

Taking aim at ‘wicked problems.’ A practical philosophy for educating designers in the making of wise decisions

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Abstract

Today’s design pedagogies lack the characteristics for redressing the nature of the ‘wicked problems’ they attempt to solve, such as sustainability. We argue it is not fair for future generations to suffer the systemic effects of our unsustainable consumer culture, partly resulting from today’s design professionals’ decisions, which ensue because design is an amoral discipline lacking a systemic perspective.

To rectify design’s characteristic failings, as part of a PhD study, we report a new pedagogical architecture founded as the synthesis of the practices of design and civics, forming the relationship design-as-civics (DaC): a practical philosophy. We position DaC as a reflexive, systemic radical political praxis for every citizen, possessing the explicit teleological goal to achieve the ‘good life’ for all.

DaC takes a transdisciplinary approach. It integrates the discoveries of cognitive science and linguistics to expose how we construct our understanding of the world interpreting metaphors and frames, which we utilise to ‘aim’ DaC. Alongside shared social practice theory (SSP) and insights from developmental psychology that reveal the distinctly human capacity of “*shared intentionality*” engendering humankind’s willingness for cooperation and empathy for fairness. That living in a fairer society is desired by people from rival political perspectives, with egalitarian societies reporting lower environmental impact lifestyles and more willingness for transitioning towards sustainment.

Thus, it is humankind’s cooperative behaviour and aligning values that provides the foundational rationale of DaC’s SSP goal to achieve the ‘good life’ through the ongoing critical examination of its ‘aim’ of resolving ‘fairness between citizens.’

Design as Civics, Sustainability, Civics, Sustainability as Fairness, Fairness between Citizens, Generative Metaphor.

The statement by the 19th century philosopher and a founder of sociology, Comte (1798 - 1857); “*The living are now more and more governed by the dead*” (White 1921 p.36), holds inescapable truth today as we reflect upon the imposition on future generations of the absence of fairness resulting from the dominant ‘western culture’ of consumerism. The absence causes systemic interconnected environmental, economic and social problems referred to as the issue

of sustainability (European Environmental Agency 2012; IPCC 2014; Stern 2007).

Design professionals' decisions are absent of fairness because design is amoral (Jonas et al., 2009 p.104/6) and lacks a systemic perspective. Moreover, today's designers and pedagogies of design predominantly focus on supporting the needs of capitalism's neoliberalism, metaphorical 'free- market' ideology that drives consumerism (Lovins et al., 1999).

Literature Review

In contemporary industrialised societies, scholars agree on the phenomena of how citizens and designers passively accept technological innovations and consume without critical engagement (Papanek 1974; Manzini & Cullars 1992 p.5; Margolin 2006; Walker 2008; Fry 2011 p.ix). For example, Margolin exposes industrialised societies' failure to ask whether the, "*onslaught of new devices, systems, and social practices,*" improves our lives (Margolin 2006 p.118). Moreover, Manzini and Cullars announced a decade earlier how design continues to lack an ethics of practice (Manzini & Cullars 1992 p.5).

Thus, it seems remiss that with decades of design scholars' thoughtful protestations, design pedagogies and professional designers predominantly remain unfocused on applying critical thinking to what we argue are their social responsibilities: of assisting citizens to question what lives or social realities they desire, and how to get there.

The free-market paradigm dominates citizens' and design's agenda, leaving design ill-positioned and possessing the wrong characteristics for tackling 'wicked problems' (Rittel & Webb 1973). As Margolin declares, we "*lack a calculus of values that can enable us to assess the worth of new experiences*" (Margolin 2006 p.118). Whereas for the philosopher and educator Freire, his concern was how the day's dominant paradigm "*absorbs those within it and thereby acts to submerge human beings consciousness*" (Freire 1972. pp.27-28), echoing Shove's thoughts that our every day to day living – our shared social practices (SSP) such as consuming – become invisible norms of society (Shove 2011 p.88). Moreover, for Diamond, 'submerging' is what he terms as "*creeping normalcy*" leading to society's 'unconscious' gradual local habitat demise (Diamond 2006 p.443).

