



EMERGING TECHNOLOGIES AND SPECULATIVE INTERACTION DESIGN

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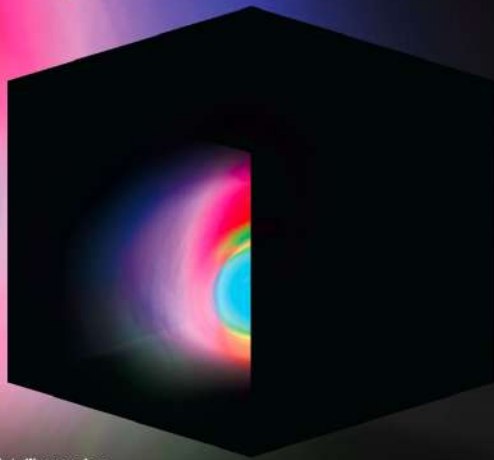




MIT
Technology
Review

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Mysterious Machines



Artificial intelligence is a black box that thinks in ways we don't understand. That's thrilling and scary. p. 54

Feature p. 42
A 3-D Printer That Really Matters
Feature p. 78
Cancer Cures For a Lucky Few
Feature p. 28
Time to Consider Geoengineering?

EMERGING TECHNOLOGIES AND SPECULATIVE INTERACTION DESIGN

EMERGING TECHNOLOGIES

TECHNOLOGIES THAT WILL REACH THEIR FULL
POTENTIAL IN THE FUTURE

1. Artificial Intelligence (AI) with Intelligent cities, Intelligent homes, intelligent infrastructures
2. Robots, especially autonomous, intelligent robots, including self-driving vehicles
3. Internet of Things (IoT) & Internet of Everything
4. Virtual Reality (VR), Augmented Reality, Mixed Reality, Digital Twins
5. Generative Design
6. 3D printing (additive manufacturing)
7. Active Materials
8. Nano-technologies, especially for medical applications
9. Neuroscience and neuro-technologies (brain-computer interfaces)
10. Biomimicry (technologies inspired by nature)
11. ...



