



In 2014, teenager Adrianna Mitchell sat at a keyboard with Barack Obama and helped him become the first US President to code. His modest effort, a mere 17 characters of script\*, underscored a deeper belief in coding as the literacy of the 21st Century. Once largely viewed as an esoteric and tangential activity, coding has emerged as an essential, world-making practice. But what will this digitally-driven future look like? Are today's school children destined for lives as software engineers, or will coding become a more diffused set of practices? What does it mean 'to code'?

Hello World addresses this question in the context of design, showing designers printing, sewing, assembling and hacking in order to free computation from the computer's dark interior. In the process of prising open the lid on modern technology, these makers are experimenting with new ways of being digital. With new-found capacities to sense and respond, the material world is becoming increasingly fertile, profoundly reshaping our social, political and economic lives. Additive manufacturing techniques mean once invisible and immaterial processes are emerging into the tangible world of objects. Low cost electronic components, and the physical computing and maker cultures they've spawned, now see computation affecting everything from toys and weapons to how we work and what we wear.

For contemporary design, code has become an important new concern, at once a tool, a material, and a process in the experience and formation of worlds.

\*Move Forward(100);

After the Avalanche  
Tom Lee

How can we give tangible meaning to the great, pervasive, yet difficult to describe changes that have been wrought on the globe due to the growing abundance of digital technology?

Metaphor and history are often good ways to begin. The philosopher of science Ian Hacking famously used the metaphor of an avalanche to describe the nationwide counting processes which began in the early 19th century. Hacking's memorable phrase "the avalanche of printed numbers" describes one of the key antecedents to the digital transformations of the twentieth and twenty-first centuries. For the first time in history, large-scale populations were translated into statistical information, which could then be arranged in systems, and systems of systems, and systems of systems of systems...

But is the avalanche the best way to describe the ubiquity of number, in all its various forms, and its impact on our lives?

In the introductory chapter to *Living by Number: In Defence of Quantity*, Steven Connor proposes an alternative. Rather than interpret Hacking's avalanche as "some uniform, indeterminate substance, like mud or snow, under which one may be crushed or asphyxiated" Connor suggests that number, and the systems of reduction, multiplication and organisation it enables, is more generatively and adequately understood as something with a great diversity of meanings and affects.

Hello World: Code and Design is an exhibition that goes some way towards showing why the avalanche is only part of the story. The works included in the show are an expression of what happens once the snow has settled or perhaps even melted; a vision of a time when the displaced forms begin to be reincorporated into a new vision of the landscape.

For thirty years or so the world has been stuffed into the internet and the interface of the screen, now we are witnessing the first inklings of what happens once it starts to overflow.

The translation of objects into code and then back into objects does not leave the associated systems of production, consumption and distribution unchanged. The on-demand possibilities enabled by computer aided design software and 3D printing have the potential to transform our relationship with objects in the same way streaming services such as Spotify and Netflix have changed our relationship with music and television.

In this sense, a return to the physical is perhaps one of the more surprising developments in contemporary experimentation with code. There is a strong emphasis on the book within Hello World, with works by Joshua Roseberg, Ben Fry, Matt Pyke, Helen Yentus and Studio Pinaffo Pluvinage all focusing on this form. Free from some of the fizz which is associated with contemporary information delivery systems, we can appreciate the book as an object of design that is at once open to transformation and free from many of the revolutionary claims or propositions about future technologies that often act as substitutes for rigour.

Compared to computing technologies, printed books seem thoroughly analogue. However, the changes initiated by the printing press in the 15th Century are in a sense a digitalisation of earlier communicative technologies and practices associated with oral storytelling and cursive script. Matt Pyke's redesign of *Composition No.1*, an experimental novel by French writer Marc Saporta, originally published in 1961, features

loose pages that each tell a discrete narrative and are able to be rearranged in any order. In each new sense, Saporta's novel prefaces some of the key affordances of digital technology. Narratives have always had an implicit sequential element, but the idea of cutting up and reordering a story, or playing one in reverse for that matter, doesn't really become a meaningful possibility until numbers are used to make explicit the way narratives are ordered at more granular level, whether through page numbers or frames sewn together in film. Systems of ordering and equivalence in this sense engender rather than inhibit openness and experimentation.

Pyke's intervention into Saporta's novel breaks the narrative down even further, focusing on individual letters as discrete units of information. In Pyke's work, letters are subjected to series of algorithmic operations, producing waves, swarms and clouds. These forms, which are typically associated with dynamically evolving, unpredictable events, remind us that while breaking something down into its constituent units may destroy the way meaning operates at one level—in this case, the meaning associated with a chronological, episodic narrative—on another level it, opens up the possibility for complex form generation and new kinds of meaning.

