providing couples with a symbol of their love.

— Biomedical engineers, designers and clinicians set out to create unique biojewellery rings for couples. Bone tissue was cultured in a hospital laboratory, using cells from chips of bone donated by the couples during wisdom tooth extractions. The bone was combined with silver to create the rings. — Biojewellery hopes to raise questions about the relationship between individual ambitions and scientific research. The exhibit at Science Gallery comprises an archive relating to this project, funded by the Engineering and Physical Sciences Research Council (UK).



**WHAT IF... MEAT COULD BE GROWN IN LABORATORIES WITHOUT HARMING ANIMALS?**

**DRESSING THE MEAT OF TOMORROW, 2007**  
JAMES KING

— Recent advances in tissue engineering have enabled us to grow meat without the expense, cruelty and traditions of rearing the whole animal. It is now possible to grow edible meat from a small sample of animal tissue. This project examines how we might choose to give shape, texture and flavour to this new sort of food in order to better remind us where it came from.

— The mobile animal MRI (Magnetic Resonance Imaging) unit scours the countryside looking for the most beautiful examples of cows, pigs, chickens and other livestock. Once located, the creature is scanned from head to toe, creating accurate cross-sectional images of its inner organs. — The most interesting and aesthetically pleasing examples of anatomy are used as templates to create moulds for the in-vitro meat (we wouldn't choose to eat the same old boring parts that we eat today). The result is a satisfyingly complicated and authentic form of food.

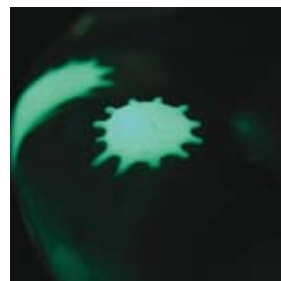


Twitter hashtag:  
#meatSG  
[www.james-king.net](http://www.james-king.net)





**WHAT IF... EVERYDAY PRODUCTS CONTAINED SYNTHETICALLY PRODUCED LIVING COMPONENTS?**



Twitter hashtag:  
#syntheticSG  
www.daisyginsberg.com  
Animation: Cath Elliot

**THE SYNTHETIC KINGDOM:  
A NATURAL HISTORY OF THE  
SYNTHETIC FUTURE, 2009**  
ALEXANDRA DAISY GINSBERG

How will we classify what is natural or unnatural when life is built from scratch? Synthetic Biology is turning to the living kingdoms for its materials library. No more petrochemicals: instead, pick a feature from an existing organism, locate its DNA and insert it into a biological chassis. Engineered life will compute, produce energy, clean up pollution, kill pathogens and even do the housework.

Meanwhile, we'll have to add an extra branch to the Tree of Life. The Synthetic Kingdom is part of our new nature. Biotech promises us control over the natural world, but living machines need controlling. Biology doesn't respect boundaries or patents. In simplifying life to its molecular interactions, might we accidentally degrade our sense of self? Are promises of sustainability and good health seductive enough to accept such compromise?



**WHAT IF... CLOUDS WERE GEO-ENGINEERED TO SNOW ICE CREAM?**

**THE CLOUD PROJECT, 2009**  
ZOE PAPADOPOULOU &  
CATHRINE KRAMER

Developments in nanotechnology and planetary-scale engineering point to new possibilities for us to conform the global environment to our needs. These advances combined with a dream to make clouds snow ice cream inspired a series of experiments that look at ways to alter the composition of clouds to make new and delicious sensory experiences.

Using ice-cream as a catalyst for dialogue, the project's focus is to welcome people into a nano-ice cream van and allow new audiences to experience and imagine emerging scientific developments and their consequences. *The Nano-ice cream van will visit Science Gallery from 12th November—4th December 2009.*

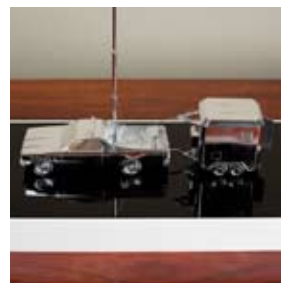


Twitter hashtag:  
#icecreamSG  
www.thecloudproject.co.uk





**WHAT IF... JIMMY CARTER HAD BEEN RE-ELECTED. WOULD THE WORLD BE GREENER?**



Twitter hashtag:  
**#goldenSG**  
[www.pohflepp.com](http://www.pohflepp.com)

**THE GOLDEN INSTITUTE, 2009**  
 SASCHA POHFLEPP

— In an alternate United States set in the 1980s, where Ronald Reagan never happened, the Golden Institute for Energy was the world's premier think tank for alternative energies.