Together, we recognise Freire's call for citizens to develop their "*critical consciousness*" (1972 p.150), Margolin's call for a "*calculus of values*" (2006 p.118), alongside Manzini and Cullars's desire for an ethics of design practice (1992 p.5) as being akin to the constitutive elements of the praxis of civics. Civics being a praxis of citizens to question; "how do we achieve the 'good life' for all citizens?" We propose that to achieve the 'good life' in our unsustainable era requires as a priority the rationalising and emphasising of the systemic relationship between fairness and sustainability.

Our theory draws on civics as taught by the ancient Greek scholars Isocrates and Aristotle. In doing so, we argue:

That we respond to sustainability literature's calls for initiating practices of sustainable development that provide new thinking and new ways of living that promote the embracing of efficiency alongside sufficiency (Cooper 2000 p.50; Cooper 2005; Mauch, North and Pulli

2001; Mont & Plepys 2008 p.536).

That sustainability is not “*definable, understandable and consensual*,” it is an ongoing ‘wicked problem’ (Rittel and Webber, 1973 p156; Conklin 2005; Levin et al., 2012) requiring the deliberative attention of citizens able to redress the absence of intra-generational and intergenerational fairness (Fry 2009 p.42) from the frequently used term to describe sustainable development.

That sustainable development is; “*development which meets the needs of current generations without compromising the ability of future generations to meet their own needs*” (World Commission on Employment and Development 1987 p.16).

Research Aim

In this paper, we argue for the explicit embedding of the value of fairness within a reflexive practice of civics and design forming the theory of practice we term design-as-civics (DaC). Whereby DaC is a reflexive, systemic radical political praxis for designers, design students, and our ambition, a shared social practice of citizens: in other words, we position DaC as a practical philosophy. We use the term practical philosophy to differentiate DaC from how philosophy is typically discussed today, devoid of action. We reconnect it explicitly with philosophy as practised by the ancient Greeks: that philosophy is the way to live life towards achieving happiness – or the “*good life*” (Aristotle AD350 NE Book I p.8). Thus, philosophy here, with its theory and practice to achieve the ‘good life’ is a praxis possessing a value-rationality. A praxis for developing the citizen’s phronetic skill of making wise decisions in uncertain conditions (Flyvbjerg 2001 p.55-57). As Aristotle states, it is that we learn by doing (Aristotle AD350 NE Book II p.1) and through such actions, “*we become just by doing just acts*” (Aristotle AD350 NE Book II p.1).

We also contend that fairness represents the overarching principal principle value; to provide DaC the moral characteristic to ‘aim’ its practice in critically interrogating “*wicked problems*” (Rittel & Webb 1973) affecting our societies. And by reframing sustainability as a proposition that the world’s cultures can readily interpret – the value of fairness – we remove today’s obscuring technocratic specifications, or “*empty phrases*” (Voss, Bauknecht and Kemp 2006 p.3) that hinder its understanding and prevents change.

In highlighting the absence of fairness concerning sustainability, to aid our thinking – and DaC practice – we propose discussing sustainability as the systemic relationship frame term ‘*sustainability as fairness*’ (SaF). It thus entails that we can write the pedagogy framing of DaC as (design as civics) as (sustainability as fairness). Alternatively, to aid transparency and ease of use, the expression DaC as fairness. Subsequently, we can state DaC’s goal is to achieve the ‘good life’ through the ongoing critical examination of its ‘aim’ of resolving ‘fairness between citizens’ (FBC).

Thus, in defining DaC, we agree with Margolin’s contention, that; “*design theory at its most fundamental ought to be a theory of how design does and might function in society rather than simply a theory of techniques*” (Margolin 2002 p.238), echoing similar thoughts on the nature of the practice of design by Papanek (1974 p.17), Jones (1981 p.9), Alexander et al., (1977),

Cross (2007 p.47), Nelson and Stolterman (2003 p.290) and Fry (2011). DaC also remedies Papanek's pedagogical concern that schools of design, "*teach too much design and not enough about the social, economic, and political environment in which design takes place*" (Papanek 1974 p.235).

Structure of Paper

Having outlined our contextual interpretation, and put forth DaC as a path forwards, the following sections develop through a series of short discussions our rationale for DaC foundational elements.

As fairness is a relational value between others – our fellow citizens, local and global – we start our discussion by reporting fairness's human evolutionary origins. Subsequently, the relationship of values with frames and conceptual metaphors; moral politics (figure 3); values and cooperation; and lastly morality and fairness. We organise our thinking as an overview of DaC in Figure 5. We then briefly report DaC in practice to highlight how the theory starts to resolve as praxis.

