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# CRITICAL MAKING TAKES A HOLIDAY

Presented by Laura Elizabeth Pinto



PES | 2016 | PANEL DISCUSSION  
DIY BODIES AND THE CRISIS OF TRUTHINESS

# TRUTHINESS & CRISIS RHETORIC

Arendt: “perpetual crisis”  
in education (1954)

Current manifestation:  
STEM crisis

Making: “a strategy to  
engage youth in science,  
technology, engineering,  
math, arts [STEAM], and  
learning as a whole”  
(Maker Education Initiative)

Photo:  
Cincinnati Public Library Makerspace

# STRUCTURE

Conceptual clarification

Philosophical grounding

State-of-the-actual

The hidden curriculum of making

# CONCEPTUAL CLARIFICATION

**MAKING:** a strategy to engage youth in science, technology, engineering, math, arts, and learning as a whole (Makerspace Initiative)

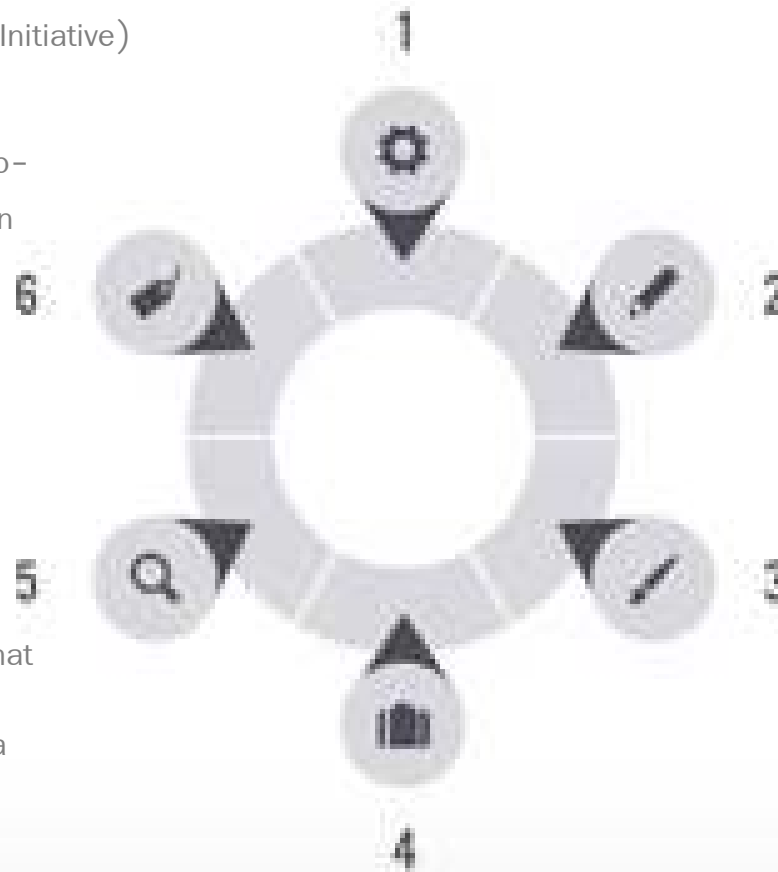
**CONSTRUCTIONISM:** learners co-create new knowledge based on active engagement with raw materials or digital code

**CRITICAL MAKING:** production that necessarily integrates reflective processes – thus emphasizing a certain type of critically-infused process over the production

**STEM/STEAM:** Science, Technology, Engineering, [Arts], Mathematics

**MAKERSPACE:** an environment or facility that provides resources, materials, and equipment for students to conceive, create, collaborate, and learn through making (US Dept of Ed)

**PRODUCTION PEDAGOGY:** learners engage in (multi)literacy, artistic, and/or practical design challenges and aptitudes through the making of authentic artefacts



# THE PROMISES OF CRITICAL MAKING

- de-centering traditional modes of authority
- student engagement and empowerment
- addressing the alleged STEM crisis
- addressing consumerism with the DIY ethos

Photo:  
Cincinnati Public Library Makerspace

# A CLOSER LOOK AT MAKERSPACE LINGO

[Make Magazine](#)

