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Critical Making

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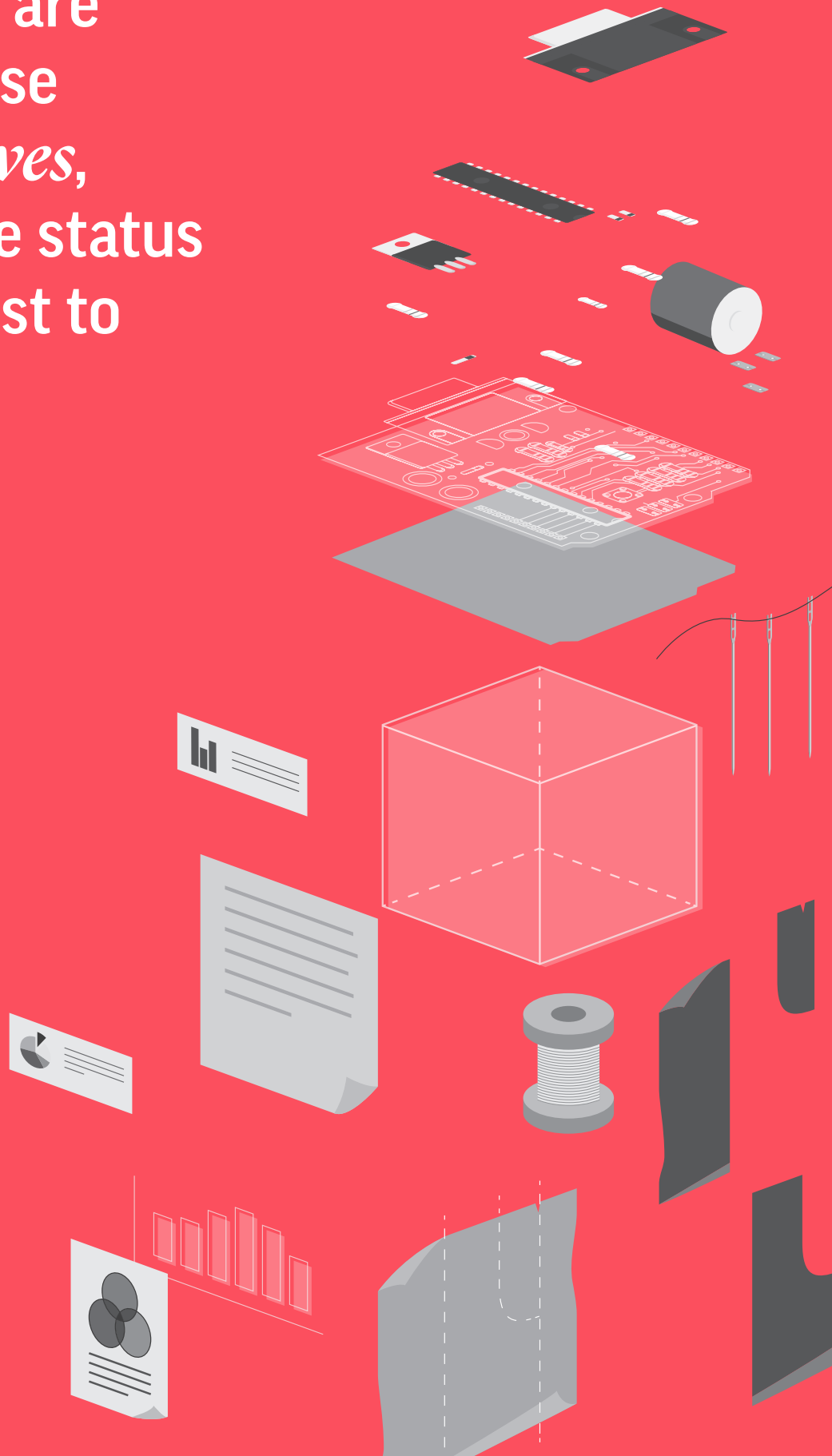
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Disruption and provocation are tactics we use to *make waves*, troubling the status quo in a quest to *make right*.

LISA H. GROCOTT



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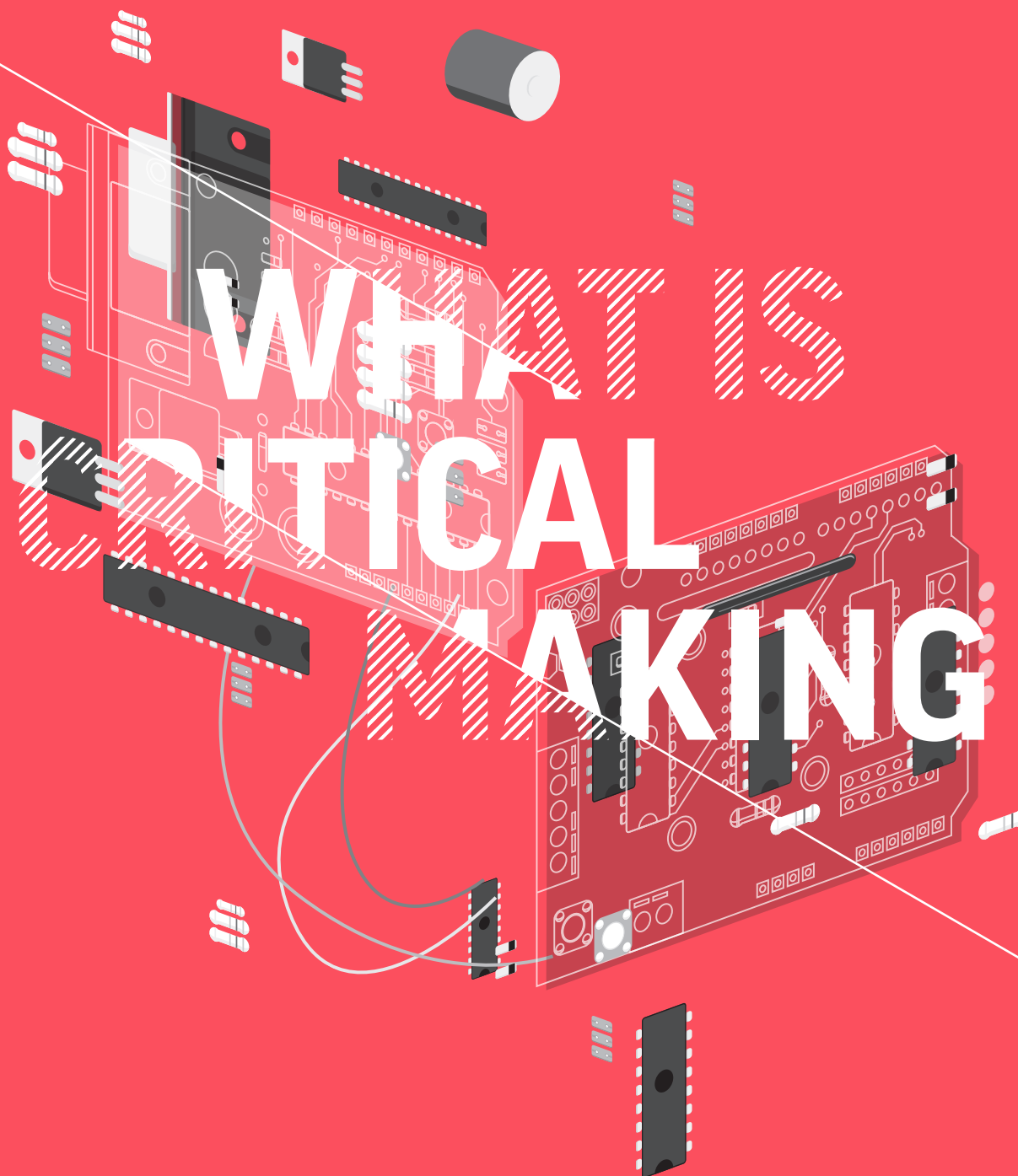
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WHAT IS CRITICAL MAKING

Garnet Hertz

CRITICAL MAKING, as a term, was initially used by Matt Ratto in 2008 and first published in 2009 to describe the combination of critical thinking with hands-on making—a kind of pedagogical practice that uses material engagements with technologies to open up and extend critical social reflection. In Ratto and Hoekema’s words, “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” [19]. Ratto wanted the term to act as glue between conceptual and linguistic-oriented thinking and physical and materially based making with an emphasis on introducing hands-on practice to scholars that were primarily working through language and texts, such as those in the fields of communication, information studies, and science and technology studies [20].

Because of its stress on critique and expression rather than technical refinement and utility, Ratto acknowledges that critical making has similarities to the practice of critical design, a term popularized by Anthony Dunne and Fiona Raby [6]. Critical design comes from the background of industrial design and builds objects that work to challenge the narrow conventions and biases that products play in daily life, primarily those that determine that products need to be convenient, affirmative, soothing, and empowering for the user. Critical design is focused on building industrial design prototypes that question the way products reinforce a banal and comfortable status quo by being efficient, optimized or comfortable, and instead pushes users into more complex emotional and psychological territory by questioning social norms and stimulating discussion and criticism of design itself [4]. For example, critical designers often build products for a dystopic future, with the prototypes professionally documented and communicated through narrative video or images: “Products ... as a special category of object, can locate these issues within a context of everyday material culture. Design today is concerned with commercial and marketing activities, but it could operate on a more intellectual level, bringing philosophical issues into an everyday context in a novel yet accessible way” [5].

Despite their similarities, a number of key differences between critical design and critical making exist. Critical making, as envisioned by Ratto in 2011, was much more focused on the constructive process of making as opposed to building an artifact. While critical design is focused on building refined objects to

generate critique of traditional industrial design, critical making was initially conceived as a workshop framework with the final prototypes existing only as a remnant of the process [19]. Critical design, on the other hand, tends to be focused on building objects that document well, with the artifacts themselves challenging concepts like optimization, efficiency, social norms, and utopianism. Critical design is object-oriented; critical making is process-oriented and scholarship-oriented: “Critical making emphasizes the shared acts of making rather than the evocative object. The final prototypes are not intended to be displayed and to speak for themselves” [19]. Ratto’s emphasis is on using hands-on techniques to augment the process of critical thinking about information systems, while Dunne and Raby’s critical design is primarily focused on building photo and video props for the construction of a speculative narrative to help us rethink designed objects and consumer culture.

As a process and scholarship-oriented practice, Ratto’s critical making resembles the field of “values in design,” a concept most closely affiliated with Helen Nissenbaum [15]. Values in design is an approach to studying sociotechnical systems from the perspective of values, and starts from the assumption that technology is never neutral: “Certain design decisions enable or restrict the ways in which material objects may be used, and those decisions feed back into the myths and symbols we think are meaningful” [16]. Values in design is an approach to scholarship and a workshop method that strives to unpack the assumptions behind technological designs and increase understanding in how technological objects shape social values. Although objects are at the heart of this process and scholarship, the understanding of these objects is of prime importance. Like in Ratto’s critical making, technological objects are primarily to be studied, worked through, and understood through a value-oriented process of scholarly inquiry. Critical making explicitly names making as an important part of this process, while making is optional in the process of values in design. Critical making is like values in design, but the former clearly emphasizes the value of material production as a site for critical reflection, following the “material turn” that highlights material objects as a key part of social processes and conceptual frameworks [10]. Ratto’s term of critical making is a constructionist approach to work through values in design, information studies, or science and technology studies [18].

Standard methods of technological design—whether through consumer culture or traditional fields of science and engineering—often produce systems that lack cultural richness, emotion, and

Critical making, as I see it, is useful in reintroducing a sense of criticality back into post-2010 maker culture: to un-sanitize, un-smooth and re-politicize it.

human-oriented values. Engineering, for example, often overemphasizes principles like efficiency and productivity that contributes to a consumer-oriented culture that overworks, overproduces, and overconsumes. Critical making intervenes by giving designers and the public an opportunity to break out of this cycle, step back, and mindfully reconsider a broader spectrum of human experience. It also strives to highlight people, perspectives and practices that are forgotten in conventional product development workflows: and consider the diverse complexities of what it means to be human.

My interest in the term critical making comes from a perspective of hands-on technology development and studio practice—in makers becoming more critically engaged with their medium. In other words, I see the term as useful in encouraging the builders of technology—whether hackers, engineers, industrial designers, or technology-oriented artists—to step back and reevaluate the assumptions and values being embedded into their technological designs. Sengers and others describe this as reflective design, where “reflection on unconscious values embedded in computing and the practices that it supports can and should be a core principle of technology design” [21].

This reflectiveness is especially relevant to the maker community that has emerged over the last decade through open source hardware projects like the Arduino, social structures like hackerspaces, products like inexpensive 3D printers and publications like *Make* [13]. The maker movement can be defined as a “convergence of computer hackers and traditional artisans . . . [that] tap into an American admiration for self-reliance and combine that with open-source learning, contemporary design and powerful personal technology like 3D printers” [24]. Maker culture can be seen as a form of depoliticized hacking, with the attributes of crypto-freedom and the hacker underground removed by Dougherty and others at *Make* to be more palatable to a commercial market [2, 14].