WE ARE DISCUSSING POSSIBLE FUTURES



GENDER STUDIES SYMPOSIUM

FUTURES FOR WHOM?
GENDERING PRACTICES AND POSSIBLE FUTURES IN TIMES OF PANDEMIC

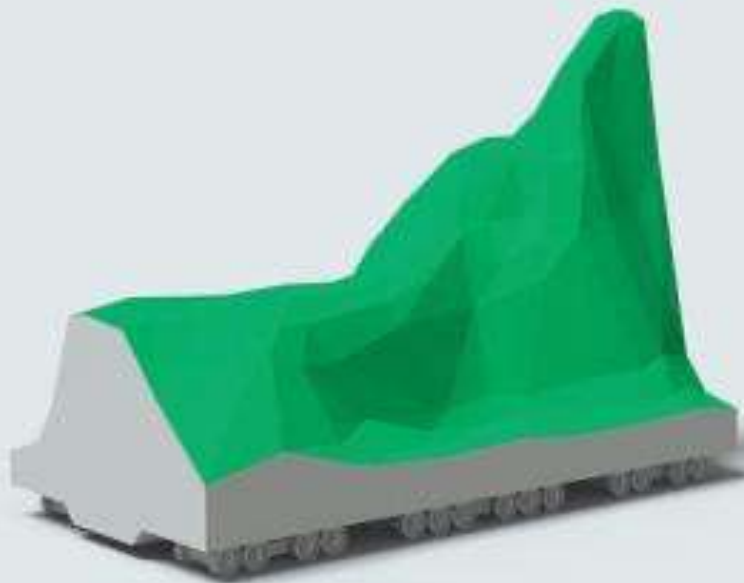
22 NOVEMBER 2021
13.15-16.15

ONLINE VIA ZOOM
GENDER STUDIES,
UNIVERSITY OF GOTHENBURG

SPECULATIVE EVERYTHING

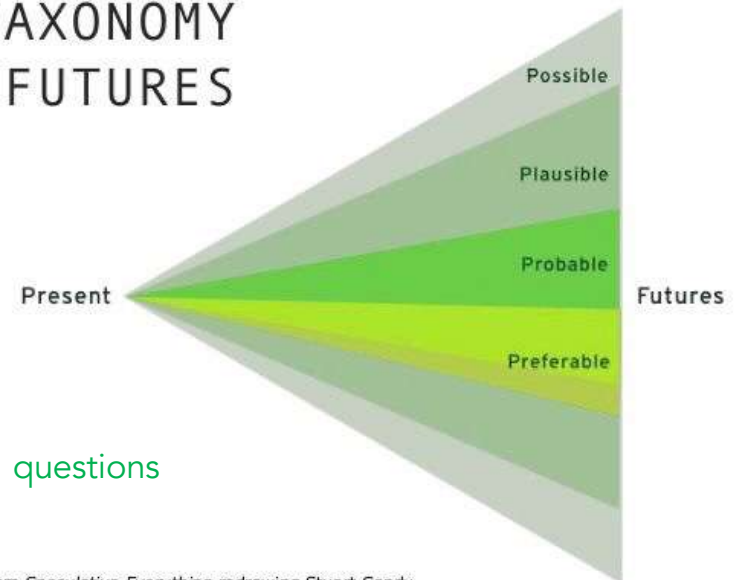
SPECULATIVE EVERYTHING

DESIGN, FICTION, AND SOCIAL DREAMING



ANTHONY DUNNE & FIONA RABY

A TAXONOMY OF FUTURES



"what if" questions

Redrawn from *Speculative Everything* redrawing Stuart Candy

Table of Contents:

- Beyond radical design?
- A map of unreality
- Design as critique
- Consuming monsters: big, perfect, infectious
- A methodological playground: fictional worlds and thought experiments
- Physical fictions: invitations to make believe
- Aesthetics of unreality
- Between reality and the impossible
- Speculative everything.

SPECULATIVE DESIGN

Speculative design combines informed, hypothetical extrapolations of an emerging technology's development with a deep consideration of the cultural landscape into which it might be deployed, to speculate on future products, systems and services. These speculations are then used to examine and encourage dialogue on the impact a specific technology may have on our everyday lives. The familiar and engaging nature of the designed output is intended to facilitate discourse with a broad audience: from experts in the field such as scientists, engineers and designers to the consumers and users of technological products and systems. Auger Loizeau

SPECULATIVE DESIGN CREATES SPACE TO...

Arrange emerging (**not yet available**) technological 'elements' to hypothesise future, products and artefacts

Apply **alternative plans, motivations, or ideologies** to those currently driving technological development, in order to facilitate new arrangements of existing elements

Develop **new perspectives** on big systems

SPECULATIVE DESIGN FACILITATES...

Asking 'What is a better future (with respect to present)?'

Generating a better understanding of the potential implications of a specific (disruptive) technology in various contexts and on multiple scales – with a particular focus on everyday life.

Moving design 'upstream' – to not simply package technology at the end of the technological journey but to impact and influence that journey from its genesis.

SPECULATIVE DESIGN ASKS...

What would life be like if we had such technologies?

It can act as a cultural and behavioural litmus test, **trying** out applications before they happen and allowing for adjustments to be made.

Its agenda is to facilitate a **more democratic and considered approach to technological development.**

ADDRESSING CHALLENGES AND OPPORTUNITIES OF THE FUTURE

We use Speculative Design to describe work that uses design (products, services, scenarios) to **address challenges and opportunities of the future**. We tend to look 5-10+ years forward and speculate on how things could be and what future we want or don't want based on these scenarios.

