EAD12 | 2017 Design for Next

Design and the Fourth Industrial Revolution

Dangers and opportunities for a mutating discipline

Tomás García Ferrari

tomas.garciaferrari@waikato.ac.nz
@tomasgf

The University of Waikato
New Zealand

1. Introduction

the changing nature of design
can be explained by transformations

- the emergence of the *homo faber*
- the idea of man as the *machine creator*
- the age of the *homo gubernator*

Graphic and Industrial design
are the results of a time:

the Second Industrial Revolution

with a focus on the mass production of goods and services

the Fourth Industrial Revolution

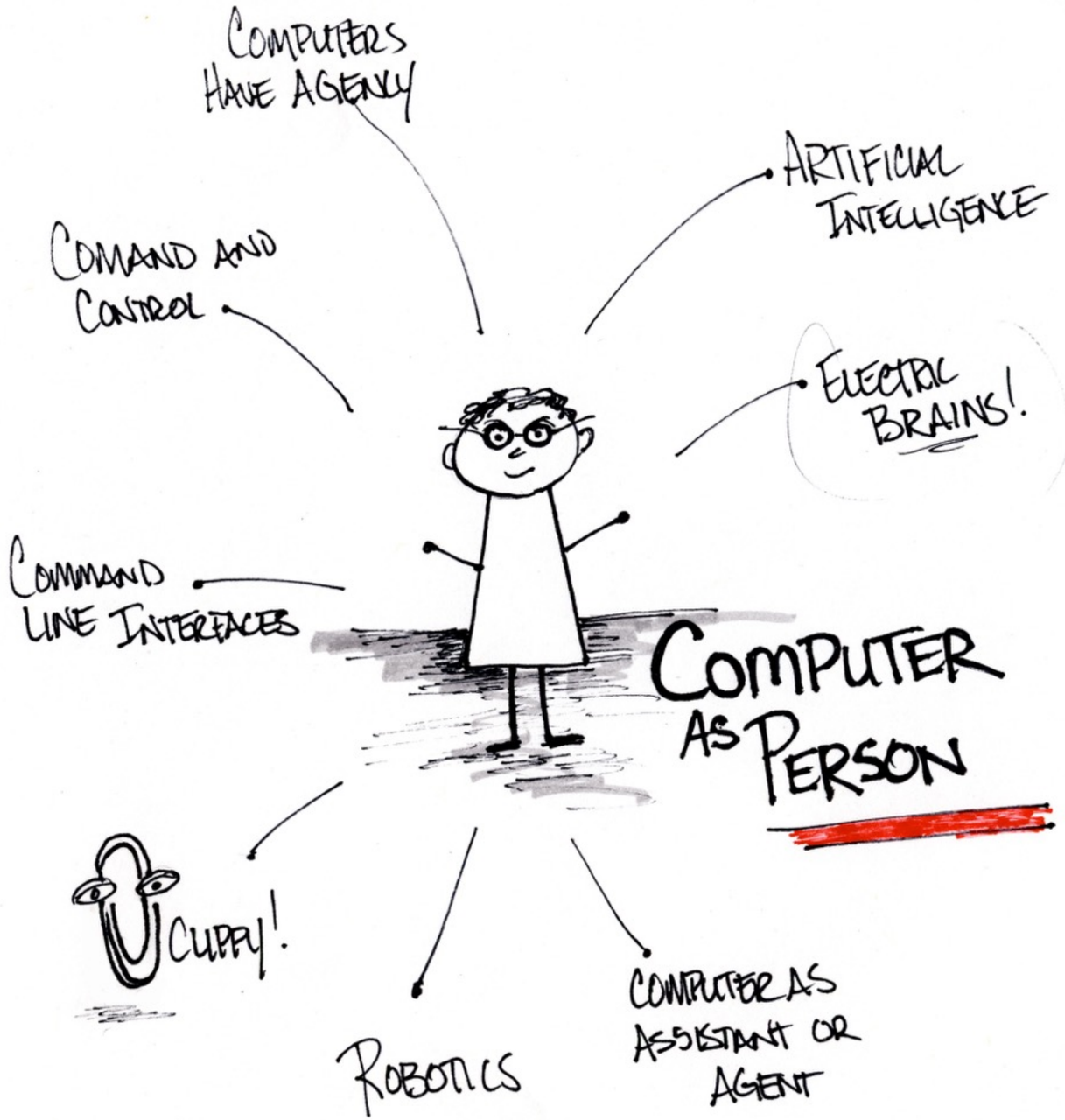
“a fusion of technologies that is blurring the lines between the physical, digital and biological spheres”