— From weather modification and lightning harvesting to using the freeway system as a source of power, the Institute's ambitions were grand and their impact on American life significant.

— How might its legacy offer a fresh perspective on our present challenges in regard to the environment?



**WHAT IF... WE COULD GROW PRODUCTS INSTEAD OF MANUFACTURING THEM?**

**GROWTH ASSEMBLY, 2009**  
 ALEXANDRA DAISY GINSBERG  
 SASCHA POHFLEPP

— Synthetic biology enables us to harness our natural environment for the production of things. Coded into the DNA of a plant, product parts grow within the supporting system of the plant's structure. When fully developed, they are stripped like a walnut from its shell or corn from its husk, ready for assembly.

— Using biology for the production of consumer goods has reversed the idea of industrial standards, introducing diversity and softness into a realm that once was dominated by heavy manufacturing. — The product on show in Science Gallery is the Herbicide Sprayer, an essential commodity to protect these delicate engineered horticultural machines from older nature.



Twitter hashtag:  
**#growthSG**  
[www.daisyginsberg.com](http://www.daisyginsberg.com)  
[www.pohflepp.com](http://www.pohflepp.com)  
 Illustrations: Sion Ap Tomos



**WHAT IF... WE HAD TO RENT TREES TO OFFSET OUR CARBON FOOTPRINT?**



Twitter hashtag:  
**#treeSG**  
[www.dotmancando.info](http://www.dotmancando.info)  
 Photography: Dot Samsen

**BUYPRODUCT, 2009**  
 DOT SAMSEN

Carbon credit brings the 'convenience' back to the 'inconvenient truth'. Global warming has been driven by capitalism. Now we are trying to solve global warming through capitalism. Is this possible?

From an ecological perspective, CO<sub>2</sub> is a by-product of the living, either directly or indirectly. From the economic perspective, CO<sub>2</sub> may become the world's largest commodity market. What do we consider the price of our own by-products?  
 This project aims to criticise the carbon trading system as well as raise awareness of how good we are at destroying the planet.



**WHAT IF... PROBABILITY COULD BE 100% GUARANTEED?**

**COIN FLIPPER, 2009**  
 DOT SAMSEN

We often use randomness and fate to help us make decisions. Some decisions are so hard to make that we leave the responsibility completely to fate or randomness—by flipping a coin. This can make us feel less guilty or believe we've reached the 'right' decision, but what are our true intentions behind these decisions?

The Coin Flipper aims to challenge this apparent randomness to reveal our true intentions.



Twitter hashtag:  
**#coinSG**  
[www.dotmancando.info](http://www.dotmancando.info)  
 Photography: Dot Samsen





**WHAT IF... SCIENCE IS ADAPTED TO FULFIL POETIC AND CREATIVE NEEDS?**

**THE PHYSICS OF THE IMPOSSIBLE,\* 2009**  
NELLY BEN HAYOUN

— Contemporary physics exists at the crossroads between science and science fiction, testing our perceptions about reality and scientific potential. This interstitial space has the potential to engage our imagination, inspire dreams and extreme experimentations.

— Here, you are the hobbyist-amateur maker who decides the possible, the believable, and the alternative. You are the astronaut in the living room, generating dark energy from pigeons' eggs in the kitchen and colliding atoms in the bathroom...

\*Building in the Infra-Ordinary



Twitter hashtag: **#impossibleSG**  
[www.nellyben.com](http://www.nellyben.com)  
Photography: Noemie Goudal



**WHAT IF... DOMESTIC PRODUCTS ALLOWED US TO FULFIL TECHNOLOGICAL DREAMS?**

**SOYUZ CHAIR, 2009**  
NELLY BEN HAYOUN

— Space tourism is a great success; the possibilities of weightlessness, to feel the thrill of lift-off and to finally meet the unknown doesn't have to be a fantasy anymore. But space tourism is still just for the few.

— The Soyuz chair accurately reproduces the three stages of the Soyuz rocket launch. Reclining into launch position, you face the sky, put on your headset, and use the control panel to select your mode; just a single stage, or the full lift-off experience.

5... 4... 3... 2... 1...

*Which planet will you land on?*

— Project in collaboration with the astronaut Jean Pierre Haignere who has experienced lift off in the Soyuz rocket twice.



Twitter hashtag: **#chairSG**  
[www.nellyben.com](http://www.nellyben.com)  
Photography: Nick Ballon





**WHAT IF... WE COULD EVALUATE THE GENETIC POTENTIAL OF LOVERS?**

**EVIDENCE DOLLS, 2005**  
DUNNE & RABY

— Evidence Dolls consists of one hundred plastic dolls used to provoke discussion amongst a group of young single women about the impact of genetic technology on their lifestyle. How will dating change when DNA analysis can reveal the presence of undesirable genes?