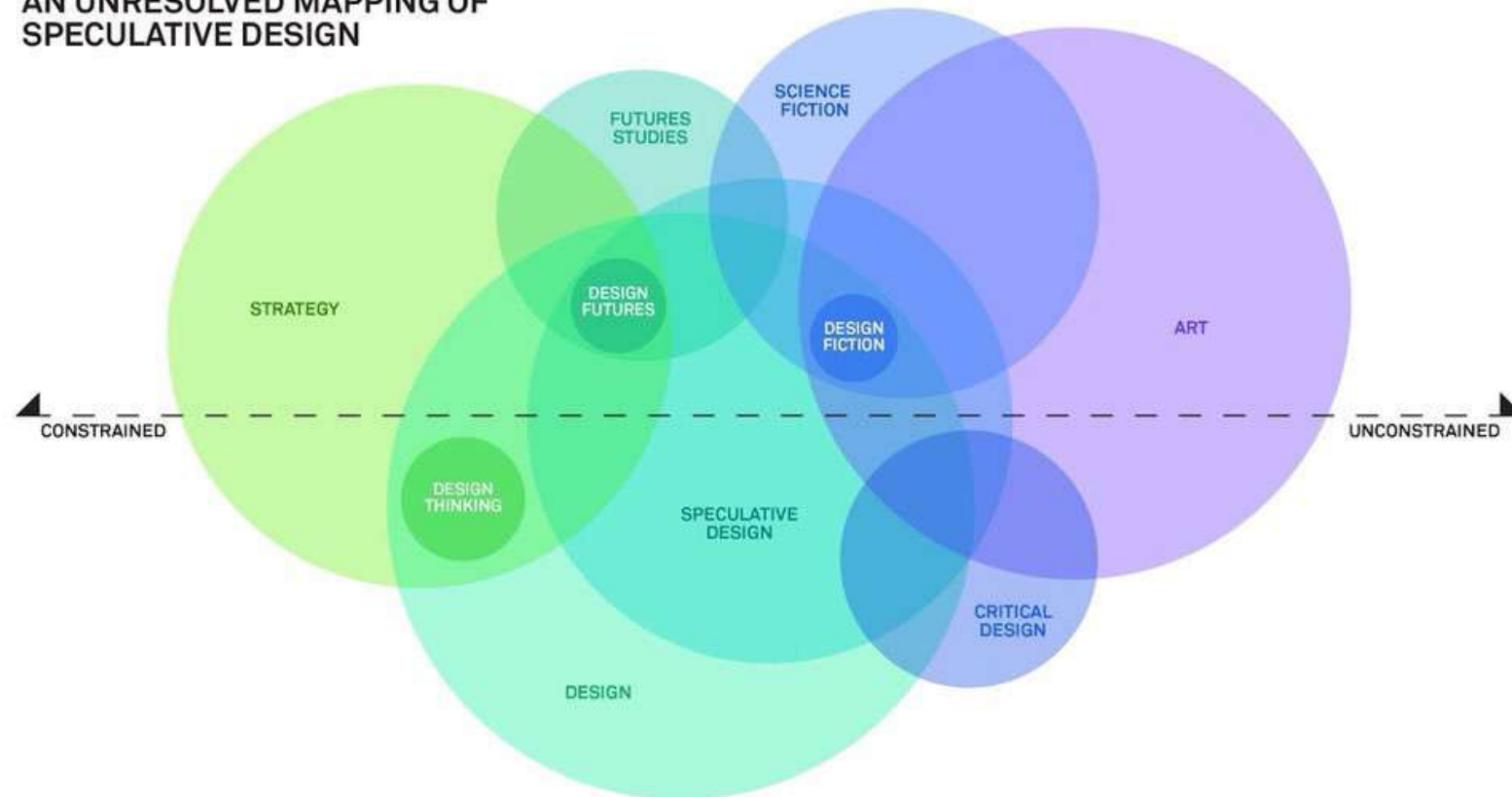
CRITICAL DESIGN

“Let’s call it critical design, that questions the **cultural, social and ethical implications of emerging technologies**. A form of design that can help us to define the most desirable futures and avoid the least desirable.”

Anthony Dunne & Fiona Raby

SPECULATIVE DESIGN AND ITS CONTEXT

AN UNRESOLVED MAPPING OF SPECULATIVE DESIGN



NOTE: SCALE IS NOT
INDICATIVE OF SIGNIFICANCE

ELLIOTT P. MONTGOMERY | EPMID.COM

EXAMPLES OF THE ISSUES WE CAN ADDRESS WITH SPECULATIVE DESIGN BASED ON EMERGING TECHNOLOGIES

future cities

urban sprawl*

autonomous transportation

overpopulation

environmental pollution

traffic

climate change,

food/water shortage

...

intelligent everything

future healthcare, disease, aging populations,
epidemics

world governance

decision-making machines

human-machine coexistence - living with robots

diminishing diversity in nature and society

meaningful life without work

...