Critical making, as I see it, is useful in reintroducing a sense of criticality back into post-2010 maker culture: to un-sanitize, un-smooth and re-politicize it. My perspective on critical making is interested in mobilizing approaches from experimental media art, critically engaged industrial design and computer science interaction research that take cultural production and humanities-oriented inquiry seriously within the context of building functional technologies. Approaches include the concepts of critical technical practice, values in design, critical design, and reflective design [1, 15, 4, 21]. This body of scholarship argues that all built technological artifacts embody cultural values, and

that technological development and hands-on making can be combined to build provocative objects that encourage a re-evaluation of technology in culture. Arts-oriented contexts include the terms of interrogative design, critical engineering, perverting technological correctness, adversarial design, tactical media and works of contemporary media art—all of which take an attitude of humanities-based inquiry into the production of art objects and technologies [27, 17, 11, 3, 7]. These approaches are helpful in tempering the optimism of maker culture and reconnecting it with its historical, tactical and controversial histories.

The way to improve Ratto, Dunne and Raby’s approaches is to extend their inquiries and proposals into material speculations: built and functional devices [25]. Interactive prototypes and their subsequent evaluations are significant for two key reasons. First, they embody actionable design strategies in a form that is accessible to the public, interaction design community and translatable to the practices of technology designers [23, 8]. Second, the prototypes materially articulate particular stances and ideas that can be informed by perspectives in philosophy of technology. In this way, they can operate as a type of boundary negotiating artifact or boundary object—objects that coordinate the perspectives of diverse communities of practice [12, 22, 26]. In addition to public legibility, material speculations can mediate exchanges among scholars in different fields, including computer science researchers, philosophers of technology, media theorists, and interaction design researchers. Critically made objects can be documented online, exhibited in public art galleries, or published as case studies in academic papers—and can work to expose the hidden assumptions within the designed objects around us and be embedded in technological systems to a wide audience. They can enable individuals to reflect on the personal and social impact of new technologies, and provide a provocative, speculative, and rich vision of our technological future that avoids the clichés of consumerist-oriented industrial design.

Objects are effective as things to think with—things can link concepts in a different way than language can, have a life of their own and travel through different contexts. Although constructed objects are often imprecise in communicating ideas in comparison to language, things have the strength to hit with powerful and forceful impact. Critically engaged language can do detailed surgery on a topic, but critical objects can hit like an emotional sledgehammer if thoughtfully implemented.



Figures 1-4. Hertz in the Studio for Critical Making at Emily Carr University. Hertz is interested in extending the concept of critical making from a process-oriented workshop model for disciplines like information studies into more studio-oriented fields like industrial design and electronic art.

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MATERIAL MATTERS

HOW DO, WE DO

Hybrid Social/Make Sites in Knowledge
Creation and Applied Partnerships

KEITH DOYLE

MYTHS-BUSTING

ADDITIVE MANUFACTURING, or 3D printing as we have come to know it, represents both an emergent personal production platform and a scale-able manufacturing process. Fundamentally it is really nothing new. Researchers and private enterprise first filed patents on stereolithography in the early 1980s. And it has been present in Industry for some time since, though usually expensive and usually complicated. Though the fundamental process of material production of a “real world” 3D dimensional objects from 3D data still seems pretty far out for most of us, it is only recently that we have felt its impact widely through a new era of personal production platforms and hybrid applications [9, 7].

It is no small coincidence that we are experiencing a renewed interest in the fundamental technology of 3D printing given that 40 years have passed since the original industrial patents took effect. Commercial machines beget personal production platforms. This newly enabled production capacity on the desktop—the transition from digital content directly to *true-life* object regardless of geometric complexity—presents massive challenges and development opportunities. We now have the ability to realize previously unimaginable material goods quickly (of one material or other) simply and if need be, serially, at home. Virtually any object can be printed now, albeit in fairly limited materials enabling a virtually limitless applicability. At what cost? This paper will discuss this in greater detail in the sections that follow.

Additive Manufacturing processes or Direct Digital Manufacturing (DDM) are built upon a fluid digital infrastructure that actually allows for a level of public participation and interaction that is unprecedented, perhaps unpredicted. Powerful PCs and laptops, affordable full-featured 3D modeling programs, and high-speed communications networks allow for the design, production, sharing and refinement of any aspect of 3D printing architecture, even at home. It was only a matter of time that proprietary rights held through industrial patents fell away offering a pivot, an *unlock* to access (and meaning) [8].

Traditionally, Research and Development (R&D) that incorporated 3D printing was a complicated, expensive, material and time-consuming process controlled primarily through vertical proprietary technologies and materials. It was out of sight, and out of reach for most of us. 3D printing as we now know it, has emerged from the Open Source. 3D printing offers access to design development to an audience that was previously unaware of it, never seriously considered it and most probably unable to afford it.

WHAT IS IT?

So, 3D printing is a technology with the capability to produce virtually any type of form regardless of its complexity, in a range of materials. Despite this asset there are distinct barriers and compromises to uptake. As commercial 3D printers produce objects of high resolution with high reliability, but operate at a relatively high cost, most commercial systems operate within a closed loop—output equipment is tied to proprietary consumables—

this arrangement produces an ongoing, reliable revenue stream to manufacturers but also acts to perpetuate common commercial verticals. In turn, many printed objects tend to be limited by budgetary considerations and constrained material palate rather than opportune design intent or technological capacity.

OPEN SOURCE HARD-WARES

Open Source communities, Doing It With Others, and 3D Print service bureaus are rich Social/Make sites that help shape solutions by lending a greater cultural context to a problem, be it endemic to material things, hardware, a communication strategy or product service. Direct Digital Design and Additive Manufacture are facilitating new pathways for the design, development and distribution of material goods within this paradigm. Existing sites for knowledge exchange and our core assumptions about what makes up a contemporary material practice are being radically redefined. This renders the *likeness* of objecthood in a new, more meaning-full light. Here is an opportunity for Makers, Artisans and Designers to develop anew as we shift towards a new paradigm for making/design/craft and production.

Within the design process and analogous to any research and development cycle, carefully considered iteration is a core concept. One could argue that matching a refined concept to its appropriate material production, is a core strength. Open Source Appropriate Technologies (OSAT) remove barriers to knowledge production and design development [4]. Pearce, writing from the perspective of a research scientist, looks to identify the key characteristics of what OSAT is, “Open source appropriate technology ... is the ability to harness the power of distributed peer review, source transparency, and the gift culture from the open source movement/academia and the contextual development capacity of ATs” (appropriate technology). Pearce’s definition of OSAT, for our purposes in the PMP lab here at Emily Carr University affords a *meaning-making* directive to our emergent technology, techniques and processes. OSAT and Peer Production are disrupting our notions of what it means to make on a large scale just as new media has redefined our relationship to entertainment.

We have entered an era of democratized production, an era of product on demand, and an era where ideas are largely independent of vertical infrastructures. The relationship between an object, how it is made, what is made of, where it is made, by whom and when is now the responsibility of the consumer/designer of that object. “Transformative change happens when industries democratize, when they’re ripped from the sole domain of companies, governments, and other institutions and handed over to regular folks” [1].

3D printing has seen a great deal of proliferation and diversification (democratization) in recent years as influenced by the Open Source. Inspired, and in some instance parented by Adrian Bowyer’s Rep Rap, a machine that is “revolutionary” and one that will “bring down global capitalism,” a vast selection of open source

printers designed to be shared—modified and re-shared—aim to bring high quality, low cost printing to anyone [6, 5]. Meanwhile large industry players, commercial manufacturers, continue to compete by absorbing competitors and other manufacturers into higher verticals on a regular basis [2].

All of this activity has created a broad understanding of the technology and a wider base of engagement. There is a highly diversified field of opportunity that ranges across: how content is made (modeling software, user interface, output technology type), what our relationships to products and markets are (shared, co-designed, disposable, customizable) and how production is defined (made at home, made locally, or made offshore). Like the freedom of complexity found in the virtual 3D space, each of these elements are scalable, they can address the individual and/or large collection of allied individuals, small industry with a local mandate or large industry with considerable geographic reach.

WHAT IS IT WE DO?

The Material Matters research centre at Emily Carr University of Art + Design is actively exploring these new digital *properties* in tandem with traditional methods and material production. “As 3D printing becomes less expensive, more powerful and more pervasive it diffuses into a wider range of opportunities” [7]. As hybrid forms of methodology and processes emerge they intersect with established means for making and knowledge transfer for students and faculty alike. “Material Matters examines these intersections with an emphasis on four interrelated components: material research and development, lateral application, partnerships, and knowledge transfer” [7].

CRITICAL THINKING IS CRITICAL STRATEGY

What does it mean to identify as makers in contemporary society? What does it mean to re-situate and to re-contextualize our

knowledge of *making* and *craft*? Contemporary reflective practices in both Design and Material Practice act as a means to identify an evolving connection between new digital processes and established material practices. How we approach our craft and Craft’s implicit relationship to the individual, ultimately affects the way objects are perceived.

This raises numerous opportunities for exploration: Process knowledge—3D printing at a large scale is a relatively new field with a multifaceted workflow. In order to adequately engage the technology multiple skill-sets must be implemented; Design Methodology—as 3D printing redefines production pathways objects take on the very character of their design parametrics, influencing the complexity of material practice and production while affording variables in ever increasing diversity; and Knowledge Mobilization through distributed Social/relational Forums—social forums are at the ready, offering an immediate call out to expertise.

MATERIALS MATTER

We are developing alternate pathways to object making that conflate the new digital workflow with the inherent strengths of legacy processes like Ceramics, like Foundry. Collaborations in material research with teaching faculty and students enrolled in studio courses, both in fine art and design, have lead to a greater integration and enabled forums for reciprocal knowledge transfer between what we recognize as the distributed processes of making (the craft) and the artisanal (the Craft). Our research and pedagogic activities have us casting directly into 3DP forms and objects in “true-life” materials in the foundry, forms that are originally conceived and iterated in digital modeling software and printed as a void of the true materiality of the intended outcome. The tensions that are found in this translation between this conflagration of “true-life” material properties drive discovery and new insights [10].

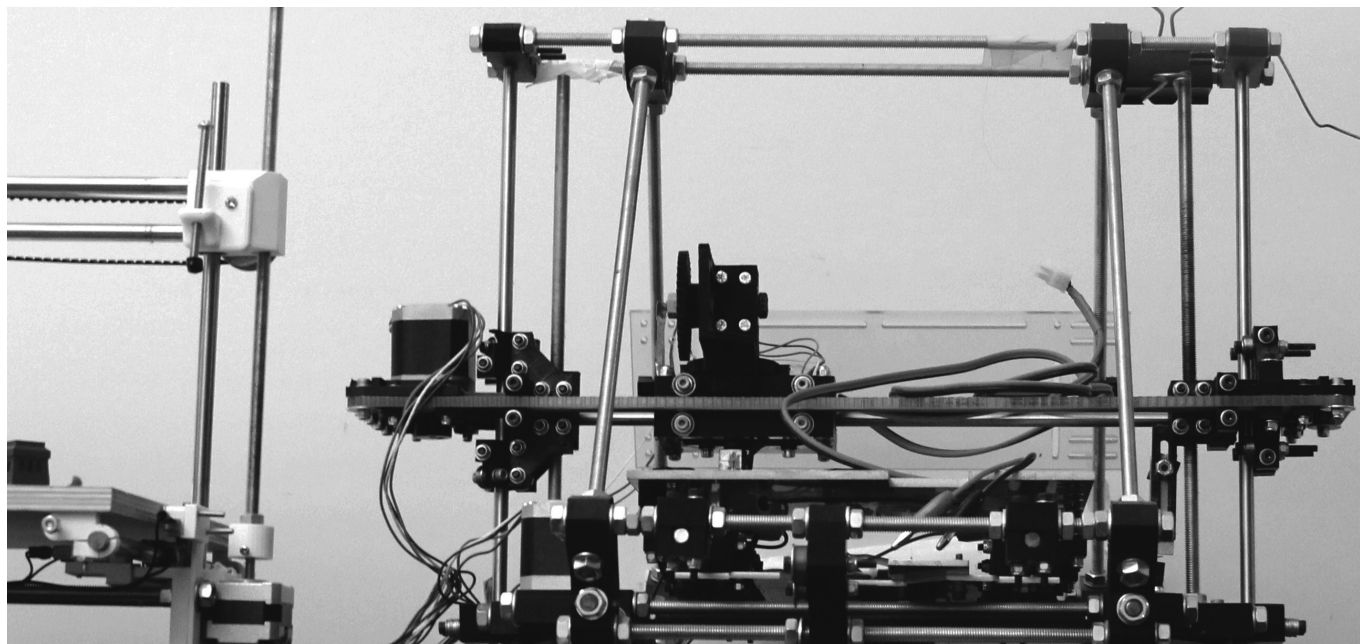


Figure 1. 3D Printing offers access to design development to an audience that was previously unaware of it.

Material production technologies are inherently about the process of *making*—the transition of inspired idea into material form—and it is this intersection of the *how* with the *why* that defines what Material Matters is.