— Evidence Dolls come in three versions based on penis size (small, medium and large). A black indelible marker is provided to note down any characteristics on the dolls body. Hair, toenail clippings, saliva, and sperm can be stored in the penis drawer.

Twitter hashtag:  
**#evidenceSG**  
[www.dunneandraby.co.uk](http://www.dunneandraby.co.uk)  
Doll Illustrations: Åbåke



**WHAT IF... CHILDREN, RATHER THAN ADULTS, COULD INFLUENCE OUR GENETIC FUTURES?**

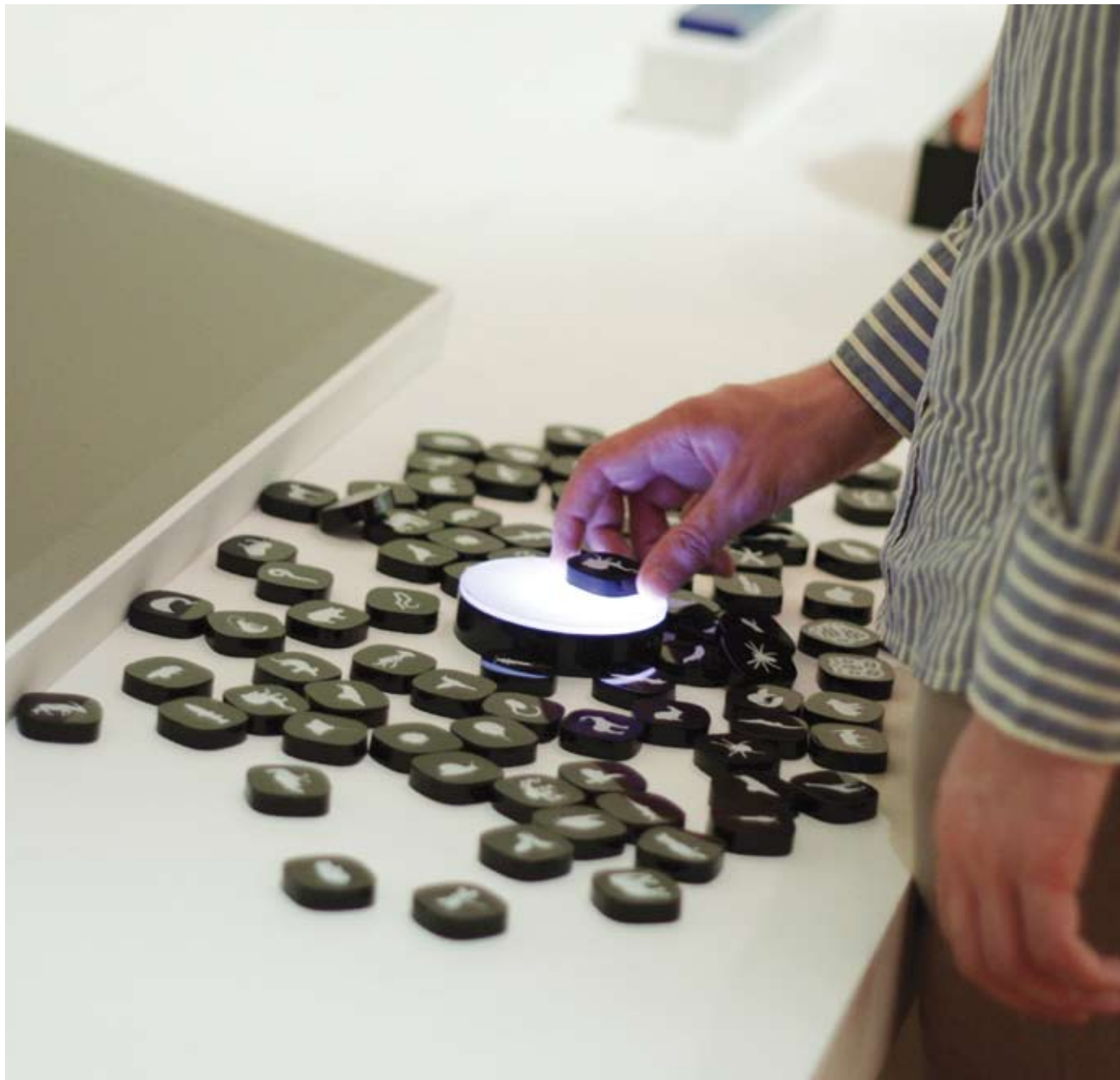
**GIFTED, 2009**  
WILL CAREY

— Gifted is a participatory project inspired by children's imaginations, in which children are the protagonists. The prototypes materialise an imaginary future where ability is considered before birth and influenced via training and parental supervision throughout the child's development.