Addressing these issues today we can lay the groundwork for the future we want, and the future we have, through the power to design

*the unrestricted growth in many urban areas of housing, commercial development, and roads over large expanses of land, with little concern for urban planning

UN GOALS 2030

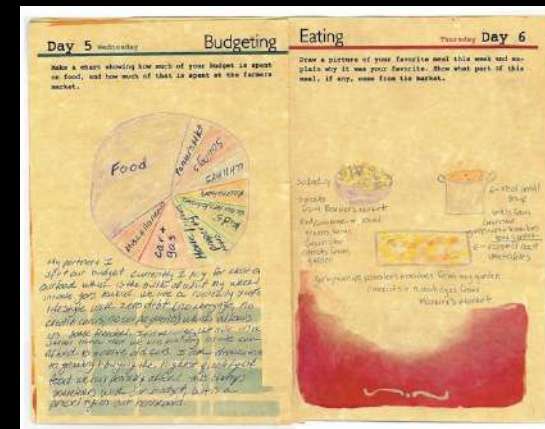
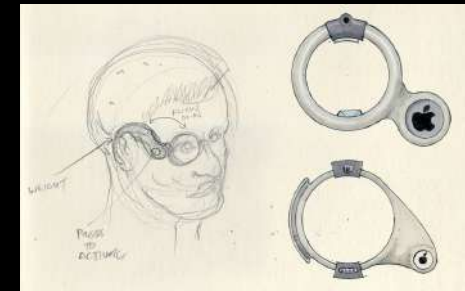
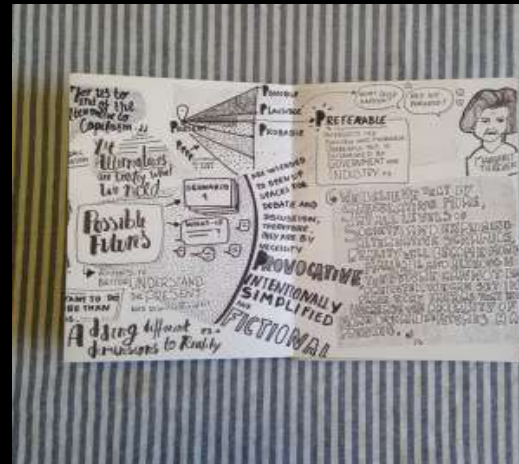
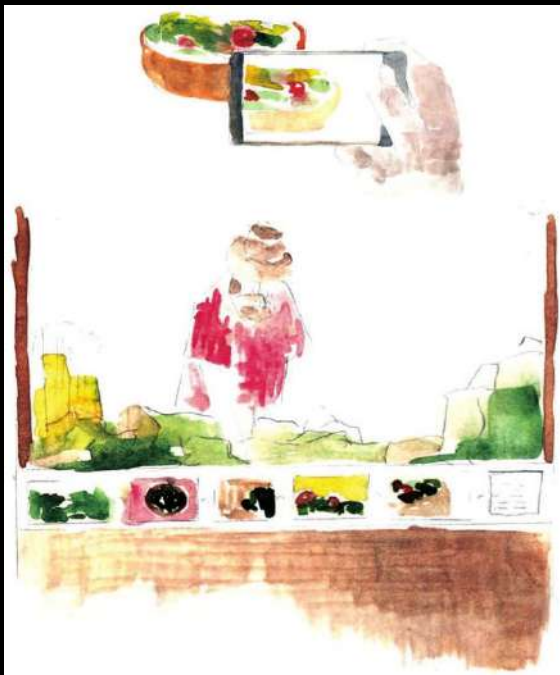


SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD



MAKING THINGS VISIBLE: SKETCHES



<http://jamiestantonian.com/speculative-design> Examples

<https://www.researchgate.net/publication/263286994> Making Things Visible Opportunities and Tensions in Visual Approaches for Design Research and Practice

POSSIBLE APPROACHES TO THE SPECULATIVE DESIGN PROJECT

Pondering over **emerging technologies and their potential** as "design material"

Thinking of the **future challenges** you want to address

Thinking in terms of **UN sustainability goals**

Thinking hypothetically, "**what if**"

Discussing and choosing among a variety of possible technologies, designs, and goals

SPECULATIVE LARGE-SCALE DESIGN

Dunne and Raby emphasize the potential of speculative **design for large-scale social and political issues**, such as democracy or sustainability, or the alternatives to the existing economic models.

...

It should be kept in mind, that the purpose of speculative design fiction **should not be utopian or dystopian science fiction visions of the future, but a dialogue on what the future can be.**

DESIGNING FOR EMERGENCE IN A WHITE WATER WORLD

Design Unbound. Designing for
Emergence in a White Water World
Ann Pendleton-Jullian and John Seely
Brown, two volume set, MIT Press
2018

“navigating today's hyper-connected,
rapidly changing, and radically
contingent white water world.”