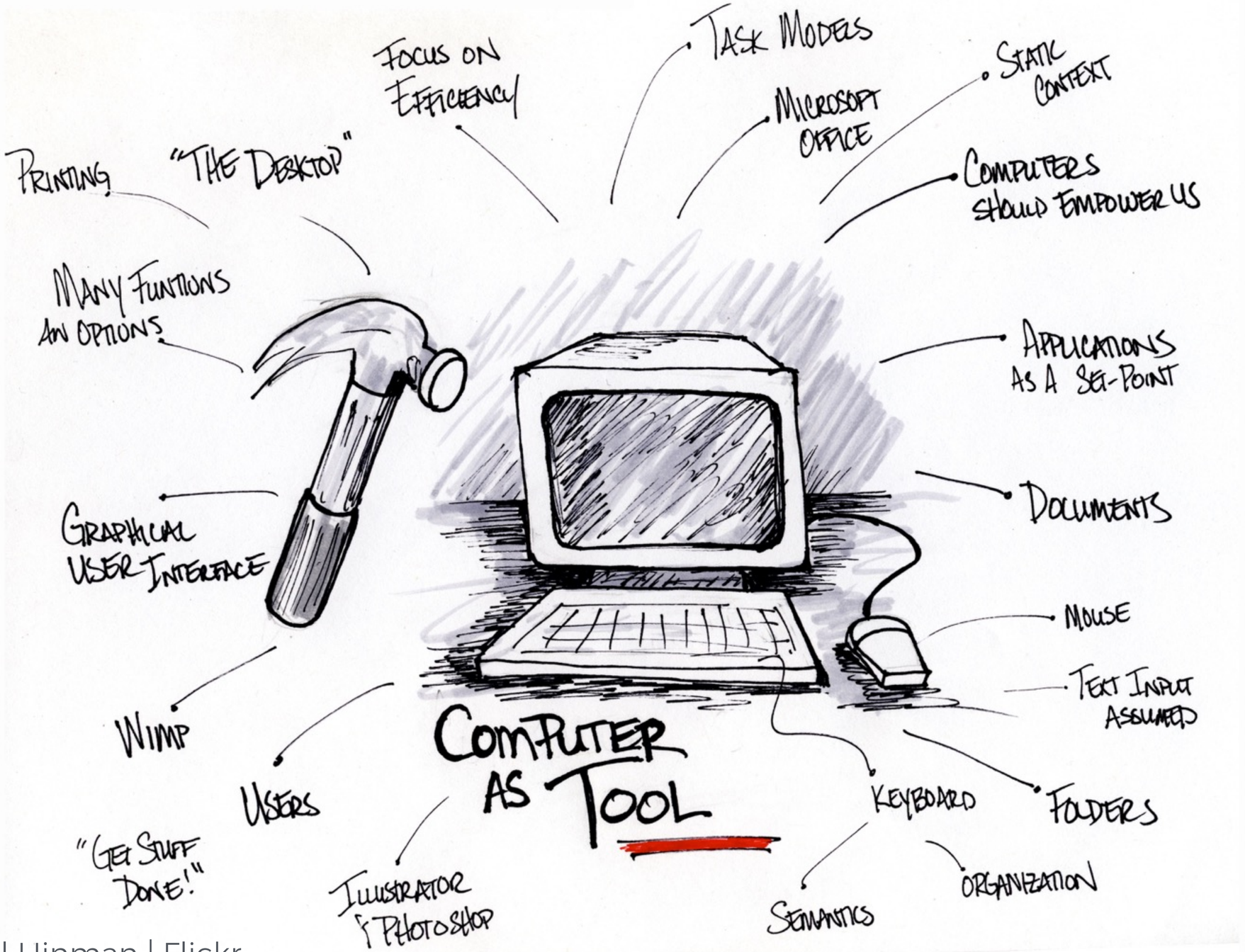
– Klaus Schwab, 2016

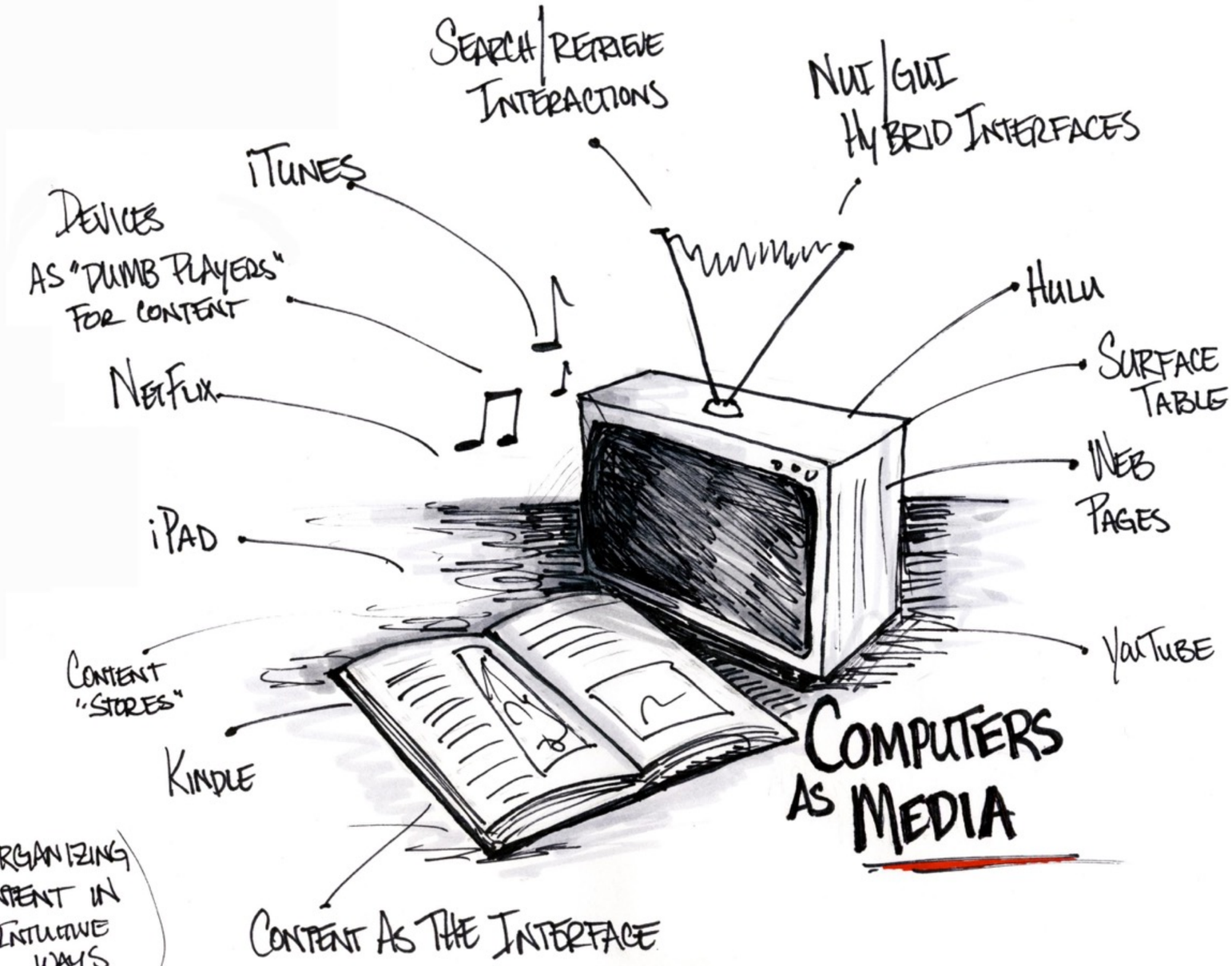
2. A software revolution and a framework of paradigms for understanding computers