- **Makerspace** – coined in 2005 by Make Magazine, gained popularity in 2011
- **Hackerspace** – coined 1995 in Europe
- **TechShop** – trademarked by California a non-profit
- **FabLab** – trademarked by MIT's Media Lab Center for Bits and Atoms; labs that wish to join the network and use the term have to conform to program, space and materials requirements

# DIY ETHOS IN ACTION

Toronto's Repair Cafe

We throw away vast amounts of stuff. Even things with almost nothing wrong, and which could get a new lease on life after a simple repair. The trouble is, lots of people have forgotten that they can repair things themselves or they no longer know how. Knowing how to make repairs is a skill quickly lost. Society doesn't always show much appreciation for the people who still have this practical knowledge, and against their will they are often left standing on the sidelines. Their experience is never used, or hardly ever.

# BACKING IT UP ... A BRIEF HISTORY

Tracing the movement...

Recycled, repaired, gardened, sewed, built, and so forth as acts of anti-consumerism



Hacktivist



Arose from concern about labour exploitation and digital monopolies

Associated with gentrification, hipsters and Brooklyn NY, artisanal production applies small-batch, traditional production to commodities popularized in the 1990s

Artisanal



Makerspaces



As makerspace popularity grew in 2011, they moved evolved community spaces to for-profit corporatized concerns

The pinnacle of commodified maker culture, centrally-organized fairs centre around purchase and sales

Maker-faires

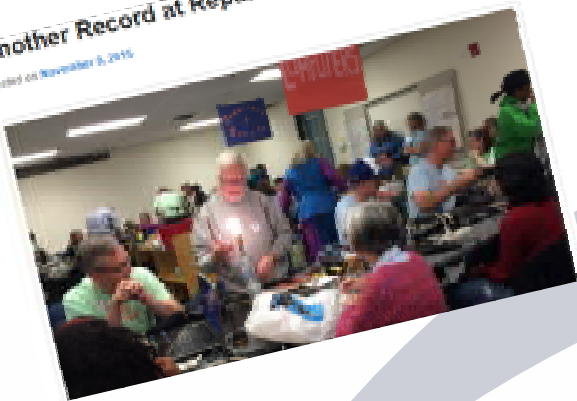




# MAKERSPACE VS. CRITICAL MAKERSPACE?

subtitle

Another Record at Repair Café!  
Posted on November 8, 2015



Grassroots,  
DIY

Activist, anti-  
consumerist

Complicit  
consumerism

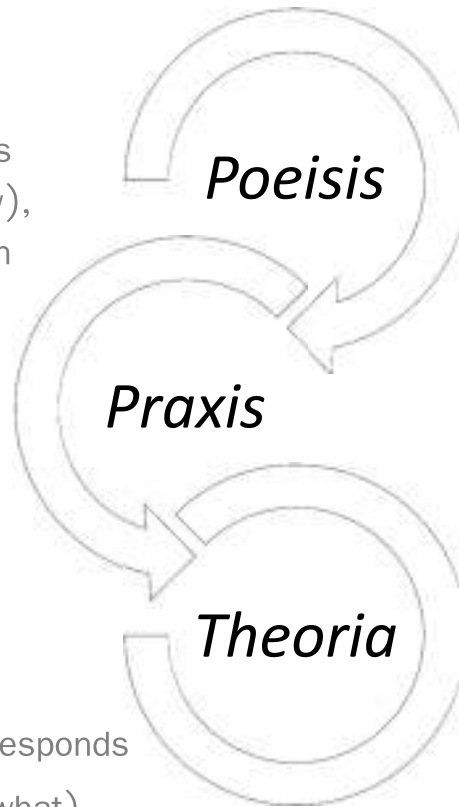


# PHILOSOPHICAL GROUNDING

Pre-socratics, Aristotle, Heidegger, Arendt & Friere

## POESIS

(making) corresponds to techne (know-how), end goal is production



## PRAXIS

(doing) corresponds to phronesis (practical wisdom), to which the end goal is action

## THEORIA

(contemplation) corresponds to episteme (know-what), end goal is truth

# MAKING, POIESIS & PRAXIS?

- Making corresponds to *poïesis*, in that they share a concern for production through know-how (*techne*).
- Unlike instructionist learning, production encourage novel solutions based on active engagement with raw materials or code.
- Critical making attempts to extend beyond *poïesis* to involve critical perspectives, thus suggesting an important connection to *praxis* and *phronēsis*.
- Arendt calls *praxis* the highest and most important level of active life, philosophers need to engage in *praxis* aimed at purposes distinct from *poiesis*.