HOW DO WE DO?

Ideas drive inquiry, and responsibilities flow freely across participants. Our individual strengths, and a studio—based methodology have the latitude to be applied to their best advantage as synergies between partners develop organically as project grow and diversify.

Conceived as a symbiotic methodology—rather than a plan for a discreet service bureau for Rapid Prototyping—we are examining pathways to production through social make spaces and forums for reciprocal knowledge transfer.

“Our work explores how new technological means of production that can interconnect with and carry forward legacy process (rather than simply supplant them); create scalable fabrication methods that capitalize on 3D printing’s innate link to customization; engaging a broad spectrum of practitioners on both an industry and personal/individual level.” [7]

Material production technologies are inherently about the process of making—the transition of inspired idea into material form—and it is this intersection of the how with the why that defines what Material Matters is.

APPLIED PARTNERSHIPS

Industry partnerships drive an innovative spirit (and pragmatic calendar) in the lab. Faculty, students and industry converge in what can be described as a *third-space*, a cooperative learning environment that is mutually beneficial to all and reciprocal in nature. Students, or HQP (Highly Qualified Personnel) research alongside, and by the guidance of teaching faculty, they research matter of fact problems, true-life problems of design, development, manufacture and commercialization.

Material Matters projects pull on a unique mix of practice-led design research, technical expertise and facilities residing within the institution (Emily Carr) and the complimentary portfolio of technology and processes all residing in one location.

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MATERIAL MATTERS 3DP FORUMS

From the very beginning of the Material Matters 3D Print Forums (a monthly meet-up style event) we have actively engaged with: Small to Medium Enterprises, Industrial Designers, Manufacturers, Resource Enterprises, Filmmakers, Animators, and Venture Organizations & Entrepreneurs. Over the past 4 years, the 3DP Forums have been facilitating a wide range of dialogues and workshops that have added to, informed, and furthered our own critical yet creative approaches to design, development and material production. This hybrid of pure and applied research within a creative context has created a space that offers the ability to freely explore ideas, technologies and material innovation to the greater benefit of the University, our faculty and our partners:

GUARD RFID Vancouver BC, HEL exploring rapid prototyping and co-creative research practice in wearable security bracelets, OFFLOAD STUDIOS, Abbotsford BC, developing innovative 3DP recipes for legacy print feedstock, FP INNOVATIONS investigating more sustainable material options for 3D printing through value added products for the building trades, BOLSON MATERIALS, cost effective print materials innovation and distribution, RAYNE LONGBOARDS, North Vancouver BC, sporting equipment development and additive manufacture, INDUSTRIALIS, Vancouver BC, hardware development, LIFEBOOSTER INC, Vancouver BC Wearable technologies, LULULEMON ATHLETICA (Whitespace Innovation lab) innovating fashion design methods, THE PLASTIC BANK, Vancouver BC, sustainable (recycled) print materials, PLANTIGA, North Vancouver, Smart Shoe development, MIRAGE SCREEN SYSTEMS, Surrey BC, Innovating retractable Screen door hardware, GOFigure! Vancouver BC Direct sizing and manufacture of garments, GREENTHUMB TECHNOLOGIES, Squamish BC, indoor gardening, BLUE MARBLE LABS, Vancouver BC, wearable environmental sensor, TOTICS, Vancouver BC, innovative digital manufacture of ankle foot orthotics for children, CANADIAN MANUFACTURERS & EXPORTERS (Ottawa & BC), CANADA MAKES & THE ECN/EEN, National Additive Manufacturing Network and the Enterprise Canada Portal for research

up, Santa, the Christmas machine has arrived. *The Guardian*. 2006. <https://www.theguardian.com/science/2006/nov/25/frontpagenews.christmas2006> [7] Robbins, P. Day Fraser, H. Doyle, K. (2014). *Material Matters. Automatic Conference Paper*. Falmouth: Falmouth University. 2014. [8] Singer, Peter W. Direct digital manufacturing: The industrial game-changer you never heard of. *Brookings*. 2011. <http://www.brookings.edu/research/articles/2011/10/10-digitalmanufacturing-singer> [9] Troxler, P. (2011). *Open Design Now: Why Design Cannot Remain Exclusive*. Amsterdam: BIS Publishers Amsterdam. 2011. 86-97. [10] Wakkary, R., Doyle, K., Robbins, P., Mortimer, S., Lin, H. Low, L. Desjardins, A. *Productive Frictions: Moving from Digital to Material Prototyping and Low-Volume Production for Design Research*. 2016.



The Role of Designing
in Behavior Change

Lisa H. Grocott

LAST CHRISTMAS I bought myself an activity tracker. The wearable represented not a reward for the exercise I was already doing but in preparation for what I was about to start doing. I realize this reads like a setup for failure—but not so—I set out to do 10,000 steps a day and I did. I am not sure what helped the most: the utility of the wearable or the notifications that primed my motivation. The thing is, even though my research is about behavior change I am not interested in tech-driven behavior design. This essay is about research projects that explore the role of design for engaging the person who is not even contemplating changing their behavior... yet.

For decades my education and practice was in communication design. I believed my capacity to negotiate Donald Schon's reflective conversation with the materials of a design situation defined my expertise [10]. My world was making things. This changed five years ago when I began to teach in a graduate design program that frames the large-scale, systemic challenges society faces as transcending disciplinary boundaries. Today my students and colleagues see themselves as designers (usually), researchers (sometimes) and doers (always). In a transdisciplinary context the capacity to facilitate generative conversations with diverse stakeholders defines the expertise of the designer. In Schon's day the architectural model was at the heart of negotiating the materials of the situation. Nowadays navigating the social context is what drives future action. This new world may be less about things, but I would argue it is still about making.

At the heart of the thesis in the Parsons School of Design MFA in Transdisciplinary Design is an attempt to improve the human condition one humble project at a time. Whether it be a civic innovation pilot, a response to a humanitarian crisis, or a K12 learning initiative all projects are attempting to shepherd people through some kind of change. However we soon concluded that positing plausible theories of change is easier than interrogating how real behavior change is enacted. As designers we master the ability to sell: to promote, inform, and seduce customers to want a product, to be brand loyal. But what do we know about getting pre-diabetic kids to change diets or to persuade busy households to compost food waste? How might we lead people through substantive, sticky change without resorting to calls to action that read like PSA campaigns?

The recent increase in design research methods publications show how design methodology is adapting and evolving. In addition we need new ways to evaluate the traction and impact of

the interventions we design. Once, I believed that the materiality of artifacts embodied the critical contribution of design. But today, the imperative to *make things happen* trumps the making of things. The role of making no longer focuses on the artifact but instead everything is considered in relation to the future scenario afforded by the artifact. *Every*-thing is designed yet *no-thing* can be designed in isolation. Critical making in this world comes with a liberating definition. Design is not reduced to the thing that is made but in the spaces the making-of-things opens up. Think about how prototyping and piloting are methods we use to *make believe* so that we can *make real*. Disruption and provocation are tactics we use to *make waves*, troubling the status quo in a quest to *make right*. At the heart of a designer's iterative process is recognition that we *make shifts* so we can *make possible*. This is how we use critical making to craft new habits, new futures, new ways of being.

TRANSFORMING MINDSETS: 3 CASE STUDIES

Teaching in a social design context reoriented my experience of design. My research into 21st century learning tilted my allegiance from design to the learning sciences. The theoretical and methodological exchange that came from working with cognitive psychologists, neuroscientists and education researchers required me to be humble about the limitations of design and clear about the value of collaborating with designers. The projects introduced here are recent research or teaching projects into the challenge of transforming learning mindsets. The snapshots illustrate how my collaborators and I positioned the role of making by negotiating the reflective and generative conversations with the materials and stakeholders of the learning situation.

The Transtheoretical Model (TTM) integrates insights from multiple disciplines to propose a staged behavior change process that takes someone from not recognizing a need for change right through to establishing an ongoing practice of the new behavior [8]. In TTM the purchase of the activity tracker would be seen as starting in the middle of the 5-stage process at the "preparation" phase, the stage before "action" and "maintenance." Many social design interventions operate at these latter stages since mobilizing action lends itself to the persuasive rhetoric and functional utility of products and communication.

However, an underlying question for my research is what can design bring to the earlier precontemplation and contemplation phases of behavior design? In the learning sciences, John Hattie's

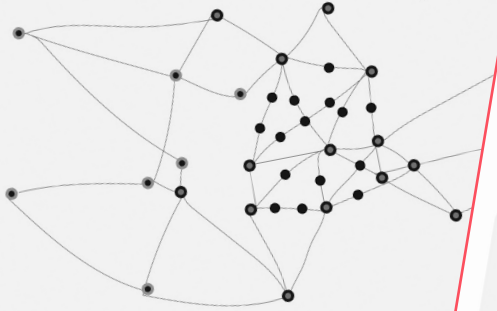
B/twixt* A META-LEARNING RECORD

* surfacing the learning that runs between the academic lessons, the coursework, the project collaborations, and the co-curricular adventures.

AN INTRODUCTION

REWARD SYSTEMS

The current system of higher education rewards performance through assignments, grades, GPA, co-curricular roles and faculty recommendations. Inevitably this system influences the activities students undertake and frames their perception of what they learned.



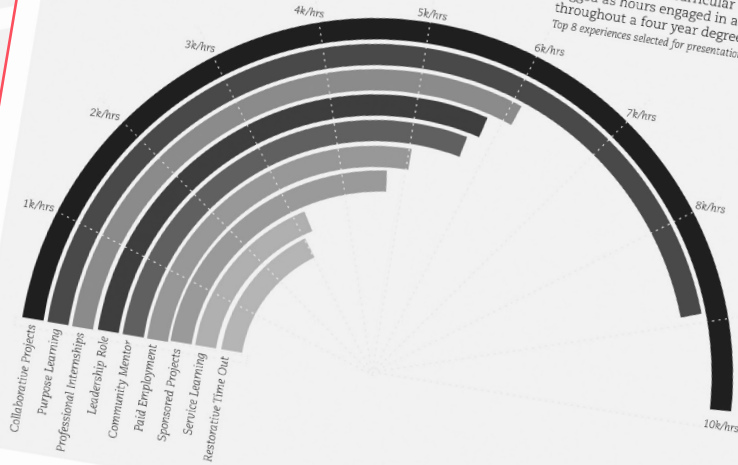
B/twixt* A META-LEARNING RECORD

* surfacing the learning that runs between the academic lessons, the coursework, the project collaborations, and the co-curricular adventures.

INSTITUTIONAL SNAPSHOT

LEARNING EXPERIENCES

Academic and co-curricular experiences tagged as hours engaged in activity throughout a four year degree. Top 8 experiences selected for presentation.



LEARNING CONTRIBUTION

Ways learners participate and contribute to the culture of learning as measured by the course professor.

Icons represent an aggregated score from course evaluation. Bars represent quartile score in relation to peers.



Active Listening

Respectful, attentive listening that leads to the capacity to synthesize input from others.



Frequent Participation

Considered and consistent engagement that leads to informed thinking, and action.



Advances Peers' Learning

Constructive input and tacit mentoring move conversation forward and leads to emergent leadership.



Depth of Insights

Quality contributions reflect a dynamic read of the situation and lead to more profound insights.



Preparedness & Perseverance

Disciplined planning, goal setting, time management and persistence lead to a productive work ethic.

Figure 1. Sample pages from the B/twixt meta-learning record.

At the heart of a designer's iterative process is recognition that we *make shifts* so we can *make possible*. This is how we use critical making to craft new habits, new futures, new ways of being.

meta analysis of education research concludes that increasing a student's perception of his or her own ability is one of the most effective interventions for improving performance [6]. I questioned whether Carol Dweck's research into how our mindset limits us from leaning into challenges or putting in persistent effort might inform the work required to prepare for real behavior change [3]. Over the course of two years and multiple scrappy pilots my lab collaborators and I explored how the human-centered, solution-seeking, and speculation-driven attributes of design might contribute to the task of shifting mindsets and promoting new behavior. One key insight that emerged from the practice experiments was the importance of liberating our definition of making from the making of things [5].

MAKE TOGETHER TO MAKE KNOWN: THE ROLE OF CO-DESIGN AND STORYTELLING

Early 2014 Riverdale Country School commissioned us to design a professional development workshop that translated Dweck's research into educational practice. Typically in these workshops the science behind the theory is introduced to advance a teacher's understanding. As designers we sought to use research from multiple disciplines to develop a theory of change that did not focus on the science or the student.

Our storymaking, collaborative intervention focused on several behavior change principles that harness bringing people together to share experiences. We drew on research into the power the stories we tell of ourselves have over us [4], and the importance of limiting beliefs we might hold on to from our past [7]. We embraced research that normalizes individual's experiences to help us understand that we are not alone [1], at the same time respecting that our intrinsic reasons for doing something are more powerful motivators than external, extrinsic incentives [12]. The workshop underscored the value of co-designing (making together) so we might collectively translate and surface (make known) the actionable principles embedded within the psychology research. This participatory approach to collective narration created a space for the teachers to be vulnerable, share their stories and envisage new ways of being.