However, we first redress the contradiction held within our claim; how pedagogies of design lack the characteristics to redress 'wicked problems' due to its amoral nature, as informed by our citing of Jonas et al., (2009), when these scholars contend design's amoral nature is a virtue needing preserving (Jonas et al., 2009 p.104/6).

Design: an amoral practice

So far our argumentation positions DaC as addressing design's amoral characteristic (Jonas et al., 2009 p.104/6). However, Jonas et al., proclaim how making design moral is a mistake: that it portrays design as an immature discipline (Jonas et al., 2009 p.104/6). Instead, they position design's amoral nature as a virtue, that it is essential for design to be ethically uncritical (Jonas et al., 104/6). They state that design as a 2nd-order cybernetic discipline, for the designer "*to evaluate the representations of reality by comparing them with reality itself*" (Jonas et al., p. 104/6) is problematic because the designer's perspective becomes a tautology of them comprehending observing their observations. For example, 'I see a cat is black because I see a black cat,' is remiss of external objective verification. (See Dubberly & Pangaro 2007 for explanatory diagrams of 2nd-Order Cybernetics)

In developing the reflexive relationship of DaC we assert we redress these concerns. We first provide DaC with an explicit teleological goal, knowing that, as White explains, "*there is in it a grand unfinished*" (White 1921 p.17): to deliver the 'good life' for everyone using FBC as the contemplative metric 'aim' that generates multiple personal perspectives through the co-performances of DaC practitioners. As such, and important to recognise, DaC possesses a value-rationality, the antithesis to the instrumental rationality of neoliberalism's 'free-market' economy (Brown 2006 p.711).

DaC practitioners triangulate through discourse to reflect on the nature of how FBC resolves within the context of the lives that their decisions affect. These include their own within the systemic relationship of living within their history, geography and occupations comprising

their city, which we later discuss as the concerns of the practice of civics. In Von Foerster's constructivist paradigm, "*reality becomes communality and community*," through the experiences of people sharing discourses (Von Foerster 2004 p.13), such that in creating "*communality and community*," the act of sharing – of living socially – represents the triangulation of the realities of those that matter: 'we collectively agree a cat is black because we all see a black cat.' That through sharing lives – performing actions and discourse together – practitioners reflexively change the knowledge and practices upon which their initial thinking drew: in other words, through discourse and making interventions practising DaC – in the true Aristotelian sense – they live philosophically (Hadot 2004 p.138). In living philosophically, they transform themselves, their habitus (Hadot 2004 p.176) and collectively create the society they desire. It creates Mode 2 knowledge that is reflexively politically accountable to the community (Gibbons et al., 1994 p.3) advancing, we argue, Rittel and Webber's call for an "*argumentative process*" for answering 'wicked problems' (Rittel & Webber 1973 p.162).

Thus, we follow Vygotsky's claim of how human culture – a social process – forms the citizen's mind (Vygotsky 1978; Barret 2011 p.36). That, our functioning is not solely the result of innate natural behaviour, but that mankind, "*constructs himself*" (Vygotsky 1989 p.65) and his understanding of reality from within their social context (Berger & Luckmann 1971), through their practices (Schatzki 1996 p.13; Reckwitz 2002; Shove, Pantzar and Watson, 2012). Such thinking is also represented in the theories of Lakoff & Johnson concerning metaphor (1999; 2003), and Tomasello (2009a; 2009b and 2014) researching developmental psychology.

And explicitly, that DaC's principal principle, the conjectures and interventions realised are all shareable as permanent records for ongoing scrutiny by fellow citizens.

The above arrangement of DaC praxis, we argue, annuls Jonas et al.'s concern of design and professional designers colonising the moral space inadequately (Jonas et al., 2009 p.104/7), and contend DaC is appropriate and justified in being a second-order cybernetic practice (Scott 2004). It recognising how "*all knowledge is seen as dependent on the observers' involvement*" (Glanville 2009 p.80), that it's their collective observing the observed that creates the 'good life' (Figure 1) as they "*become just by doing just acts*" (Aristotle AD350 NE Book II p.1).

