

IMPROVISED EVERYTHING

PROTOTYPING A MORE
EQUAL PARTICIPATION
IN DESIGN

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MRes Arts & Cultural Research: Design

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2014-15

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Introduction

A starting point

This project began with a hypothetical question: *what if the relation between designer and user was one of equals?* By assuming equality – between the professional and amateur, producer and consumer – can such an equality be enacted? What might such a practice of design look like? This research engages with such philosophical questions through practice, since they arise from the effects of the practice of design. The question is an ethical one: ethics as it relates to the role and agency of the “user” with regard to their own material, designed environment, and within the practices of design that create it.

The research takes as a point of departure the ethical position of Ranciere, in which equality is axiomatic: instead of working progressively towards making “an equal society out of unequal men”, guided by the knowledge of experts, equality should be a starting point; the realisation that the unequal social order is comprised of equal men.¹ Ranciere investigates the *what if?*, the far-reaching implications of this radical assumption that forms the basis of the democratic idea – that our relations and role in collective matters should be conducted on the level of equals, regardless of the existing hierarchies of the social order. Such an uncompromising approach raises the question of its own feasibility; this research project will “suspend disbelief” in order to investigate the idea and feasibility of a form of design practice based on such a seemingly utopian equality.

Background

It's something of a cliché: *everything around us is designed*. Design *has* created the modern world, its labour-saving machines and enabling devices; and also its mountains of waste rising over denuded landscapes. Design may try to improve our lot, but at the same time has the potential to produce disastrous unintended consequences by its interventions in the complex systems of our world, natural and cultural.

According to the anthropocene hypothesis², man's material interventions in the environment, the results of our systems of production and exchange, have become so dominant that they may destroy not only “nature”, but our culture along with it. It's a slowly *designed* apocalypse: somewhere a designer cranks out another new concept for a decorative iPhone case; the flimsy shell travels half way around the world, warming it ever so slightly; a new stratum of plastic debris

¹ Jacques Rancière, *The ignorant schoolmaster*, Trans. Kristin Ross (Stanford: Stanford University Press, 1991), 133.

² Paul J Crutzen and Eugene F. Stoermer, “The 'Anthropocene'”, *IGBP Newsletter* 41 (2000): 17-18.

appears in the geological record. As Fredric Jameson noted, “it is easier to imagine the end of the world than to imagine the end of capitalism”³; with the advent of the anthropocene epoch, we may get both, and a “return” to something like Hobbes’s apocalyptic state of nature:

In such condition there is no place for industry, because the fruit thereof is uncertain, and consequently, not culture of the earth, no navigation, nor the use of commodities that may be imported by sea, no commodious building, no instruments of moving and removing such things as require much force, no knowledge of the face of the earth, no account of time, no arts, no letters, no society, and which is worst of all, continual fear and danger of violent death, and the life of man, solitary, poor, nasty, brutish, and short.⁴

To Hobbes all men are equal – and so, under his logic, without a political structure based on hierarchy, the authority of a (sovereign) leader, the result would be an anarchy of “war of every man against every man”.⁵ US right-libertarian survivalists are already eagerly preparing themselves for such a future.⁶ The equality of all men is used by Hobbes to justify the inequality of the social order; equality in human relations is a nightmare which must be resisted at all costs.

They way design has created our world, the specialisation and division of labour towards the solving of our material problems, has created its own order: a system in which professionally designed products in turn produce their users as passive consumers, with little opportunity to contribute to the making of the material world around them. The order of design is a professional one, based on expertise; each fulfilling their appropriate role, much as Plato suggests (through Socrates) in the Republic.⁷ The designer acts as an expert representative, anticipating the needs and desires of the consuming public; they may “vote with their feet” as to the suitability of such proposals, but the relationship is an unequal one. Despite the proliferation of products and tools, “the user” is effectively disenfranchised when it comes to the making of the designed world.

The “product” itself is an agent of this disenfranchisement. A product, in its instrumental dimension, is a tool for achieving some human purpose. As Illich argued, our tools (from hammers

3 Fredric Jameson, “Future city,” *New Left Review* (2003): 65-80. <http://newleftreview.org/II/21/fredric-jameson-future-city>

4 Thomas Hobbes, *Leviathan* (Harmondsworth: Penguin, 1981), XIII.

5 Ibid.

6 See for example Kurt Saxon, “What is a survivalist?” (1980), accessed 7th September 2015. <http://www.textfiles.com/survival/whatsurv>. To Saxon, “survival” is largely about protecting oneself with weaponry. A more positive “survivalist” approach is that of the *Survivor Library*, a pre-emption of a natural or man-made EMP (electro-magnetic pulse) imagined to cause global catastrophe, necessitating individuals to re-learn how to survive without everyday industrial technology. See: “About us,” *Survivor Library*, accessed 7th September 2015, http://www.survivorlibrary.com/?page_id=1645

7 As Rancière (*as Jacotot*) interprets Plato’s view on the artisan’s place: “Don’t do anything other than *your own affair*, which is not in any way *thinking*, but simply *making* that thing that exhausts the definition of your being; if you are a shoemaker, make shoes - and make children that do the same. The Delphic oracle was not speaking to you when it said, Know yourself.” Rancière, *The ignorant schoolmaster*, 33-34.

to educational systems) have either the potential to foster greater autonomy, limited only by the extent to which they limit the autonomy of others, or to constrain us, and our liberty.⁸ The former are “convivial” tools; rather than passive consumption, they allow each man to “express his meaning in action”⁹. A society built around convivial tools would seem to describe an anarchistic state of equals, relating to each other equally, in direct counterpoint to Hobbes. It would also run counter to a Platonic social order of expertise; the convivial tool is that which can be grasped and put to use by all, with the minimum of instruction.¹⁰

Following a peak in the 1970s, and a subsequent lull, there is a current resurgence of interest in “making” as a popular practice, something people do out of enjoyment rather than necessarily as “work”.¹¹ From handmade craft to the possibilities for self-manufacture opened up by digital fabrication technologies, production appears to be becoming “democratised”¹²; that is, participation by non-experts is growing. Design through making was the earliest form of designing; rather than the acts of design and production being divided between specialists, design was a process of “craft evolution”, the maker slowly refining designs by successive iteration.¹³ It is also a current topic within design education.¹⁴ What if the idea of designing was as “democratised” as the idea of making? How might this be achieved?

The art or work-pleasure, as one ought to call it, [...] sprung up almost spontaneously, it seems, from a kind of instinct among people, no longer driven desperately to painful and terrible overwork, to do the best they could with the work in hand – to make it excellent of its kind; and when it had gone on for a little, a craving for beauty seemed to awaken in men's minds, and they began rudely and awkwardly to ornament the wares which they made; and when they had once set to work at that, it soon began to grow.¹⁵

As William Morris (or his alter-ego, the narrator Guest) learns from an aged resident of his future maker-utopia in *News from Nowhere*, when freed from alienated labour people just *taught themselves* to design and make things of excellence and beauty. Morris, like his 19th century

8 Ivan Illich, *Tools for conviviality* (London: Harper and Row, 1973), 12.

9 Illich, *Tools for conviviality*, 35.

10 Illich explains, “Tools foster conviviality to the extent to which they can be easily used, by anybody, as often or as seldom as desired, for the accomplishment of a purpose chosen by the user. The use of such tools by one person does not restrain another from using them equally. They do not require previous certification of the user.” Ibid.

11 “Making” as a popular practice is currently promoted by *Make* magazine, amongst others.

12 Projects such as *Wikihouse* expressly promote their “democratic” credentials, whether in terms of participation in design, (digital) production, or intended widespread use. See: “Wikihouse”, accessed 7th September 2015. <http://www.wikihouse.cc/about/>

13 John Chris Jones, *Design Methods: Seeds of human futures. 1980 ed.* (London: John Wiley & Sons, 1980), 15.

14 For example the current RCA Design Products MA platform, “Designing through making”. See “Professor Sharon Baurley articulates vision for Design Products”, RCA, Accessed 7th September 2015. <http://www.rca.ac.uk/news-and-events/news/professor-sharon-baurley-vision-design-products/>

15 William Morris, “News from Nowhere,” in *William Morris: Selected writings and designs* (Harmondsworth: Penguin, 1962), 300.

contemporaries, relied on the idea of revolution to recast the social order of industrial capitalism and create an anarchistic society based on equality, freedom and cooperation. But in this he displays a faith in an emergence; that through a collective need and desire, inexpert people might teach themselves and each other to design and make things – and further, that these things might display a beauty borne of the joy in their making. The intervening period has however provided a long and lamentable list of instances in which revolutionary attempts to upend the social order have resulted in a new one as bad or worse than its predecessor; the power vacuum created tends to invite appropriation of power.

In *The Ignorant Schoolmaster*, Rancière relates his protagonist Jacotot's twin assertions: *the unjust inequality of the social order is unchangeable*, and that *all men are possessed of an equal intelligence*. What follows from this is remarkable. Jacotot makes the chance discovery that he can teach what he doesn't know; that, just as a child learns how to speak his own language without being taught, by first imitation and then improvisation, people could *teach themselves* through this “universal teaching”.¹⁶ The ignorant schoolmaster could teach his students a language he didn't know; the illiterate father could teach his son how to read; all that was required was for the teacher to *compel* the pupil to demonstrate his equality of intelligence. If Rancière can be taken seriously, the untrained may well be capable of learning how to design for themselves, or each other, without the need for professionals willing to share their expertise or their position within the social order. The extent of participation in design would become a matter of self-education; and to Rancière, “education is like liberty: it isn't given; it's taken.”¹⁷ Given the crises which design as a profession is implicated in, might this hold out the promise of a less destructive and alienating way of designing our world, in which more of the designing happens at the level of life rather than in an abstracted form as a vehicle of commerce?

16 Rancière, *The ignorant schoolmaster*, 18.

17 Ibid., 107.

Aims

This research project aims to critically address the disempowerment of the user through prototyping a basic method for self-education in designing and making for a general audience: a *masterless apprenticeship*, in which the roles of designer, maker, and user collapse together into one. This experimental, informal education aims to:

- Allow users to develop knowledge, skills and experience in designing and making through doing
- Provide users with access to the tools for making as a by-product of the learning process
- Allow users to gain the confidence to act as designers and makers, by learning to see designed objects and materials as things they can change, and that *can* be changed to the user's own ends.
- Act discursively as a whole to provoke debate on the role and agency of the user within the practice of (product) design, and the material environment created by it

The prototype method developed in this project was tested out in two workshops, and the results analysed with respect to the project's philosophical underpinnings, and the extent to which learning was evident.

Research question

Could (and how might) improvised, prototype objects enable self-education towards a more equal participation in the design and making of the things of everyday life?

Literature and contextual review

Literature review¹⁸

This project sits at the intersection of design (research), education, and political philosophy. Design research is a young field, and inherently interdisciplinary, and so by necessity draws on previous research from a variety of disciplines.¹⁹ This is both a weakness and a strength; a resulting openness presents difficulties in defining the relevant literature, but also allows fruitful new connections to be made between work in ostensibly disparate disciplines. With this in mind, the literature was reviewed in the following areas of thought (themselves emergent groupings) which are important to this project:

- (radical) politics of design, participation and education
- alienation and designed products, critiques and utopias
- “democratic” design & making, DIY
- models of “participation” in design, and designers' attempts to address the gap between designer and user.

For each of these areas I review the existing literature of most relevance to this project, and in doing so demonstrate the timeliness and novelty²⁰ of this research topic and approach.

¹⁸ The literature review was scoped using the google scholar academic search engine (which searches all other online research indexes) in conjunction with the university library catalogue.

¹⁹ See Nigel Cross, “Design/science/research: developing a discipline,” in *Fifth Asian Design Conference: International Symposium on Design Science, Su Jeong Dang Printing Company, Seoul, Korea, 2001*.

²⁰ Or perhaps disruptive *untimeliness* and persistent relevance.

(Radical) politics of design, participation and education

The extension of user involvement in design is necessarily political. This extension has been considered from various radical perspectives as a necessary constituent of a sustainable future for design - and for society.^{21 22 23} From these perspectives, *representative* democracy does not present a suitable model for the far-reaching changes in everyday life envisioned in a transition to a sustainable society.²⁴ A different, “less formal” definition of “democracy”, or “politics”, has been proposed as a useful model for changing the practice of, and participation in, design.^{25 26 27} Markussen extends these proposals with Ranciere's notion of “aesthetic dissensus”, “a non-violent unsettling of the self-evidence, with which existing systems of power can control and restrict the unfolding of our everyday behavior and interaction”.²⁸

The importance and utility of craft as a means of popular engagement with the task of design is also noted by both Kossoff and Fry.^{29 30} Ken Baynes charts the radical social potentials of design, from a “self-reliant anarchist” viewpoint, and with particular reference to education of the child.³¹ Baynes provides a good overview of the historical implication of design in the problems of contemporary culture, and speculates on possible design-based alternatives. These proposals remain in the most part as challenges to be addressed in practice.

The conception of a radical politics of egalitarian participation and education with relevance to design is best embodied in the work of Ranciere, who takes what Saul Newman describes as a

21 Gideon Kossoff, “Holism and the Reconstitution of Everyday Life” in *Grow Small, Think Beautiful: Ideas for a Sustainable World from Schumacher College*, ed. S. Harding, (Floris,: Edinburgh, 2011)

22 Tony Fry, *Design as Politics* (Oxford: Berg, 2010)

23 Ezio Manzini, "The scenario of a multi-local society: creative communities, active networks and enabling solutions," in *Designers, visionaries and other stories*, ed. J. Chapman & N. Gant, 77-93 (London: Earthscan, 2007)

24 Tony Fry specifically argues against it.

25 For example Gui Bonsiepe prefers “a substantial, and thus less formal, concept of democracy as the reduction of heteronomy, i.e. domination by external forces.” Gui Bonsiepe, “Design and Democracy,” *Design Issues* 22, no. 2 (2006): 30.

26 Carl DiSalvo, “Design, democracy and agonistic pluralism, *Proceedings of the Design Research Society Conference 2010*, Montreal, 2010.

27 Mahmoud Keshavarz and Ramia Maze, "Design and Dissensus: Framing and Staging Participation in Design Research," *Design Philosophy Papers* no. 1 (2013). <http://search.proquest.com/docview/1266785256?accountid=9727>.

28 Thomas Markussen, “The Disruptive Aesthetics of Design Activism: Enacting Design Between Art and Politics,” *Design Issues* 29, No. 1, (2013): 45.

29 Gideon Kossoff, *Holism and the Reconstitution of Everyday Life: a Framework for Transition to a Sustainable Society*, PhD thesis, Centre for the Study of Natural Design, Duncan of Jordanstone College of Art and Design, University of Dundee, (Dundee, 2011), 265-7

30 Fry, *Design as Politics*, 139-140.

31 Ken Baynes, *Design and democracy: speculations on the radical potential of design, design practice and design education* (Wellesbourne: Design and Technology Association, 2005)

post-anarchist position.^{32 33 34} Ranciere's notion of an axiomatic equality forms the ethical basis for his philosophy. Ranciere investigates the far-reaching implications of this radical assumption, for example in education in *The Ignorant Schoolmaster*, through the protagonist Jacotots's method of "universal teaching".³⁵ The implications for contemporary education have been drawn out by a number of more recent authors, building on Ranciere's ideas of "ignorance" and "equality of intelligence".^{36 37 38} There is a body of literature discussing the potential of applying his radical philosophy of equality in relation to education – particularly art education.^{39 40 41} It is likely that such approaches have escaped the attention of design since it is not a discipline which Ranciere addresses directly.

Aside from the "common sense" view, that in order to teach one must first possess knowledge or expertise to share, critiques of Ranciere's application of equality to educational practices focus on a sleight of hand in transferring "mastery" to the object of study, and a seeming implausibility of implementation or lack of relevance to pedagogy. To Nina Power universal teaching can be criticised as merely transferring authority from the teacher and their explanations to the object of study:

*Jacotot's method transfers the mastery inherent in the pedagogical situation from the figure of the teacher to the solidity of the book. It is the book that becomes the more democratic (admittedly), though none the less sanctified, teacher: "Instead of paying for an explicator, couldn't a father simply give the book to his son and the child understand directly the reasonings of the book?" The danger of shifting the master from person to object doesn't necessarily overturn the hierarchy of student and teacher, just shifts it from the classroom to the library.*⁴²

32 For education and equality: Jacques Rancière, *The ignorant schoolmaster*, Trans. Kristin Ross (Stanford: Stanford University Press, 1991)

33 For equality and democracy: Jacques Rancière, *Hatred of democracy*, Trans. S. Corcoran (London: Verso, 2008)

34 Saul Newman, "Postanarchism: a politics of anti-politics," *Journal of Political Ideologies* 16, no. 3 (2011): 313-327.