# ARENDT & FREIRE

Arendt calls *praxis* the highest and most important level of the active life and the true realization of human freedom, action through *praxis* is aimed at different purposes distinct than *poiesis*.



The idea that we can ‘make’...institutions or laws, for instance, as we make tables and chairs [is a] delusion (Arendt)



Freire: *praxis* is a central defining feature of human life and a necessary condition of freedom

# ***HOMO FABER* & ANIMAL LABORER/MAKER**

- Arendt divides *poïesis* into labour (routine ephemeral behavior to meet basic human needs, conducted by *Animal laborans*) and work (production of lasting artifacts, usually by artists or artisans, that comprise the artificial world carried out by *Homo faber*).
- *Homo faber* knows “how to do” but fails to know “what to do,” leading to the dominance of labour and its resulting status in the highest position in *vita activa*.

# STATE OF THE ART?

When critical making is critical



U of T Critical Making Lab:  
Using a 3D printer to create  
anatomical models for medical  
school



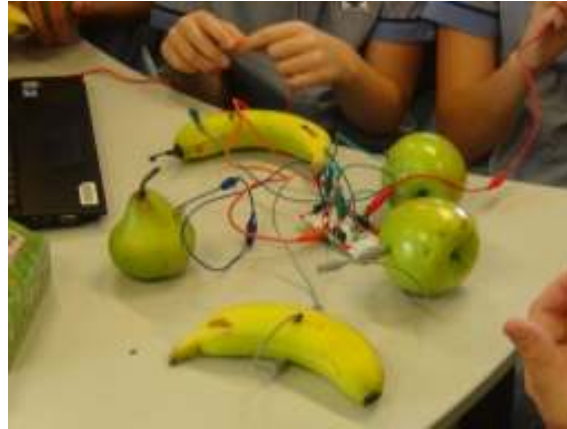
Garnet Hertz's Concept Lab (UC  
Irvine)  
Parody of "Make" magazine  
drawing attention to problems  
[Image](#)

# STATE OF THE ACTUAL?

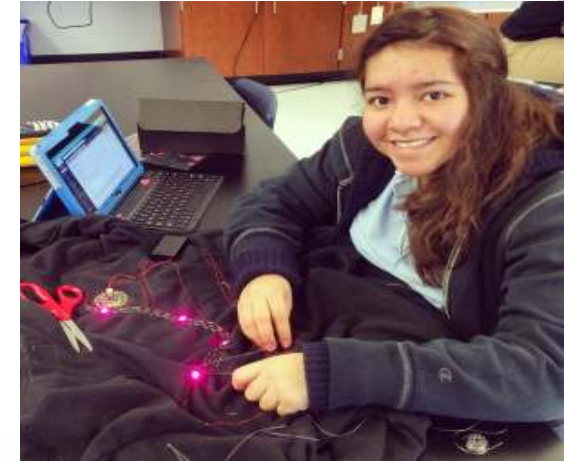
What kinds of activities do educational makerspaces use?