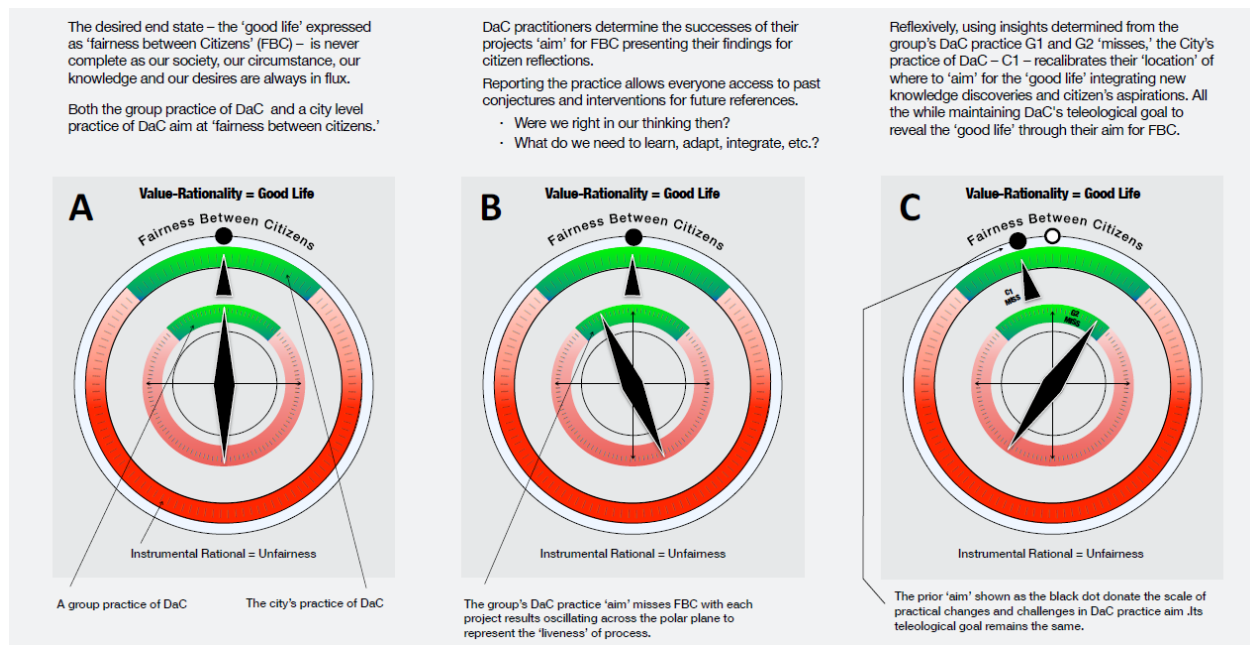


Figure 1: Three views using a compass metaphor to navigate DaC towards the teleological goal of achieving the 'good life' by aiming for the value, FBC.

Fairness and morality

How morality and fairness arose in human nature is contested, with theories promoting that of altruism (Fehr and Fischbacher 2003) and mutuality (Tomasello 2009a). We find Tomasello's (a developmental psychologist of the Max Planck Institute for Evolutionary Anthropology) positioning of mutuality first followed by altruism, insightful (Tomasello 2009a p.85). He states, "homo sapiens are adapted for acting and thinking cooperatively in cultural groups" (Tomasello 2009a p.XV) and distinctly equipped with social skills for regulating their behaviours in social contexts.

In human infants from around the age of one, emerges the social skill of understanding the intentions of others (Tomasello, Carpenter, Call, Behne 2005 p.675). This "shared intentionality" is motivated to form cooperative actions, the helping and sharing with others (Tomasello 2009b p.321) resulting in mutualist relationships forming, and precedes a child's development of "understanding beliefs" (Tomasello 2005 et al., p.675). The beliefs the child's culture hold and moulds into its children. These cultural beliefs, alongside the member's capacity to, "suppress their own interests in favour of those of others or equate their own interests with those of others," are essential for cooperation (Tomasello & Vaish 2013 p.251).

The shared intentionality of a "joint goal" (Tomasello 2009b p.321) of early human cooperative acts arose in hunting and gathering expeditions, whereby the rewards were fairly distributed (Warneken et al., 2011). Figure 2 depicts Tomasello's documenting how young children in 'joint tasks' share the rewards fairly (Macdonald, T. 2013 t.24').