MAKE TANGIBLE TO MAKE POSSIBLE: THE ROLE OF IMAGINATION AND SPECULATION

This first project focused on the past we bring to the present, in contrast the second project tried to avert and probable future for a preferable one. Dunne and Raby describe speculative design as a "catalyst for social dreaming" [2]. The B'twixt meta-learning record is a speculative artefact conceived to provoke debate around the consequences of recording not what courses students

pass but surfacing what we can tell about graduates future capacity for learning given their university performances. B'twixt operates as a prop for engaging the collective imagination of a university by speculating on a new way to make student learning visible.

The interviews at the outset of this project underscored how hard it is for communities to imagine a radically different scenario from what they know. People believed that "lifelong learning" and "learning on the fly" reflect the dynamic professional landscape we live in and recognized the lack of integrity that comes with reinforcing the misconception that a GPA is an indicator of individual's abilities. Yet unanimously interview subjects were not convinced a learning record could meaningfully reflect the non-cognitive skills highly valued by employers. However, people's reactions to the speculative prototype were profoundly different to the cynicism held for the idea. The tangible prop draws people into debate over the tradeoffs against the current model—the conversation can shift from a place of pessimism to optimism. Tonkinwise describes design's relationship to making possible can be understood as equal parts realistic and fantastical [11]. B'twixt does this by addressing real concerns (minimizing the human burden cost for gathering the data) and dreaming big (students only being able to access grades once they had uploaded his/her learning from failure moment video). B'twixt negotiates this tension by radically disrupting the transcript as a "receipt" for a college education and incrementally transforming current evaluation practices. The profound shift in cynicism versus enthusiasm between the before and after conversations shows how the tangible realization of an idea, no matter how tentative, can expand people's appetite for change.

MAKE SENSE TO MAKE SHIFT: THE ROLE OF FRAMING AND REFLECTION

Putting into practice insights that had emerged from the previous projects graduate students in the Transforming Mindsets studio designed the Archipelago of Possibilities. The students conceived of an early-phase workshop for K12 teachers as part of a 4-year funded research project on teacher change. The medium-term goal is to prepare teachers to rethink the mindframes they bring to classroom practice [6]. But before getting to the preparation stage the teacher needs to find an intrinsic motivation for letting go of her current way of teaching. The workshop was designed to create a space where the teacher could metaphorically take a vacation from the everyday classroom experience and imagine the holiday activities he would focus on if only s/he had the time to invest in fostering deeper learning.

The teacher is shepherded through a sequence of framed activities to reflect on the mindframes he or she would be excited to improve, questioning how they want to "travel" to the island

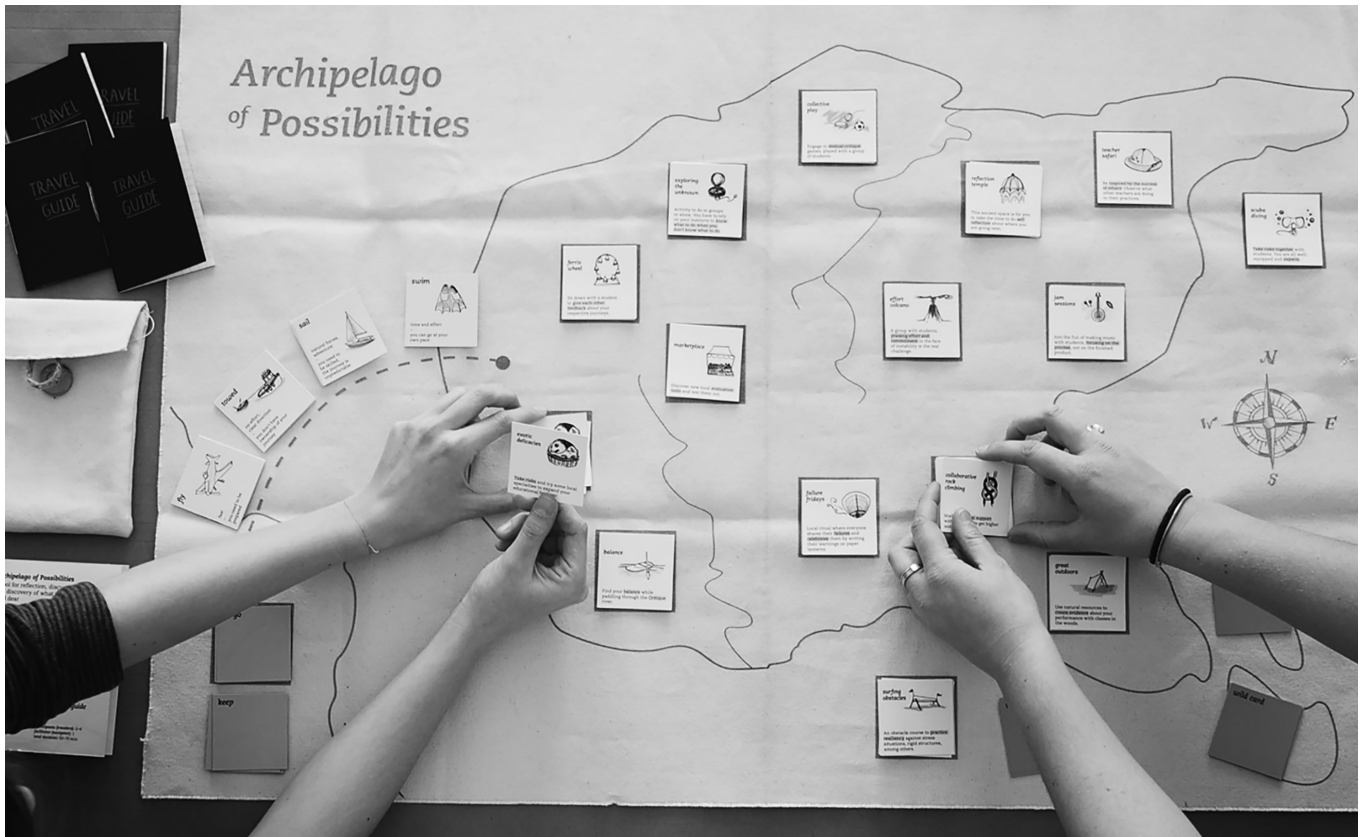


Figure 2. The Archipelago of Possibilities workshop prepares K12 teachers to rethink the mindframes they bring to their classroom practice.

and then crafting a “souvenir” to remember the promise of the holiday by. The integrated experience is heightened by the conversations prompted by making the individual’s decisions visible (the souvenirs, the travel guide, mode of transport). In framing acts of making, narrating and discussing the experiential exercise immerses participants in the act of sense-making the teacher they want to be. After multiple pilots of the workshop the consensus was that the experience felt antithetical to traditional professional development which typically implores a teacher to adopt a new practice. Instead this workshop draws teachers into enthusiastically using their newfound understanding of their own passions (make sense) to inform who they want to become (make shift).

**MAKE MOVES TO MAKE HAPPEN:
THE ROLE OF MINDFULNESS AND ACTION**

These projects introduce three insights about making in the explicitly social context of behavior design. Respect for the research advanced by other disciplines is the first underlying premise. The effectiveness of the designed outcomes become amplified by the learning sciences research that informs our theories of change—the references would change if we were talking about climate change or public health but the point would be the same. Seeking out knowledge from other fields requires disciplinary humility and is matched by the ongoing need to articulate what design brings to collaborations. These complementary positions drive the third insight around the call to recognize an expansive notion of making. For it is in integrating

the affordances of designing with the empirical research of other disciplines that the potential for new practice spaces emerge.

The empathic, human-centered core to the initial faculty workshop is forged by the value of making together. Drawing on social belonging, motivation and narrative research the participatory approach of making together helps make known the tactical moves teachers could use to change the mindsets holding them back. Appropriating from fiction the speculative, future-oriented nature of design is behind the B’twixt record’s role as a prop. In making tangible an abstract idea the university community could locate the prop-as-future-scenario in multiple contexts (advising, recruiting, formative feedback) to collectively dream of the consequences and implications across the whole learning ecosystem. The reflective yet solution-oriented focus of design is core to the Archipelago journey. The activity invites the individual, in a social context, to make sense of their current practice so the teacher can reflect on how to make the shifts necessary to realize the future-self they want to be.

This expanded practice of making is less artefact centric and yet the role of material intelligence and form-making is still critical. The Archipelago could have worked without the crafted illustrations, yet an early observation in the pilots was that people leaned in and began to invest in the exercise when handed their own travel guide. The poetics of the souvenir, as commitment device, becomes a material reminder for the participants once the activity concludes. These material exchanges play an important role in engaging the hearts and minds when contemplating future action.



Figure 3. The Archipelago of Possibilities guide for facilitators.

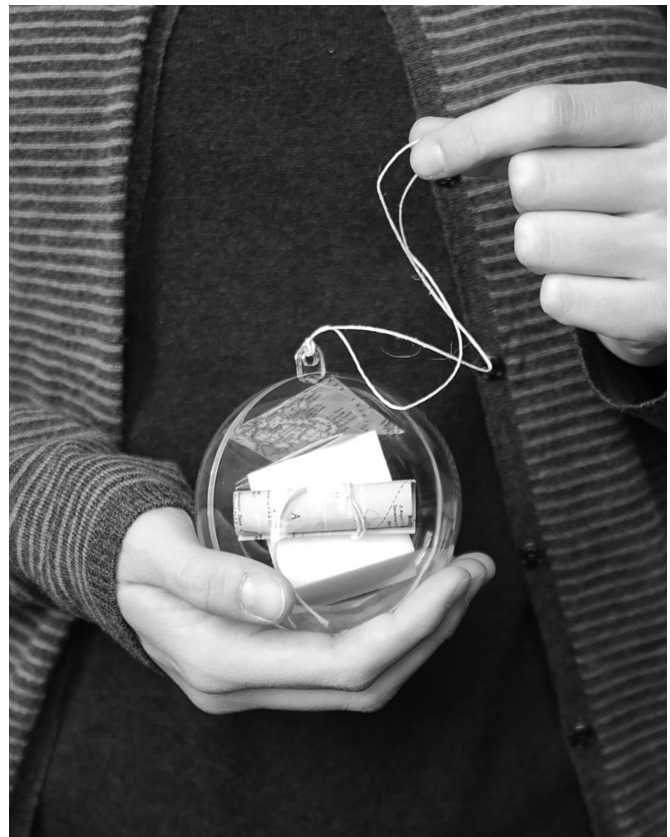


Figure 4. Teachers craft a "souvenir" during the workshop.

A simple show of hands could have communicated what aspects teachers' hold dear, yet this quick move would fail to lead anyone to invest in substantive change.

This expanded notion of making does not diminish the value of crafting things so much as ask us to be mindful of what we are making—to consider how we make space for collaborating, make space for new thinking, make space for future action. The scale and complexity of the social problems we face can lead disciplines down a path of intractable analysis and potential paralysis. Otto Scharmer presents mindful action as the counter to an action-less mind [9]. Critical making is a key affordance of design, it defines our humble capacity to make a move, to propose, to enact, to provoke. In our quest for sustainable change let us be mindful that beyond the apps, trackers and data-visualization there are mindsets to be transformed and design has a role to play in helping to make that happen.

ACKNOWLEDGEMENTS

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ALL FOR 1 AND 1 FOR ALL

A Secret Society for Type 1 Diabetics

LUCINDA MCGROARTY

18

CURRENT

TYPE 1 DIABETES (T1D) is defined as a self-managed, chronic auto-immune disease that occurs when the insulin-producing cells of the pancreas are destroyed by the body's immune system. Consequently, those living with T1D rely on an external source of insulin for life. The day-to-day management of this disease is exceedingly complicated, impacting every aspect of a diabetic's life. Individuals must vigilantly balance a number of factors that impact their blood sugar levels including insulin and carbohydrate intake, physical activity, hormones and stress.

It is little wonder that type 1 diabetics often lose momentum when managing their disease. This phenomenon is commonly referred to as "diabetes burnout" and is characterized by "the emotional distress that arises from living with diabetes" [2]. For some individuals, burnout is experienced as a reaction to the tedious and repetitive management practices of T1D, including daily blood sugar tests and insulin adjustments. For others, burnout takes the form of generalized feelings of anxiety or frustration that result from constant blood sugar fluctuations and attempts to alleviate these. Reactions to this are equally as varied; some individuals may purposely alter their insulin dosages or test their sugars infrequently, while others may experience unrelenting high levels of stress and fatigue. The resulting poor blood sugar control contributes to the development of long-term complications. As diabetes affects all areas of life, burnout may also negatively impact an individual's personal relationships, socialization, education, career or economic status, as well as one's spirituality or life goals [3].

As an initial step for my master's thesis, I conducted a series of exploratory, semi-structured interviews with twelve young adult and adult type 1 diabetics to further comprehend the implications of burnout, and to challenge my own assumptions about T1D as a

diabetic myself. During this process, I discovered that a number of the interviewees regularly reach out to the T1D community as a way to prevent or combat feelings of frustration, anxiety and loneliness. These participants maintained that type 1 diabetics share an automatic bond simply because they understand the challenges of living with this disease. During my own personal experience of living with T1D, I have gone through various phases of burnout, but at no point had I considered reaching out to this community for support.