35 See in particular Jacques Rancière, *The ignorant schoolmaster*, Trans. Kristin Ross (Stanford: Stanford University Press, 1991)

36 Charles Bingham and Gert Biesta, *Jacques Rancière: education, truth, emancipation* (London: Continuum, 2010).

37 Anwaruddin, Sardar M. "Pedagogy of ignorance," *Educational Philosophy and Theory* (2014): 1-13.

38 Nina Power, "Axiomatic equality," *Rancière and the politics of contemporary education*. Eurozine (2010).

39 See for example: Lynn Fendler, "Figuring Out Ineffable Education." *Other Education* 1, no. 1 (2012): 5-18.

40 Cath Lambert, "Redistributing the sensory: The critical pedagogy of Jacques Rancière," *Critical Studies in Education* 53, no. 2 (2012): 211-227.

41 Dennis. Atkinson, "Contemporary art and art in education: The new, emancipation and truth." *International Journal of Art & Design Education* 31, no. 1 (2012): 5-18.

42 Ref Nina Power "axiomatic equality" Eurozine (originally in Polygraph) 2009

To Catherine Pelletier, Ranciere's ideas remain “untimely”; Jacotot's 19th century innovations address a context no longer of direct relevance to contemporary pedagogy.⁴³ But Ranciere's book is not really about the practice of education (“there is no Jacototist pedagogy”),⁴⁴ but about the assumption and practice of equality. As Ranciere notes, to the “superior minds” of the pedagogues, “that intelligence is unequal is evident to everybody”⁴⁵. To proceed as if it is not, systematically, would require such a radical shift in practice and sustained intensity of effort as to appear almost impossible. But what remains of interest is the unending project offered by this provocation, the challenge to the “self-evidence” of inequality; I intend to use this as a foundation for my research approach, to pursue the course of “demanding the impossible”, in order to determine what *may be* possible.⁴⁶

Elsewhere in the political literature, within anarchist studies the work of Colin Ward in particular is of relevance in analysing anarchism as a theory of (self-)organisation, not as a utopian future but as currently existing within the fabric of everyday life – particularly in relation to housing and self-built architecture.^{47 48 49 50} Reedy locates “anarchist utopianism”, including William Morris's *News from Nowhere*, as a form of practice to complement the aims of post-structuralism.⁵¹ Furthermore, Kossoff's Transition Design framework explicitly draws on anarchist ideas of self-organisation, where sustainability becomes “artfulness in everyday life”⁵². To Kossoff, “transition design could help fulfil design's potential as an agent of iconoclastic utopianism.”⁵³ This framework could be seen as a contemporary renewal of Morris's project, albeit as a structure for action rather than a practice in itself. It is however an as-yet-untested work of theory; and as such it currently remains as utopian as *News from Nowhere*.

43 Catharine Pelletier, “No time or place for universal teaching: The Ignorant Schoolmaster and contemporary work on pedagogy,” in *Jacques Rancière and the Contemporary Scene: The Philosophy of Radical Equality*, ed. J-P. Deranty, & A. Ross, (London: Continuum, 2012), 99-115.

44 Jacques Rancière, “On ignorant schoolmasters,” in *Jacques Rancière: education, truth, emancipation*, Charles Bingham and Gert Biesta (London: Continuum, 2010), 14.

45 Rancière, *The ignorant schoolmaster*, 46.

46 There is a reference here to the the political and philosophical project of anarchism; see: Peter Marshall, *Demanding the impossible: A history of anarchism*. PM Press, 2009. While I do not subscribe to an anarchist ideology myself, I do see a value in some its ideas on a philosophical level.

47 Colin Ward, *Anarchy in action* (London: George Allen & Unwin, 1973).

48 Dennis Hardy and Colin Ward, *Arcadia for all. The legacy of the makeshift landscape* (Mansell, 1984)

49 Colin Ward, “Walter Segal, community architect,” in *Talking to Architects* (London: Freedom Press, 1996)

50 Stuart White, "Making anarchism respectable? The social philosophy of Colin Ward." *Journal of Political Ideologies* 12, no. 1 (2007): 11-28.

51 Patrick Reedy, "Keeping the Black Flag flying: anarchy, utopia and the politics of nostalgia," *The Sociological Review* 50, no. S1 (2002): 169-188.

52 Kossoff, *Framework for Transition*, 277

53 Ibid., p284

Alienation and designed products, critiques and utopias

The effects of alienation in capitalist culture were first described in the mid C19th : to Marx, through its increasing division, alienated labour became a dehumanising means of subsistence, the worker separated from the products of their labour, and becoming a mere commodity producing more commodities.⁵⁴ To Marx, the alienation of the worker occurred in four dimensions: from the objects produced by one's labour; from the possibility of enjoyment and control of the work; from cooperative social relationships with others; and from one's own humanity. As industrial capitalism developed, the roles within designing and making became increasingly separated and specialised, and by the mid 20th century the role of designer had appropriated most of the creative work.⁵⁵

Contemporary with Marx, the American philosopher-poet Henry David Thoreau developed an alternative poetic critique of alienation through material practice – an anarchist building a house in the woods and registering ethical objection by withdrawal from consumer society, in order to live by a tenet of “simplicity”.⁵⁶ Later, William Morris, through writing and material (design) practice, developed an anarchistic vision of an “ethical art”, a future dream of pleasure in creative, unalienated work for all.^{57 58} More recently, the later writings of John Chris Jones provide a vision of a “creative democracy”, a future in which the work of design is no longer reserved for specialists, but is done by all, aided by software and the connectivity of the internet.⁵⁹ As such, there is a strand of “design” that has been an agent of social imagining against alienation. Design can offer a practical means of making changes to material situations, and so is well placed to attempt to put such imagined futures into practice; but design interventions in a complex world are also frequently the cause of the problems which further design then seeks to address or critique. There is a sense in which a Thoreau-like stoicism could be a more responsible attitude towards designing; a design more conscious of its limits, and that knew how to limit itself productively.

54 Karl Marx, *Economic and Philosophic Manuscripts of 1844* (Marxists.org, 2009), 29-35.

55 John Chris Jones, *Design Methods: Seeds of human futures*. 1980 ed. (London: John Wiley & Sons, 1980), 22.

56 Henry David Thoreau, *Walden, or, Life in the Woods* (New York: Dover, 1995), 29-30.

57 Paul Greenhalgh, “The history of craft,” in *The culture of craft*, ed. Peter Dormer (Manchester: Manchester University Press, 1997), 35.

58 See William Morris, *News from Nowhere, or, an Epoch of Rest* (London: Routledge 1997), a fascinatingly strange romance novel that pictures a craft-based utopian communist future, harking back to a dream of the middle ages.

59 John Chris Jones, "Creative democracy, with extended footnotes to the future," *Futures* 30, no. 5 (1998): 475-479.

“Democratic” design and DIY

The contemporary “maker movement” represented by e.g. Make Magazine ostensibly responds to the same problem through encouraging amateur making projects, and building a community through “Maker Faire” events.⁶⁰ Contemporary “making” is a broad church, from drone building⁶¹ to radical knitting⁶², and so encapsulates a variety of approaches, ideologies and intents. There is a technocentric tendency; its accompanying rhetoric of a “third industrial revolution”⁶³ of distributed digital manufacture seems to offer the negative promise of yet more accelerated consumption and further deskilling. Making here risks becoming just another commodified leisure activity, or else is seen as the potential source of market innovation: “making” as a sort of hyper-distributed micro-capitalism. There is also a tendency towards the handmade, a renewed interest in knitting, the making of furniture etc; a making in search of a life less commodified, and a reconnection with the materiality of living.⁶⁴ Against the prospect of another “industrial revolution”, Thoreau's reaction to the first seems to remain an unconscious model.⁶⁵

The “democratic”, non-alienated sphere of making could be seen as residing in the DIY project. Paul Atkinson analyses their varying levels of creative design engagement and locates DIY within both design discourse and the wider social and political context.⁶⁶ David Gauntlett theorises this kind of popular making more broadly, from knitting to youtube, combining craft and media theory.⁶⁷ Gauntlett builds on early visions of social, popular creative practices as advanced by Ruskin and Morris as possible de-alienation strategies. Guy Julier however points out that “new technologies have allowed the partial 'democratization' of design through allowing access to its tools: tasks that were once the preserve of trained specialists now become almost menial” - and so professional designers continue to strive to differentiate themselves as “professional and specialist”.⁶⁸

60 Dale Dougherty, "The maker movement," *Innovations* 7, no. 3 (2012): 11-14.

61 See for example : “DIY drones: the leading community for personal UAVs,” accessed 8th September 2015. <http://diydrones.com/>

62 See e.g. Betsy Greer, ed., *Craftivism: The Art of Craft and Activism* (Arsenal Pulp Press, 2014).

63 Jeremy Rifkin, "The third industrial revolution: How the internet, green electricity, and 3-d printing are ushering in a sustainable era of distributed capitalism." *World Financial Review* 1 (2012).

64 See: David Gauntlett, *Making is connecting* (London: John Wiley & Sons, 2013), 64-66.

65 In *Walden*, Thoreau expresses his contempt for the trivialities of consumerism, and describes his own making practices supporting his philosophical experiment in living, such as making his own furniture and growing food, in addition to building his modest house.

66 Paul Atkinson, "Do it yourself: Democracy and design," *Journal of Design History* 19, no. 1 (2006): 1-10.

67 David Gauntlett, *Making is connecting* (London: John Wiley & Sons, 2013)

68 Guy Julier, *The culture of design* (London: Sage, 2007), 44.

Models of “participation” in design

Since *Design for the Real World*, Papanek's early 1970s polemic against the socially and environmentally destructive effects of industrial design, professional design has sought to respond practically to the distance between designer and user, and its negative effects, through a variety of approaches labelled as “design activism”.⁶⁹ The *user-centred design* approach has concentrated on research *into* the “user” and use of products: to provide evidence for designers with which to attempt to better address the user's needs.⁷⁰

The literature on user *participation* in design and *co-design* describes the many and varied attempts of design to open itself up to more “democratic” involvement of the user in the design process. Within these there is a spectrum of decreasing professional control: from mere consultation, to user participation in planning, to *co-design*, i.e. participation throughout the entire design process with the “designer” as facilitator.⁷¹ A recent development along these lines is *open design*, a collaborative model with roots in the open-source movement in software development.^{72 73} *Open design* seems to hold out a promise of a more egalitarian participation: harnessing mass internet connectivity and tending away from professional control of the terms of participation, it opens up the possibility of free contribution, adaption and reuse of the designs. Participation is however limited to those with the necessary design skills and technical knowledge, and such projects typically remain “owned”/managed by their originators.⁷⁴

Design research has also analysed the activity of users and non-designers as a form of design in its own right. In *Design by Use*, Uta Brandes defines *non-intentional design* as an improvised activity of adaptation performed by users - “the everyday re-design of the designed world”.⁷⁵ Katarina Bredies expands the definition to include DIY and some other more “intentional” user repurposing.⁷⁶ Other researchers use *everyday design* as another term for the same thing, whether or not it is considered to have any radical or emancipatory potential; such manifestations of user “design” can be extremely mundane: cups used to hold toothbrushes, and students' organisational systems to cope with the books and papers overspilling their desks.⁷⁷ Such approaches recognise a

69 Victor Papanek, *Design for the real world*. (London: Thames and Hudson, 1972)

70 Typified by e.g. Donald A Norman, *The design of everyday things* (New York: Basic books, 2002)

71 Elizabeth B-N Sanders and Pieter Jan Stappers, "Co-creation and the new landscapes of design," *Co-design* 4, no. 1 (2008): 5-18.

72 Leon Cruickshank and Paul Atkinson, "Closing in on Open Design," *The Design Journal* 17, no. 3 (2014): 361-377.

73 James Tooze, et al., "Open Design: Contributions, Solutions, Processes and Projects," *The Design Journal* 17, no. 4 (2014): 538-559.

74 An exception is the wiki model, of e.g. Wikipedia, in which participation is not subject to vetting.

75 Uta Brandes, Sonja Stich, and Miriam Wender, *Design by use: the everyday metamorphosis of things* (Basel: Birkhauser, 2009), 10.

76 Katharina Bredies, Rosan Chow, and Gesche Joost, "Addressing use as design: a comparison of constructivist design approaches," *The Design Journal* 13, no. 2 (2010): 156-179.

77 Jan-Henning Raff and Gavin Melles, "Design without Designers: Thinking Everyday Design Practice," *Design*

potential for “design” activity even within the act of consumption – and as such point to a potential for more meaningful or developed popular engagement with designing given suitable conditions.⁷⁸

⁷⁹ ⁸⁰ The “design” performed by the user is however not considered on a par with the work of the professional. Emily Campbell's reconsideration of design as “resourcefulness and self-reliance” proposes the sharing of the profession's skills with non-professionals, in order to increase public resourcefulness.⁸¹ A new position that interpolates between the ubiquity of the user as common-sense *everyday designer* and the collaborative openness of *open design*, tapping and cultivating creativity and resourcefulness, deserves to be explored.

Philosophy Papers 10, no. 1 (2012): 23-33.

78 There is a parallel here with Barthes's “Death of the Author”: see Roland Barthes, “The Death of the Author,” in *Image-music-text* (London: Macmillan, 1978)

79 Also, for the canonical analysis of everyday consumption and the potential for “resistance” within it, see: Henri Lefebvre, “The Critique of Everyday Life, translated by John Moore and Gregory Elliott.” (London: Verso, 2008)

80 See also: de Certeau, Michel, *The Practice of Everyday Life* (Berkeley: University of California Press, 1984)

81 Emily Campbell, “You know more than you think you do: design as resourcefulness & self-reliance,” *RSA Design & Society* (2009).

Contextual review

The most relevant practice context for this research is the particular and rare set of instances where non-specialists have participated in designing and making, in settings which involve an expanded, informal idea of education - learning by doing - in a manner that begins to approach a non-hierarchical relationship with professional designers. Such an egalitarian relationship can be approached from opposite perspectives: as an act of magnanimity, something “given” by the professional, or as an opportunity “taken” by the non-designer. The tensions between these poles of agency play out in different ways in the examples considered, never simply one or the other. I review the most significant recorded examples of such awkwardly political⁸² practices, which occurred in disparate settings and times during the 20th century; they also share the common theme of not sitting wholly comfortably within the field of “design”.

Informal, non-hierarchical education through designing and making?

The self-made objects of 1990s post-Soviet Cuba collected by Ernesto Oroza resemble such a popular self-education.^{83 84 85} The government-sponsored dissemination and collection of instructions, recipes and plans, coupled with the intense motivation of economic hardship, produced a relative abundance of self-designed and self-made consumer products. The materials used were largely existing “waste” products, dismantled, recombined and adapted to new uses, or everyday scraps such as cans and plastic bottles melted down and cast into new objects. Oroza theorises the emergent attitude of Cubans towards consumer products as one of “technological disobedience” (see fig.1 and 2); that is, disobedience to both the “integrity” of the product, and to the technological intention of its designer.⁸⁶ These objects demonstrate the expanded designerly potential of the user once the idea of the product as a finished and complete whole is broken.

82 “Political” in Rancière’s terms according to his third thesis concerning politics:

“Politics is a specific rupture in the logic of arche [rule]. It does not simply presuppose the rupture of the ‘normal’ distribution of positions between the one who exercises power and the one subject to it. It also requires a rupture in the idea that there are dispositions ‘proper’ to such classifications.”