Here we see the psychological processes of fairness, of human cooperation and morality, evolving hand-in-hand as the means to enhance a group's collective potential. Knowledge, skills and practices develop – including civics – with their transmission and evolution determined by the community's culture. We draw upon the above insights as providing the explanatory and practical insights for theorising DaC as a SSP of citizens: where FBC is realised through instigating humankind's innate nature of fairness in 'joint goal' activities.



Figure 2: Prof. M. Tomasello explaining to Prof. A. Roberts his study exposing how children in 'joint tasks' share the rewards fairly (Macdonald, T. 2013 t.24').

How metaphors frame our understanding of situations

Cognitive science reveals how our brain's conceptualisation of the world builds its understanding of reality interpreting metaphors within language (Lakoff & Johnson 2003 p.3). Metaphors reside as physically encoded synaptic 'frames' within our brain (Lakoff 2002 p.145) which we recall, often unconsciously, when say voting, to our concern here, of practising DaC (See Lakoff & Johnson 2003 for discussion on conceptual metaphors).

Schön exposes the unconscious implications of generative conceptual metaphors dramatically within the "problem-setting of social policy" for two USA urban housing projects (Schön 1993 pp.262 - 265). One framed the problem as blighted recalling the conceptual metaphor frame of 'disease,' and its response, to eradicate. The area was razed.

The other housing problem-setting frame, following discussions with local citizens, focuses unconsciously on the conceptual metaphor 'natural community.' Here the officials' response to the conceptual metaphor drove their intervention to nurture elements representing 'home,' with "unslumming" restricted to specific interventions (Schön 1993 p.263).

Metaphors thus unconsciously and consciously inform our reality shaping the nature of our actions (Lakoff & Johnson 2003 p.158). However, their role is complicated by our moral politics.

Values, metaphors and moral politics

Nearly "all moral concepts are defined by metaphors" (Lakoff & Johnson 1999 p.325) motivating an individual's position on political issues, such as sustainability. Cognitive linguist George Lakoff identifies, and terms as 'moral politics,' two distinct conceptual metaphors

framing the USA's public discourse, dividing conservative and liberal positions. These are the 'Strict Father' and 'Nurturant Parent' models (Lakoff 2002) (Figure 3).

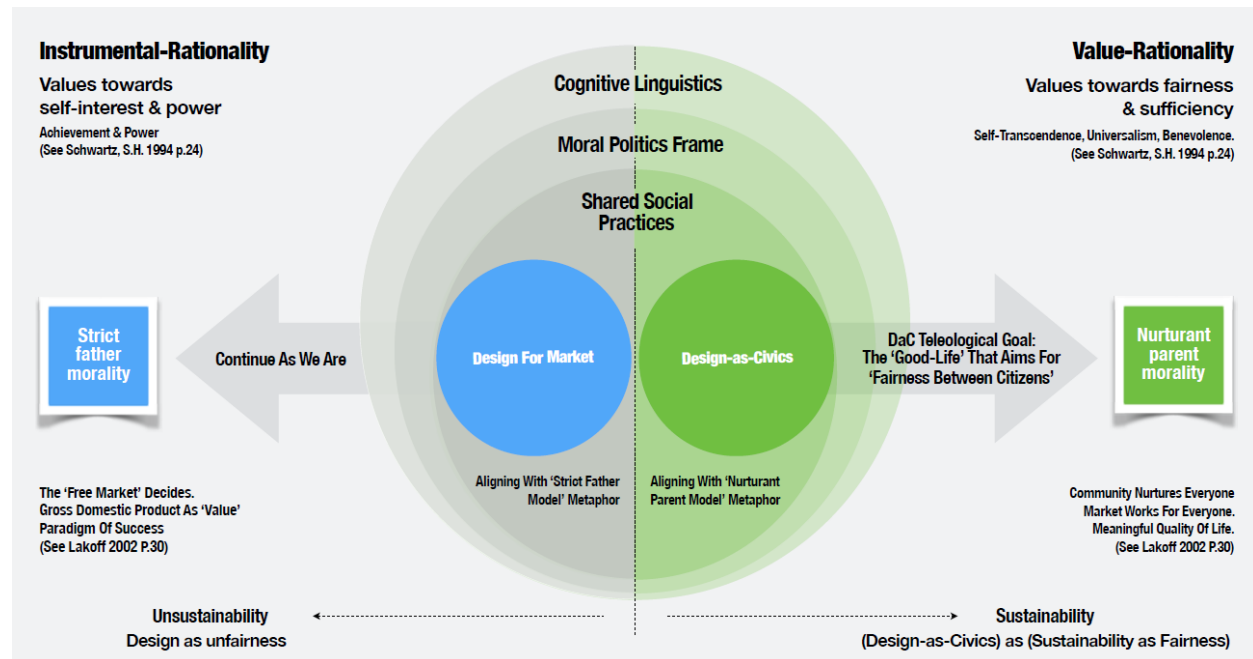


Figure 3: Values and the metaphors of moral politics.