— Would it be morally acceptable to alter or influence our children if we knew they could absorb higher levels of oxygen, increasing levels of concentration, focus, calmness and improved health? — The project raises questions about how children themselves might use their own fantasies and dreams to imagine an alternative genetic future. One could ask whether it is adults or children who are really in control of the technology?



Twitter hashtag:  
**#giftedSG**  
[www.willcarey.net](http://www.willcarey.net)



**WHAT IF... WE COULD SAMPLE ANIMAL DNA AND CREATE NEW UNIMAGINED HYBRIDS?**

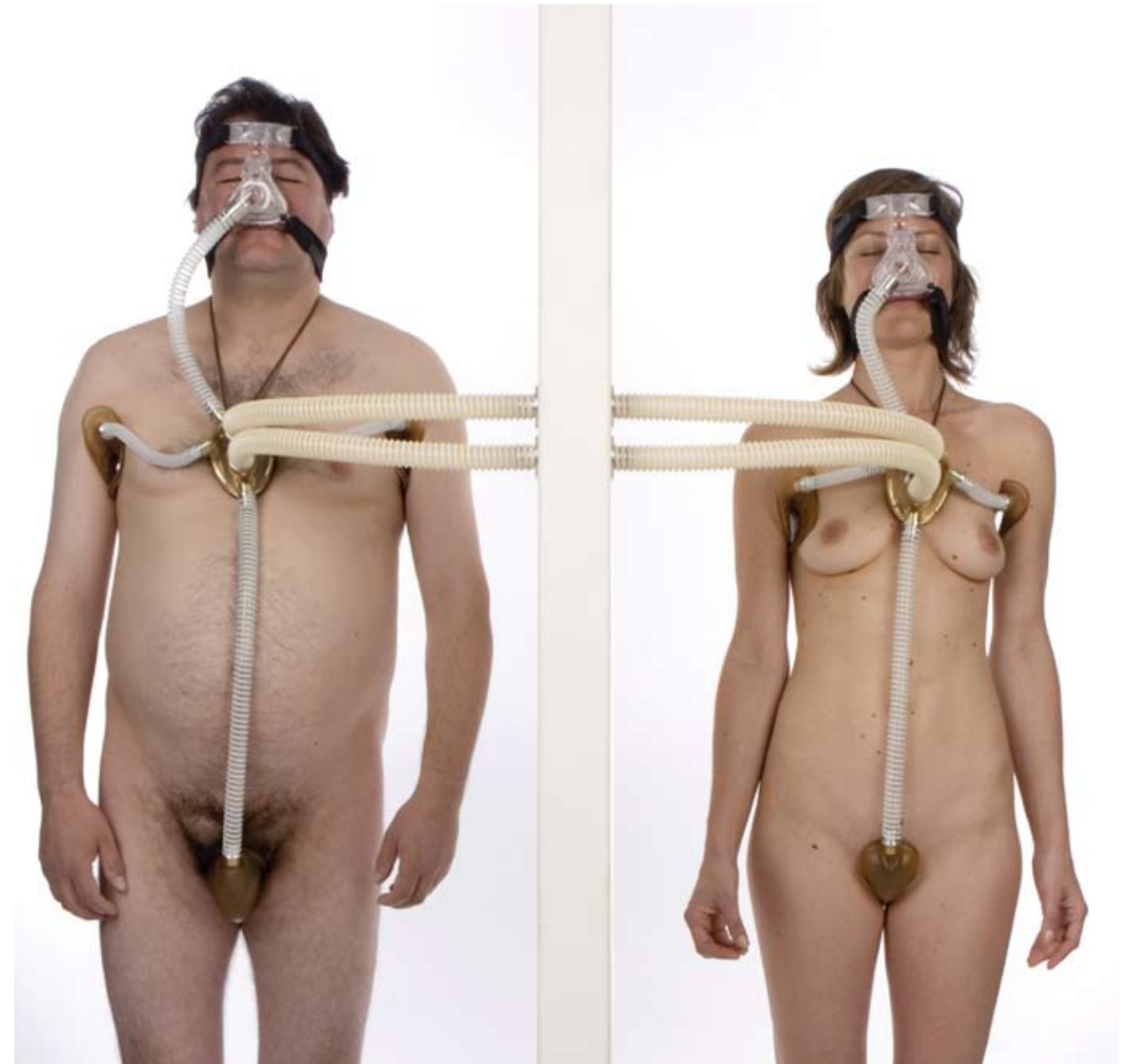


Twitter hashtag:  
#dnaSG  
www.portfolio.myers.fr

**TRANSGENIC BESTIARY, 2009**  
NICOLAS MYERS

— Transgenic Bestiary is a game that envisions the use of animal DNA to discover biodiversity, understand taxonomy and create collections of unimagined hybrids. In order to create rich and complex creatures, the player has to mix species close enough in the tree of life. Combining unrelated species leads to unstable animals that will eventually die.