In furthering my research, the obvious choice was to adopt a heuristic approach, one that "...explicitly acknowledges the involvement of the researcher to the extent that the lived experience of the researcher becomes the main focus of the research" [1]. With this in mind, I continued my exploration by immersing myself in the T1D community. I joined various organizations, including Young and T1, Let's Talk T1D (JDRF Toronto) and Connected In Motion. Additionally, I reached out to numerous online communities including Glu and Beyond Type 1.

As months passed, I began to recognize the true value of the T1D community. I realized that a type 1 diabetic who is highly engaged in the community is motivated, inspired and empowered by what it has to offer. This individual is more positively and actively in control of his or her physical and mental health, contributing to an increased resilience towards diabetes burnout. This in turn builds momentum, which is crucial to wellbeing and overall happiness.

Increased resilience towards burnout is achieved through knowledge exchange, a growing sense of belonging and psychological support. A lack of information contributes to feelings of helplessness and anxiety, but as community members share knowledge with one another, they build the confidence and resourcefulness required to overcome these sentiments. Moreover, upon diagnosis,

a type 1 diabetic automatically becomes part of the T1D community. This connection can potentially provide an individual with a sense of belonging if he or she identifies and resonates with other community members. Finally, diabetes burnout commonly involves feelings of anxiety and depression, which lead to poor diabetes management, thus poor health. This points to the importance of nurturing mental health alongside physical health. The T1D community offers reliable, firsthand advice for overcoming diabetes burnout and its psychological implications.

I had minimal connection to the T1D community prior to the onset of this research, and I discovered that I was not alone in overlooking the community as a resource. Aside from the initial interviewees who benefit from the community, I encountered other type 1 diabetics during this interview process, as well as at clinics and workshops, who disregarded this resource for various reasons. While discussing this phenomenon with them, I discovered two main barriers to community support: lack of awareness of the T1D community and general disbelief in its value. I realized that a gap exists between what the perception is of the community, and what it actually can provide for a type 1 diabetic. This led to the formulation of my design research question: How can design be used to increase awareness of and shift the perception around the T1D community?

While becoming an active participant in the T1D community, I created a series of artifacts that touched on insight pulled from

this experience as well as organization websites, online forums, conversations with other type 1 diabetics and further introspection on my part. This constituted a generative material-based research practice. The artifacts were presented to a group of individuals, both type 1 diabetics and non-diabetics, for comment and feedback. They included an embroidered image of a pancreas, a zine called *Doughnuts & Diabetes*, a juice box felt brooch, a model of a clubhouse, and graphic imagery displaying everyday objects juxtaposed with diabetic supplies. These designed objects contributed to key discussions around the T1D community and its members: the lack of visual identity, the importance of physical gathering space, the use of story, concealed meaning and insider's perspective, and the use of visual storytelling as a vehicle for message. These artifacts helped inform a making practice to be carried forward into the final design concept.

THE 1 CLUB

The 1 Club is an imaginary secret society for type 1 diabetics. It serves as a means of reframing the T1D community in a way that resonates with type 1 diabetics through both visual and written language formats. The aim of The 1 Club is twofold: to direct young adult and adult type 1 diabetics to the T1D community, while promoting its key offerings.

As a whole, the construct of a secret society eerily mirrors the structure of the T1D community. Secret societies are, by nature,



Figure 1. The crest contributes to the visual iconography of The 1 Club, helping to cultivate a sense of connection among its members.

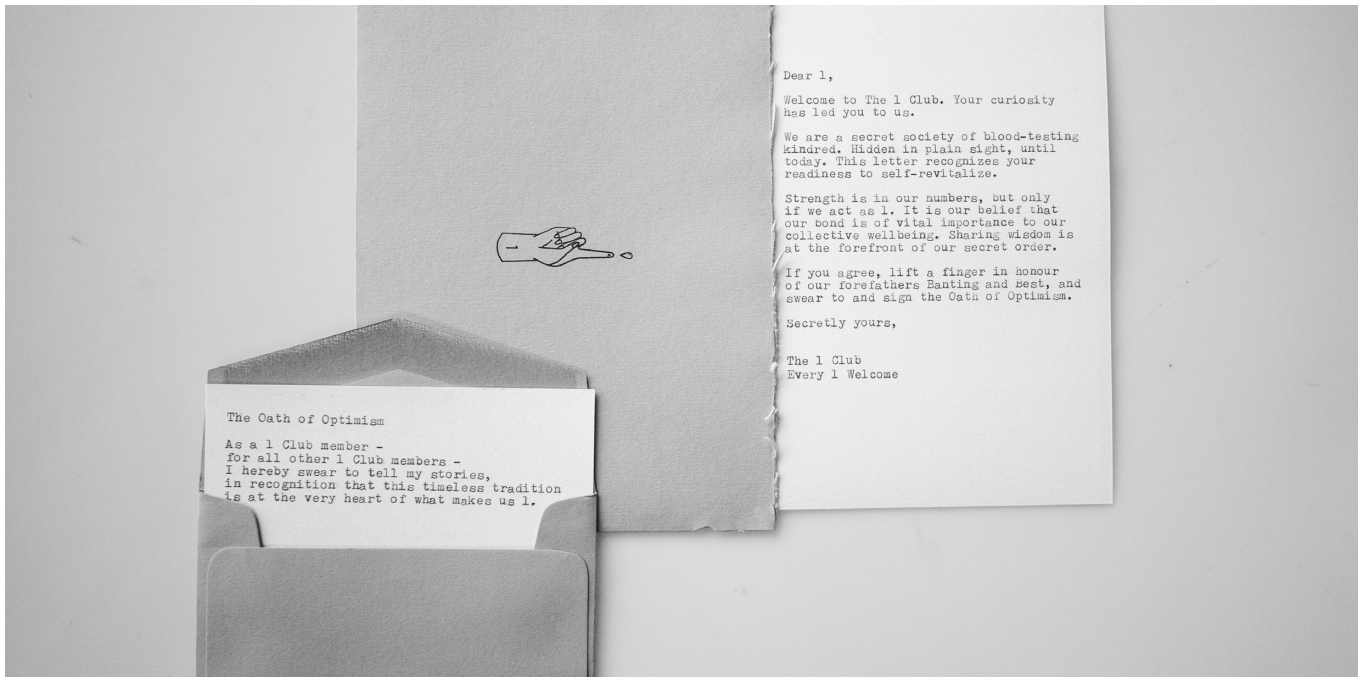


Figure 2. The letter and oath serve as a welcome for newly diagnosed type 1 diabetics to The 1 Club. These artifacts intend to provide a sense of comfort, rather than induce the fear and stigma that is often associated with a diagnosis.

secret congregations operating within the public domain. Coincidentally, type 1 diabetics live under this same shroud of mystery, and go about their daily ritualistic practices within the public space, quite easily undetected by strangers, colleagues and friends. Quite literally, type 1 diabetics treat an invisible disease invisibly, which thereby makes their community secret.

The name, The 1 Club, was chosen to represent the oneness of all its members, but also to differentiate the T1D community from the type 2 diabetes (T2D) community, as confusion exists between these two diseases. The tagline “Every 1 Welcome” was created to complement the name, emphasizing the inclusivity of the club’s membership. Initial designs for a crest and New Member letter have been used to encourage dialogue around this design concept.

The creation of a secret society allows for a visual language that is simultaneously serious and fun. The hand-embroidered crest draws on secret society iconography. It illustrates the characters of Sir Frederick Banting and Charles Best, the discoverers of insulin, kneeling on either side of a hand with its index finger pointing upwards. An illuminated drop of blood hovers above the finger.

The New Member letter reads as follows:

Dear 1,

Welcome to The 1 Club. Your curiosity has led you to us.

We are a secret society of blood-testing kindred. Hidden in plain sight, until today. This letter recognizes your readiness to self-revitalize.

Strength is in our numbers, but only if we act as 1. It is our belief that our bond is of vital importance to our collective wellbeing. Sharing wisdom is at the forefront of our secret order.

If you agree, lift a finger in honour of our forefathers Banting and Best, and swear to and sign the Oath of Optimism.

Secretly yours,

The 1 Club

Attached to the letter is the Oath of Optimism:

As a 1 Club member—for all other 1 Club members—I hereby swear to tell my stories in recognition that this timeless tradition is at the very heart of what makes us 1.

As the project continues, both the crest and New Member letter will be used to support a short animation intended to inspire type 1 diabetics to join the T1D community. Story is an incredibly effective vehicle for relaying a message, as it builds an emotional connection between the storyteller and audience. If done effectively, the story of The 1 Club will be used to help direct type 1 diabetics to the T1D community. The film will draw on the community aspects of knowledge exchange, a sense of belonging and psychological support as it works to emphasize the importance of finding new perspective, and ultimately building resilience towards diabetes burnout.

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AN INTERVIEW WITH KATE FLETCHER

An illustration of a book with a red cover and white pages, and three spools of thread in shades of gray. The book is open, showing the pages. The spools are of different sizes and are positioned to the right of the book. The entire scene is set against a red background with a white diagonal line running from the top left to the bottom right.

Louise St. Pierre

Interviewed by Louise St. Pierre, Nov 26, 2015.

You are recognized internationally as a leader in sustainable fashion design, having written 3 seminal books on Sustainable Fashion, and over 50 publications. You are one of the founders of the Slow Fashion movement and instigator of many sustainability projects, including Local Wisdom, which has engaged hundreds of people worldwide and was shortlisted for the Observer Ethical Awards in 2010. Your international research has taken you to the far North of Finland and remote locations South America. Many people cite you as one of the most inspirational speakers they have heard on sustainability, and your strategic leadership includes a role as co-secretariat to the All Party Parliamentary Group on Ethics and Sustainability in Fashion at the House of Lords. These extraordinary accomplishments indicate a powerful commitment to sustainability.

WHAT MOTIVATES YOU? What gives you the energy that you bring to these efforts? Was there a seminal moment in your life or career that solidified or strengthened your commitment?

KF I think the energy I have was kindled in my youth. Only this last weekend did I realize that I have Liverpool—the city of my birth, a bleak place in the 1980s with few jobs and little hope—to thank for an enduring understanding of what both community and solidarity mean. No one had very much. Everyone lived cheek by jowl. But we organized street parties, passed a just-read newspaper next door, made hand-me-down bikes new again with stickers. We lived well together. I remember once that our part of the city declared itself an independent state for the day. There was a lot of laughter. Could it have been then that I realized that change was possible?

LSP Your understanding of whole systems is more holistic than the pragmatic view held by most designers and businesses. Are things changing? Do you feel that others are starting to hear your views and understand what you are trying to offer to the conversation?

KF I try to look at the relationships between things... to be, in Kathleen Dean Moore's terms, a professor that studies connection. Sometimes that ties in with the business agenda. Often it doesn't. The vast majority of businesses and designers are focused on making their product or service new and different and this trumps the drive to find the connecting thread. But perhaps all it takes is for some of us (will you join me?) to look for and love the connections...

LSP Your relationship to nature is clearly very important. Indications of this come through in your blogs and in some of your talks. Is this a personal inclination, or do you think it is important for all designers to become more fully eco-literate? If so, why?

KF A relationship with nature is both a personal necessity for me and I would wager vital for all of us. My own ecological literacy has afforded me a gorgeous friendship with the natural world. I have never felt worse for wandering about outside. As I see it, its power is in us understanding that nature has a value that goes beyond its usefulness to us. The *literacy* this gives us—the knowledge this gives designers—is deeply held and has the potential to shape all our ideas and actions. It is uniquely powerful.

LSP In some of your talks, you allude to the importance of risk-taking with reference to the word “stray” in Gary Snyder's poetry. Who do you wish would hear this message more clearly? Academics? Designers? Manufacturers? Politicians? Students? Who do you wish was taking the bigger risks?

KF Yes Gary Snyder... his line about “straying” captures the idea of risk-taking perfectly! He is careful to suggest that before you wander off-piste you should spend time understanding the local conditions; but then, stray! Explore new places, uncover new potential, see, taste, hear afresh to understand differently. The risk is that it may not always go well, but it might, it just might also lead to a breakthrough, to a spectacular moment.

Who would I wish to hear this message of Snyder's? Well, perhaps first of all, I direct it to myself... a call to action, a guard against complacency. I also direct it to all of those in the status quo who have forgotten how things look from a different vantage point. It is time to wander of the path and when we are there, think again about how to live.



Figure 1. 'Multiple functions take time' from the Local Wisdom project describing the practices of using clothes. "This is a top made out of two shirts, two men's shirts. I have cut it up and made it into a new ladies' top, so half of it is silk and half of it is polyester. You can totally unbutton the two halves from each other. It means that you can wash [the two halves] separately, but it actually means that one side crinkles much more than the other, so I only have to iron half (laughs). It had to be made from two shirts that had the same collar width... I discovered after I made the other ones what the criteria is for the next pieces that go together. Which is complicated (laughs). You [can wear it without the second half], you can actually unbutton it off and put that over your head and wear it as a halter-top.