<https://mitpress.mit.edu/books/design-unbound-designing-emergence-white-water-world-volume-1>

WICKED PROBLEMS IN DESIGN THINKING

What are Wicked Problems?

Wicked problems are problems with many interdependent factors making them seem impossible to solve. Because the factors are often incomplete, in flux, and difficult to define, solving wicked problems requires a deep understanding of the stakeholders involved, and an innovative approach provided by design thinking. Complex issues such as healthcare and education are examples of wicked problems.

The term "wicked problem" was first coined by Horst Rittel, design theorist and professor of design methodology at the Ulm School of Design, Germany. In the paper "Dilemmas in a General Theory of Planning," he describes ten characteristics of wicked problems:

There is no definitive formula for a wicked problem.

Wicked problems have no stopping rule, and there's no way to know your solution is final.

Solutions to wicked problems are not true-or-false; they can only be good-or-bad.

There is no immediate test of a solution to a wicked problem.

Every solution to a wicked problem is a "one-shot operation"

Wicked problems do not have a set number of potential solutions.

Every wicked problem is essentially unique.

Every wicked problem can be considered a symptom of another problem.

There is always more than one explanation for a wicked problem.

Explanations depend on the individual perspective.

Planners/designers have no right to be wrong and must be fully responsible for their actions.

<https://www.interaction-design.org/literature/topics/wicked-problems>

WICKED PROBLEMS & DESIGNING FOR EMERGENCE

Design theorist and academic Richard Buchanan connected design thinking to wicked problems in his 1992 paper "Wicked Problems in Design Thinking."
<http://www.jstor.org/stable/1511637>

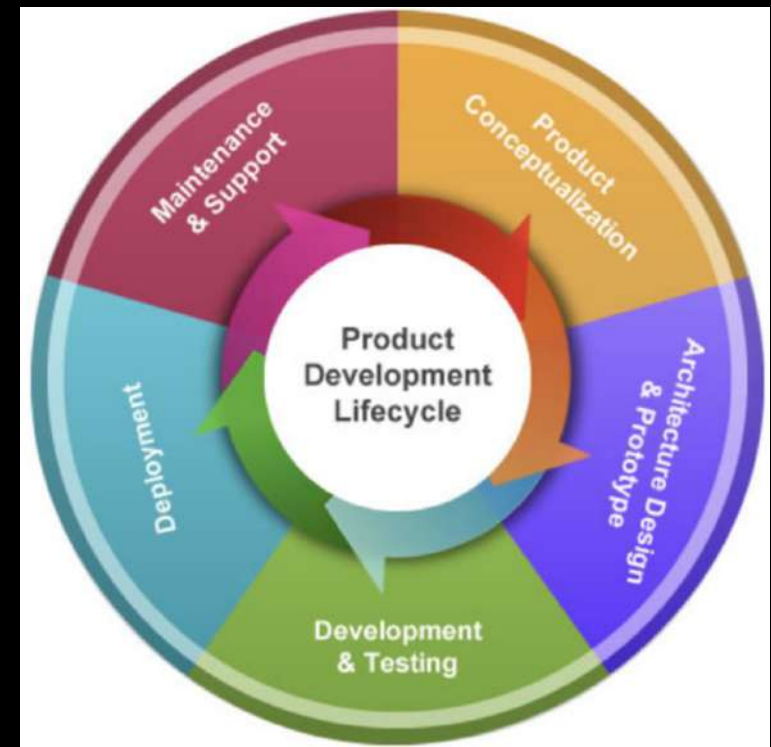
Design thinking's iterative process is extremely useful in tackling ill-defined or unknown problems—reframing the problem in human-centric ways, creating many ideas in brainstorming sessions, and adopting a hands-on approach in prototyping and testing.

<https://www.interaction-design.org/literature/topics/wicked-problems>

Ethical Framework in the Design of Emergent Technology

Ethical requirements must be fulfilled in all phases in the life-cycle of a product (autonomous car/robot) The context of:

1. Conceptualization/Design/Prototyping/
Construction/Development/Testing/Production
2. Deployment/Application/
3. Maintenance/Support
4. Oversight/Regulation



WHAT THIS COURSE CAN OFFER TO YOU IS
PRIMING OR OPENING A WINDOW WITH A **VIEW**