— Far from being fictional, many of the technologies and trends underlying this project already exist today. It only makes sense to use this vast amount of information for recreational purposes, to satisfy curiosity and let non-specialists grasp and appropriate this bewildering biodiversity.



**WHAT IF...WE COULD USE SMELL TO FIND THE PERFECT PARTNER?**

**SMELL +, 2007**  
JAMES AUGER  
JIMMY LOIZEAU

— Smell has been until recently a neglected sense. The current low status of smell is a result of the re-evaluation of the senses by philosophers and scientists of the 18th and 19th centuries. Smell was considered lower order, primitive, savage and bestial.

— This project explores the human experiential potential of the sense of smell, applying contemporary scientific research in a range of domestic and social contexts. The design concept acknowledges that smell is a complicated sense requiring a level of control for both input and output emissions. This control is then applied to several situations exploring the possibilities and potential of smell as raw information.



Twitter hashtag:  
#smellSG  
www.auger-loizeau.com





**WHAT IF... WE COULD FARM MEDICAL PRODUCTS ON OUR BODIES?**



Twitter hashtag:  
**#farmSG**  
[www.michael-burton.co.uk](http://www.michael-burton.co.uk)

**FUTURE FARM, 2007**  
**MICHAEL BURTON**

— Future Farm reflects the current body farm industry of people in severe deprivation using their bodies for income including selling hair, kidneys or incubating other people's babies. The project focuses on new scientific and technological discoveries that radically change the perceptions of our bodies and extend the possibilities of their exploitation for industry.

— With the promises of stem cell technology to create replacement organs and even sperm from adipose fat tissue, Future Farm presents a vision of this where people use their body to produce and sell adult stem cells, to incubate pharmaceutical products, alongside hosting clinical trials.



**WHAT IF... WE COULD REDESIGN HUMAN TEETH TO ENCOURAGE VEGETARIANISM?**

**VEGETARIAN TOOTH, 2007**  
**SUSANA SOARES**

— Recent research into the effects of eating meat on global warming estimated that meat production accounts for nearly a fifth of gas emissions. Recently the UN appealed for a radical shift in diet, arguing that it wouldn't only be good for our health, but for the planet in general.

— Teeth are an essential tool for nutrition—their shape is related to diet. Herbivore animals, for example, have developed teeth that reflect their feeding preferences and facilitate the consumption of plant material. Could our teeth structure be replaced to encourage a more sustainable dietary shift?



Twitter hashtag:  
**#toothSG**



**WHAT IF... THE HEALTH OF THE NATION COULD BE ANALYSED FROM SPIT, SNOT AND STOMACH BILE?**



Twitter hashtag:  
**#nativeSG**  
[www.willcarey.net](http://www.willcarey.net)

**NATIVE COMMODITIES, 2009**  
**WILL CAREY**

— As genome technologies promote the open sourcing of the human body, could such data participation one day be extended into other forms of biological manufacture? Synthetic biology and nanotechnologies have made it possible to reprogramme cells, but would we be prepared to consider using our bodies to do this?

— This project is a preliminary study into the tolerable limits of sharing, manufacturing and interacting with biological data from our bodies. The aesthetics of three spittoons for capturing bodily fluid have been explored.



**WHAT IF... ROBOTS WERE DESIGNED FROM AN EMOTIONAL POINT OF VIEW?**

**TECHNOLOGICAL DREAMS**  
**SERIES: NO.1, ROBOTS, 2007**  
**DUNNE & RABY**

— It's a dream that refuses to go away. Robots are destined to play a significant part in our daily lives—not as super smart, functional machines, nor as pseudo life forms, but as technological cohabitants. But how will we interact with them? What new interdependencies and relationships might emerge in relation to different levels of robot intelligence and capability: intimate, subservient, dependent, equal?

— **Robot 1:** This one is very independent. It needs to avoid strong electromagnetic fields as these might cause it to malfunction.  
 — **Robot 2:** This robot is very nervous. It analyses everything with its many eyes. If a person approaches too close it becomes extremely agitated and even hysterical.  
 — **Robot 3:** This robot uses retinal scanning technology to decide who accesses our data. It demands that you stare into its eyes for a long time. It needs to be sure it is you.  
 — **Robot 4:** This one is very needy. Although extremely smart it is trapped in an underdeveloped body and depends on its owner to move it about.