Jacques Rancière, “Ten Theses on Politics,” in *Theory & Event*, Vol. 5, No. 3, 2001.
<http://www.egs.edu/faculty/jacques-ranciere/articles/ten-thesis-on-politics/>

83 “Ernesto Oroza,” accessed 4th February 2015, <http://www.ernestooroza.com/>

84 Ernesto Oroza, “No Waste,” in *Pentagram Papers*, Vol. 36, edited by Delphine Hirasuna, 44-49 (San Francisco: Chronicle Books, 2006)

85 Ernesto Oroza, *Rikimbili: une étude sur la désobéissance technologique et quelques formes de réinvention* (Publications de l’Université de Saint-Étienne, 2009)

86 “Technological disobedience,” Ernesto Oroza, accessed 4th February 2015.
<http://www.ernestooroza.com/technological-disobedience/>

The structure of popular involvement in designing and making here appears as one of distributed self-teaching, a collective cultivation of a pervasive bricolage as a commodity substitute. The involvement of authoritarian government however provides an ultimate hierarchical figure, which sought to promulgate, facilitate, but also direct, and even perhaps make political capital in the process. The process appears convivial, and relatively sustainable given its re-use with a closed system of resources, but looking at the Rikimbili in particular, also possibly deadly.

In the 1920s, Russell W Porter decided he could teach anyone to make a scientifically accurate, high-powered telescope, and teach astronomy in the process.⁸⁷ Introducing the principles, but leaving the designing and making of the telescopes to his students (manual and clerical workers from the local factory), Porter left space for his non-professional students to design for themselves (see fig.3). The Amateur Telescope Makers of Springfield, Vermont developed a self-sustaining community of amateur practice that has grown and continued into the present (see fig.4).⁸⁸ Porter's role becomes that of initial facilitator of an emergent culture of designing and making - here of a specific instrument – but also of something beyond the task at hand.

As Porter himself reported:

This, then, is one way of teaching astronomy. I am convinced that these workmen, some of whom have only attended district schools, have a far better conception of the great mechanism of the solar system than graduates of our high school. They have, perhaps unconsciously, absorbed the fundamental facts of our solar system. They sense the direction of the axis of our earth and know where its north end at least pierces the celestial sphere. They had to in order to adjust their telescopes. They sense the celestial equator sweeping across the southern skies, and see upon it the dial of an immense clock whose hours come to the meridian in unfailing regularity. They know too where zero right ascension is to be found.

Surely the making and putting into use of a powerful astronomical telescope goes far toward properly orienting one's self in the great scheme of things.⁸⁹

87 Russell W Porter, *The Telescope Makers of Springfield, Vermont: One Way of Absorbing Astronomy*, 1923
<https://stellafane.org/history/early/theSTMs.html>

88 “About stellafane,” Springfield Telescope Makers, accessed 4th February 2015.
<http://stellafane.org/about/index.html#Stellafane>

89 Porter, *The Telescope Makers of Springfield*.

The telescope makers made their own tools for exploring the celestial sphere, and as such served something like an apprenticeship in equality; workmen demonstrating their potential to appreciate one of the gentlemanly liberal arts⁹⁰, approached through an engagement with the more familiar realm of the material.

In the 1970s, British-based architect Walter Segal developed a simplified modular system for housebuilding that allowed a level of participation in the design process by non-professionals with no prior experience that approached the highest levels of control possible by non-architects.⁹¹ Based on self-designing and self-building, the Segal Method was a modern development and rationalisation of medieval techniques, treating the standardised sizes of timber and boards as pre-made components that fitted into a modular grid. Segal's simplified method allowed groups of people on the council waiting list in Lewisham to design, build, and eventually own their own homes (see fig.5) – taking control of their material environment and converting their own labour into capital.⁹² Segal as facilitator provided the initial conditions for self-education in design to occur; the houses became more contingent structures, able to be adapted and expanded by their inhabitants as necessary.

90 Parker, H. "The Seven Liberal Arts." *The English Historical Review* Vol. 5, No. 19 (Jul., 1890): 417.
<http://www.jstor.org/stable/546447>

91 John Broome, "The Segal method," *Architects' Journal* 184 (1986): 31.

92 Ward, "Segal: community architect".



Fig.1: *Technological Disobedience* at the Miami Science Museum 2014 - reproduced from E Oroza



Fig.2: "Rikimbili" motorised bicycle, Cuba 2005 – reproduced from E Oroza



Fig.3: Original Telescope Makers, 1920s - reproduced from Stellafane.org



Fig.4: Contemporary Amateur Telescope Makers, 2013 - reproduced from Stellafane.org

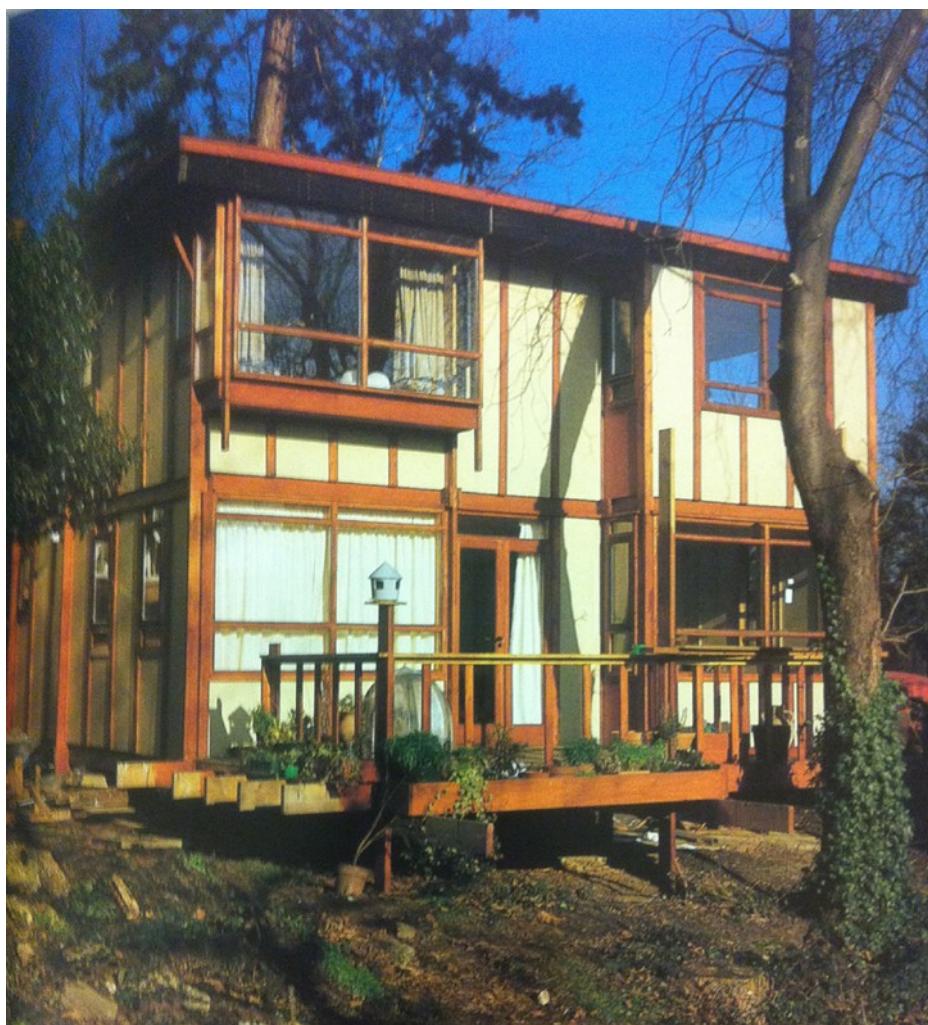


Fig.5: Original Segal Method self-built houses at Walters Way, Lewisham

These approaches contrast with a traditional professional product design education, rooted in the attempt to overcome the difficulty of designing for production, designing for the user as other, attempting to anticipate needs and desires of a consuming public etc. Where designer, maker and user begin to collapse together, some mainstays of the curriculum become irrelevant: seductive presentation drawings, marketing concerns etc. A mindset takes precedence: a way of looking at the world of designed objects not as mysterious black boxes, but as materials and components to be used and changed.⁹³ Similarly, this may alter conceptions of the designed object, becoming more like a contingent *prototype* than a finished *product*. The traditional education in professional making was the apprenticeship, often beginning with making the tools of the trade. Heavily reliant on the authority of single master figure, the end of the apprenticeship was the point at which the apprentice could become a master themselves.

Such alternative approaches go some way towards a less hierarchical relationship, blurring the distinction between designer and user. They are a step towards a radical ethics of equality as advanced by Ranciere.⁹⁴ But there is still a distinction. The Segal method builders still relied on the architect for their calculations and drawings; the telescope makers had their teacher, and the Cubans their government. Contemporary “open source” projects retain their leaders within their communities, even if this structure is hidden from view. A question remains - what if the role of the professional were to retreat further, until designer and user stood in equal relation to one another?⁹⁵

Summary

In summary, this review shows how existing literature and examples of practice address:

- the implication of design in consumerism and the alienation of the user
- design and making-based de-alienation strategies
- attempts by the design profession to narrow the gap between designer and user
- models for a radical redesign of the practice of design for egalitarian/ecological purposes
- models for more egalitarian modes of education within art and design, following Ranciere

The literature and context however do not appear to address in detail, and to test in practice, the possibilities for the practical self-education of the untrained to allow the very terms of participation in design, and the popular conception of the designed product, to be recalibrated. This research is therefore exploring an original area of inquiry.

93 For a thorough development of the “black box” see for example W. Ross Ashby, *An Introduction to Cybernetics*, (London: Chapman & Hall, 1956). Internet (1999), 86-120. <http://pcp.vub.ac.be/books/IntroCyb.pdf>

94 Notably in Ranciere, *The ignorant schoolmaster*.

95 A similar question is posed in Alastair S MacDonald, “The Inner Resource: Enabling the Designer within Us All – A Case Study,” *The Design Journal* 16, no .2 (2013): 175-196. The results of the study point to a potential for at least partial confirmation that non-designers could design effectively for themselves without professionals present.

Methodology

A guiding element to the research approach is the belief that knowledge is constructed through doing, learning through practice - an idea based on a constructivist epistemology , in particular Piaget's educational constructivism.⁹⁶ Papert's development of this into constructionism, with its focus on practical making, is also a useful reference for the project's educational aspects.^{97 98}

The overall form of the research is a practice-based project to make an exploratory sketch towards the design of a *masterless apprenticeship*: a basic self-instruction programme in designing and making, intended to be “self-replicating”, that enacts an equality by assuming it.⁹⁹ The project investigates how the volunteer “apprentices” might learn to take a step beyond “everyday design”, recognise their own resourcefulness, and begin to see the world of objects as adaptable components and malleable materials. Through following an adaptable method, the “apprentices” would adapt consumer objects and form materials to make the tools of an intentional everyday design, moving in the process from imitation to free and unruly adaptation of the material world around them. This project is a test case, a prototype for a method for the general public of learning to *act as a designer*: for anyone who sees a problem with their material environment, but lacks the resources (or the confidence) to change it. Fundamentally, the intent is to investigate a way to lower the barriers-to-entry to the act of designing, as “the process of deciding on and then realizing preferred futures”,¹⁰⁰ applied to the smallest, most local scale. The project as a whole is also intended to act discursively – to question and provoke discussion about the role of the user in the designed world, and the imbalance of power reproduced by the hierarchies formed by and within it.

The research methodology is that of a practice-based enquiry through design, within a framework that draws on elements of *critical design*, *metadesign*, and *transition design*. Despite its focus as a piece of design research, this could be considered an “artistic” form of methodology in the terms of Gray and Malins, since it involves “...a pluralist approach and the use of a multi-method technique, tailored to the individual project... [and is] responsive, driven by the requirements of practice and the creative dynamic of the art/design work. It is essentially qualitative, naturalistic and reflective.”¹⁰¹

⁹⁶ Edith Ackermann, "Piaget's constructivism, Papert's constructionism: What's the difference?" *Future of learning group publication* 5, no. 3 (2001): 438.

⁹⁷ Seymour Papert and Idit Harel, "Situating constructionism," in *Constructionism*, 1-11 (New Jersey: Ablex, 1991)

⁹⁸ Jonan Donaldson, "The Maker Movement and the Rebirth of Constructionism," *Hybrid Pedagogy* (2014). Accessed 4th February 2015. <http://www.hybridpedagogy.com/journal/constructionism-reborn/>

⁹⁹ Self-replicating in the more human-centred terms of F H Colvin, rather than that of an autonomous self-replicating machine: see Fred H. Colvin, *60 Years With Men And Machines* (New York: McGraw-Hill, 1947)

¹⁰⁰Cameron Tonkinwise, “Transition design: From and to what?” Academia.edu (2015), 7. Accessed 30th April 2015 https://www.academia.edu/11796491/Design_for_Transition_-_from_and_to_what

¹⁰¹Carole Gray and Julian Malins, *Visualizing research: A guide to the research process in art and design*, (Aldershot, Hampshire: Ashgate, 2004), 71-2.

Critical design (or *discursive design*, or *speculative design*) as popularised by Dunne and Raby is a “non-commercial” design whose objective is to provoke discussion, particularly regarding designed futures, design ideologies and the social effects of designed products.^{102 103 104 105}. Such fictional products are intended to disturb the user, and provoke a questioning in them. Increasingly however, the relationship is becoming one of autonomous artwork to viewer, as their designs now meet their “users” in galleries rather than in interactions with people in everyday settings. Rather than speculate via fiction, and create unusable design-artworks, I attempt to produce objects that are both usable and thought-provoking; to take communicative speculative objects out into the world of use in a meaningful way.

Metadesign attempts to produce change in complex systems by a process of seeding and harnessing emergence. A way of “designing design”, it is “the kind of design that puts the tools rather than the object of design in the users’ hands”.¹⁰⁶ Whilst risking the appearance of an overly literal interpretation, in part the project involves designing *actual tools*; but also, a manner in which to use them, and hopefully for them to afford or enable something larger than the base utility expected of them. Perhaps there is something elemental about the designed object in the tool, that can work as a material metaphor and speak to the history of a common human resourcefulness, to communicate the idea that designing and making *can* be open to all? Metadesign is fundamentally concerned with enabling, broadening, and decentralising participation in the designing of our material environment. John Wood argues that metadesign can harness a “synergy of synergies”, in order to create “WIN-WIN-WIN-WIN” situations, and hence make more positive interventions into the systems and networks of a complex world by increasing the number of “players”, and hence “peer relationships”, engaged in the tasks of design.¹⁰⁷

102“Critical Design FAQ,” Anthony Dunne and Fiona Raby, accessed 4th February 2015.

<http://www.dunneandraby.co.uk/content/bydandr/13/0>

103Jeffrey Bardzell and Shaowen Bardzell, “What is critical about critical design?” in *Proceedings of the SIGCHI conference on human factors in computing systems*, 3297-3306 (ACM, 2013)

104Bruce M. Tharp and Stephanie M. Tharp, “Discursive design basics: Mode and audience,” *Nordes* 1, no. 5 (2013).

105Anthony Dunne and Fiona Raby, *Speculative everything: design, fiction, and social dreaming* (London: MIT Press, 2013)

106Elisa Giaccardi, “Metadesign as an emergent design culture,” *Leonardo* 38, no. 4 (2005): 342-349.

107John Wood, “Relative abundance,” in *Designers, visionaries and other stories*, ed. J. Chapman & N. Gant, 96-115 (London: Earthscan, 2007)

Transition design is an emerging framework with the goal of directing design activity towards the transition to a sustainable society. Cameron Tonkinwise defines it as follows:

*Transition Design is an attempt to name an ambition for an expert craft of designing that acknowledges the extent of our social crises by advancing the practices of social and sustainable designing through the incorporation of multi-stage practice-oriented transformation.*¹⁰⁸

Transition design emphasises the links between the social and the material, with an emphasis on the futures design can create. With a debt to Herbert Simon, *transition design* considers design as “the process of deciding on and then realizing preferred futures.”¹⁰⁹ Fundamentally a practice of redesigning the practices of everyday life, it simultaneously emphasises a “revived insistence on design taking responsibility for the futures it materializes.”¹¹⁰ To this end, transition design encourages careful testing within “Living Labs”: “semi-protected domains in which new devices, skills and meanings can co-evolve. When robust, these new social practices can then be reproduced or translated more widely.”¹¹¹

To Tonkinwise, transition design takes a longer term view of the task of design:

Designing is always a process of action research, coming to understand by making changes.