“all of the technology required to transform industries through software finally works and can be widely delivered at global scale”

– Marc Andreessen, 2011







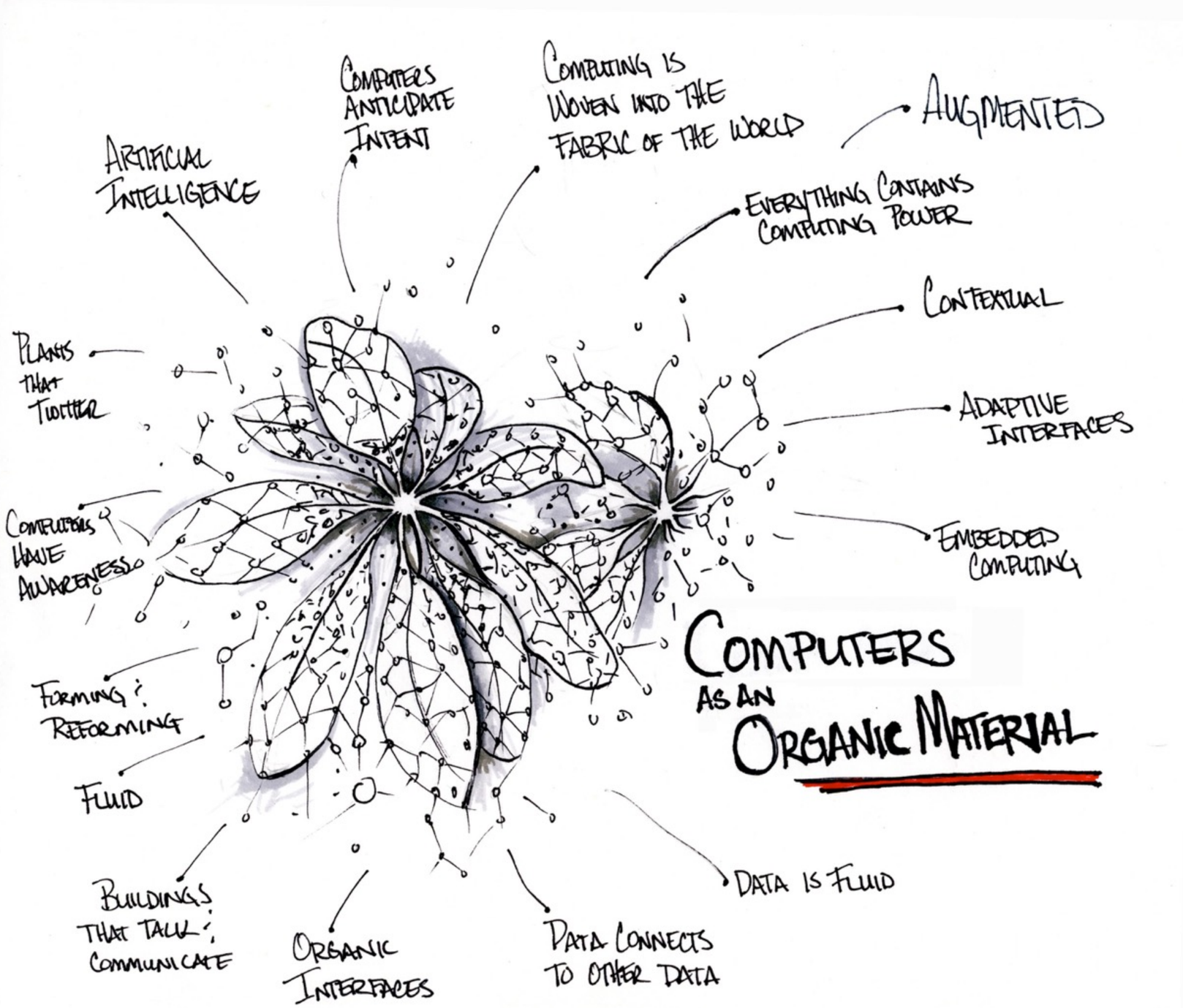
Verplank and Moggridge also propose