Twitter hashtag:  
**#emorobotSG**  
[www.dunneandraby.co.uk](http://www.dunneandraby.co.uk)  
 Video: Noam Toran





**WHAT IF... DOMESTIC ROBOTS COULD BE SELF-SUFFICIENT?**

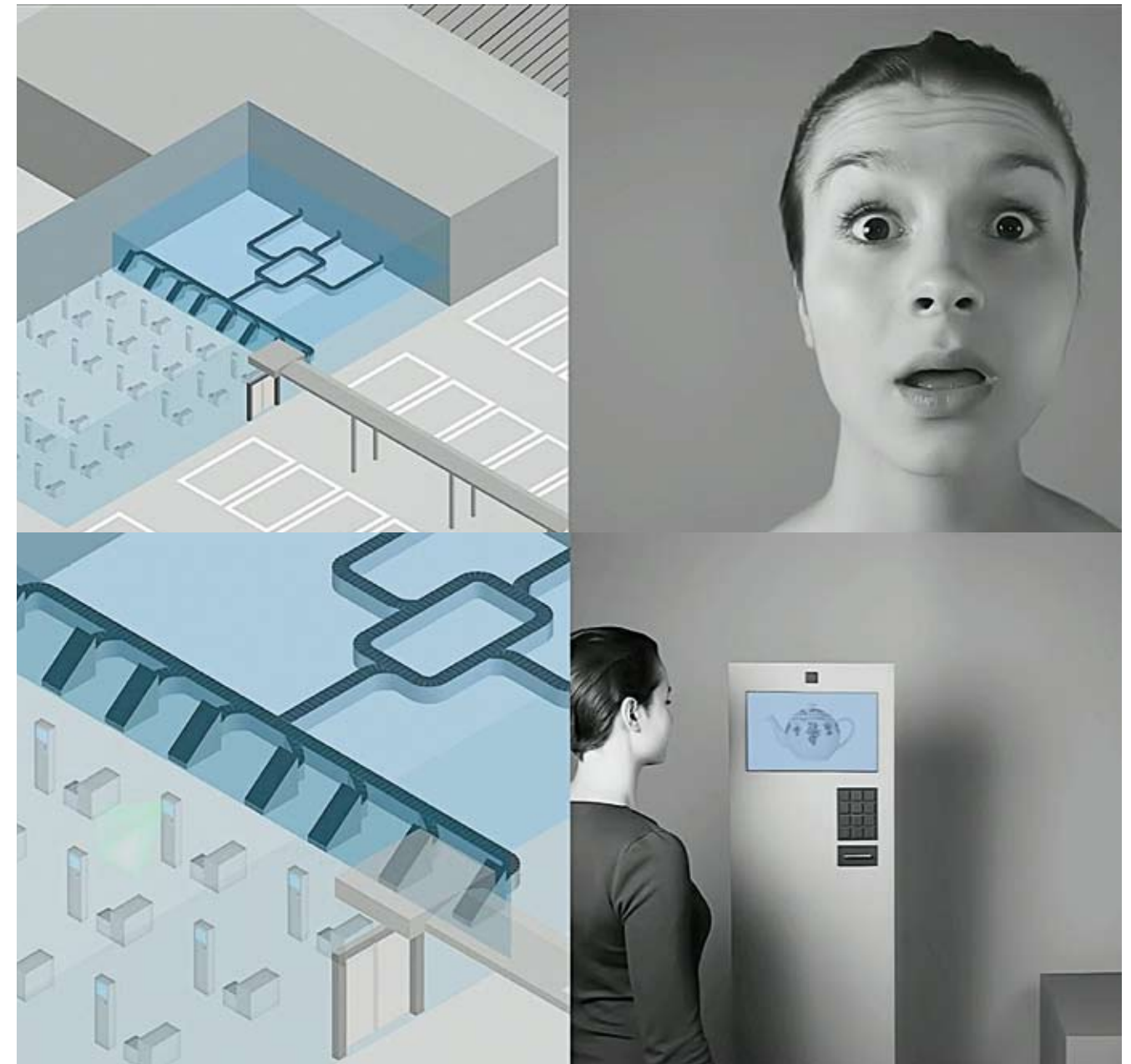


Twitter hashtag:  
**#robotsSG**  
[www.materialbeliefs.com/prototypes/cder.php](http://www.materialbeliefs.com/prototypes/cder.php)

**CARNIVOROUS DOMESTIC ENTERTAINMENT ROBOTS, 2008**  
**JAMES AUGER**  
**JIMMY LOIZEAU**  
*Engineered by Alex Zivanovic*

— This project approaches the subject of robots from an alternative perspective. Inspired by methods of survival in nature this series of robots references strategies of adaptation and bio-mimetics in their design. Developed for the home, they avoid the stereotypical forms normally associated with robots and adopt a contemporary fashionable design aesthetic.

