Critical Making

How using critical thinking in technological practice
can make a difference

Regina Sipos, reginasipos.net 35C3 Leipzig, 29. December 2018 Creative Commons Attribution 4.0

Critical Thinking + Making

= Critical Making

„Reintroducing a sense of criticality
back into post-2010 maker culture
to **un-sanitize, un-smooth and re-politicize it**“

Garnet Hertz

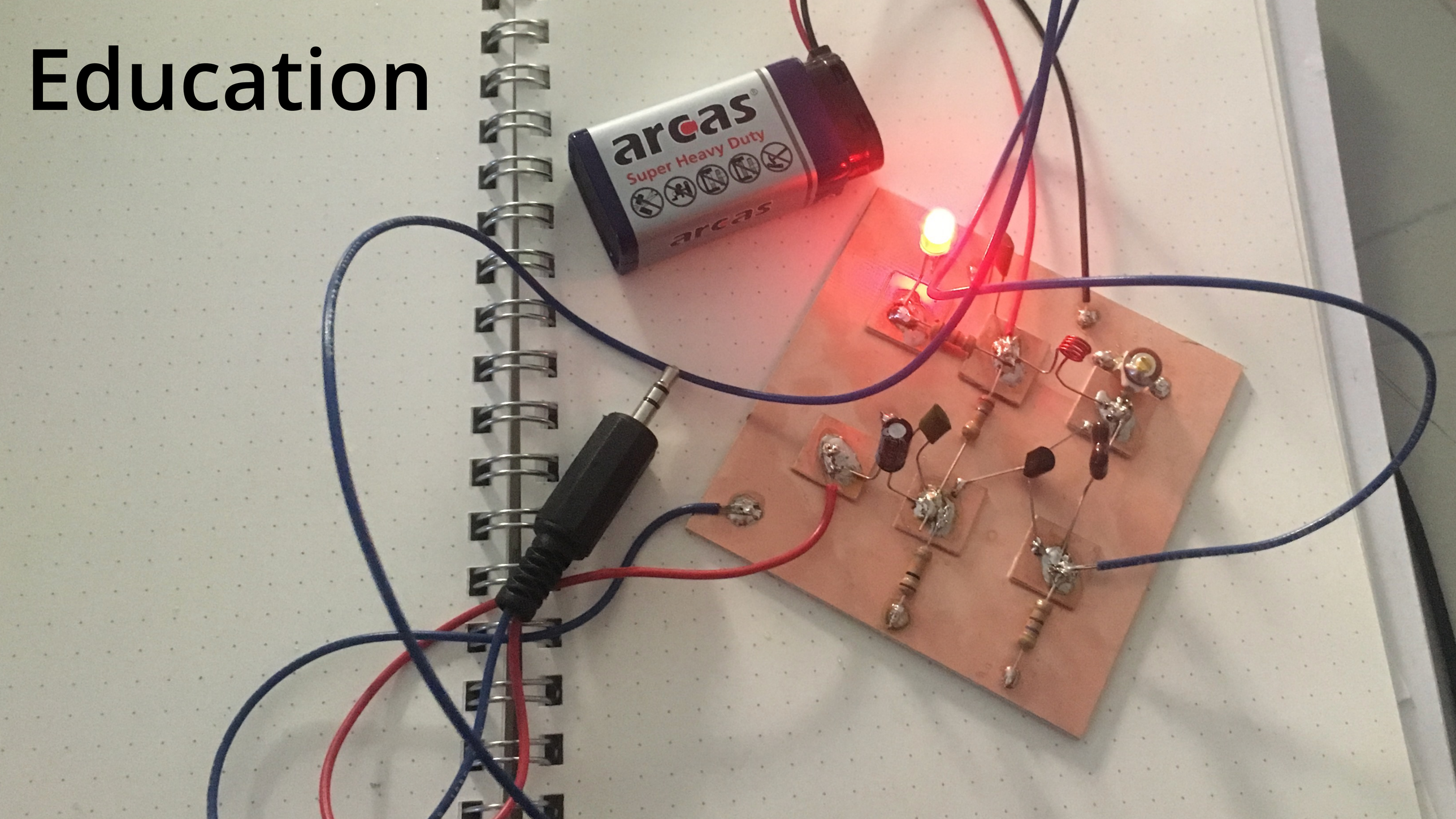
Making, Makerspaces, Maker Movement

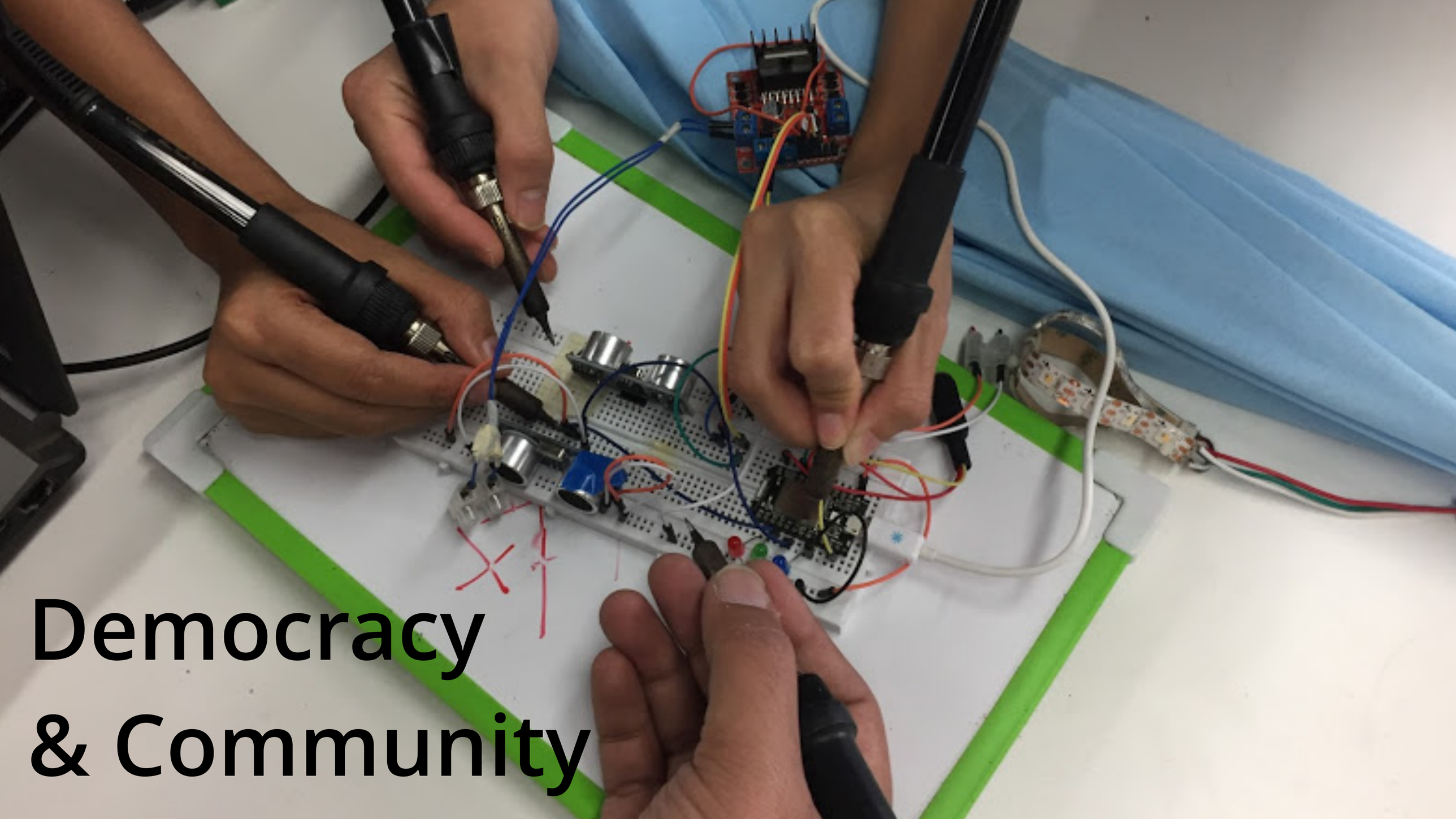
A Short History

- **1873**: Gowanda Ladies Social Society
- **2003**: MIT Center for Bits and Atoms: Fab Labs
- **2005**: Make: magazine & Maker Faires
- **2006-2016**: 14x worldwide

Societal Impact

Education





Democracy & Community

New Models of Production

fablabs.io

Commons & Open Source

opensourceecology.org

Innovative Artefacts

Made For My Wheelchair
careables.org

Sustainability

Repaircafé
repaircafe.org

Criticism

Criticism

- New industrial revolution (?)
- Mainstream version
- Consumerism
- Negative environmental impact