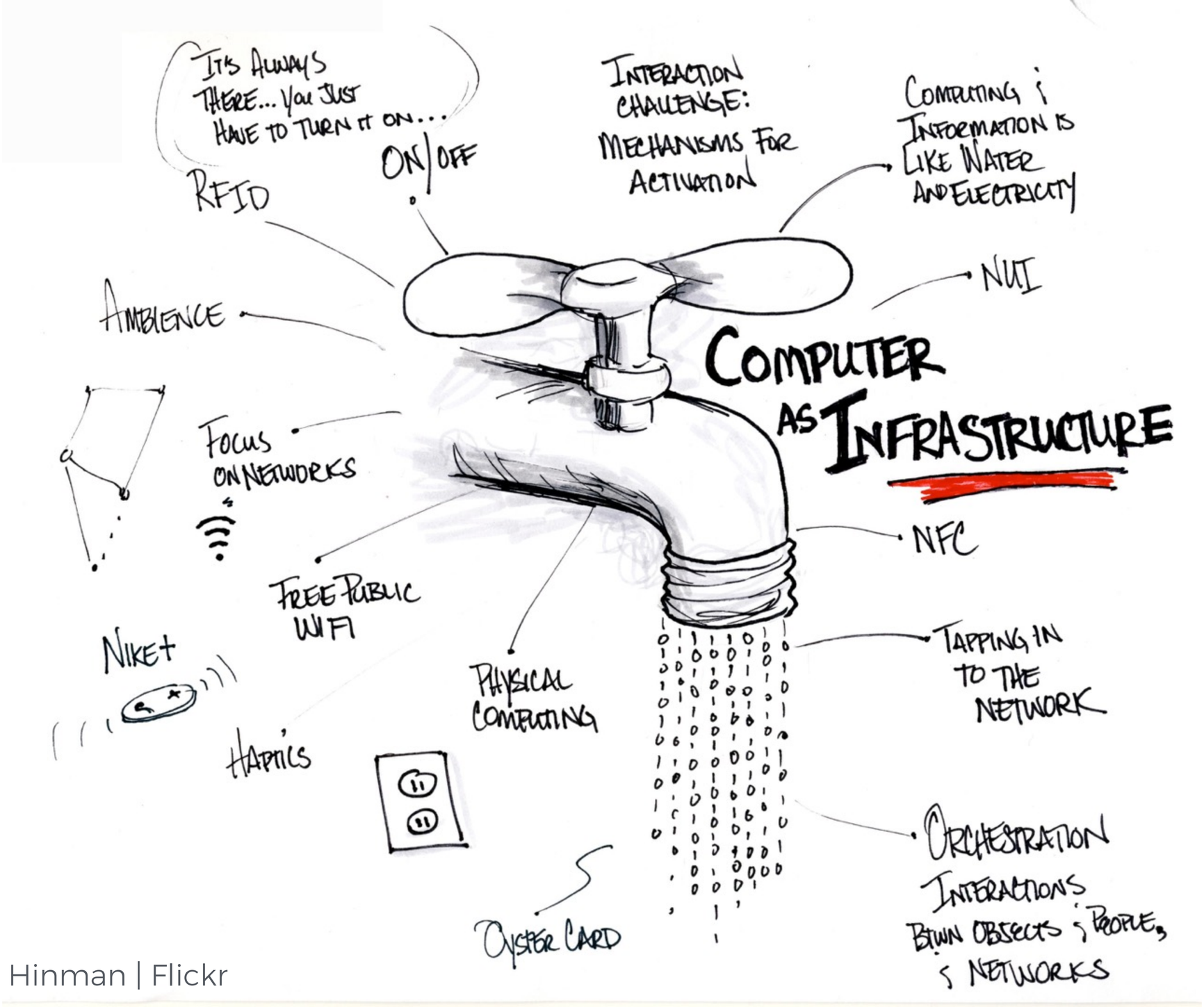
– computers as LIFE

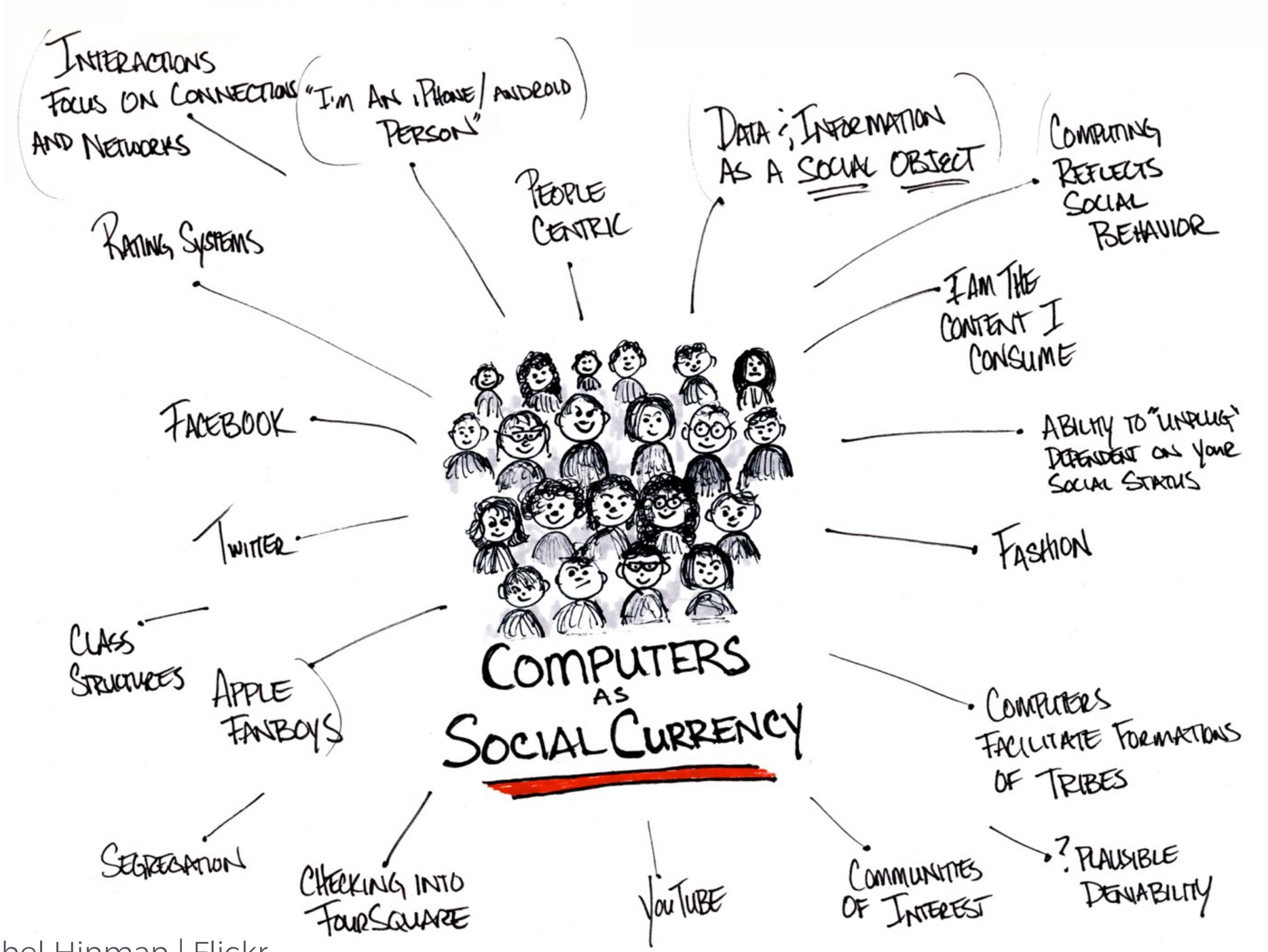
– computers as FASHION

– computers as VEHICLE

but Hinman proposes a different set







“engineers, designers, and architects are combining computational design, additive manufacturing, materials engineering, and synthetic biology to pioneer a symbiosis between microorganisms, our bodies, the products we consume, and even the buildings we inhabit””