But I've also found that when I've had multifunctional pieces I don't really find the second function until I've owned it for a number of years. It is not something that I necessarily interchange, weekly. It might be I wear it one way for a year or two and then I discover how the other way now works. That sort of helps the longevity of a piece that might not be immediately apparent."

Photography: Paul Allister

Figure 2. Pocket On The Go, external pockets slung on belts to be worn over and under clothes by Tara Baath Mooney. Here the capacity of pockets to make our garments work in practice and to, literally, hold our hands, our memories and things, are extended to other outfits.

Photography: Agnes Lloyd-Platt



[Nature's] power is in us understanding that [it] has a value that goes beyond its usefulness to us. The *literacy* this gives us—the knowledge this gives designers—is deeply held and has the potential to shape all our ideas and actions.

LSP Your upcoming book, *Craft of Use* discusses a new role for design: “Framing design and use as a single whole, the book uncovers a more contingent and time-dependent role for design in sustainability.” Can you give us an insight (or preview) of how you see the new role for designers?

KF *Craft of Use* starts from a very simple idea of change, that it is important to pay attention to using things as to creating them. The role for designers in the art, culture and craft of use is massive—and it is sometimes also a bit messy. For it means that designers will reach into the lives of users in a continuous and dynamic way and together evolve and practice ideas and behaviours of using things well. Things will be ambiguous, on-going, unpredictable.

The book is based on around 500 stories which I collected from the public over a 5 year period, (including a healthy number from Vancouver!), documenting the craft of using clothes. The stories reveal many opportunities for influencing sustainability goals—opportunities linked to the life and times of garments in real people’s lives—an underexplored area for design in fashion. The book was enriched by Emily Carr students’ work to amplify the ideas and practice of use of clothing—bringing progressive industrial and interaction design perspectives on the ‘wicked problem’ of fashion.

LSP *Craft of Use* also discusses “ideas of satisfaction and interdependence, of action, knowledge and human agency, that glimpses fashion post-growth.” This is about much more than designers... can you describe how fashion post-growth engages with society and culture?

KF Fashion provision and expression that operates beyond consumerism is a completely different prospect for us all. It opens up the possibility that consumerism might no longer be the defining force in the shaping of our fashion experiences. What will that mean? To be completely truthful I am not sure yet. But what I do know is that fashion-as-usual is not an option. The signs from the *Craft of Use* stories are that there are many small moments of creativity, pleasure, satisfaction in engaging with clothes outside of the market. What we will find out over the next years is what it will mean for designers and what will it mean for all of us who wear clothes.

LSP Where is your work going next?

KF I have been doing some nature writing recently, pulling together short pieces that explore kinship between people, clothes and the natural world. I have been writing amongst other things about how fashion and birds are alike. I love both of these things even more for what they say to each other.

And I have been working on a project called Fashion Ecologies, looking to map garment-related resource flows, interactions and relationships in tightly bounded geographical areas, a small-scale whole, in order to understand more about the big picture.

LSP In your acceptance speech for your honorary doctorate at Emily Carr University of Art + Design, you spoke about the skills of the future as “skills of anticipation, rigorous imagination, and resilience.” Can you expand on that? And is there any other advice you would offer to young designers that you haven’t already mentioned?

KF Education is preparation for the future. And the future is changing. Perhaps what we know most evidently is that the future is unpredictable. Hence why the skills of the future are ones that help us live well within unknown conditions. We will have to experiment with diverse ways of living and do that with a smile and find beauty and delight on the way.



CRITICAL

DESIGN

CRITICAL

MAKING

CRITICAL

USE?

HÉLÈNE DAY FRASER

Critical use is mediated.
Critical use is applied.
Critical use is an act of appropriation.
Critical USE drives content and insight.
It spins off new: systems, ideas, solutions,
rigor sets, affinities.
Critical use gets us past the blocking points.
Critical use is risky it asks us to
engage in new ways.

It makes use of quasi—disruptive forms.
It draws on embodied experience.
It is situational but not positivist.
Phenomenology plays a role.
Through USE things adjust.
New modes are generated.
Use is not stable/static.
It is dynamic.
Perpetual.
It is giving.

I NOTICED SOMETHING the other day. About the work we are doing on the CLOTHING(s) as Conversation project and the emergent research discussions and design outcomes that are occurring/ appearing on the periphery. Provocative possibilities pointing to Critical Use are at play. At Emily Carr there is a significant contingent of individuals seeking to re-think the status quo. This is driven by a common set of values that hold; that the connections we have with people, the environment and the artifacts around us are meaningful and significant; that consumptive tendencies in contemporary western society set up an unhealthy disconnect; our presumed relations with waste and care need significant re-adjustment.

Shifts require shocks of sorts. Many of us apply strategies from Critical Design, and Critical Making in order to sort through, proffer up, and attempt to condition new outcomes and relations or, more radically, afford paradigm change. Yet this does not quite satisfy. For those of us working with clothing, there is a discourse complimentary to our own that has come to us through the work of Kate Fletcher on the Local Wisdom project and by extension the articulation of Craft of Use practices. At Emily Carr, in the CLOTHING(s) as Conversation project, we are considering use and craft of use—identifying, applying and amplifying insights from our own individual and group mediated experiences.

My intent here is to begin to frame this tendency and set of emergent practices at Emily Carr. I will outline and situate key aspects of Critical Design, Critical Making, and other creative theoretical frameworks and modes of inquiry that are informing Critical Use. I will discuss investigations and strategic applications of artifacts and actions that privilege and prioritize use as a means, an informant, and instigator of changed perspectives. In doing so I aim to provide an initial mapping of a design practice that interrogates and calls into question our current relations with use.

PRECEDENTS: THE TERM CRITICAL

To begin, it is worth considering when and how we use the term “critical.” As an adjective, the word critical serves to modify or describe nouns: stable placeholders such as names, and words that act as markers. Critical can be understood as “expressing adverse or disapproving comments or judgments” [5]. Connected to situations or problems that are at “a point of crisis” it refers to decisive

or crucial actions/choices that are required in order for something to succeed or fail. When used in relation to nature and properties of matter and energy in physics, “critical” speaks to “a point of transition from one state to another” [8]. In the Arts “critical” is used to describe acts of analysis and evaluation that take on and consider the merits or faults of an artifact or body of work [6]. Critical Design, Critical Making, Critical Use all tap into this. These are design approaches that demonstrate concern, discomfort with the status quo, and a desire to point to, invoke and incite changed relations with the products of design. The ways in which they do this varies.

CRITICAL DESIGN

First applied in the late 1990’s, Critical Design makes use of speculative design proposals in order “to challenge narrow assumptions, preconceptions and givens about the role products play in everyday life” [16, 15]. Dunne and Raby are careful to situate Critical Design as a position and not method [16]. Critical Design is a device intended to make us think—to produce artifacts that raise awareness, expose assumptions, provoke action, spark debate [16]. While the tactics it applies lead us to a reflective space it also, arguably, acts as a catalyst. Design artifacts that come out of a Critical Design approach offer up opportunities to consider alternate spaces and modes of engagement. These are provocateurs that make use of Design Fictions and storytelling that act as “diegetic prototypes” [2]. As such they afford a means to test an idea [2] and arguably (contrary to Dunne and Raby’s original articulation) point to means of accessing them as part of a method of inquiry.

Something else important to consider, Critical Design situates its propositions in a detached space—separate from the user. A means of entertaining—“in an intellectual sort of way, like literature or film” [16]—we are titillated/enticed but relegated to observer. We do not participate in its making. Possibilities of knowing through lived engagement and usage are not offered up to us.

EMPATHY AND HEURISTICS

In other domains of Design, engagement with use is increasingly common. Role playing empathy techniques such as Experience Prototyping and Bodystorming are used by Designers as a means to immerse and internalize alternate lived experience (to release

their own view), and evoke a greater appreciation/alignment with the user [4,29]. In Psychology and the human and social sciences, Heuristic Inquiry (a mode of qualitative research) also pulls on embodied practices as a way of understanding use and lived experience [28]. The inverse of empathy studies, Heuristic Inquiry taps into the researcher's own experience through long term engaged explorations that include stages of: immersion, incubation, illumination, explication, creative synthesis and finally validation through the transmitting and sharing of this experience [27, 24].

CRITICAL MAKING

While Critical Making does not apply empathy studies or Heuristic Inquiry it does recognize the gap that Critical Design does not address. Critical Making seeks to “supplement and extend critical reflection” via “material forms of engagement with technologies” [33]. In the doing (in the making) a means “to reconnect our lived experiences with technologies to social and conceptual critique” is facilitated [33]. Rather than an artifact of observation, process is brought to the fore. Attention is shifted to the insight and possibility available in the initiation of an artifact—in acts of making [36]. This insight is not relegated to the designer. A focus on open design, access, and engagement is applied to a new group—to others who may build, use, and/or modify plans and lived experience of (Critical) making [25].

USERS, USE PRACTICES AND HEURISTICS

As exemplified by the efforts and events surrounding the 2015 Paris Climate Change Conference (COP21) contemporary society actively acknowledges a need to radically adjust our engagement with the environment. By extension, many within Design are seeking new approaches in order to change up unhealthy assumptions pertaining to the things we design, and the ways we produce and consume objects [20, 38, 22]. Exposing existing and nascent use behaviors (in the mean or on the periphery of society) is key to these endeavors. A growing body of research into *Design by Use* [3] and *Craft of Use* practices [18] is indicative of this perspective. The significant shift that has occurred in the approaches taken on by product design over the past 25 years (from expert driven to user centered to co-creative) and the growth and uptake of Participatory research methods into the main stream is also part of this dynamic [35, 34, 23, 30].

Kate Fletcher's ground breaking work on the Local Wisdom Network and ongoing documentation and articulation of use practices (via storytelling, interviews, visual documentation) has uncovered and made accessible our nuanced relations with use and clothing [17]. For those of us invested in the clothing(s) as Conversation project, Fletcher's work is of particular interest as it demonstrates links between cognitive process and physical practices of garment use. Fletcher notes that use is “all about synthesis”—that the ideas *in our heads* and the way we conceptualize our world are linked to



Figure 1. I threw it down (in a foreign place). I secured it (with a bulldog clip). A stranger offered me help. I wrapped myself up. I wore it to a family function (and shucked corn). I stretched my feet out—took time to reconsider assumptions as I watched strangers across an expanse of grass.

When put to Use/used the designed artifact confounds... [Users] have to deal with the uncertainty of the form and their ability to maintain usual relations with space, time, and the social encounters that shape them.

the way we engage with the clothing we wear [19]. Sequencing and sorting that is a part of everyday use practices can be linked to both practical understanding and abstract knowledge [18]. They are integral to products that are comprised of both material dynamics and mental activities.

Fletcher's work points to use as a strategic means of getting at new knowledge/new systems of knowing. It draws us to consider the potential of use (and its strategic application) as a means of re-thinking designed products and systems. Revised use scenarios—Critical Use—as a way to re-route existing behaviors and affectively encourage new alternatives, in this case, pertaining to clothing.

CRITICAL USE

SIMILARITIES-ALIGNMENT Critical Use pulls on all of the design and research strategies described above. Similar to Critical Making and Heuristic Inquiry it acknowledges that open source and embodied process of knowing are integral to critical thinking. It looks to existing evolving engagement with artifacts and use practices for insight. As with Critical Design and Critical Making it involves disruptive artifacts.

ARTIFACTS EMPLOYED Provocation as *raison d'être*: Critical Use seeks to confound intentionally with the aid of idea artifacts [9]. The Situationalist International's analysis of contemporary capitalist society and approaches for social transformation set precedence [31]. The Legacy of Detournement and tactics used to reveal new material conditions (potentials) and "enable divergent political affairs" through making strange are also employed by: Critical Design, Critical Making, Adversarial Design, Slow Design [13]. These approaches use artifacts and accompanying scenarios to throw those participating off their usual course as a means of re-understanding.

DIFFERENCES Unlike with Critical Design, the leverage points for Critical Use are participatory; unlike Critical Making, they are ongoing.

PARTICIPATION Examples of Critical Use reject scenarios that station the user as observer and passive consumer of the visual. Similar to Guy Debord who critiqued the capitalist infatuation and manipulation of the "spectacle," Critical Use seeks active participation [10]. This is seen as a means to get past passive social relationships, between people (and between people and things) mediated by images: to side step the problematic display and consume dynamic often attributed to mainstream Design [31]. Critical Use refuses performances and postures that relegate individuals

and artifacts to isolated positions of observer and the observed.

This intent to connect people to creative acts—to affecting design—is similar to aspirations of Fluxus and Critical Making. Critical Use attempts facilitating "non-hierarchical ways of making and knowing" through the ongoing amalgamation of design constituents of Use: users, artifacts, actions [37, 25].

ONGOING Use is a fluid space. While there are markers, evidence of use is implicitly always about moving and adjusting—about flux. There is nothing static about use. Critical Use asserts that embodied knowledge should not only be considered at the front end but also adapted and applied on an ongoing basis [9]. Use is considered a key mechanism to afford new meanings to the products we engage with [18]. Knowledge garnered through ongoing provocative relations with products (through use) is applied to affect change.