*[...] A Transition Designer designs something not to be an end unto itself, a final solution to a problem, but to open up subsequent opportunities. [...] Transition Designers ask “... and so ... and then ...”*¹¹²

Taking all this on board, this research proposes, and seeks to test, a case which problematises this developing framework: a way of approaching transition design's overall goal, while taking Ranciere's equality seriously. This may amount to an ambition for a distributed, *inexpert* craft of designing, that acknowledges an inherent resourcefulness within the user of the designed world, and puts this to work on the smallest scale: a transition based on the “living lab” of an everyday prototyping. This raises an ethical question: Tonkinwise ascribes an ethical duty to the expert designer, but how could an enabling of the user as an ethical designer and maker be ensured?

¹⁰⁸Cameron Tonkinwise, “Transition design: From and to what?” Academia.edu (2015), 13. Accessed 30th April 2015
https://www.academia.edu/11796491/Design_for_Transition_-_from_and_to_what

¹⁰⁹Ibid., 7

¹¹⁰Ibid.

¹¹¹Ibid., 13.

¹¹²Ibid., 11.

Research Methods

Exploratory stage

- **Design and making of speculative objects**

Material self-experimentation, taking found materials and waste consumer objects and turning them into improvised tools, using DIY facilities in order to anticipate the working constraints of a non-professional designer.

Purpose: to imagine the tools of an intentional everyday design and test them out materially, and provide communicative objects with which to engage workshop participants.

Process documented in sketchbooks, and the designed objects themselves/photographs of them. A reference for the design approach is the speculative “cack-handed design”¹¹³ of Stuart Walker (see fig.6), along with the sense of “technological disobedience” in repurposing “waste” products seen in Ernesto Oroza’s collected objects.

- **“Instructional” design**

Create simple but non-prescriptive instructions which encapsulate the form of these basic designed objects, so that they may be reproduced by others with no assumed making skills, and requiring design choices on the part of the maker from the outset.

Purpose: “Incomplete” or interpretable instructions to be used set the task, and serve as a means to elicit improvised design activity from the workshop participants.

Research into instructions/formats, including the following references:

- Intermediate Technology Development Group: re-design of tools for self-manufacture, as part of a project with Zimbabwean carpenters facing hardship caused by deskilling.¹¹⁴
- Ikea assembly instructions – puzzlingly non-verbal
- Recipes – minimal instruction in list form, efficient and adaptable.
- Popular mechanics – plan drawings, with materials and some method.
- Fluxus event scores – somewhere between the recipe and the stage direction, with an emphasis on reproducibility, access, and the poetic quality of reduction. Their approach has discursive potential, whilst leaving space for interpretation.¹¹⁵

¹¹³Stuart Walker, "Cack-handed design: Design-centred approaches to process and product for sustainability," *The Design Journal* 10, no. 3 (2007): 28-40.

¹¹⁴Aaron Moore and Musaemura Sithole, *How to make carpentry tools: an illustrated manual*, (London: Intermediate Technology Publications, 1997)

¹¹⁵See in particular: Yoko Ono, *Grapefruit: a book of instructions and drawings* (New York: Simon and Schuster,

It was recognised during the process of devising instructions that there is also the potential (to a degree) for the tools produced to embody the instructions for their own making: accessed and reconstructed by the participant through disassembly, analysis and reassembly.



Fig.6: Stuart Walker's "cack-handed design": candlestick and torch.

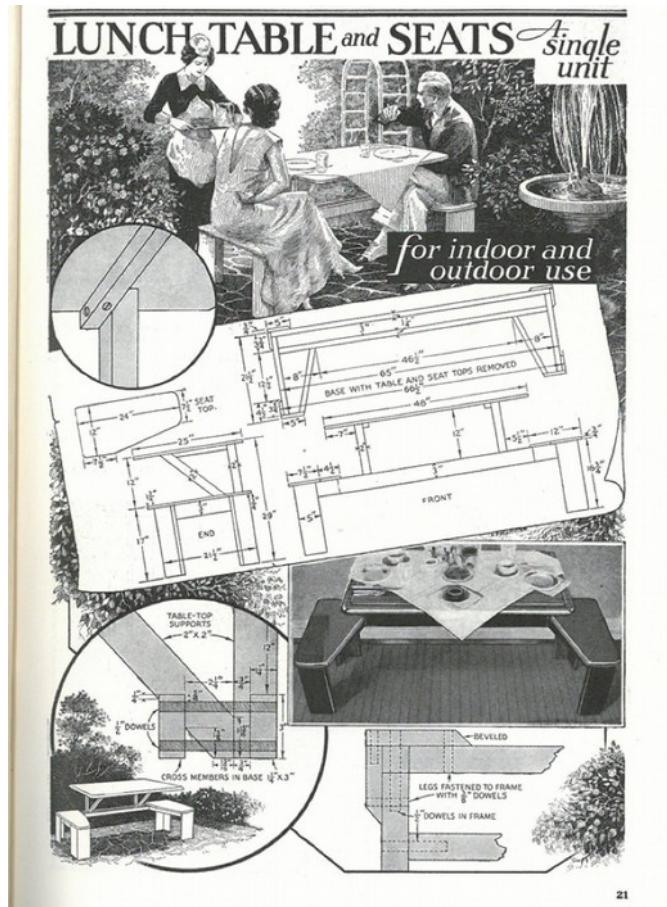


Fig. 7: Popular Mechanics DIY table plans, 1939.

REVALUE PIECE II

Use all existing art work as pieces of furniture and household appliances. i. e. Use sculpture such as Henry Moore's as diaper hangers, or chairs, bookshelves, tables and beds. Use paintings such as Monet and Picasso as heavy curtains, sofa covers, etc.

Use all existing armaments as decorative objects and accessories. i. e. Use cannons and fighters for garden sculptures, bullets and earrings, etc.

1968 winter

Fig.8: Fluxus event score: Yoko Ono's Revalue piece II, 1968, reproduced from Grapefruit.

Workshops stage

- **Pilot workshop** (for workshop outline see appendix A)

The pilot workshop intended to investigate how a group of novice designers approach and respond to a designing and making exercise in two parts:

Part 1: Starting with an improvised tool made by the researcher, devising their own instructions for and making their own simple hand tools in imitation of the existing ones.

Part 2: Using the self-made tools to make other tools and and/or furniture towards an “improvised workshop” of their own design.

The participants (8 art and design students, with experience ranging from international foundation to 2nd year BA Design and Craft) were split into two groups (more and less experienced). Group discussions were held after each part in which each group presented their work to the others, in order to generate reflection on the process.

Purpose: to test out tools and instruction methods with volunteers with some design experience, and to pilot the structure of the subsequent public workshop. This is in order to better understand the capabilities of novice designers to creatively “design” improvisatory solutions to problems using everyday materials and simple tools – as such, “teaching themselves”. This workshop also intended to get an idea of what skills and behaviours might need to be developed in non-designers, if they are to be encouraged to become designers and makers in their daily lives. The existing tools and instructions act as catalysts for the production of further tools and furniture, which then act as data for analysis.

Documented via video/audio recordings and photographs of the workshop itself, the working process of the participants and the objects produced.

- **Public workshop** (for workshop outline see appendix B)

The public workshop repeated the structure of the pilot with a group of non-designers (4 non-designers: a recent mature arts graduate, a fine art academic, a design and craft history academic, and a design history PhD student.) In two groups, participants set the task of making their own instructions and tools, then use them together to make further tools/objects towards an “improvised workshop”, building on the work of the previous participants. They reflect on the process as it progresses and at the end. This environment constitutes a small scale “living lab”, and enables a form of semi-“naturalistic enquiry”, the

participants engaged in a genuine experience, although this is instigated by the researcher.¹¹⁶ The participants will also be involved in the continuous testing of their own prototype objects, in a form of “dogfooding”.¹¹⁷

Purpose: to generate tools and objects designed by non-designers, to observe the non-designers' approach to designing, to test the efficacy of the prototype “method”/toolkit and provide feedback to suggest modifications/improvements. The workshop also provides a comparison to the approach of novice designers with some prior experience of designing. Documented via video/audio recordings and photographs of the workshop itself, the working process of the participants and the objects produced.

Workshops ethnographic methodology: a speculative design ethnography?

Ethnography's incursion into design is now well established, particularly in *user-centred design*. Though its manner of adoption can descend into superficial market research¹¹⁸, its methods do have a useful role in design research where people's behaviour in a social context needs to be studied. Design's use for ethnographic methods does not generally demand the same level of rigour as an anthropological study; as Don Norman describes, designers favour *rapid ethnography*:

Methodologies in cognitive science, psychology, anthropology and sociology may be approximated so they can be used with speed by designers who do not need scientific precision. [...] Even research such as ethnographic studies which are by their nature lengthy may be streamlined. The basic principles of the technique are retained, while new methods of estimation speed up the process.

*This rapid ethnography is critical to the invention of new classes of products and can accelerate the evolution of young, hard-to-use technologies into mature, well understood ones.*¹¹⁹

This project makes such a “quick and dirty” use of ethnographic methods that focuses on two discrete workshop events, rather than a long-term situated study.

The main ethnographic methods employed are *direct observation*, combined with *video ethnography*; while both are ways of observing the behaviours of the participants, the former is

¹¹⁶Yvonna S. Lincoln and Egon G. Guba, *Naturalistic inquiry* (London: Sage, 1985)

¹¹⁷Derived from “eating your own dogfood”, a metaphor for testing a designed product and demonstrating confidence in it by using it yourself, popular in the world of software development.

See <http://www.oxforddictionaries.com/definition/english/dog-food?q=dog+food>

¹¹⁸ As Jamer Hunt puts it, “most anthropologists would not consider one week of videotaping subjects brushing their teeth to be an ‘ethnography’”. Jamer Hunt, “Prototyping the social: Temporality and speculative futures at the intersection of design and culture,” in *Design Anthropology: Object culture in the 21st century*, ed. Alison J. Clarke. (Vienna: Springer, 2011), 34.

¹¹⁹Donald A. Norman, “Rapid ethnography,” in *The methods lab: user research for design*, ed. Hugh Aldersey-Williams, John Bound, and Roger Coleman (Design for Ageing Network (DAN), 1999), 16.

object or task orientated, and the latter is focused on interactions. As Neville Stanton explains of the former, “observing people interacting with a device gives data on errors and performance time, and insight into the ease or difficulty of tasks.”¹²⁰ Françoise Brun-Cottan explains the subtle difference in approach of video ethnography:

*Video ethnography provides a way of studying in detail the dynamic interplay of people’s interactions with one another. Their shared understandings of their material and organisational environment can yield critical insights which can then inform the co-design of new technologies for the workplace. Videotaping events as they happen “in context” allows methods of addressing, categorising and resolving those work-related activities most relevant to the “users” to be captured and demonstrated.*¹²¹

Participants' interactions and their ongoing, unprompted reflections to each other during the process are of particular interest here. The workshops were recorded on HD video and reviewed, and the audio and significant actions transcribed at a later date; there would not have been time to both note observations and also lead the workshop/ensure safety.

In this research context, the environment is semi-natural, set in a workshop space that is necessarily out of the ordinary for the second workshop's participants. This constitutes what could be thought of as somewhat counterintuitive ethnography based on a *disruptive* social situation: a *speculative design ethnography* of a designed social situation that does not as yet exist in the world outside the constructed environment of the workshop. A balance has to be struck here between intervention and observation - between the opposing tendencies of design and ethnography.

The reflective discussions held during the workshop resemble *focus groups*, in that through discussion they produce a series of reflections concerning the preceding task: feelings, associations, practical experiences. In design focus groups, “the result is usually a list of agreed (and disagreed) statements. With help of a good moderator, a discussion can reveal not only explicit but also implicit needs and reactions.”¹²² In effect, the task itself can be seen through this lens as a means of eliciting reflections on it, a kind of action-elicitation.

The post-workshop questionnaires (in two parts: reflective and evaluative) constitute the remaining ethnographic method used, along with a detailed follow-up questionnaire from one particularly engaged participant from the pilot. These aimed to bring out a more structured reflection on the process as a whole, the participants' experience of it, and any perceived learning.

¹²⁰Neville Stanton, “Direct observation,” in *The methods lab: user research for design*, ed. Hugh Aldersey-Williams, John Bound, and Roger Coleman (Design for Ageing Network (DAN), 1999), 20.

¹²¹Françoise Brun-Cottan, “Video ethnography,” in *The methods lab: user research for design*, ed. Hugh Aldersey-Williams, John Bound, and Roger Coleman (Design for Ageing Network (DAN), 1999), 18.

¹²²Hannele Hypponen, “Focus groups,” in *The methods lab: user research for design*, edited by Hugh Aldersey-Williams, John Bound, and Roger Coleman (Design for Ageing Network (DAN), 1999), 22.

Data and analysis: summary

- Sketches, speculative objects from self-experimentation phase:
Analysed continuously and self-reflexively via “active documentation”.¹²³ Producing reflection in, on and for practice.¹²⁴
- Workshop participants reflect and give feedback via standard questionnaires.
The qualitative data is also to be used for project evaluation. Analysed using a simple visual coding and abstraction process, the “affinity diagram”, grouping observations into emergent categories.¹²⁵ Borrowing more elaborate methods from the social sciences would here unnecessarily complicate the process.
- Empirical data embodied by the objects (produced by myself and participants): a simple empirical test of utility, demonstrated by evidence of further objects produced using the self-made tools, and evidence of creative uses the tools are put to.
- The workshops were documented via video/audio recordings and photographs - of the workshop itself, the working process of the participants and the objects produced. These provide empirical records of the processes of making, and data for qualitative analysis, again coded and abstracted using affinity diagrams. Data collected includes:
 - Recordings of discussions with and between participants during the making process
 - Visual documentation of “tacit” aspects of the design/making process
 - Visual documentation of stages and progression of the design/making process
 - Visual documentation of tools/objects produced and their use/testing

Metrics for evaluation: learning and expertise

A major focus for analysis is the evidence for learning on the part of participants. The workshops aim to facilitate learning through doing, and therefore Kolb's learning cycle¹²⁶, which describes a four-stage cyclical model of experiential learning (see fig.9), is an especially relevant metric against which to evaluate such evidence. Learning can also be described more generically as the development of expertise, as described by Dreyfus and Dreyfus (see fig.10).¹²⁷ This research project investigates the potential for everyday design, an example that problematises conventional

¹²³Nancy De Freitas, "Towards a definition of studio documentation: working tool and transparent record." *Working papers in art and design* 2 (2002): 1-10.

¹²⁴Gray and Malins, *Visualizing research*, 57-8.

¹²⁵Ilpo Koskinen, et al., *Design research through practice: From the lab, field, and showroom* (London: Morgan Kaufmann, 2011), 78-9.

¹²⁶Brian Lawson and Kees Dorst, *Design expertise* (Oxford: Architectural Press, 2009), 283.

¹²⁷Lawson and Dorst, *Design expertise*, 99.

notions of expertise, so while such models may not fit wholly comfortably here, they nevertheless provide an important point of reference.