— The robots utilise a microbial fuel cell to power themselves, generating energy from biomass in the form of common household pests. This gives them autonomy and to a degree they become living entities existing in a similar way to an exotic pet such as a snake or a lizard, where we provide living prey and become voyeurs in a synthesized, contrived microcosm.



**WHAT IF... OUR EMOTIONS WERE READ BY MACHINES?**

**BELIEF SYSTEMS, 2009**  
**BERNHARD HOPFENGÄRTNER,**

— Facial micro-expressions last less than a second and are almost impossible to control. They are hard wired to the emotional activity in the brain which can be easily captured using specially developed technological devices. Free will is now in question as science exposes decision-making as an emotional process rather than a rational one.

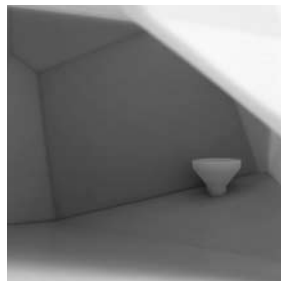
— This ability to read emotions technologically could result in a society obsessed with emotional reactions. Emotions, convictions and beliefs, which usually remain hidden, now become a public matter. "Belief systems" is a video scenario about a society that responds to the challenges of modern neuroscience by embracing these technological possibilities to read, evaluate and alter people's behaviours and emotions.



Twitter hashtag:  
**#beliefSG**  
[www.berndhopfengaertner.net](http://www.berndhopfengaertner.net)



**WHAT IF... WE LIVED IN A SOCIETY WHERE OUR EVERY THOUGHT WAS PUBLIC?**



Twitter hashtag:  
**#extraSG**  
[www.gunnargreen.de](http://www.gunnargreen.de)  
[www.berndhopfengaertner.net](http://www.berndhopfengaertner.net)

**EXTRA ROOM, 2009**  
BERNHARD HOPFENGÄRTNER  
GUNNAR GREEN

— Extra Room exists in an imaginary world where neuro-imaging is used to 'read' the human mind. As the mind becomes transparent in this world a new need for protective self discipline emerges. The Extra Room, is built into the basement of a multi storey building, where it is shared by the building's inhabitants.

— Utilising effects of sensory deprivation and methods, used by the military to break someone down, this room enables subjects to adjust their thinking and beliefs.



**WHAT IF... DATA FROM OUR BANKER, DOCTOR AND THERAPIST DETERMINED WHEN WE SHOULD CONCEIVE?**

**ARTIFICIAL BIOLOGICAL CLOCK, 2008**  
REVITAL COHEN

— The promises posed by new reproductive technologies such as IVF, test tube babies and egg freezing, are blurring perceptions of the reproductive cycle amongst women, and consequently, the age of conception is constantly being challenged. — The female body clock relies on moonlight to regulate the menstrual cycle. The use of artificial light and contraceptive hormones, along with the growing pressure to develop

a career, are distorting the body's reproductive signals. The artificial biological clock compensates for this increasingly lost instinct. — This object acts as constant reminder of the temporary and fragile nature of fertility. Given to a woman by her parents or partner, it reacts to information from her doctor, therapist and bank manager via an online service. When she is physically, mentally and financially ready to conceive the object awakes, seeking her attention.



Twitter hashtag:  
**#clockSG**  
[www.revitalcohen.com](http://www.revitalcohen.com)





**WHAT IF... DOMESTIC ECOSYSTEMS PRODUCED OUR FOOD?**



Twitter hashtag: [#riverSG](#)  
[www.mathieulehanneur.com](http://www.mathieulehanneur.com)  
 Photography: main image, Gaetan Robillard

**LOCAL RIVER, 2008**  
 MATHIEU LEHANNEUR

Local River is a home storage unit for live freshwater fish combined with a mini vegetable patch. Local River is based on the principle of aquaponics coupled with the exchange and interdependence of two living organisms—plants and fish.

The plants extract nutrients from the nitrate-rich fish waste. In doing so they act as a natural filter that purifies the water and maintains a vital balance for the eco-system in which the fish live. Local River responds to everyday needs for 100% traceable fresh food and aims to replace the decorative 'TV aquarium' by an equally decorative but also functional 'refrigerator-aquarium'.