This application of Deleuze and Guattari's "and... and... and..." rhizome contingent [11] and access to Design that facilitates conjunctive arrangements that do "not follow the lines of a pre-conceived patterned or an embedded program" moves the user and the design artifact into an ongoing state of negotiation [1]. The focus is shifted away from the front end "lived experience of (Critical) making" [26, 32]. The object, unlike those found in Critical Design is never final (delineated by an end point). With Critical Use we offer ourselves, and others, the possibility to rethink existing artifact—action ecosystems.

(+) A DISRUPTIVE ARTIFACT—USE EQUATION Critical Use seeks to ply and design speculative propositions in order to enable new sets of artifacts/systems. It is intent on making us question assumed approaches. Through their semi disruptive nature these propositions instigate new use situations. In doing so they facilitate a re-patterning of contemporary circumstances and conditions.

In Summer 2015 three individuals (including myself) wore our plus(+) template for an extended time (anywhere from 7 to 38 consecutive days). The experience was provocative and built off an earlier exploration done in 2013 (8 participants for one day). It placed us in positions that had us rethinking our use and involvement with clothing, the spaces we inhabit and the people, animals we interact with. As a quasi-disruptive form the plus(+) allows us a critical platform, a place to deposit and reposition our biases and experiences towards clothing.

How does this play out? An unusual but vaguely recognizable form is constructed and used. This open source form is made based on the individual's desires, needs, whims. It may be documented before it is used—out of its usual context (at the lake, on the pavement of a parking lot, hanging from a tree, suspended

from a climbing gym set up). When put to Use/used the designed artifact confounds. Its users have to deal with unusual questions, queries from others. They have to deal with the uncertainty of the form and their ability to maintain usual relations with space, time, and the social encounters that shape them. They have to improvise, tell stories, create new structures, new body movements (to go through doorways, up stairs, round corners). They navigate the social—answer what ifs, contend with family expectations, professional obligations, personal desires of self-projection. And as they document and move forward they identify new sets and patterns that might be accessible. They consider new approachable behaviors, criteria, and aspects of use that make things meaningful and allow the user (themselves and others) to engage with a wide range of qualities of the environment (social, political, ecological) in different ways.

In the case of CLOTHING(s) as Conversation we, the designers, have taken on Use. We have created an artifact and a scenario. The plus (+) is a designed artifact. It is made. But most importantly it is used and through its use (over an extended period of time)

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concentration is shifted away from assumed stances. We now consider our experience with clothing as more than the constructed sites of articulation that we usually afford ourselves—you, me, that beautiful object. The pedestal, the role of provocateur, the performer setting out a statement for confirmation or debate (black/white, yes/no)... is resituated. Our assumptions have been thrown back at us, reconstituted by applied use. Moving forward, the making and the use will be shared with others—to individuals in New Zealand, Holland, Spain, England, urban and rural North America who have approached the initial users of the plus(+) and asked... if they too could use it.

END: BEYOND COMMENTARY AND REFLECTION At Emily Carr interventions intended to dislodge individual and collective assumptions are abound; CLOTHING(s) as Conversation is but one among many. These interventions are used to trigger new discussions, outcomes, means of getting at the tacit, implicit, implied. I think we (and our colleagues, peers and students) are doing something particular that is tied to the critical (and the strategic). We are reconstituting Use as a creative entity for questioning: Critical Use.

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IMPROV DESIGN

A generative tool for working with Zero-Waste Pattern Cutting

NATALIE TILLEN

30

CURRENT

IMPROV THEATRE techniques create the conditions to embody the design space through collaborative action, as a generative tool that provides structure through constraints in the creative process for designers. This research will demonstrate what improv theatre principles are and how they relate to design, as well as identify precedents using similar theories and opportunities as the ones I'm exploring in my undergraduate thesis.

METHOD

To strengthen skills, improv actors practice techniques through exercises, games and activities; the methods demonstrated in this research use the conditions of this space. Exercises refer to a singular task or sense to be activated and flexed, games refer to the generation of play and silliness that can induce cognitive or physical flow, and activities refer to a series of intentioned tasks to reach a collective goal. The main principles of improv theatre can be described as:

- Yes, and...
- Spontaneity.
- Creating collaboratively.
- Showing up, as you are.
- Failing awesomely, often.
- Anything and everything is interesting and inspirational.

Improv and design are both social in nature and create from an unknown space in the early stages. During the creative process of design, principles of improv are optimally utilized at the ideation and iteration phase (see figure 1). The d.school of Stanford University has done the most effective work around Design Thinking and

Improvisation. In an email conversation with Erik Olesund Teaching Fellow at d.school, he mentioned that “when I (or most people at the d.school) use the word design we refer to the process of solving problems in a human-centered and collaborative way... It is the way to the solution (process) not the solution itself (artifact) that we see having a lot overlap with improv theater” (E. Olesund, personal communication, October 21, 2015). The goal of using improv theatre techniques in design is the exchange of tacit knowledge when a group of people create together rather than in isolation. Improv’s framework provides the container for divergent thinking and rapid form development, shifting a designer’s reaction from patterned and automatic to conscious and playful. Having the ability to spontaneously react to one’s internal and external environment throughout the design process is crucial [1]. With these exercises designers can begin to broaden their responsiveness and imagination to new ways of problem solving.

CONTEXT

At the height of rapid consumer culture and environmental degradation, the fashion industry is built on efficient standardized processes that avoid risk and uncertainty [2]. How can a shift towards more sustainable practices in the fashion and garment industry take place? Current fashion design practices involve conventional patterns that contribute to 15% fabric waste at the cutting stage [3]. Zero-Waste Pattern Cutting (ZWPC) is an alternative cutting technique that addresses material waste at the design stage in the garment lifecycle. What tools are designers missing or do they need to be more autonomous from groupthink? How do you create change without risk?

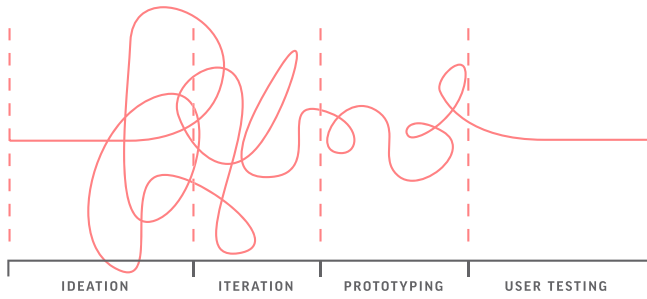


Figure 1. Design process: highlighting opportunities for improv methods to intersect with design.

THEORY INTO PRACTICE

My undergraduate thesis investigates opportunities of improv theatre techniques as a methodology for the early stages of design, which aims to create a platform for fashion designers to work with ZWPC. The research involves determining its optimal use and ability to provide value as a generative tool to facilitate collaborative embodied cognition in material and design practices with less risk [4]. A series of co-creative sessions are activated by the facilitator (myself) guiding the group (design team) to gain cognitive collaborative flow, and progressively work through activities that: (1) highlight an aspect of ZWPC (2) the group can identify some key take away pieces (3) the group can later discuss, reflect and analyze.

I had the opportunity to facilitate a co-creation session with the design team at the Lululemon Lab. A 45 minute session, including warm-ups, ideation games and iterative ZWPC activities, including one called “Cutting and...” It involved each participant improvising their own cutting technique, and then collectively choosing one of the 5 new techniques to create a garment with. Divided into 2 groups, they each had 10 minutes to construct a garment and were then asked to do a “walk off” to explain their designs. The objective was for each individual to ideate a cutting technique through improvisation, then choose as a group one technique to iterate a garment with. Working in this way, the group can identify the most viable option to move forward with.

All 5 participants embodied a “yes and...” attitude of spontaneity, creating collaboratively and engaging in the process. There was a significant increase in their energy with comments of delight and intrigue in the potential of this as a tool for fashion designers. Further research with user validation is underway and opportunities for material artifacts are still being realized.

CONCLUSION

Once designers begin to identify improv theatre techniques as a tool, they can adapt this as a methodology for their creative process that benefits their collaborators, users and end product. In closing, Gerber notes that “the value of improvisation is in the potential it holds to unleash creative action for individual designers and design teams... although there is much work to be done to blend the rich traditions of improvisation and design” [1].



Figure 2. The framework for the workshops is rooted on embodied collaborations within the creative process through both individual and group activities.

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DESIS

DESIGN FOR SOCIAL INNOVATION & SUSTAINABILITY

LOUISE ST. PIERRE



THE CONTEXT OF SUSTAINABILITY

THOSE OF US who are paying attention to climate change know that the way that we live our lives *needs* to change. The way that we live needs to change urgently, markedly and systemically; this includes all that we do, every act that has impact on others, on resource consumption, energy consumption and on collective decision making. To speak of sustainability means to speak of a renegotiation of the way that we live on the earth: a dramatic reduction of our resource and energy consumption. It is about social change.

According to Ezio Manzini design for social innovation towards sustainability, or DESIS is “everything that expert design can do to activate, sustain, and orient processes of social change toward sustainability” [2]. Manzini’s work on DESIS has spanned more than a decade, and has resulted in the establishment of a network of DESIS research labs in design schools worldwide.

ORIGINS OF DESIS

From the beginning, Manzini’s ideas were seen as visionary in values and design. He was able to articulate the relative importance of various approaches to sustainable design. He affirmed that while it is essential to design resource efficient products and services, the needed reduction in ecological impacts would come from changes in how people lived, worked, and connected with one another: this is social innovation toward sustainability. At the time, this was a new vision and domain for sustainable design.

The research that leveraged Manzini’s theories began with the EMUDE (Emerging User Demands for sustainable solutions) project in 2004. Working with a number of colleagues including Anna Meroni and François Jégou, Manzini decided to research what creative people were already doing to live low impact lifestyles. With support from the European Union, teams of design students from eight schools in Europe were mobilized to gather case studies of people who were shaping their lives resourcefully and creatively. The case studies were analyzed, sorted and disseminated in publications that reached a wide audience of academics, students and designers [1, 3]. This was followed by projects that collected diverse case studies and interest from around the world. It is very important that this work has been distilled from the initial case studies and inspiration to principles and approaches for designing in new ways: *social innovation toward sustainability*, an emerging domain for design.

The ideals of social change toward sustainability were disseminated by Manzini via his prolific international teaching and speaking career. Design schools, as places for learning, experimentation and creation of new models for design, house and

support much of the DESIS research work. Participating design schools, students, and faculty are important agents of change and contributors to DESIS. DESIS holds annual assemblies in conjunction with Cumulus, the largest association of Art and Design schools around the world. This draws members together for decision—making and builds the knowledge network and community of design for social innovation and sustainability.

The DESIS lab network was formalized in 2009 by the eight original member schools and by 2016 has grown to 48 member schools around the world. The DESIS organization supports the capacities of member schools to operate as design research teams that collaborate internationally to share knowledge through research relationships, and by presenting at the annual DESIS assembly. These labs do ongoing research, promote the development of knowledge, and educate designers to meet the growing demand for design for social innovation toward sustainability.

Emily Carr Design, with its strong focus on sustainability, design research, participatory methods and contextually grounded design, was an ideal candidate for a DESIS lab. We joined DESIS in 2012 and are currently the only DESIS lab in Canada. The Emily Carr DESIS lab hosts a number of initiatives including the CLOTHING(s) as Conversation project (See page 25 in this issue), Vancouver Transition Town Collaborations, and Who is Social, an inquiry into social engagement with other-than-humans.

KEY PRINCIPLES OF DESIS

The theories, approaches and methods of DESIS are detailed extensively in Manzini’s new book *Design, when Everybody Designs*. Key principles to discuss here: Scale, Recombination of Existing Assets, and Redundancies. These and other DESIS principles shift the way that designers have traditionally been taught to approach our work.

SCALE

Social innovations work best when they are designed for the local conditions of specific communities. They are characterized by their human scale.

Ecologically, small scale solutions are often less resource intensive. Large scale production of any type requires extensive resources, often fossil-fuel based. In her system map Eilish McVey indicates the multiple touchpoints that are potential resource impacts for a single head of hydroponic lettuce grown outside metro Vancouver. Her redesign proposes curbside neighbourhood greenhouses called Gro-Mo with member card access modeled after car share programs. This local scale greenhouse reduces

To speak of sustainability means to speak of a renegotiation of the way that we live on the earth: a dramatic reduction of our resource and energy consumption. It is about social change.