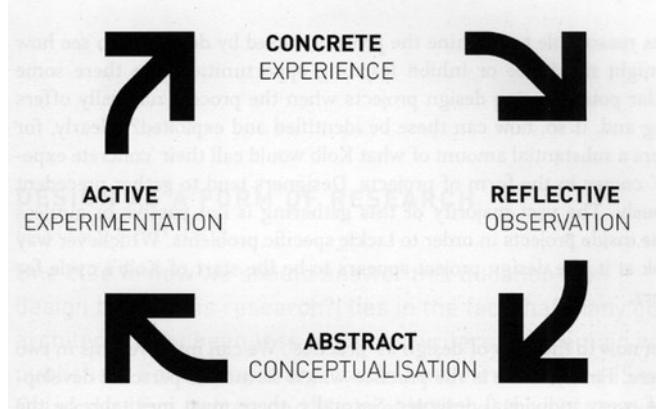


Fig.9: Kolb's experiential learning cycle (from Lawson and Dorst, Design expertise, 283)

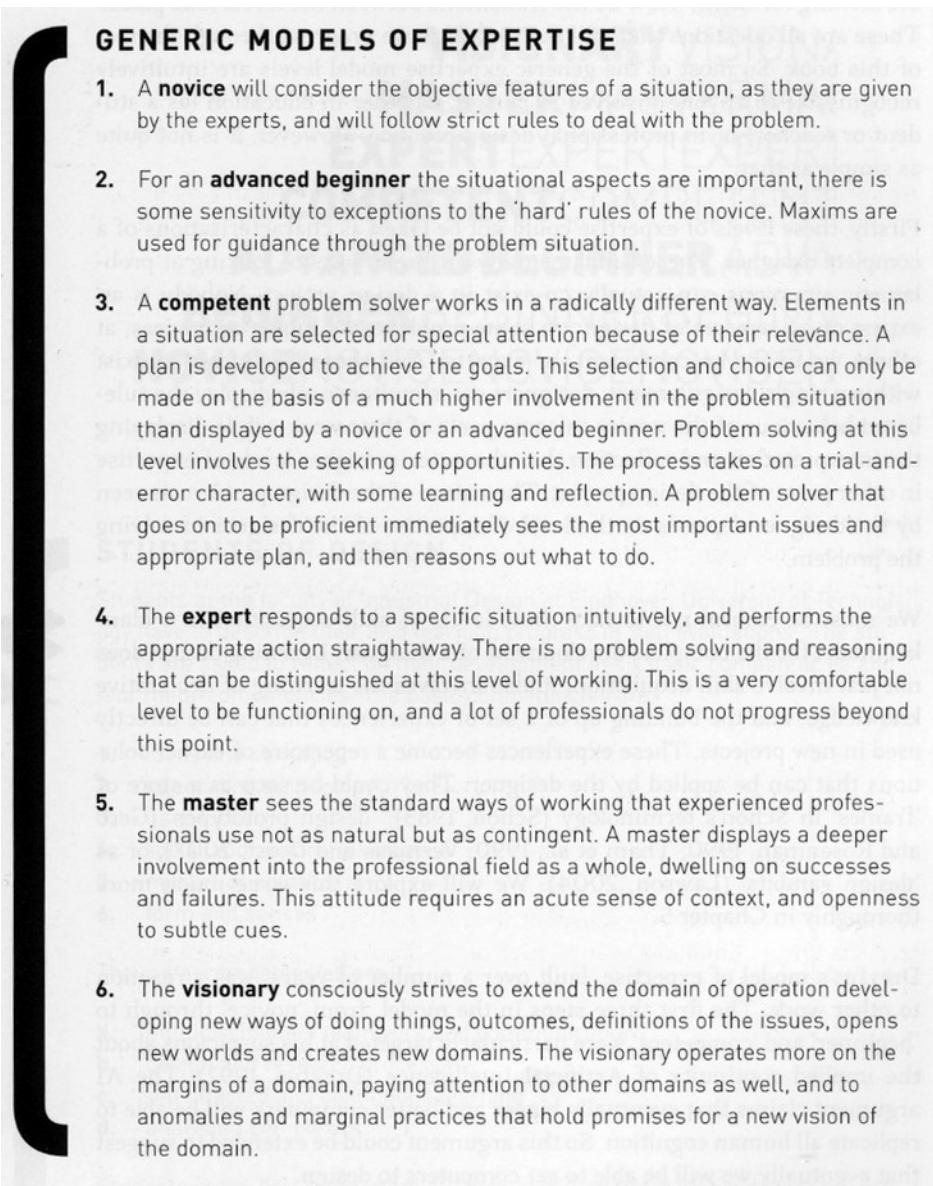


Fig.10: Dreyfus 6-stage model of expertise (from Lawson and Dorst, Design expertise, 99)

Results and discussion

As described in the methodology, the practical elements of the research project progressed in two stages: an initial phase of exploratory making resulting in a collection of improvised tools, and a subsequent workshops phase, in which the researcher's self-made tools were used as the starting point for interactions with two different groups of participants.¹²⁸ Workshop A was conducted with a group of eight "novice designers" - art & design students with backgrounds ranging from international foundation to 2nd year BA Design and Craft - and acted as a pilot for the subsequent workshop. Workshop B was conducted with a group of four "non-designers", recruited through the university – lecturers and students of subjects other than design/craft practice. As will be seen in this discussion, the groups' relative levels of "experience" in designing and making are not as straightforward to differentiate as might appear.¹²⁹

The discussion that follows proceeds through the practical phases of the project, and is developed around the themes which emerged from the data, in relation to the research question:

Could (and how might) improvised, prototype objects enable self-education towards a more equal participation in the design and making of the things of everyday life?

The practical phases sought to address the conjectural "how might..." question, in order for the analysis to begin to address the extent of its possibility.¹³⁰

Exploratory making: tools and instructions

Objects

The material results of the exploratory making phase were a series of improvised tools, some more functional than others; but that is one aspect of their purpose. They could be judged as *successful* to the extent that, in a similar manner to Russell W. Porter's telescopes, they afford something more than the ability to accomplish a mechanical task; to "*enable self-education towards a more equal participation in the design and making of the things of everyday life*". This is an aspiration for tools operating on two levels of "conviviality" in Illich's terms:¹³¹ both enabling self-

128See documentation booklet.

129These demographic groups should not be taken as representative of broader social groups, or worse, society as a whole – they are a small subset, in a specific setting at a specific time, and their experiences of the workshops are inevitably the product of a complex interaction of personality, previous experiences, social and cultural factors (etc.) with the task at hand.

130See Hillier, Musgrove and O'Sullivan's characterisation that "design proceeds by conjecture-analysis, rather than analysis-synthesis". Bill Hillier, John Musgrove, and Pat O'Sullivan, "Knowledge and design," *Environmental design: research and practice* 2 (1972): 1.

131Illich, *Tools for conviviality*, 35.

directed making, and further, enabling a realisation to occur in the user *that they can* act in some way as the designers and makers of their own material surroundings, and learn to do so without subordinating themselves to the authority of the expertise of others.

Through engagement with materials and the processes of everyday-making-as-designing, a set of tacit criteria emerged:

- Functionality
 - functionality as tools
 - durability and repairability
- Economy
 - overall simplicity of process
 - minimum of (other) tools required
 - availability and suitability of materials
- Communicativeness
 - legibility of construction (“self-evidence”)
 - communicative (poetic) qualities

The aesthetic qualities of the tools were not considered consciously as a priority, but on reflection a definite aesthetic emerged from the process and materials, which might best be described as “rubbish” - *rubbish tools*, with a *rubbish-craft* aesthetic. Defined by their materials and process, they are based on a lack – of resources, but further, a lack of the *aestheticised demonstration of mastery* often present in the aesthetic of “craft” objects,¹³² and indirectly via machine production in mass-produced ones.¹³³ Their unfinished-ness seemed to impart a sense of openness – the marks of making not hidden or removed. I don't consider them ugly; if anything they resemble art objects in the *arte povera* tradition, made or chosen for their (political) character – somewhere between Gilardi's bricolaged wheelbarrow and Pascali's agricultural tools.¹³⁴ (see fig.11 and fig.12). This emergent aesthetic contributed to their communicativeness a sense of alchemy, the turning of base waste into something of greater value, and with properties greater than those contained within the material. This would be an alchemy of use value (however intangible) rather than exchange value; there is something fantastical in them that exceeds a banal instrumentality.

¹³² As Glenn Adamson describes, studio craft “is defined by the mastery and enactment of a set of readily identified ‘actions’ (throwing a pot, making a basket etc.)” Glenn Adamson, *Thinking through craft* (Oxford: Berg, 2007), 166.

¹³³I would argue that the “mastery” evident in the machine-produced object derives from its apparent quality, predetermined by the designer of the machine. This is much like David Pye’s “workmanship of certainty”: see Adamson, *Thinking through craft*, 73.

¹³⁴Jacopo Galimberti, “A third-worldist art? Germano Celant’s Invention of Arte Povera,” *Art History* 36, No. 2 (April 2013): 434-5.

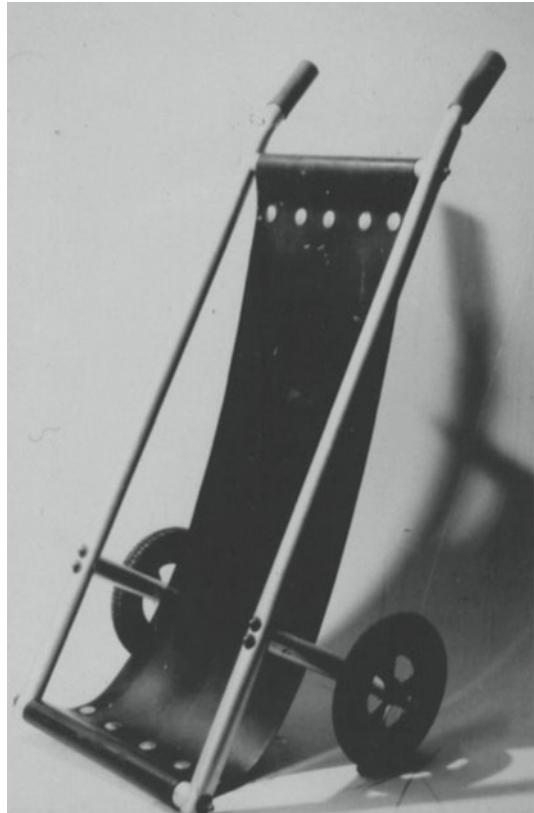


Fig.11: *Gilardi's bricolaged wheelbarrow: Piero Gilardi, Carriola (Wheelbarrow), 1967*



Fig.12: *Pascali's agricultural tools: Pino Pascali, Attrezzi agricoli (Agricultural tools), 1968.*



Fig.13: Improvised prototype frame saw, produced during exploratory making phase.

In one description of the materiality of Socialist utopia (itself something fantastical), Morris claims:

*Nothing which is made by man will be ugly, but will have its due form, and its due ornament, and will tell the tale of its making and the tale of its use.*¹³⁵

On reflection, the frame saw (see fig. 13) for example embodies many of these “ideals”:

Its *form* is fitting for a future of reuse; it retains and re-uses found forms, and integrates “natural” and “cultural” waste materials. Arguably it possesses due *ornament* for a tool, i.e. not much; it lacks its own finish, its “ornament” being the remnants of the mass-produced finishes of the reused parts, although in its resulting openness it could well acquire more at a later date. In part the lack of finish allows it to *tell the tale of its making*, displaying evidence of the minimal operations performed on the materials. *The tale of its use* becomes complex; the patina and wear of the reused constituents will be added to by those of its new use.¹³⁶

Process/ “instruction”

The tools were designed through a process of *direct making*, often with only a simple initial sketch before the fact, or drawing only as documentation after making.¹³⁷ This is a very simplified design process, which felt intuitive; making in this way was in part an attempt to *role-play* the bricolage approach and constrained making circumstances of the amateur or DIY designer/maker. It is however difficult to self-evaluate this very objectively – the effect of my own design and making “expertise” could well make this appear much more straightforward than it would to an inexperienced or untrained person. On the 6-level generic model of expertise proposed by Hubert Dreyfus (as represented by Lawson and Dorst), this way of working appears to correspond to the 4th level, *expert*:

*The expert responds to a specific situation intuitively, and performs the appropriate action straightaway. There is no problem solving and reasoning that can be distinguished at this level of working. This is a very comfortable level to be functioning on, and a lot of professionals do not progress beyond this point.*¹³⁸

135 Fiona MacCarthy, and William Morris, *Anarchy & beauty: William Morris and his legacy, 1860-1960* (London: National Portrait Gallery, 2014), 59. MacCarthy attributes the quote to Morris's “article on 'art', *The socialist ideal*, 1891.”

136 Though Morris did not mean it as such, the idea of an object *telling the tale of its use* also brings to mind the user-centred design of consumer objects, the attempt to make the affordances of objects intuitive through their form; that is, the tale of their *intended* use. The saw is legible in this sense to an extent, though it does not necessarily communicate which way round it is to be used. But does it really matter, if the use is, in the end, to be designed by the user?

137 This is very similar to the method used to design and make the objects that Stuart Walker describes in Walker, “Cack-handed design.”

138 Lawson and Dorst, *Design expertise*, 99.

Is this also the way that a good DIY-er proceeds? This immediate, intuitive response has a parallel with the bricoleur's approach, though the idea of an expert amateur, or and skilled generalist, seems a contradiction in terms.¹³⁹ This points to the assumptions in the formulation of the Dreyfus model, which is based on "instructed skill acquisition": that instruction is necessary or preferred; that there exists a "novice" state.¹⁴⁰ Dreyfus's *novice* "will consider the objective features of a situation, as they are given by the experts, and will follow strict rules to deal with the problem."¹⁴¹ How this instructed pupil would react instead to a lack of instruction, but the assertion that they can teach themselves, fall outside the scope of such a model.

Initially I documented each step of the process with photographs.¹⁴² I soon realised that this produces a lot of information to be passively and linearly digested by the instructed maker. The simple drawings made as I went (and after as document) were then developed into pictorial instructions.¹⁴³ But these are *explications*, defining an order that is to some degree arbitrarily imposed. On reflection it felt as if I was making these instructions in a vacuum: explanations to nobody, in the abstract, like generic advice; in order to be of value, the form of "instruction" should be more adaptable and less prescriptive.

It occurred to me prior to the workshops that a dismantled object could potentially act in an explanatory manner; the object as its own exploded drawing, explaining its construction. It may have been of relevance to his teaching approach that one of Russell W. Porter's many occupations was as a technical artist, known for his exploded or cutaway renderings of complex objects.¹⁴⁴ Such a way of looking, beneath an opaque surface at its constituents, or in terms of assembly, can reveal an object's workings as readable like a text (see fig.14). An object could then serve, like a book, as a Jacototian object of study; on the basis of the equality of intelligence, "instead of paying for an expicator, couldn't a father simply give the book to his son and the child understand directly the reasonings of the book?"¹⁴⁵

139 To Levi-Strauss, "the 'bricoleur' is adept at performing a large number of diverse tasks; but, unlike the engineer, he does not subordinate each of them to the availability of raw materials and tools conceived and procured for the purpose of the project. His universe of instruments is closed and the rules of his game are always to make do with 'whatever is at hand'". See Claude Lévi-Strauss, *The savage mind*, trans. John Weightman and Doreen Weightman (Chicago, IL: The University of Chicago Press, 1966), 11-12.

140 See: Stuart E. Dreyfus, and Hubert L. Dreyfus. *A five-stage model of the mental activities involved in directed skill acquisition*. No. ORC-80-2. University of California Berkeley Operations Research Center, 1980.

141 Lawson and Dorst, *Design expertise*, 99.

142 See documentation booklet, 6-7.

143 See documentation booklet, 21-25.

144 See e.g. Berton C. Willard, *Russell W. Porter, arctic explorer, artist, telescope maker* (Freeport, Me.: Bond Wheelwright Co., 1976).