*In collaboration with Anthony Van den Bossche*



**WHAT IF... WE SHARED OUR HOMES WITH PIGS BRED TO PROVIDE REPLACEMENT HUMAN ORGANS?**

**UTILITY PETS, 2003**  
 ELIO CACCAVALE

Utility Pets is an experimental project that uses products to draw attention to the ethical consequences of xenotransplantation—the transplantation of animal organs into humans. In an imagined not-so-distant future, shortly after birth people will be given a piglet with their own DNA engineered into it. The pig, known as a 'knockout pig' in the scientific jargon, is a form of a living insurance policy—an organ bank. This project explores what kind of new objects might be needed if the pig lives in the home with its owner's family.

The Utility Pet products include:  
 — **One.** A pig toy with a microphone and a radio handset allowing the owner to listen to the pig enjoying itself.  
 — **Two.** A smoke-filtering device allowing a person to smoke in front of the pig without it suffering the consequences of passive smoking.  
 — **Three.** A low-resolution TV exclusively for pigs, which they can control themselves.  
 — **Four.** A comforter—a psychological product made from the snout of a pig, which helps people come to terms with the contradictory feelings generated by this complex situation.



Twitter hashtag: [#pigsSG](#)  
[www.eliocaccavale.com/utilitypets/](http://www.eliocaccavale.com/utilitypets/)





**WHAT IF... WE ACCEPT CO-EVOLUTION WITH BACTERIA, MICROBES AND PARASITES AS A HEALTHY OPTION?**



Twitter hashtag:  
#raceSG  
[www.michael-burton.co.uk](http://www.michael-burton.co.uk)

**THE RACE, 2007**  
MICHAEL BURTON

— For every one human cell in your body there are ten non-human cells—bacteria, viruses, fungi and other microbes—living inside and on you. They are vital to many of your daily functions.

— The Race responds to this outcome and human meta-genomic research to reconsider our approach to healthcare as a co-evolved organism and conglomeration of vital bacteria, microbes and parasites. The project scrutinizes our inadvertent creation of superbugs like mRSA through the misuse of antibiotics to offer alternative enhancements, new behaviors and objects for a more symbiotic future as an extraordinary balanced ecosystem.



**WHAT IF... ANIMALS WERE USED AS LIFE SUPPORT MACHINES?**

**LIFE SUPPORT, 2008**  
REVITAL COHEN

— Assistance animals—from guide dogs to psychiatric service cats—unlike computerised machines, can establish a natural symbiosis with the patients who rely on them. Could animals be transformed into medical devices?

— This project proposes using animals bred commercially for consumption or entertainment as companions and providers of external organ replacement. The use of transgenic farm animals, or retired working dogs, as life support 'devices' for renal and respiratory patients offers an alternative to inhumane medical therapies.

— Could a transgenic animal function as a whole mechanism and not simply supply the parts? Could humans become parasites and live off another organism's bodily functions?



Twitter hashtag:  
#supportSG  
[www.revitalcohen.com](http://www.revitalcohen.com)





## WHAT IF... INSECTS COULD HELP US DIAGNOSE ILLNESS?



Twitter hashtag:  
#beesSG

### **BEE'S, 2007-2009** SUSANA SOARES

Scientific research has demonstrated that bees have an extraordinarily acute sense of smell. They can be trained within minutes, using Pavlov's reflex, to perform a health check by detecting a specific odour of people's breath.

This project consists of a series of alternative diagnostic tools that use bees to accurately diagnose a vast variety of diseases at an early stage. The project aims to build on current technological research, using design to translate the outcome into systems and objects that people can understand and use in their daily lives.

## CREDITS...

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**04 DRESSING THE MEAT OF TOMORROW, 2006**  
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ANIMATION: CATH ELLIOT

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REVITAL COHEN

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MATTHIEU LEHANNEUR  
IN COLLABORATION WITH ANTHONY VAN DEN BOSSCHE  
PHOTOGRAPHY: LARGE IMAGE, GAETAN ROBILLARD, SMALL IMAGE: MATHIEU LEHANNEUR

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[www.dunneandraby.co.uk](http://www.dunneandraby.co.uk)  
Photography: Dunne & Raby

### BLOOD/MEAT ENERGY FUTURE—TEDDY BEAR BLOOD BAG RADIO, 2004 DUNNE & RABY

— This project is a Critical  
Design experiment commissioned  
by the Science Museum exploring  
different energy futures. The gallery  
is aimed at children aged between  
7 and 14. We chose to design a  
collection of hypothetical products  
to explore the ethical, cultural and  
social impact of different energy

futures. Photographic scenarios  
were used to communicate a set  
of values driven by social as well  
as technological changes—value  
fictions rather than science fictions.

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