# THE
# FILTER



fig. 00.09 Embodied learning - Smartphone tig (catch) game

As humans we work within an entanglement of many human created structures and institutions. As teachers we educate our children within them.

These structures offer a programmed interface or framework in which our daily routines are pre-planned by the structures we operate within.

I ask, is it possible to map and therefore learn the algorithms of these interfaces we live and work within and therefore understand our personal position within them?

With a greater awareness of our position, is it then possible to gain more control of these networks through our actions within them?

A broad question grew out of my inquiries;

What would an educational approach in the context of a concept driven, inquiry based classroom, look like; where the prevalent pedagogy gave space for participants to question, be critical and play with these physical, hidden, expectational and often seemingly invisible structures?

Refining this question led to my main research question;

How can multimodal inquiry reveal thinking and unfold opportunities to open black boxed systems and networks, building space and time for greater agency in learning processes of those inquiring?

I wondered whether to be able to actively construct knowledge within a networked society, one needs to be actively engaged within it - fully immersed albeit with a certain level of acceptance or awareness of our place and need to exist within it. Could this open opportunities to turn them inside out and tinker with elements of them?

How might arts based practices provide paths to getting beneath the surface of the structures that form these networks, creating situations that build upon them, rebuild them, walk within them, touch them, fold them and unfold them?

Rather than detaching ourselves from these systems and networks, acceptance could possibly offer greater opportunities to experiment, explore and express oneself within networked society.

Tackling these issues leads to many guiding sub-questions:

- How does exploration and construction of these systems within their physical environment in a scaled down manner, build understanding of them and support the development of a more critical stance?

- How can a greater awareness of black boxed systems lead to agency of both teacher and learners within these closed networks?

- Is there room for a 'hacker educator' within formal educational settings?

- Is tackling these systems worth the struggle?

#agency
#algorithms
#black box
#construction
#critical
#environment
#hacker educator
#inquiry
#making
#multimodal
#network
#open

# INTERLUDE

## ON LOOKING
## #UNDERTHEHOOD

#agency
#critical making
#digital
#making
#multimodal
#network
#post-digital

In March 2016, I participated in an education conference, LEARNING2 EUROPE, hosted by The American School Milan. Alongside designing, building and leading a pop-up library maker space; a learning space with embedded open ended inquiry, I took part in a workshop entitled, "From Heart to Hashtag."(Guinto, P., 2016)

The theme of this workshop was to search for a binding idea that would guide your thinking and pedagogy as an educator, similar to the use of the hashtag of Twitter; the glue that binds your collected inquiries together. The hashtag I chose was #underthehood.

#underthehood alluded to looking under the hood of a car (or bonnet for UK English readers) at the inner workings of an automobile i.e. the motor, radiator, pipes, plugs etc. At the time my working practice was embedded within digital learning cultures and learning technologies. With '#underthehood' I sought to deepen my understanding of the above fields, my personal methodology and in particular; computer science, the rise in popularity of MakerSpaces, literacy of the world wide web and inquiry based learning. The complexity of many dilemmas arose which are detailed below.

There arose an apparent conflict between methodologies of introducing and embedding technology into learning and the approaches to integrating maker education in schools and non-formal learning spaces such as libraries and museums. Furthermore, the pedagogical and didactical approaches being modelled to introduce and

embed them appeared to remain rooted in a traditional mode of information delivery rather than providing an opportunity to redefine approaches to teaching and learning, and the ways in which one learns. Technology could provide new ways of thinking, experimenting, exploring and personal expression, if opportunities are created to open some of the closed systems existing within education.

Some artist practices respond to issues faced within contemporary, networked societies whilst education seems entrenched in the past, often appearing to work with pre-packaged knowledge systems following heavy investment. Didactical models viewed as more traditional, group learners by age and ability, and from similar backgrounds. Making mistakes is frowned upon. Above all, these learning experiences take place in traditional learning spaces seldom escaping the four walls of the classroom.

Indeed the notion of computational thinking appears to be detached and isolated from developing any broader understanding of networked societies in which these new forms of literacies exist, becoming increasingly more abstract and detached from general understanding. Two New York based artists, Ingrid Burrington and Surrya Mattu (2015) sought to uncover gaps between initiatives to drive computer programming in learning and the (over) use of software or learning of software without knowledge of the systems than permit the technology to function. Notion of ideas such as the 'cloud' become abstract ideas where in reality they are physical things in physical buildings somewhere in the world.

*"…more and more organizations and institutions have embarked on campaigns and development of curricula for "digital literacy" or "code*

*literacy", tools and resources to get the newly online comfortable and savvy with the network.*

*For the most part, these initiatives focus on the experience of the web– what a browser is, how to search for information, how to make an email address. Sometimes digital literacy education gets into maintaining security and privacy with living online, and sometimes it's an on-ramp for teaching people how to code.*

*This is all well and good for making people feel comfortable manipulating interfaces on a screen (and yes, that's the majority of what coding education looks like too, fight me), but very rarely does digital literacy education get into what's happening behind and beyond the screen. Where does that information loaded from Google actually live? How does it travel from that location to my computer? Who owns all this stuff?" (Mattu, S., 2015)*

Hinting towards building agency within individuals, skill based initiatives are seen as detached from a wider understanding of the networks of the web.