145 Rancière, *The ignorant schoolmaster*, 4.

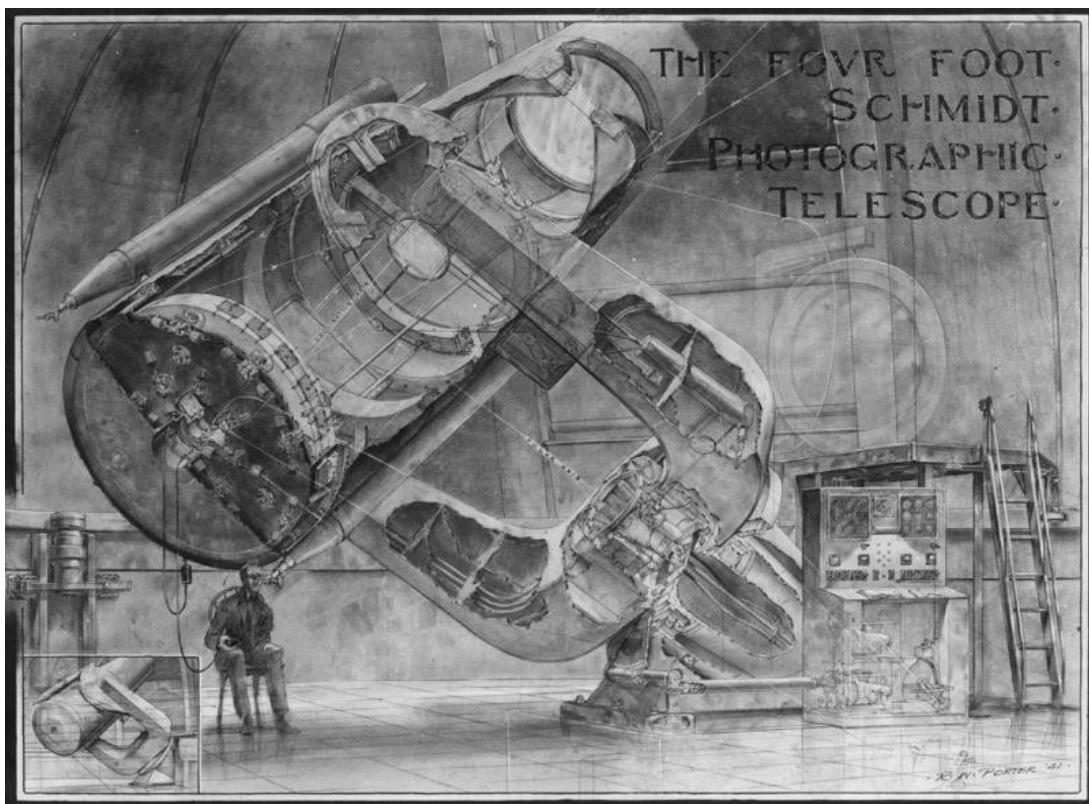
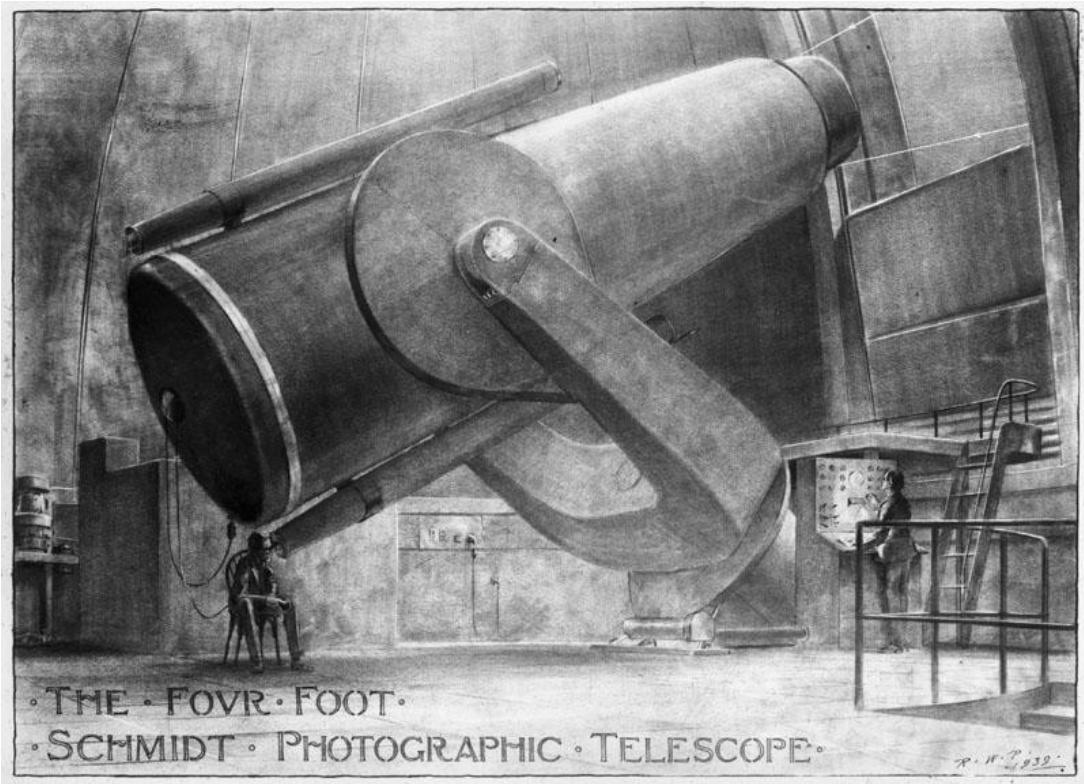


Fig. 14: Cutaway drawings by Porter for the proposed Mt. Palomar telescope, c.1929.

A text is an assembly of units, an additive form, fundamentally visible in its construction. Some objects (like the stone hammer)¹⁴⁶ are subtractive; what is removed becomes a mystery, like a redacted or abridged text. The object would then be like a reference, the detail discoverable by a self-directed process of research and engagement. Following the decision to test this in the workshops, the element of “instruction” became more like a poetic *event score*, less like a recipe; the *event* being to try to produce your own instructions for the given tool, in order to replicate it.

Larger scale: the toolkit and replication

As a whole, the set of objects produced is not enough to replicate itself, or even to fully furnish the barest of workshops, but it is a start – enough to make something else with mostly self-made tools.¹⁴⁷ The toolkit relies on pre-made cutting edges (drill bits, chisels, saw blades), as the skills for producing these would require more time and effort, although they are not beyond the amateur.¹⁴⁸ Such a toolkit, if it performs as intended, should be able to be completed by its users, who would discover what is missing for themselves, by using it.

The tools, like all objects, require tools with which to make them. Making such a toolkit requires the use of a starting set of tools, which are made “obsolete” by the self-made tools. As Thoreau remarked at the beginning of his project “Near the end of March, 1845, I borrowed an axe and went down to the woods by Walden Pond [...]. It is difficult to begin without borrowing, but perhaps it is the most generous course thus to permit your fellow-men to have an interest in your enterprise.”¹⁴⁹ In this project, an existing workshop space and set of tools were “borrowed” as the basis for replication, in order to begin to build up a replica set, and a self-made workshop, over time. If continued, this could eventually lead to a second cycle, starting with the improvised workshop, which could then replicate itself. The replication and expansion of such a toolkit could provide a means of investigating where the desirable “limits” to industrial production might be drawn in such a case.¹⁵⁰ Common useful objects are revealed as unfeasibly complex from this perspective; it’s almost impossible to make a screw thread in a non-industrial manner.¹⁵¹

146See documentation booklet, 10.

147Most notably missing is a drill.

148See e.g. Alexander Weygers, *The Complete Modern Blacksmith*. Ten Speed Press, 2012., a very detailed instructional manual for amateur blacksmithing, including making a forge from a paint can.

149Thoreau, *Walden*, 26.

150The idea is from Illich: that conviviality means deciding collectively where to draw the limits to our industrial productions. Illich, *Tools for conviviality*, 10.

151Henry Maudslay's screw-cutting lathe (c.1800), the means of production of precise screw threads was in fact one of the major innovations of the industrial revolution.

See: Henry Maudslay's original screw-cutting lathe, c.1800, Science Museum, accessed 28th August 2015.

http://www.sciencemuseum.org.uk/objects/hand_and_machine_tools/1900-20.aspx.

Workshops stage: emergent themes

Through analysing the workshop data using the affinity diagram method¹⁵², a set of categories of observations and reflections emerged. Both workshops are considered together under the relevant themes, since similar categories emerged in both cases. Due to the available space, the analysis concentrates on the evidence of learning and the circumstances affecting this.

1. Knowledge/learning

Teaching, experience and hierarchy

In order to attempt to enact Ranciere's idea of equality (as a starting point rather than an end point), I attempted to hold back from intervening or helping the participants in their tasks. This was so as to try not to transmit my own knowledge of the tools and making processes, and so position myself as the "master" and the participants as subordinate "ignorants". The workshops became a test of the extent to which they could teach themselves without my intervention – an intervention which was nevertheless inevitable. In this way I took on an ambiguous role of pedagogical observer, both leading and attempting not to lead. The problem here becomes one of the *ends* of authority. In Ranciere's example of Jacotot, the teacher or leader's position of authority is precisely what *enables* the enacting of the equality of intelligence: it is the authoritative voice which compels the other to demonstrate that equality that subverts their distinction.

This proved to be a difficult position to maintain, without feeling I was being unhelpful in withholding information; "expert" knowledge is after all the basis of conventional skills education.¹⁵³ On reflection, I did in fact make knowledge-based interventions, e.g. in both workshops pointing out to students that they were holding the saw "the wrong way round". The idea of "helping" could be seen to be at the heart of the endeavour; the difficulty being at what level is the "help" being given – such an immediate one, which might reinforce the inequality of expertise, or a more "meta" level, which might enable equality? A strange ethical dilemma arose: whether withholding information would be more or less beneficial to the participants. It was impossible for me to become ignorant of the task which I had devised. To Anwaruddin, the essence of a Rancierian "pedagogy of ignorance" is not necessarily ignorance of the subject to hand, but the *ignorance of inequality* between teacher and pupil.¹⁵⁴

¹⁵²Both workshops and questionnaire responses were analysed with separate affinity diagrams.

¹⁵³My previous experience as a university art and design technician has to some extent ingrained the idea of trying to help students in this way, although as a generalist I attempted to help with problems outside of my own experience.

¹⁵⁴ Anwaruddin, "Pedagogy of ignorance," 12.

Object-learning, object-knowledge

Following an analogy with Jacotot's method, the stone hammer and frame saw made during the exploratory phase were used as the basis for the workshops; each acted as a “text”, to be closely examined, taken to pieces and reconstructed, in order to imitate it. The replication of the tools corresponds not only to this imitation, but further, to a manifest *interpretation* of the physical “meaning” of the tool: primarily its principles of construction. In this way it becomes possible to *verify that they have learned*,¹⁵⁵ through a physical and verbal testing process.

In both workshops, the participants successfully interrogated the objects and discovered their principles of construction, making their own working versions: they in effect taught themselves using the objects, although not entirely without the researcher's intervention.¹⁵⁶ Through careful observation, discussion, and interaction, initiated by the direction to “make your own instructions” for how to replicate the tools, they reconstructed the design knowledge present in the objects. In the first part of workshop B, through observation and discussion group 2 were able to pick up a lot of instructional clues from the appearance of the saw's parts, and through interaction, gain some understanding of the physical principles at work:

[Julia and Mary Anne dismantling saw – discussing, questioning each other...]

Julia: [discussing the pins holding the blade] *Oh, they fell out because of the tension.*

Mary Anne: *Do you think so?*

Julia: *Yes! ... This is really cool!*

In the second part of workshop A, group 2A built on this process of imitation in order to conduct a kind of research: Evan and Ella examined the existing workshop vice repeatedly, at different stages of their design/making process, to inform their own design for an improvised vice:

Evan: *We probably need a base...*

Ella: [examining workshop vice again] *We probably need to make these...*

[pointing to support bars] ...and they don't turn, or anything.

Through this process of research, analysing an existing object for the design knowledge contained within it, they were able to modify the design, adapting and developing it to suit the found materials available. In the former case, the object was designed to be dismantled and offer an educational affordance, but in the second it was not; the idea of the former was taken up through experience and generalised, to be applied to a new situation.

¹⁵⁵Ranciere describes the ignorant schoolmaster's means of verification: “He will not verify what the student has found; he will verify that he has searched. He will judge whether or not he has paid attention. For one need only be human to judge the fact of work.” Ranciere, *Ignorant schoolmaster*, 31.

¹⁵⁶Discussed later, see section “Mistakes, and replication of errors”.

With the original improvised tools, there is a sense in which they could be seen as acting as “explication” deferred into an object, in the hope that it might be discoverable. Consider an informational text that attempted to explain a phenomenon: a transcription of a master’s explanation, this would merely be the same expertise rendered in a different medium. Read out, such a text becomes indistinguishable from a masterly teacher explaining to a pupil. Better would be a kind of object/text that could be studied without reproducing masterful explication. What would seem to be most suitable is the creative work¹⁵⁷, that most obviously open to interpretation; a story, or record of events, which omits the direct explanatory voice, allowing space for its “user” to construct their own interpretation. The improvised tools are both creative works and (partial) records of the events of their construction. They do not *explain* how they work as such, other than by allowing the reconstruction of their meaning by their investigators – which will be variable.

The interpretation of the “design”, and the replication made by its investigators does not necessarily follow the original in all details. For the less experienced participants, the clues are also not necessarily as readable. In the discussion at the end of the first part of workshop B, Stephen describes group 1’s understanding of the principles of the stone hammer’s construction:

Stephen: ... you've got these three things though. You know that they've got to go together.... the twine, the stone and the twig [pointing at drawings/instructions]. Once you know that, that they've got to go together, then you can improvise after that moment, but you need to break it down... and also the tools [to use].

Replicating the tools is a semi-determinate goal, in that there is a definite endpoint but multiple possible approaches; due in part to unfamiliarity with the processes, it was approached here by improvisation, after gaining a schematic understanding through reflecting on the experience of material experimentation.¹⁵⁸

The workshops served to discover what informational cues were missing from the objects in terms of their appearance: mainly the need to start with a longer stick in the case of the hammer, and the “change of state” of the green wood as it dries, but also the order of the operations. In the discussion at the end of the first part of workshop A, group 2 describe how they found the saw more readable, due to its nature as an assembly of components:

Ella: I think the object is kind of self-explanatory, you can see all the components, there's nothing hidden.

Leona: But only through taking it apart...

Ella: The only thing is just to put [the blade] in before you tighten [the string].

157 E.g. the novel *Telemache* in Ranciere’s description, although this is a “didactic” novel about education. See Ranciere, *The ignorant schoolmaster*, 2.

158 This appears to equate to a loop of the Kolb learning cycle (per tool produced).

It seems that to the degree that an object is readable it can offer an educational affordance. A mystified object, a black box, affords nothing but passivity. The successful replication of the tools relied on the participants constructing a schematic understanding of the tools, the relationship of the parts to the whole, even if aspects of this remained tacit.

Mistakes, and replication of errors

The mistakes made, and the replication of errors, complicate the picture. In the first part of workshop B, group 2 did misinterpret an aspect of the design of the saw: the design of the pegs which hold the saw blade. In order to help them complete a working saw within the time available I intervened, asking how they thought their modified design would tension the blade, using the original saw frame to demonstrate the movement under tension.¹⁵⁹ It appeared they were replicating the external appearance of the saw; a surface understanding, rather than fully grasping its principles. They had not reassembled the original saw, but merely dismantled it. Reassembly and use of the tool before replication would probably benefit the process of developing a schematic conceptual understanding of the objects.

This “surface understanding” has a relationship to Heidegger's concept of the *present-at-hand*, the “theoretical” manner of attempting to understand, through observation.¹⁶⁰ To Heidegger, *use* is crucial in developing a fuller understanding of a thing. An instrumental thing like a tool in use is experienced as *ready-to-hand*; it recedes from our perception, acting on the world. To Heidegger:

*...the less we just stare at the hammer-Thing, and the more we seize hold of it and use it, the more primordial does our relationship to it become, and the more unveiledly is it encountered as that which it is – as equipment.*¹⁶¹

By “equipment” Heidegger means the nature of the thing as instrumental, and connected to the materialities of its constituents and effects. But when a tool is encountered as “broken”, its withdrawal is interrupted. In its disruptive *un-readiness-to-hand* we are reminded of its dual nature; it just sits there to be looked at, theoretically, while also reminding us of the things which, unable to be used, it is connected to, its materials and its frustrated uses.¹⁶² As such, the being of a thing is constituted both theoretically and practically; to understand its essence these dimensions must both be appreciated.

159 See documentation booklet, 59.

160 This is part of Heidegger's tool analysis; to Heidegger, “Theoretical behaviour is just looking, without circumspection.” Martin Heidegger, *Being and time*, trans. John Macquarrie and Edward Robinson (Oxford: Blackwell, 1973), 99.

161 Heidegger, *Being and time*, 98.

162 Ibid., 103.

In the first part of workshop B, group 2 arrived at a surface understanding of the tensioning of the saw by, as Heidegger might put it, putting too much emphasis on “just looking at the saw-thing”. Taking the tools apart allowed them to present themselves as unready-to-hand, opening up the possibility for a fuller understanding of their essence. Making a successful replica and testing it reconstitutes the tool as both ready-to-hand and also still present-at-hand, a conceptual understanding of its construction and operating principle having been developed. Where the present-to-hand dominates, practical errors arise: the same group, when assembling the twine, replicated its twisted appearance rather than its function. This was in turn replicating an error made by group 2 in the first part of workshop A, who reassembled the saw in this way. The tendency to favour an observational approach was thus not confined to non-designers.

Discursive leaning

Ignorant or socratic?