Makers:
hackers minus controversy

Made: Technology on Affluent Leisure Time
Garnet Hertz, 2012
conceptlab.com/made

Criticism

- Silicon Valley ethos
- Instructional, not speculative
- Funding = influence

Rethink

don’t repeat

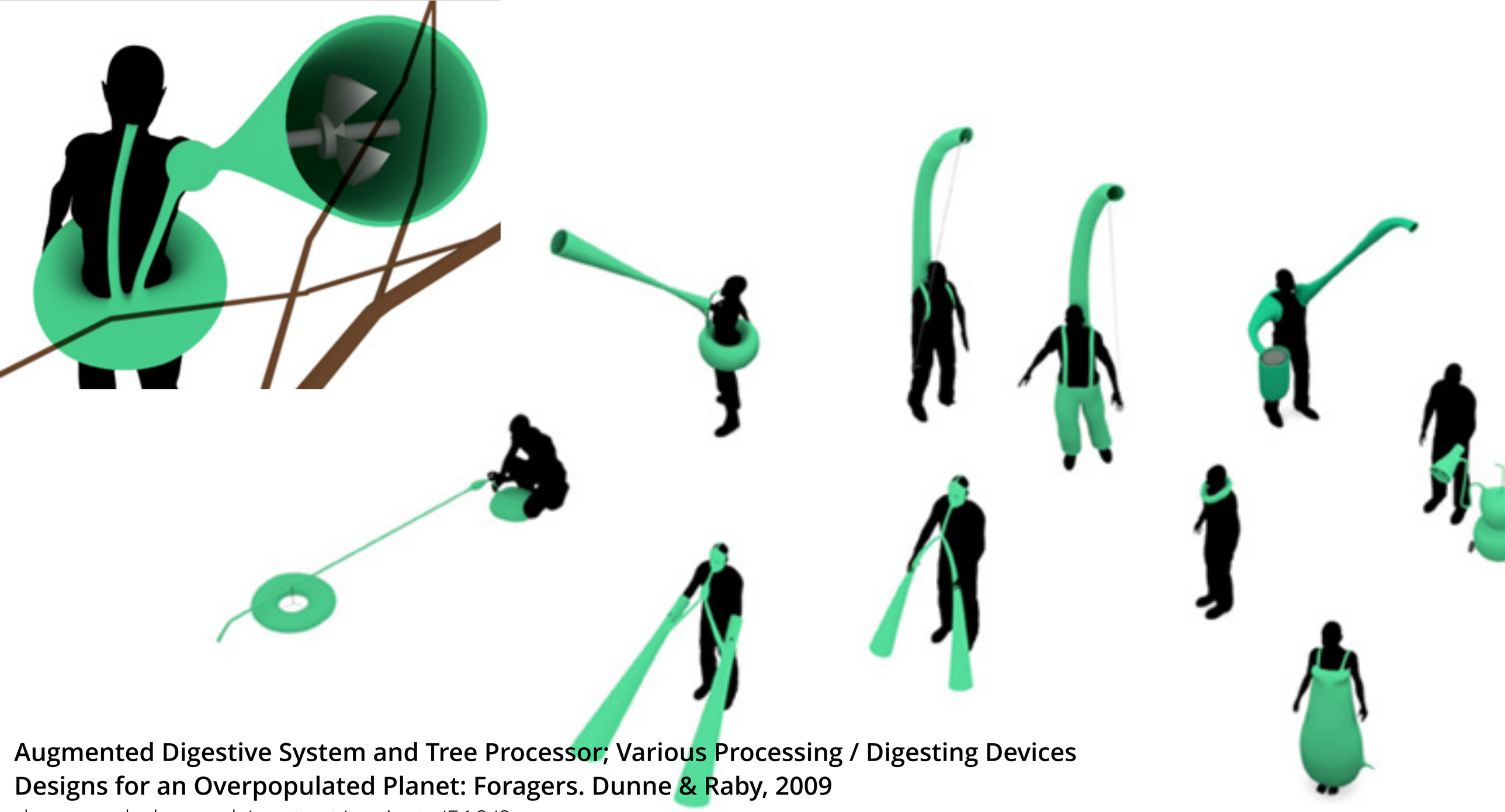
Roots of Critical Making

"Critical making is an elision of two typically disconnected modes of engagement in the world – ‚**critical thinking**,' often considered as abstract, explicit, linguistically based, internal and cognitively individualistic; and '**making**,' typically understood as material, tacit, embodied, external and community-oriented."