– Klaus Schwab, 2016

3. Design, the age of biology and second-order cybernetics

the Four Orders of Design according to Richard Buchanan

Graphic

Signs
Symbols
Print

Industrial

Products

Interaction

Services
Experience
Interfaces
Information

Systems

Business
Organisations
Education
Governments

graphic design
visual symbols, the communication of information in words and images

industrial design
tangible, physical artefacts and material things

the Bauhaus

the Ulm Hochschule für Gestaltung (HfG Ulm)

the HfG Ulm made an enormous contribution, exploring novel areas such as **cybernetics**

we are moving ahead **complex interrelations of systems**

we have to consider the crossover between design and cybernetics

the shift from a mechanical-object ethos to an organic-system ethos

“increasingly design shares with biology a focus on information flow, on networks of actors operating at many levels and exchanging the information needed to balance communities of systems”

– Hugh Dubberly, 2008

“designers of digital systems are faced with the challenges of product-service ecologies”

“form-givers may have the luxury of working alone, but designing systems and designing platforms require teams”

– Dubberly & Pangaro, 2015

“The designer will be the coordinator. His responsibility will be to coordinate, in close collaboration with a large number of specialists...”

– Tomás Maldonado (in Rinker, 2003)

“design is not just steering towards a goal (as in first order cybernetics); design is also a process of discovering goals, a process of learning what matters (ad in second-order cybernetics)”

– Dubberly & Pangaro, 2015

“design and cybernetics are really the same thing”

– Ranulph Glanville, 2015

the Fourth Industrial Revolution

- the lines between the physical, digital and biological spheres are blurring
- the role of design could be related to the process of discovering goals and learning what matters

- two examples
  - the creation of forms: Dreamcatcher
  - connected technologies: Enchanted Objects

“Dreamcatcher is a generative design system that enables designers to craft a definition of their design problem through goals and constraints”

– Project Dreamcatcher | Autodesk

“enchanted objects starts as ordinary things … augmented and enhanced through the use of emerging technologies – sensors, actuators, wireless connections, and embedded processing – so it becomes extraordinary”

– David Rose, 2014

4. The Fourth Industrial Revolution and the inevitable

- **the inevitable**
  twelve forces related to technology that will shape our future in the next thirty years

- Becoming, Cognifying, Flowing, Screening, Accessing, Sharing, Filtering, Remixing, Interacting, Tracking, Questioning and Beginning

“it means processes – the engines of flux – are now more important than products”

“in the intangible digital realm, nothing is static or fixed”

“everything is becoming”

– Kevin Kelly, 2016

5. Conclusions

- a software revolution
- a computer paradigms framework
- the four orders of design
- the age of biology
- a correlation between design and cybernetics
- the fourth industrial revolution

“[previous changes] pale by comparison to the paradigm shift in design that we are now witnessing”

– Bruce Archer, (in Krippendorf, 2006)

“design as to shift gears from shaping the appearance of mechanical products... to conceptualising artefacts, material or social, that have a chance of meaning something to their users”

– Klaus Krippendorf, 2006

a hundred years ago, industrial and graphic design emerge in the context of a “technological innovation and industrial development”

there is a need to change “permeating the multiple nodes of the unprecedented sociotechnical networks in which we all live and operate”

– Ezio Manzini, 2015

- the **Fourth Industrial Revolution** presents a crisis
- in Chinese, crisis (危机) equals *danger* and *opportunity*
- design, confronted with the crisis, could change and mutate

firmitas, utilitas et venustas

(well constructed, functional and delightful)

– Vitruvius

EAD12 | 2017 Design for Next

Grazie.

Thank you.

Tomás García Ferrari

tomas.garciaferrari@waikato.ac.nz
@tomasgf

The University of Waikato
New Zealand