In both workshops, the groups discussed ideas and negotiated between themselves to determine a way of replicating the tools. This discursive mode of learning was particularly noticeable in part one, workshop A, group 2 (which had the most equal, centreless contributions), and in both groups in part one, workshop B. In workshop B group 2, Mary Anne and Julia mostly verbalised their thought process in the form of questions, asking “ignorant” questions of each other... and eventually arriving at a successful outcome, although this was aided by my intervention described previously.

[To make their design work, Julia suggests adding pins on the outside of the pegs]

Mary-Anne: I was thinking of putting them on the inner face...

Julia: [tests the motion of the frame again] What will that do? [unconvinced, demonstrating for Mary-Anne]

Mary-Anne: Err... No, there, you're right, to stop them going that way...

I think they would have got there themselves without my intervention, but not within the workshop time available.

As previously discussed, the extent to which I was able to be “ignorant” whilst being knowledgeable was in the dimension of equality: the degree to which the participants were enabled to construct their own knowledge in the interactions between each other, objects, and a questioning researcher. In discussions, this meant trying to only ask questions, although in workshop B I was asked more questions by the participants. I tried to answer with questions in turn, or in general terms as to my *opinion* of whether something would be possible, rather than give any indication of preferred solutions. Trying to raise problems rather than offer expertise or knowledge is not an

unusual pedagogical strategy; this is not the behaviour of an ignorant schoolmaster, but possibly something closer to the method of Socrates. Socrates is however singled out for particular criticism by Ranciere: a knowledgeable master asking probing questions intended to solicit self-realisations, and thus replicating inequality. Socrates (in Plato's rendering) professes to know nothing, implying that the knowledge to be derived from his “teaching” is constructed through the dialogue; but Socrates is the mysterious master of this dialectical method, and appears to “know” a lot:

This is the secret of good masters: through their questions, they discreetly guide the student's intelligence – discreetly enough to make it work, but not to the point of leaving it to itself. There is a Socrates sleeping in every explicator. [...] Through his interrogations, Socrates leads Meno's slave to recognise the mathematical truths that lie within himself. This may be the path to learning, but it is in no way a path to emancipation. On the contrary, Socrates must take the slave by his hand so that the latter can find what is inside himself. The demonstration of his knowledge is just as much the demonstration of his powerlessness; he will never walk by himself, unless it is to illustrate the master's lesson. In this case, Socrates interrogates a slave who is destined to remain one.”¹⁶³

The most “ignorant” form of questioning in these workshops is therefore the inexpert questions of the participants to each other; through their own dialogue of uncertainty, they arrive at increased knowledge, and do so in a potentially equal way. There were however qualitative differences in the dialogue in the different groups. A relatively equal questioning dialogue was present in workshop A group 2 and workshop B group 1; these groups were both comprised of members who already knew each other. The most unequal dialogue was that of workshop A group 1, in which the most experienced member took on a “directing” role; a distinction between the “leader” and the others was probably exacerbated by the fact that the remaining members of the group were international students, less confident in expressing themselves in the English language.

Explanatory interventions

Whilst I consciously tried to avoid intervening and explaining, at some points participants took it upon themselves to act as “teachers”. Especially in the second part of workshop B where the groups combined, Stephen from group 1 took on a more “teacherly” role, advising others, sometimes wrongly: advising Julia on how to make a handle, Stephen explains to her his idea of how to proceed, which she then follows, eventually leading to the handle breaking and being unusable for the final object.¹⁶⁴ Something in this exchange concentrates the drawbacks of both

163 Ranciere, *The ignorant schoolmaster*, 29.

164 See documentation booklet, 77-80.

“ignorance” and “mastery”. It is possible that the absence of my “teacherly” voice created a vacuum to be filled by unsolicited teaching; the “freedom” of a Hobbesian un-hierarchy allows anyone to appropriate power if there are no controls in place. This might suggest the need for “democracy” in the form of an organisational tool by which power can be distributed equally while seeking to prevent its appropriation. Alternatively, as Ranciere would have it, “democracy” constitutes a point of rupture where equality emerges against the social order, a concept based on his particular ethics; so what becomes important is an ethics for designing, here as an extension of a general ethics for relations with others and the community. As observer I did not intervene in these interactions in the workshop, in order to let them play out and record them, but it would seem that an ethical duty for any “overseer” in future would be to foster and ensure an ethics of equality in the interactions between participants.

Role of prior knowledge/experience

Due the varied backgrounds of the participants in each workshop, social or experiential distinctions were present between and within each group:

- Workshop A group 1 – prior experience imbalance, Lauren dominated group.
- Workshop A group 2 – Evan had more previous experience (two years of product design), but didn't dominate group.
- Workshop B group 1 – both had experience in theoretical areas related to design, approached tasks quite theoretically, e.g. instructions mainly with words.
- Workshop B group 2 – Mary Anne had more experience in different field (fine art), seemed to approach from the look of things rather than functional principles/use, and some practical misunderstandings. Julia had done amateur making of unrelated things: puppets, dolls etc.

It is difficult to gauge the role of relevant prior “experience” in contributing to the groups' success in the tasks, as the extent of this largely remains tacit, and what is “relevant” is open to question. The participants in workshop A had more “design” experience, whereas those in workshop B, being older, perhaps had more “everyday” experience to draw upon. As might be expected, the student participants in workshop A (especially group 2) showed more familiarity with the workshop tools and practices, though the least experienced (Chloe and Saki) did not demonstrate a higher skill level than those in workshop B. The tasks did not directly correspond to the ways of working that would have been developed within a conventional design education, so there is a sense in which the kind of design and making required was out of the ordinary for both groups.

One of Jacotot's claims was that it was possible for anyone to learn something unfamiliar by a process of relating it to prior experience – any prior knowledge at all. All that was required was to know *something*: “would you know how to recognise the letter O that one of my students - a locksmith by profession – calls 'the round,' the letter L that he calls 'the square'?”¹⁶⁵ The inexpert participants in workshop B did more noticeably lack the “correct” language with which to describe the materials, tools, processes of the task at hand - so they made up their own, which sufficed for their communications. In the second part of workshop B, this fuzziness over terminology resulted in a variety of descriptions for the proposed design during the initial discussion: *a grippy thing, gripping tool, picking-up-tool, pincers, pliers*. The fact that this discussion went on longer than those in workshop A before a design idea that seemed feasible was settled on points to a lack of experience doing more formal design, but also highlights the role of discussion in the process of learning. In terms of Kolb's cycle, here they seemed to go through several accelerated “intellectual” iterations: miming out an idea with materials, reflecting together, suggesting a new idea in light of this, and so on, without fully testing the ideas in practice.

In the same task, participants' lack of existing practical knowledge may have contributed to some time spent pursuing mistaken or unworkable ideas; drilling into a hacksaw blade, or the attempt to wedge a wooden handle without a large enough hole onto the tool. But as long as they are reflected upon, such experiences can be very valuable for learning; they are notable, and *prompt* reflection, more so than ideas that work first time, necessitating a new concept to be formed in light of reflection, and for this to be then tested out. This is the essence of experiential learning.

Designers' skills?

The non-designers in workshop B displayed some stereotypical views of the competencies of designers, and of what doing “design” involves, but also a sense that their idea of their own competencies, and what design was, was changing:

Kimberly: [of the difference between designers and non-designers] It's just a sensibility isn't it? [...] You can look at [the saw] and say 'that's going to create that kind of effect, and that needs to be a bit more tense', you know you can just judge it very quickly, read it, whereas if you're not used to designing you're perhaps not sure, the way the force is going...

NS: But do you think you could work it out?

Julia: Definitely!

Kimberly: I still don't understand how this works anyway...

¹⁶⁵ Ranciere, *The ignorant schoolmaster*, 23.

- [...] [Julia suggests more planning time might help, Mary Anne agrees]
- NS: Do you think you would be able to know what to plan though?
- Julia: No... It's really interesting to do it this way though, because you learn loads by doing it, by just going and doing it rather than just planning it.
- Kimberly: [Kimberly explains that she thinks designers would work differently, and have a preconceived idea before making]...They would have an image in their mind of how the whole thing works together, and I think when you're not the designer of the tool and you're just putting it together, you have to work bit by bit, but it's kind of counter-intuitive to the [...] process of making somehow...
- NS: Did you become the designers of the tools you made?
- Kimberly: [Thinks] ...Yeah! I think so, in the end... I feel like we own those tools in some way, rather than just making a tool that's a copy... [...]
- Stephen: Definitely.

There was something in the process of understanding and then improvising in order to imitate that compelled them to design: the uncertainty, the incompleteness of the information available. At a certain point, their attempted analyses of the objects broke down; they just had to try things out, to make conjectures. As Bill Hillier et al. describe, design's approach is one of conjecture-analysis, rather than analysis-synthesis.¹⁶⁶ There was a point where, in attempting to write their instructions, analysis failed, and conjectures had to be made; and this is where the designing started.

What was perceived to have been learnt (reflections of participants)

The reflections of the participants themselves provide the best evidence for conscious learning prompted by the workshops. The workshops had built-in opportunities for reflection in the form of the discussions. These asked participants to present what they did, how it went, how they felt about the process - in effect to reconstruct a story of the making process, and to reflect upon any successes or difficulties encountered. Further reflections were elicited through the feedback questionnaires, in addition to the spontaneous reflections within the groups during the working process that were captured on the video recordings.

In workshop A, group 2 were surprised at how effective their improvised tools were, and this elicited reflection on the idea of professionalism itself:

166 Hillier, Musgrove, and O'Sullivan, "Knowledge and design", 1.

- Evan:* [of adapting/remaking] But that's how it's always evolved isn't it? Now, unless [a tool] comes in a yellow steel case, it doesn't feel 'new'. Or like it should work as well as this [pointing to his group's replica improvised saw]
- Leona:* And that's quite surprising in a way.
- Evan:* Yeah... even though it doesn't look 'professional', you could probably turn up to a professional job with that and get away with it [laughter]

They were also affected by the ethic of simplicity, and saw potential for their own innovations:

- Leona:* That's what we were saying... you could just use stones [as hammers]... all the time!

These questionnaire responses of some of the design students, who are most likely to go on to become professional designers, are also interesting to the extent that they recognised a potential for a different way to approach their work:

Q: Do you feel you learned anything from participating in the workshop?

A: Yes, working quickly and spontaneously

A: I've learned how to think and make a lot quicker than I'm used to and make in a team

A: Applying principles of one idea to other materials and just doing it

A follow-up questionnaire with one of the workshop A participants shows how she had put the ideas explored to use in her own work subsequently, and seemed to have genuinely gained insights for her design approach through the experience of the workshop.

Q: What do you feel are the main things you have taken away from the workshop, on reflection?

A: Thinking about tools in a new way, as just anything you can make that will be useful.

Thinking about the objects around us as a pool of resources to be matched and broken down to form new things.

Q: Have you designed and/or made anything in an "improvised" manner since the workshop, or do you plan to? Please explain.

A: I plan to, to go out to try and collect different wild food and improvise something to collect it out of the materials there.

Without attempting to draw out the potentials for sustainability for "improvisatory" approaches in the workshop, this participant appears to have made the connection for herself, and to take this approach into her own design work. This suggests the benefits of addressing both "ends" of the "gap" between designer and user , since these future designers are likely to have an effect here.

The non-designers' reflections differed slightly, though some focused on things they could apply to other situations:

Q: Do you feel you learned anything from participating in the workshop?

A: Yes, I learned that good communication is crucial when working in partnership with someone else

A: ... that collaborating with someone you don't know can really work [...] that it can work to work things out as you go along.

These are both procedural and social realisations; the experience of how to collaborate with others applied to other activities could help with the alienation from others Marx diagnosed. The idea that it can work to “work things out as you go along” points vaguely to a potential for something like a *practical emancipation* (as opposed to an intellectual one): that practical action, or design, need not be the reserve of trained experts, but that the principles can be picked up as you go.

A: ...that taking apart something does not necessarily tell you how to make it...

A: ... also, that in order to understand how something works it helps to take things apart!

They were not in agreement over the benefits of dismantling and interrogating objects; though they succeeded in doing so, only half of the participants appeared to enjoy or value this approach. This may be because some found it difficult, more so than the design students. More time may well be the solution to this; many of the participants reported feeling “stressed” by the short time available.

2. Process

Wrong use/ use innovation

Both experienced and inexperienced were keen to misuse objects and tools, and did so creatively. The more inexperienced did so more dangerously, most likely due to having less experience of the boundaries for safe use - especially Stephen in Workshop B group 1.¹⁶⁷ They “designed by use” in their misuse of tools.

Informal design process

Both groups got on with designing and making without being given a structure for how to do so, other than “make instructions, then replicate”. Their informal design process consisted of aspects analogous to a more formal design process:

¹⁶⁷ See documentation booklet, 73.

<i>research:</i>	<i>instructions, and examining other objects</i>
<i>idea generation:</i>	<i>mostly discursively, but also in conj. w/ objects/materials (some cases more individual than others)</i>
<i>prototyping:</i>	<i>iterative adapting/revising, failing quickly</i>
<i>testing:</i>	<i>physically, and verbally through discussion</i>

But rather than proceed linearly, these “stages” were all mixed up together, as necessary; this is probably closer to the way designers actually work, not following “formal” procedural models very closely.¹⁶⁸ Together they do however constitute an iterative cycle of learning analogous to that of Kolb; in this way the informal design process is process of experiential learning, or perhaps a kind of “experiential research”, grounded in the materiality of the problem at hand.

“Cheating” with technology

In workshop A, both groups used phones to video and photograph the objects to aid in writing instructions. This seemed to be more out of a generational habit than as a result of design experience, and didn't appear to make a significant difference to the objects produced. Towards the end of the workshop, group 2 resorted to power drills to make their final adaptations so as to finish on time, though this was to finish on time rather than expand the processes available to them.

From imitation to design?

There seemed to be a seamless and necessary transition from imitation to design: in the first part of workshop B, all attempted to imitate their given tools, but with errors/imperfections, which necessitated creative improvised solutions. This puts “error” as the condition under which “design” can occur – at each point a state which needs to be turned into a preferred one, by a further conjecture. Their mistakes made them design even in the process of imitating. This brings to mind Tim Ingold's assertion that there is improvisation even within the following of instructions; the act of trying to replicate a definite thing, to live up to a given standard (here an object) necessitates this deep attention and focussed trial-correction-iteration, homing-in on the desired outcome.¹⁶⁹

¹⁶⁸As Ken Wallace puts it, in design practice “the objective is to produce the best product design and not to follow slavishly some prescribed model.” Ken Wallace, “Some observations on design thinking,” in Research in design thinking, edited by N. Cross, K. Dorst and N. Roozenburg (Delft: Delft University Press, 1992), 78.

¹⁶⁹To Ingold, “even if practitioners are following instructions laid down in a plan, score or recipe [...] the more strictly a performance is specified, the greater the improvisational demands to ‘get it right’. Any formal resemblance between copy and model is not given in advance but is rather a horizon of attainment, to be judged in retrospect.” Tim Ingold, *Being alive: Essays on movement, knowledge and description* (Oxford: Routledge, 2011), 216.

3. People

Safety and intervention

The point at which the attempt to assume equality in my interventions became very difficult was where safety became a concern. Workshops are dangerous places, and the misuse of even sharp hand tools can result in serious injuries. As the Dreyfuses state:

Anyone who wishes to acquire a new skill is immediately faced with two options. He can, like a baby, pick it up by imitation and floundering trial-and-error, or he can seek the aid of an instructor or instructional manual. The latter approach is far more efficient, and in the case of dangerous activities, such as aircraft piloting, essential.¹⁷⁰

Instruction is of course pragmatic, and Dreyfuses denigrate the method of the “baby” - which sounds a lot like Jacotot's universal teaching. But to ensure safety there is also the option of active intervention. Can the figure of authority that interjects, “no - you'll hurt yourself,” do so in a way that fosters equality? Could other participants be enabled to equally do so to each other, or the “teacher”? In workshop B, Kimberly admonished Stephen repeatedly for behaviour bordering on the unsafe, so such interventions were not limited to the “teacher”. But she was only listened to to a degree, Stephen seemed to feel more confident or experienced, and able to decide on his actions for himself.