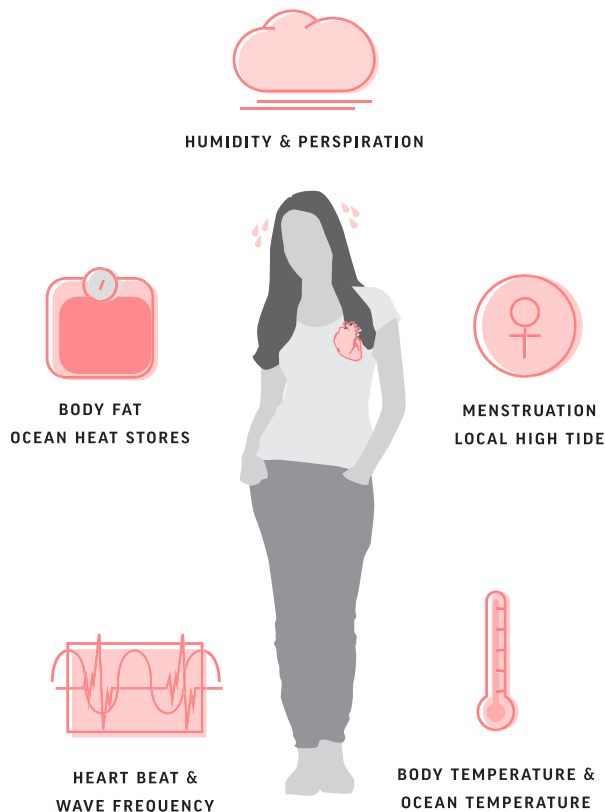


Figure 1. Lisa Bolton's proposal, In Deep, viscerally connects urban dwellers with the ocean, shifting the Quantified Self movement to the Sensing Self future.

travel and also increases the potential for neighbourly encounters when harvesting lettuce for dinner. This exemplifies what Manzini refers to as a small, local, open, and connected system (SLOC). The small greenhouse is positioned very close to home, open to any members, and interconnected via an information system that can monitor membership, use and maintenance. Scaling up the Gro-Mo can mean replicating a local community solution in another location, with small shifts to allow for the local context. It is more like scaling out than scaling up.

CREATIVE RECOMBINING OF EXISTING ASSETS

The principle of recombining what already exists is foundational to lowering resource intensity. This is what you want to do when you want to innovate without increasing consumer volume.

Planet Chef is a web based game whereby participants compete to prepare food using the least energy and resources. All factors are considered in the scoring, from how the food was grown, where it was purchased, how far it travelled to get to its destination, and how much energy was used in the preparation. The scoring also includes points in the categories food competitions are known for: visual appeal, taste, mouth feel. The culmination is a shared low energy meal at a neighborhood potluck. This design innovates social engagement by recombining existing assets: the web, food data, and friends. New social moments, educational opportunities, and networks are created without building new artifacts.

Who is social? This Emily Carr DESIS initiative researches social relations with more than humans. A more integrated relationship between people and the natural world is essential to developing priorities and values necessary for sustainability. Lisa Bolton's proposal, In Deep, viscerally connects urban dwellers with the ocean. Drawing on existing oceanography databases, Bolton developed a smart phone app that correlates data about our bodies with data about the oceans. (See figure 1.) For this project the Quantified Self movement and the numerous apps that chart biometric data are existing assets. The new In Deep app recombines with existing sensors and adds information about how one's body relates to live ocean data at that moment. Bolton's app correlates body temperature to ocean temperature, heartbeat to wave frequency, body fat to ocean heat stores, and menstruation to local high tide. An entirely new social relationship is created from existing assets.

Recombining existing assets forces creativity of a different sort: re-forming what already exists to create new and socially rewarding experiences. This is a lean efficiency that can bring enormous design satisfaction as well as social innovation.

REDUNDANCY

Redundancy is a principle adapted from the study of resilient ecosystems. A resilient ecosystem contains many species that are able to perform similar functions. This allows the ecosystem to more easily adapt to shocks and changes, because another plant or animal can step in and fill the role previously taken by another species [4]. In social innovation contexts, a diverse resource pool of small businesses allows for replacement, updating and upgrading, and constant evolution in response to a community's changing needs. Redundancy also supports shared responsibility in a community, and together with scale, allows customization to specific contexts.

For example, DESIS Emily Carr collaborated with Village Vancouver to design seed libraries to support the practice of seed sharing in the lower mainland. Village Vancouver is a Transition



Figure 2. Book of Seeds, by Bryce Duyvewaardt, Sauha Lee, Eilish McVey, and Leah Pirani, is designed to fit in the Public Library context.

Town. Along with other transition communities around the world, it is devoted to supporting the transition to a low-resource economy. Seed sharing has many benefits. It lowers the costs of gardening, fosters the selection of locally adapted plant species, and allows independence from big seed corporations. Village Vancouver supports this practice by providing seed libraries throughout Greater Vancouver that are points of exchange and learning at Street Fairs, Farmer's Markets, Community Gardens, and Public Libraries.

Emily Carr DESIS students spent time immersed in the grass-roots culture of seed sharing. Then, taking the redundancy approach rather than the traditional design approach, developed a diversity of seed libraries to be manufactured and shared locally. With the wearable Seed Apron, a roving volunteer carries seeds throughout a Farmer's Market to have conversations about the importance of exchanging seeds. The product supports a performative and social function. The Market Box is suitable for street fairs. The Book of Seeds is designed to fit into the Public Library context, and the DIY Seed Storage is a low-cost instruction kit for Community Gardeners to build their own storage. This multiple solution approach allowed Village Vancouver to find a variety of locations within the local urban fabric willing to host seed libraries.

CONCLUDING THOUGHTS

Scale, Recombining Existing Assets, and Redundancy are key principles that have emerged from years of DESIS research. The principles that underlie design for social innovation for sustainability shift our understanding of traditional design: small-scale solutions challenge standardization and mass production, recombination of existing assets challenges the tendency to produce

rampant artifacts, and designing for redundancy decreases dependence on singular solutions. The degree of change represented by these shifts is significant. They help to shepherd the marked and systemic social change that we need.

Deeply embedded in the DESIS philosophy is the understanding that joy and satisfaction gained from social engagement surpasses any gratification one might find in consumerism, and offsets the notion that reduction of consumption brings any deprivation. Much of the value laden and ethical work of DESIS has been made possible by engaging research within design schools, where the pressures to provide for consumer culture can be tempered. As a result the methodologies and approaches of DESIS are changing how we design, live, imagine, feel and be.

Louise St. Pierre is the Lab Coordinator and H el ene Day Fraser is the Lab Manager. Both have attended and presented at International DESIS Lab Assemblies.

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DITCH THE BOTTLE

Plastic Bottles and Design Activism

TINA YAN

OUR PLASTICS PROBLEM

HOW DO WE begin to examine and deconstruct our relationship with plastic? Since its discovery, designers, inventors and engineers alike have exploited its cheap cost, durability, and flexibility of use. It was not until recently that we recognized problems with this material, especially regarding plastic waste. Yet we still continue to use and throw out plastics on a daily basis, largely because of our consumptive lifestyle. The Ditch the Bottle project is an example of design activism that comes at a time when our relationship with consumption practices and plastics has reached a peak. It looks to address one of our most wasteful habits—drinking water from single use containers. As a type of guerrilla social activism, I seek to inform and engage the public regarding this issue, creating a system of do-it-yourself activism.

Today, we are living in what Julier calls “a world in turmoil” [5]. Many social, political, and economic issues plague our society and yet, Julier notes, “the structures and processes of neoliberalism that have come to dominate the majority of our planet [...] seem to rumble on” [5]. He criticizes our current design culture, with its focus on commercialisation, capitalism and consumption driven primarily by the rise of neoliberalism. This focus has led to an uncritical use of plastic by designers.

We have a wicked problem with plastics—they take thousands of years to biodegrade, and we produce too much of it as waste. Plastics are filling up the landfills and polluting our oceans, and many contain harmful toxins. A clear indication of the state of our plastics crisis is the Great Pacific Garbage Patch, an area of the Pacific Ocean roughly 20 million square kilometers (7.7 million square miles) in size that is filled with plastic debris [4]. Millions of birds and sea mammals swallow the plastic items thinking they are food,

with many consequently dying from choking or intestinal blockage. These plastics in the ocean also have an indirect effect on humans as they break down into smaller and smaller pieces. These tiny particles contain toxins that bio-accumulate up the food chain, eventually ending up in the seafood that we ingest [8].

More specifically with regard to bottled water, research on this topic has found samples containing traces of contaminants such as arsenic, bromide, bacteria and lead, with 27 out of 49 bottled water products available in Canada recalled by the Canadian Food Inspection Agency since 2000 [2]. Bottled water is not subject to the same strict guidelines as tap water, which is regulated by Health Canada [9]. In addition, bottled water produces up to 1.5 million tons of plastic waste per year worldwide [1], with more than 75% of plastic water bottles not recycled [3]. Undoubtedly, the practice of bottled water is damaging on many levels to humans, animals, and the environment at large.

THE ROLE OF THE DESIGNER

The issue at hand is clear. The problem space calls for intervention, in which design activism can play a role. Due to designers’ increasing dissatisfaction with the status quo, design activism has “emerged as a movement, partly in response to the recent crises of neoliberalism” [6]. One basis for this activism can be found in the concept of design authorship—having designers take responsibility for their work, and especially for its content, rather than existing within the “typical client-designer relationship” where designers are told what to do [7]. McCarthy argues that “design needs content, and design needs users (readers, a market, an audience, etc.), but the message content [...] can equally come from the designer

herself” [7]. As designers, we need not take a passive role in our consumption-driven world; we can actively create content and take ownership of our work.

PROCESS

As a communication designer, I want to influence consumers to rethink the single use water bottle. I especially want to reach them at the point of sale, before they make the decision to buy bottled water. I also want this project to be spread freely by other people. I decided to use stickers because they are easy to disseminate, and anyone can print them out. I created 10 stickers, each displaying a fact about plastic bottles in the shape and size of an actual bottle (see figure 1). There is a (mock) website at the bottom of these stickers, which people can visit for more information and to get involved by creating and printing their own stickers. These stickers can be handed out at events, spread through social media and word-of-mouth, and noticed wherever they are placed. The project uses a black and white palette to keep the aesthetic minimal, with pops of red to give it a sense of urgency and to contrast with the abundance of blue in current bottled water packaging. The text is in a bold, black, sans-serif font on a white background to create further contrast and to attract a younger demographic. The minimalism in the design is also intended to differentiate the stickers from colourful bottled water packaging.

In the last stage of my project, I went to stores and vending machines and placed my stickers where plastic bottles are sold, as seen in figure 2.

Although challenging the status quo, this project uses mainstream design tactics and principles in order to be easily understood. Julier argues that design activism is not a boycott, demonstration or protest—it is a “designerly” way of intervention, still situated within its specific context [5]. He says, “as intervention, it moves within the challenges of pre-existing circumstances, while also attempting to reorientate these” [5]. This project uses typical corporate standards, having a website, logo and social media presence, and employs design principles in its branding in order to appeal to its primary target audience, the 18-30 year old youth/young adult demographic.

OTHER PROJECTS

Comparing the Ditch the Bottle project to Shepard Fairey’s Obey Giant graphic campaign, we can see that both criticize corporate control, while “employing the same strategies of global branding schemes” [7]. Fairey’s campaign was spread locally, and then eventually worldwide, by a public who took it upon themselves to post the image freely, sometimes illegally, and without central planning [7]. Similarly, the Ditch the Bottle project engages the public and gives them the option of spreading the message themselves. As such, the visuals must look appealing, “manipulat[e] the environment graphically, [and] harness the modes and media of visual communication” [7].

Similar phenomena have appeared globally, such as the Arabic pamphlet “How to Revolt Intelligently,” circulated during the



Figure 1. Ditch the Bottle stickers, each displaying a specific fact about plastic bottles, can be downloaded and printed off from its corresponding website.



Figure 2. The Ditch the Bottle sticker at a local supermarket, placed where bottled water is normally sold, delivers an otherwise disregarded fact about the product.

2011 Egyptian protests [6]. These pamphlets were created by the designer Ganzeer as a response to the uprisings, and were put online to be freely downloaded by the public. Subsequently, they were “widely shared via electronic social networks and designers’ blogs” [6]. In both examples, the designer took an authorship role—they took ownership and responsibility over their work, motivated by a concern over issues that impacted their society. However, it is not completely up to the designer to control where campaigns go. Projects can acquire “their own cultural identities separate from that of their creators, while also allowing for intellectual attribution beyond the designer-authors” [6].

These projects are emblematic of the complex relationship between “author (artist, designer, photographer), idea, image, message, and audience” [7]. It is a relationship that can transform and evolve, something the Ditch the Bottle project aims to do by giving much of the responsibility to the public. As a designer-author, I provide the information, resources, and materials to

encourage social dissent through community involvement, but it is ultimately up to the public to disseminate the material.

CONCLUSION

Single use bottled water has effectively turned one of the most fundamental human rights—access to clean, fresh water—into a commodity purchase. It is a hugely wasteful habit in which we throw away a bottle every time we finish, leaving it to pollute our land and poison our oceans. As a form of design activism, with an emphasis on design authorship, the Ditch the Bottle project seeks to bring these issues to light by informing and engaging the public, and also by encouraging them to take responsibility. Designers should not be limited only to producing content that is commissioned—rather, the content can come from designers themselves. It is crucial, with the current social, political, and economic state of the world, that we act on issues that have an impact on us. Design has the potential to both initiate and facilitate these movements.

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