Ratto & Hockema, S. FLWR PWR: Tending the Walled Garden. 2009, 51-60.

Critical …

- Technical Practice
- Design
- Engineering



Augmented Digestive System and Tree Processor; Various Processing / Digesting Devices Designs for an Overpopulated Planet: Foragers. Dunne & Raby, 2009

dunneandraby.co.uk/content/projects/510/0

CE

The Critical Engineering Working Group
Berlin, October 2011-2017

Julian Oliver
Gordan Savičić
Danja Vasiliev

THE CRITICAL ENGINEERING MANIFESTO

0. The Critical Engineer considers Engineering to be the most transformative language of our time, shaping the way we move, communicate and think. It is the work of the Critical Engineer to study and exploit this language, exposing its influence.

1. The Critical Engineer considers any technology depended upon to be both a challenge and a threat. The greater the dependence on a technology the greater the need to study and expose its inner workings, regardless of ownership or legal provision.

2. The Critical Engineer raises awareness that with each technological advance our techno-political literacy is challenged.

3. The Critical Engineer deconstructs and incites suspicion of rich user experiences.

4. The Critical Engineer looks beyond the "awe of implementation" to determine methods of influence and their specific effects.

5. The Critical Engineer recognises that each work of engineering engineers its user, proportional to that user's dependency upon it.

6. The Critical Engineer expands "machine" to describe interrelationships encompassing devices, bodies, agents, forces and networks.

7. The Critical Engineer observes the space between the production and consumption of technology. Acting rapidly to changes in this space, the Critical Engineer serves to expose moments of imbalance and deception.

8. The Critical Engineer looks to the history of art, architecture, activism, philosophy and invention and finds exemplary works of Critical Engineering. Strategies, ideas and agendas from these disciplines will be adopted, re-purposed and deployed.

9. The Critical Engineer notes that written code expands into social and psychological realms, regulating behaviour between people and the machines they interact with. By understanding this, the Critical Engineer seeks to reconstruct user-constraints and social action through means of digital excavation.

10. The Critical Engineer considers the exploit to be the most desirable form of exposure.

Download English language version of Manifesto as a printable PDF
(sha256sum 1b542dc224800f6266334f96b13ba65ea6ecac1cd058d913aec8910f6ce3d09f).

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Critical Engineering intensive training | Announcement Newsletter

Workshops: NETWORKSHOP, UNIX CLI, OTHERNET

Oliver, Savicic, Vasiliev:
The Critical Engineering Manifesto
criticalengineering.org

Julian Oliver: Harvest
julianoliver.com/output/harvest

In Academia:

Teaching & Research

In Academia:

Teaching & **Research**

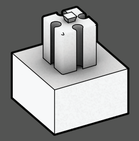
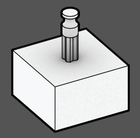
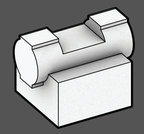
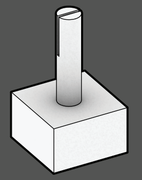
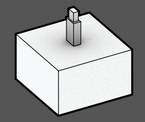
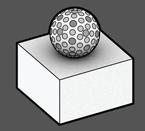
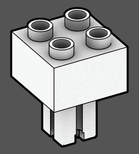
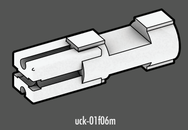
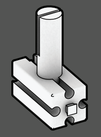
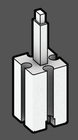
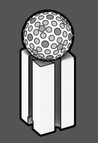
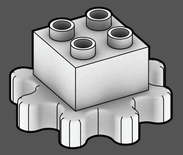
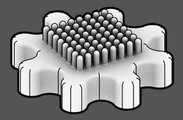
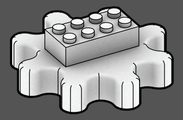
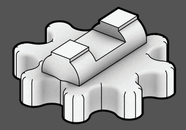
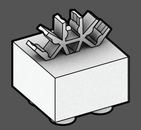
Citizen-driven:

Art, design and activism

Grassroots maker practices

Free Universal Construction Kit

fffff.at/free-universal-construction-kit

Duplo®	Fischertechnik® K'Nex®	Krinkles®	Lego®	Lincoln Logs® Tinkertoy®	ZomeTool®	Zoob®	
Godfred K. Christiansen US Pat. 3597875 / Aug. 10, 1971	Artur Fischer US Pat. 3464147 / Sep. 19, 1966	Joel Glickman & M. Doepner US Pat. 5061219 / Dec. 11, 1990	Walter Heubl US Pat. 3603025 / Sep. 30, 1968	Godtfred K. Christiansen US Pat. 3005282 / Jul. 28, 1958	John Lloyd Wright US Pat. 1351086 / Jan.8, 1920	Charles H. Pajeau US Pat. 1113371 / Jul. 8, 1914	Steven Rogers & P. Hildebrandt US Pat. 6840699 / Nov. 1, 2002*	Michael J. Grey US Pat. 5897417 / Dec. 11, 1996*	
(Duplo to Duplo)	 uck-00f01m	 uck-00f03m	 uck-00f04m	(Lego to Duplo already supported by manufacturer)	 uck-00f06m	 uck-00f07m	 uck-00f08m	 uck-00f09m	Duplo®
 uck-01f00m	(Fischertechnik to Fischertechnik)	 uck-01f03m	 uck-01f04m	 uck-01f05m	 uck-01f06m	 uck-01f07m	 uck-01f08m	 uck-01f09m	Fischertechnik®
 uck-02f00m	 uck-02f01m	 uck-02f03m	 uck-02f04m	 uck-02f05m	 uck-02f06m	 uck-02f07m	 uck-02f08m	 uck-02f09m	Gears! Gears! Gears!®
 uck-03f00m	 uck-03f01m	(K'Nex to K'Nex)	 uck-03f04m	 uck-03f05m	 uck-03f06m	 uck-03f07m	 uck-03f08m	 uck-03f09m	K'Nex®
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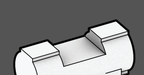
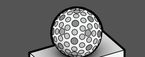
(Lego to Duplo already supported by manufacturer)	 uck-05f01m	 uck-05f03m	 uck-05f04m	(Lego to Lego)	 uck-05f06m	 uck-05f07m	 uck-05f08m	 uck-05f09m	Lego®

Garnet Hertz: Critical Making. 2012
conceptlab.com/criticalmaking

Garnet Hertz: Disobedient Electronics: Protest, 2016
disobedientelectronics.com

WILDERNESS WIRELESS

SURVEILLANCE OVERRIDE

INTRODUCTION TO SOFTWARE DEFINED RADIO

COMMAND LINE BOOTSTRAP

SELFHOSTED

INTRODUCTION TO BIOCOMPUTING WITH SLIME MOULDS

Archives

2017 | 2016

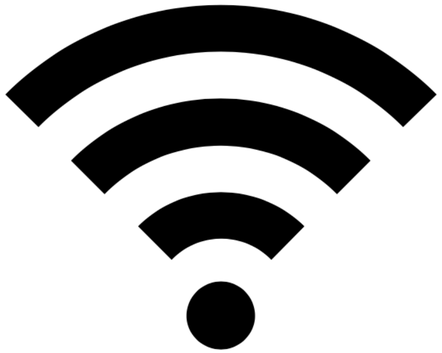
WILDERNESS WIRELESS

3-5 AUGUST, FROM 10:00 TO 18:00

WEISE7 STUDIO, BERLIN

WITH BRETT IAN BALOGH

criticalengineering.org/intensives/2018 wildernesswireless.org



Critical Access Point

Grassroots

- Difficult to find or research
- Decentralised
- Lack of taxonomy
- Once institutionalised: hardly grassroots
- High societal impact

Thanks & sources

Garnet Hertz, http://current.ecuad.ca/what-is-critical-making

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Martinez, S. L., & Stager, G. (2013). Invent to learn: Making, tinkering, and engineering in the classroom. Torrance, CA: Constructing modern knowledge press

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Source: https://criticalengineering.org/intensives/2018/ Further info: http://wildernesswireless.org

Ratto: http://opendesignnow.org/index.html%3Fp=434.html

DIY Citizenship: Critical Making and Social Media, Edited by Matt Ratto and Megan Boler

http://ctheory.net/articles.aspx?id=759&fbclid=IwAR1EVSOsz0PK6127kY9hJ8jhnZ6Zh1ZUbGEmsIvvuPP0LXd_pWf0BZWsyUU

(Matt Ratto and Megan Boler (eds), DIY Citizenship: Critical Making and Social Media, Cambridge: MIT Press, 2014.)

http://blogs.lse.ac.uk/lsereviewofbooks/2014/11/14/book-review-diy-citizenship-critical-making-and-social-media-edited-by-matt-ratto-and-megan-deibert/

reginasipos.net