Wayzata Public Schools  
(Minnesota) Sphero Cart



Makerspace Australia Squishy  
Circuits with Makey Makey



@makerready wearables  
with Arduino lilypad



“Toronto Public Library users can choose from a variety of different colours of plastic in which to 3D print their projects”(Emily Chung/CBC)

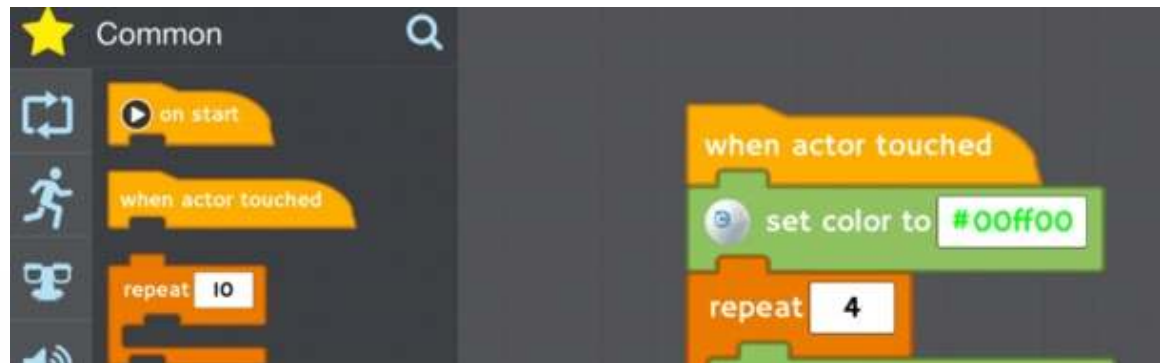
# STATE OF THE ACTUAL

A closer look at common materials and technology



## Spehro Robotic Ball (\$149.95 for the kit)

Code using a smartphone app – where the user drags and drops commands



## Makey Makey (\$49.95)

Clip circuits to any object (e.g., fruit) and the object becomes a keyboard. Only the ability to alligator clip is required



# STATE OF THE ACTUAL

A closer look at common materials and technology

## LilyPad Arduino (\$59.95 for the kit)

Hand-stitch LED lights and a circuit board with battery to textiles using the included conductive thread.



# MAKING, CRAFTING, POST-PRODUCTION?

State of the art features

- Wark: nothing more than postproduction?
- Dominated by assembly of pre-fabricated materials and kits
- Fail to explore the sources of these materials or actual labour processes (while glorifying “amateur labour processes,” Wark)
- Reinforces uncritical consumerism
- Use of pre-formatted lesson plans fail to acknowledge uncertainty, ingenuity and local/community problems imagined by makers
- Elevates status of *poiesis* over (seemingly absent) *praxis*

# “I AM NOT A MAKER”

Debbie Chachra



In a framing and value system that is about creating artifacts, specifically ones you can sell, I am a less valuable human...It re-inscribes familiar values, in slightly different form: that **artifacts** are important, and **people** are not...

the alternative to making is usually not doing nothing—it’s almost always doing things for and with other people, from the barista to the Facebook community moderator to the social worker to the surgeon



# THE HIDDEN CURRICULUM OF MAKER CULTURE



## CONSUMERISM: BUY THE KIT

Post-production crafting results in Makerspaces that rely on kits



## “THINGS” TRUMP DOING, THINKING, CARING

“Re-inscribes familiar values, in slightly different form: that artifacts are important, and people are not”(Chachra)



## STEM/STEAM IS OF HIGHEST VALUE

Rhetoric, policy/funding and practice mean that STEM is front and center at the expense of caring, humanities, and arts (e.g., Noddings)

## WORK, DON'T PLAY



Amateur labor processes dominate replace play in classroom settings in the absence of critical reflection on labor and supply chains

# UNLESS... WHAT IS MISSING FROM MAKER CULTURE?

Kids can and have been engaged in thinking critically about production, the environment and labour



"...turning MORE Truffula Trees into Thneeds which everyone, EVERYONE, EVERYONE needs!

...And all that the Lorax left here in this mess was a small pile of rocks, with one word...

'UNLESS.'

Whatever that meant, well, I just couldn't guess."

# CONCLUSION

- Uncritical acceptance and superficial application of production pedagogies reinforce consumerism, historical privileging of STEM over humanities, and making over doing.
  - Can making ever deliver on critical promises within mainstream schools?
  - Can (and should) *poïesis* and *praxis* be reconciled?
  - How can the hidden curriculum be addressed in makerspaces? Or, how can we balance educational aims and practices based on the critique presented here?