Unique Board are an illuminating example of a company using 3D printing to run smaller batches of products that are commercially riskier. The company uses Instagram as channel to initiate collaborations on 3D printed sculptures with artists and creatives who are doing interesting work. The number of sculptures produced is limited by set period of three months. Time rather than quantity that primarily determines production.

While it might be tempting to focus on the more glamorous and revolutionary possibilities associated with technologies such as 3D printing, their production model exemplifies the ways in which our dynamically evolving, socio-technical ecology is influencing cultural expression, consumer products and production. The business model of Unique Board is contingent on multiple technologies, such as the camera enabled smartphone, image sharing services, computer aided design and 3D printing, not to mention the distinctive cultures of sharing that have both enabled and been enabled by different digital networks.

Similar sentiments are at work in Golan Levin and Shawn Sims' open source project *Free Universal Construction Kit (F.U.C.Kit)*, a design in which Gottfried Leibniz's dream of a universal language goes some way to being realised, only now it is the grammar of objects that is being transformed. Levin and Sims redesigned the components used in various systems of children's building toys, such as Lego, Duplo and many others, so they can be connected and used in the same, unified system. It might be tempting to see this as reductive, but that would be to follow the same line of thinking that regards the avalanche as the end point. The users and communities who discover the possibilities afforded by the new material syntax will in the end determine whether the design ought to be equated with a reduction or enlargement of possibilities. If the works curated in Hello World are any indication, we can expect the gradual thawing that comes after the avalanche to promote the growth of some fascinating and diverse new forms.

- 01 **Ying Gao**  
Canada  
possible tomorrows, 2017  
Neutralité : Can't and Won't, 2016  
Incertitudes, 2013
  - 02 **Studio Pinaffo Pluvinage**  
France  
Papier Machine, 2018
  - 03 **Aaron Koblin, Takashi Kawashima, 10000 anonymous artists**  
United States  
Ten Thousand Cents, 2008
  - 04 **Golan Levin, Shawn Sims**  
United States  
Free Universal Construction Kit, 2012
  - 05 **Tristan Perich**  
United States  
1 Bit Symphony, 2010  
Noise Patterns, 2016  
0.01s, 2015
  - 06 **Alterfact**  
Australia  
Collapse, 2015  
Handbuilt/Machinebuilt, 2015–2018,
  - 07 **Ben Fry**  
United States  
The Preservation of Favoured Traces, 2009
  - 08 **Zeitguised**  
Germany  
OY—A New Planet Is Born // Void season, 2016
  - 09 **Wang & Söderström (designers), Unique Board (manufacturer)**  
Denmark/Sweden  
Excavation I, II, III, 2017
  - 10 **Leah Buechley**  
United States  
Lilypad Arduinos, 2007
  - 11 **Universal Everything (designer), Visual Editions (publisher)**  
United Kingdom  
Composition No.1, Published August 2011
  - 12 **Ben Roberts**  
United Kingdom  
Interior of Amazon Fulfilment Centre, Rugeley, 2012  
Motivational poster #2, Rugeley, 2012  
From the series 'Unpacked'
  - 13 **Stakker Communications**  
Mark McClean and Colin Scott (visual imaging), Brian Dougans aka Future Sound of London (music), Marek Pytel (executive producer)  
United Kingdom  
Stakker Humanoid, 1988
  - 14 **Amazon**  
United States  
Amazon Dash (Glad, KY, Tyleneol, Red Bull, AmazonBasics Batteries, Pampers), 2015
  - 15 **Victor Doval**  
Spain  
Howler Monkey by Meier & Erdmann, 2017
  - 16 **Unyq**  
United States  
Scoliosis Brace Prototype, 2015
  - 17 **Helen Yentus**  
United States  
On Such a Full Sea Limited Edition, 2013
  - 18 **Defense Distributed**  
United States  
The Liberator, 2013
  - 19 **Kouhei Nakama**  
Japan  
Makin' Moves, 2017
  - 20 **Reinoud van Laar**  
The Netherlands  
Fluid Leaves, 2015
  - 21 **Josh Roseberg**  
Australia  
Letters of E.B. White, 2016
  - 22 **A2-Type (Scott Williams, Henrik Kubel)**  
United Kingdom  
A23D, 2014
  - 23 **Iris Van Herpen**  
The Netherlands  
Dress and 'Aero' shoes, 'Lucid' collection, Autumn/Winter 2016-17
- Lent by the Museum of Applied Arts and Sciences, Sydney. Purchase with funds from the Museum of Applied Arts and Sciences Foundation, 2016.