Barnes (2001) refers to agency as the "…capacity of our selves to act reflexively, meaningfully, and responsibly, if not always effectively or efficiently.

In a school context, Sean Michael Morris (2017) offers a compelling description of agency.

"Agency does not give us power over another, but it gives us mastery over ourselves. And an education that does not encourage or facilitate this agency is not an education. An education that convinces us of what needs to be known, what is important versus what is frivolous, is not an education. It's training at best, conscription at worst. And all it prepares us to do is to believe what we're told."

Jay Silver (2016) of Life Long Kindergarten, MIT, suggests, "Humans have brought more than just tech gear into this world. Humans have created drugs, wars, religions, economies, and governments. We don't have to accept agriculture industries, schools, or banking systems the way they were offered to us. If it can be created by a human, then it can be recreated by you, me, and all of us. But only if we all believe in ourselves as inventors (and re-inventors)."

Taking this notion of invention further, I consider the concept of critical making in a post-digital space as an approach to questioning some of the systems mentioned above.

# <p><em>CRITICAL MAKING</em></p>

I have positioned my research in a post-digital space which seeks to move beyond dichotomies between digital and analogue learning which are particularly intrinsic to international educator employment positions such as Director of Digital Learning, Technology and Media, Technology Integrator or STEM integrator.

This has led to considering whether 'critical making', as termed by Matt Ratto (2008) provided me with an orientation to discuss the way I engage with complex systems and institutions through hands on making (inquiry).

By nature of offering learners a voice, choice and agency in their learning, a critical stance through experimentation would allow thinking and research to take place.

Garnet Hertz (2014) responded to how, " 'hacking' (had) been sanitised and transformed in to 'making' - with politics, activism, tactics, history, economics, and social issues removed in the process."

He was interested in bringing together ideas under the concept of critical making which would include, "maker culture, critical technical practices, hacking, tactical media, art and technology, critical design, zines and experimental publishing"

If critical making encompasses any practice between making and criticality, I wondered how the relevance of such an approach would unfold thinking around the role of educator/mentor/ coach as critical maker (of curriculum) or critical designer of learning experiences.

Critical making is not specific to art and design and encompasses any practice that combines making with criticality.

I therefore consider where the role of the educator enters this discourse  and where the theory arises out of the practice of field tactics ; proposed as a lived methodology in a later section.

My practice as a technology educator/digital literacy coach was directly connected to ways of thinking through experimentation with (new) technologies often inspired by arts based approaches which dealt with socio/ technological/cultural or political developments.

Critical making is regarded as a way of engaging with complex systems and institutions through hands on making. It ask questions such as:

What do you learn through making an object?

Critical making is less concerned with the development of skills but more about ways of thinking.

School curriculum programmes are packaged around skills often related to 'employability' or to becoming a 'contributing' citizen.

What if curriculum considered more conceptual understandings and ways of thinking?

Critical Making positioned within: art practices – technology – society (education) – research

It opens the Black Box

This section was inspired by a Round Table discussion on Critical Making

@Station Day, Willem de Koning Academy, Rotterdam

06.02.2019

Shailoh Phillips in conversation with:

Ginger Coons, Florian Cramer, Jon Stam, Pia Lauwerens, Anja Groten

In the Research Station

#activism
#analogue
#critical making
#curriculum
#digital
#making

A critical maker looks at a system they're in, and makes some initial assumptions or draws a line.

These lines of tension or disruptions within a post-digital space provided a point at which to rethink a past employment position I held. By rewriting (remixing) this job description I was positioned to better understand or at least think through some of the inherent tensions experienced.

The potential relationship between creative citizenship, termed as 'maker literacies' has been examined following emergent findings from The MakEY Project, an international project on the use of makerspaces in early childhood. Marsh et al (2018) citing Hughes (2016) offer findings that argue, rather than making for the sake of making, critical making is concerned with, "the relationship between technologies and social life, with emphasis on their liberatory and emancipatory potential. Thus, it connects two practices that are often considered separate: critical thinking and creative expression (Ratto, 2011)."

Therefore, I propose that there is space to bring the craft of the educator into this discussion. To consider how teachers express themselves creatively through the learning experiences they develop and how these expressions could provided a deeper connection with social life beyond the classroom.

*Jay Silver (2016) Discussing the maker movement, "It's a new renaissance, post-industrial, that is led by each person and every person being fluent with the idea of meaning making, ethics. politics of technology, and conscientisation."*



fig. 00.08 Material conceptual understanding