For Gert Biesta, in a “reclaiming” of authority for progressive teaching, the very act of speaking to a student can, in a sense, cast them as equals: as worthy of being spoken to. Rather than left to their own devices as mere “learners”, they are worthy of the teacher's address, of being taught.¹⁷¹ This is a complex position, but where the safety of the participant or student could be at risk, leaving them to learn what is dangerous for themselves certainly would not demonstrate the respect of an equal. This suggests there may be two forms of knowledge that demand different approaches. Safety may be better thought of as something determinate e.g. (how) not cut off your fingers, where the transmitted knowledge of rules or guidelines may be an essential starting point. Other things may be better thought of as indeterminate or subject to interpretation e.g. how to design/make something.

170 Dreyfus and Dreyfus, *A five stage model*, 1.

171 In doing so, Biesta takes up a theme touched on in Ranciere's *the ignorant schoolmaster*. See: Gert Biesta, “The Rediscovery of Teaching: On robot vacuum cleaners, non-egological education and the limits of the hermeneutical world view,” *Educational Philosophy and Theory* ahead-of-print (2015): 1-19.

The workshop participants were (for health and safety compliance) given a very basic set of guidelines at the beginning, as general as possible – e.g. “no fingers in front of a cutting edge”. There is a parallel here with the *rules* of a game; is it reasonable to expect the rules of the game to be learned by observation (especially when the consequences are injury)? Such rules don't have to convey mastery, but offer an equal entry point. In some circumstances, rules can be picked up (mostly) without explanation, by experience, but it is perhaps an unnecessary handicap. Despite the initial guidelines, it was however necessary to intervene to reiterate the ideas. Withholding explanation/information until it becomes necessary, where this is possible, can add a motivatory aspect, as then learning proceeds through a concrete discussion based on real problems as they arise.

Participant's feelings/perception of experience (summary)

Enjoyment –	very high among all participants, except possibly one, who described the experience as “ <i>more interesting/fascinating rather than enjoyable as such</i> ”.
resourcefulness –	generally all felt their resourcefulness was affirmed or increased.
possibilities –	workshop A brought realisation of various possibilities for the improvisatory approach e.g. in students' own work, whereas some in workshop B saw more possibilities for themselves to design/make things.
cooperative work –	opinions for and against: those in workshop A mentioned enjoying the opportunity for cooperation. In workshop B, one mentioned negative aspects of another who “ <i>is set on a design and won't listen to reasons why it won't work, but even then its worth working on the futile design because you get to practice using tools and working out solutions to problems</i> ”.
terror/panic/stress –	some negative aspects due to time constraints noted in both workshops, but especially Mary Anne in Workshop B. The group members did however support each other, and congratulate their successes.

4. Objects

Flaws

[In workshop A, Leona and Cat assembling a rail onto their drawing board, which then splits. They start laughing]

Leona: *[aside, to Cat] It's like the worst job I've ever seen!*

There were many obvious flaws in the objects produced, though mainly in terms of finish (sharp points etc). This is understandable given the time available, and could be the basis of further workshops – i.e. redesigning/remaking. One “flaw” which prompted my intervention was that the twine on the stone hammers made in workshop A loosened over time, so I had had re-tie them before the second workshop, though this is more to do with the drying of the wood than workmanship.

Successes

All groups produced working tools, and so proved to themselves that they could design and make their own tools. Replication worked, after a fashion, and also produced a second iteration: workshop B put the vice, saws and hammers made in workshop A to use. This did produce what could be the beginnings of a human-directed and powered “machine” (reliant on material inputs and knowledge), operating as a “convivial hand tool” in Illich's sense. In terms of the original self-made tools, an important success was noted by Cat in her follow-up questionnaire: “*it made it easier to believe that it was possible to make your own tools.*”

Affective-ness:

Appeal?

In workshop A the unfamiliar workshop hand tools, especially the drill brace were appealing to the participants; in workshop B, the existing improvised tools, especially the knife-saw and frame saw seemed to appeal strongly. They were all out of the ordinary and intriguingly simple for the participants concerned. Instead of seeming unnecessarily laborious, basic hand tool use was appealing - based on object-appeal, and strangeness. Illich would be pleased with this, considering their general conviviality.

Attachment

Through making, struggling, interacting, and eventual success, the participants built a bond with their tools. In workshop B, group 1 were noticeably triumphant as they finally overcame their struggles, and group 2 Kimberly notes strongly her attachment to the hammer they have just made. They decide to name it, “*labour of love*”, and show an affection for it like a baby – as they say, it is “*the first time we've made something together*”. This seems to point to the idea that this is something untrained people could enjoy doing, after experiencing strong affection for a self-designed/self-made thing. Such a relationship with objects can't help but provoke a comparison with the relationship to a conventional consumer product.

Associations (summary)

- *musical instruments*: both workshops compare saw to a “musical instrument”
- *animals*: Mary Anne compares her “scraper” to an animal, possibly out of affection
- “*they're almost like a knife and fork*”: Kimberly compares the nail-puller and Mary Anne's “scraper”, both made from one knife plus stick and twine.
- “*like turnips ... parsnips*” ... *I feel like we're operating in the wrong domain*”: Mary Anne thinks there's something wrong with the green wood – not wood-like enough, not aware of the change that will occur as it dries.¹⁷²

The kitchen similes are notable, since I thought of the work as similar to cooking. Cooking is one of the remaining arts of everyday living, in which it is possible to work with raw materials and produce something which doesn't have an economic end, but a human and social one. Spending time cooking only makes sense socially; you can *feed* yourself with bread, but a meal is something shared, that invites care and attention to the extent that you care about those you share it with. The aspiration within the project is for a designing and making as everyday as cooking, a creative involvement in the material, rather than just consuming it.

¹⁷² See documentation booklet, 58. Mary Anne made this comment while making the pegs.

Reflections on nature of designed objects in general

Two participants in workshop B noted some significant changes to how they saw designed objects:

Q: Did the workshop make you think any differently about designed objects?

A: Yes, it makes me less nervous about taking apart designed objects. I also stop seeing them as individual units but rather a bundle of components

A: Yes. I have a new reverence for tools I take for granted. I suspect I will look at my tool-box from now on and start asking why things are as they are...

These participants appear more likely to act on, or at least to question, the designed world around them. In answer to the same question, the designers noted different changes in their conceptions, based on their different relation to the making of designed objects:

A: Yes. I think things should be clearer – how they are constructed should be clearer where possible

A: Yes, they can be hacked, changed, and applied to scrap material.

A: These objects work just as well as mass-produced ones (with some patience)

These are significant realisations for people at either end of the “gap” between designer and user, and evidence that such an approach could have some effect on narrowing the gap. They raise the problem of the black box being the result of the designers work: intervening into the mindset that produced this could be of significant help the user in being able to teach themselves to intervene in designed objects. As Cat explains in her follow-up questionnaire:

Q: Following the workshop, do you think it is important for designed objects to be “self-explanatory”, and if so, in what sense and why?

A: I think it is important – for example the chair saw once you took it apart you could see easily how it was put together. I think this is important because it makes it easier to repair and/or modify to suit you better. A lot of things where you can't see what's going on are useless even if only something small has gone wrong.

The “social order” of design is unlikely to be removed, but like the hierarchy of education, perhaps it can be used to subvert itself through applying equality as a starting point.

Summary and conclusion

Summary

The project began with the philosophical premise of *assuming equality*, and followed through on its implications for design through exploratory, experimental practice. A prototype toolkit was made, and used as the basis for workshops which explored the extent to which people could *teach themselves* to design and make things, without the explanations of an expert. While it is important to stress the limits of this brief study with a small number of participants, the workshops revealed something of the ability, or potential, of these “inexperienced” people to do so, and to prove their competence by designing and making useful things. Further, the results offer a partial confirmation that such an approach, based on improvised, prototype objects, can be effective in provoking realisations on a deeper level, on the part of both designers and non-designers, which could potentially start to address the ill-effects of the *unequal* way in which design is constructed as a practice and a discipline.

Enabling designing

The tools operate on two levels of conviviality: confirmed on the immediate level of enabling self-directed design and making, and partially on the level of a realisation of the equal possibility of practical action. Such improvised, prototype objects allow the reconstruction of “the tale of their making”; the human intervention required is the supported compulsion of others to show themselves that they can uncover this, and make what they will of it. In this way the toolkit could replicate and expand itself as necessary, through the actions of the “practically emancipated”. The workshop leader's role consists of ensuring equality through any interventions; not being the source of expert knowledge, but allowing it to develop outside of a transmission from “master” to “pupil”. Knowledge resides in the objects, but also arises in the interactions between the object and other equally-intelligent people. The objects are not just deferred explication but interpretive text, allowing reconstructive interpretations of their meaning; a meaning which must be grasped both in theory and in use. The participants learned most equally through object-based discussion with equally “ignorant” others. Mismatches in prior experience within groups had some disruptive effects; the social order intrudes when left to. This pointed to the need for the reinforcement of an ethics of equality in order for interactions to proceed on these terms.

The workshops provide some evidence of the untrained gaining confidence to learn how things work for themselves and act with this knowledge – a “practical emancipation”, for want of a

better term.¹⁷³ All groups demonstrated “competent” action on the Dreyfus model, except for one, where some participants appeared to be *constructed* as novices within the group - by being told what to do. The workshop appears to prove such competence by assuming it is possible to demonstrate, implying that “novice” and “beginner” stages may be in part constructed *by instruction*.

Designing differently

The design students took other things from the experience: the improvised way of working, with found or waste materials, and an ethic of simplicity; thinking about tools as “anything useful”, and objects as unfinished, with the potential this holds for sustainability. Designers working collaboratively in this way at the level of use could present a model for practice: like John Chris Jones’s “Type A” designs,¹⁷⁴ such immediate improvisations with the things at hand may have the greatest potential to positively affect the here-and-now. A longer-term view is of course still needed, but such an approach offers a suggestion towards a practical model for action within larger holistic frameworks such as transition design. The resourcefulness and cooperative spirit fostered by such an approach point to intrinsic benefits for a transition model aimed at reducing both alienation and environmental crisis caused by the unwanted effects of designing. The greatest effect in the immediate term must come from those who are (or who will be) professional designers – the “social order” is not going away – but non-designers could have a more equal role. Working together as equals, they could demonstrate their capabilities (to others and to themselves) to learn through *just doing*. Overcoming instruction, or a perceived need for it, in this way could remove a significant barrier to entry to the act of designing, when the absence of instruction is what prevents action or involvement.

Improvisation

Improvisation is at the heart of this approach, the conduit for this “practical emancipation”. The participants arrived at an informal design process tacitly, through improvising it. Untutored improvisation is what sticks in the Dreyfus model, in which the “expert”, overcomes “rules” through experience and becomes able to improvise freely. But generically, improvisation seems to occur as part of our everyday competence as humans as we “design by use” to get by – so perhaps “expertise” is the incorporation of a task or skill *into our everyday*, to the extent that we spend time doing it, forgetting its terrifying newness, and fall back on an underlying mode of action. This is

173 A potential problem with this suggested term is that it may appear to reinforce a binary with “intellectual”. There doesn’t seem to be an obvious word that encompasses both intellectual and practical aspects: “design emancipation” would also seem to favour the intellectual over the practical.

174 John Chris Jones, *Design Methods* 1980 ed., xxiii.

perhaps the same as “assuming equality” - an assumption that all are equally able to improvise, to make things up, or work things out, as they go along. Resourcefulness, like expertise, is nothing more than the ability to improvise with the matter at hand; by this measure all would consider their “expertise” to have grown. This is the expertise of the bricoleur: a generalist improviser of material actions. There is potential within such everyday, uncommercialised improvisations to counter alienation: to decide on a project and control its result, to experience the joy of self-directed work, and so to demonstrate one's humanity, and place as part of a community. To Levi Strauss,

*the ‘bricoleur’ [...] derives his poetry from the fact that he does not confine himself to accomplishment and execution: he ‘speaks’ not only with things, [...] but also through the medium of things: giving an account of his personality and life by the choices he makes between the limited possibilities. The ‘bricoleur’ may not ever complete his purpose but he always puts something of himself into it.*¹⁷⁵

Improvised everything?

Despite their “flaws”, the tools did their job on a number of levels. The affective nature of the (mere) tools – self-made, as a product of self-teaching – and the pride in their successful making shows a potential criterion for the valuing of products. Designers *could* let objects be the result of meaningful action of their users, which, in their construction, let the user make their own understanding of the making of their things. Design *could* operate with the assumption of equality, that the user of a thing is capable of understanding its working and redesigning it for themselves, not just in its use but in its being, while not putting people at risk by doing so. The evidence indicates that users could potentially change the way they see the material world, and their place within it, even with a short intervention. The verification of this possibility requires further work, the most immediate being a longer-term study, with a wider range of participants, particularly from outside of higher education. Whether “everything”, or more things, can be improvised is limited by necessity, interest, and openness to the possibility. Perhaps the biggest challenge is getting someone who doesn't think they can design and make things to try it. Designers can have a role in this by assuming equality now, and manifesting it in their products and their engagements with “stakeholders”. Ordinary “users” could use something like this toolkit and workshop model to prove to themselves their competence by *doing what they cannot do*, and so perhaps become everyday experts in resourceful designing and making who can *improvise everything* – an ongoing process of everyday research. In this way, there may be a potential for a more equal participation in the designing and making of the things of everyday life.

175 Lévi-Strauss, *The savage mind*, 14.

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Appendix A

IMPROVISED EVERYTHING - pilot workshop

Date: Wed 6th May 1pm-5pm
 Venue: Dorset place studio-workshop
 Participants: Students – design and non-design

Workshop outline:

Participants devise their own instructions to make simple “improvised” hand tools, then make the tools from their instructions. Participants then test out the tools, and use them to create an object of furniture from waste wood /pallets, designing directly by improvisation.

Introduction (1:00-1:15pm)

Describe project, sign consent forms and discuss hand tool safety.
 Show examples of improvised toolkit

Making tools from things: (1:15-2:45pm)

Making “improvised” tools to own instructions: imitation, self-teaching

Split into two groups:

Group 1 (3-4):

- Take apart example tool (saw) and write instructions on how to make it. Discuss.
- Make frame saws from broken chairs, sticks, hacksaw blade and length of twine. Check tools and discuss.

Group 2 (3-4):

- Take apart example tool (hammer) and write instructions on how to make it. Discuss.
- Make hammers from a stone, green stick and twine. Check tools and discuss.

Break (2:45-3:00)

Making things with tools: (3:00-4:30pm)

Testing-out creatively: improvisation

Participants are given a brief in the form of an “instruction”:

Make a piece of furniture together from scrap wood using your self-made tools

Use the tools together to test them out, while making a simple piece of furniture (unplanned, improvisatory) from a given material source: pallets and/or scrap wood.

The furniture should be for an “improvised workshop” – e.g. stools, workbench
 - an improvised imitation of the surrounding workshop.

Discussion and feedback: (4:30-5pm)

Appendix B

IMPROVISED EVERYTHING - public workshop

Date: Wed 24^h June 1pm-5pm
 Venue: Dorset place studio-workshop
 Participants: non-designers

Workshop outline:

Participants devise their own instructions to make simple "improvised" hand tools, then make the tools from their instructions. Participants then test out the tools, and use them to create further tools or a piece of furniture from found materials, designing directly by improvisation.

Introduction (1:00-1:20pm)

Describe project, sign consent forms and discuss hand tool safety.
 Show examples of improvised toolkit

Making tools from things: (1:20-2:50pm)

Making "improvised" tools to own instructions: imitation, self-teaching

Split into two groups:

Group 1:

- Take apart example tool (saw) and write instructions on how to make it. Discuss.
- Make frame saws from broken chairs, sticks, hacksaw blade and length of twine. Check tools and discuss.

Group 2:

- Take apart example tool (hammer) and write instructions on how to make it. Discuss.
- Make hammers from a stone, green stick and twine. Check tools and discuss.

Break (2:50-3:00)

Making things with tools: (3:00-4:30pm)

Testing-out creatively: improvisation

Participants are given a brief in the form of an "instruction":

Make a tool or piece of furniture together from found materials using your self-made tools

Use the self-made tools together to test them out, while making a simple object (unplanned, improvisatory) from the given materials.

The new tools or furniture should be for an "improvised workshop" – e.g. stools, workbench - an improvised imitation of the surrounding workshop.

Discussion and feedback: (4:30-5pm)