We oversimplify the richness and thoughtfulness of Lakoff's thinking and keep our discussion to how his ideas relate to sustainability and 'wicked problems.' The conceptual metaphor of the 'Strict Father' model, Lakoff equates to the frame of the 'free market' ideology of capitalism (Lakoff 2002 p.213) and thus its instrumental rationality (Weber 1978 p.85; Brown 2006 p.711).

Its moral emphasis focuses on the value of 'freedom' of the individual. That one's moral politic is to self-determine one's actions, with life a competition for personal success – the increasing of one's financial worth (Lakoff 2002 pp.67-69). Moreover, in this frame, man as a steward has mastery over nature. Exploiting the bounty of nature's resources is thus argued as being morally good (Lakoff 2002 p.213).

Diametrically, Lakoff's conceptual metaphor 'Nurturant Parent' model equates to how the whole community must benefit from the market's commercial activities (Lakoff 2002 p.216). The conceptual metaphor of 'nurturing' promotes; responsibility for caring for oneself, while explicitly recognising that cooperating fairly, with mutual respect and empathy, as a member of a community, benefits everyone's wellbeing. Significantly, nature is not under the stewardship or control of man as a resource for exploitation, but considered, metaphorically, as "*nurture-as-mother*" (Lakoff 2002 p.216).

As such we recognise how one's personal values intersect with the 'moral politics' frame used in the dominant 'free market' discourse. How it informs – often tacitly – the individuals response to

societal issues such as sustainability. That such ‘moral politics’ discourse is embedded as path dependencies within everyone’s SSP, and today’s discourse of design, preventing change.

Values and emotions

According to Schwartz, values are what we each hold as important to our lives (Schwartz 2012 p. 3). A person’s core values – their principles – may include security, freedom, friendship, learning and fairness.

Psychology theorists; “*view values as the criteria people use to evaluate actions, people, and events*” (Schwartz 2006 p.0). Thus, when we talk about the long-term issue of sustainability – the interconnecting elements of; “*social equity, environmental justice and business ethics*” (Elkington 1997 p.72) – and ask, ‘are disposable plastic water bottles good?’ we can take a personal view as to the absence, or not, of fairness. However, values are not fixed or determinate. Values are beliefs guided by our emotions (Schwartz 2006). So, one’s response to the above depends on one’s moral politics worldview.

Of importance to our discussion here, is how psychological experiments, such as the Ultimatum Game – a joint action game between two unknown participants, establishes how fairness (or equality) is chosen rather than monetary gain (Tomasello 2009b p.187; Gintis, Bowles et al., 2003 p.157; Henrich, J, et al., 2005 p.815). These findings contradict the prevailing ‘economic man’ or ‘utility theory’ espoused by the ‘free-market’ – of how individuals are supposed to determine monetary gain objectively and maximise their self-interests, their “*material welfare*” (Heylighen et al., 2006 p.5). Bechara and Damasio stating, “*Modern economic theory ignores the influence of emotions on decision-making*” (Bechara & Damasio 2005 p.336) and of how people feel when confronted with ‘utility theory’ practices going against their internal norms of fairness.

Summary of Fairness

Values such as fairness are experiences of everyone’s every day. It is our nature to continually evaluate the day’s happenings emotionally using our values in context. As fairness is an internalised human behavioural norm (Fehr and Fischbacher 2003 p.785), one way we can consider our ability is to see it akin to being an expert’s professional skill, an intuitive skill (Dreyfus 1997 p.22), which humans develop naturally through day-to-day practice. A skill having universality, meaning that we can engage as plainly with our neighbours as we can with citizens around the world. DaC’s goal is to attune this skill for revealing the ‘good life.’

Schwartz's research concludes "support for the near universality of the four higher order value types and of their organization into two dimensions that structure value systems" (Schwartz 1994 p.24).

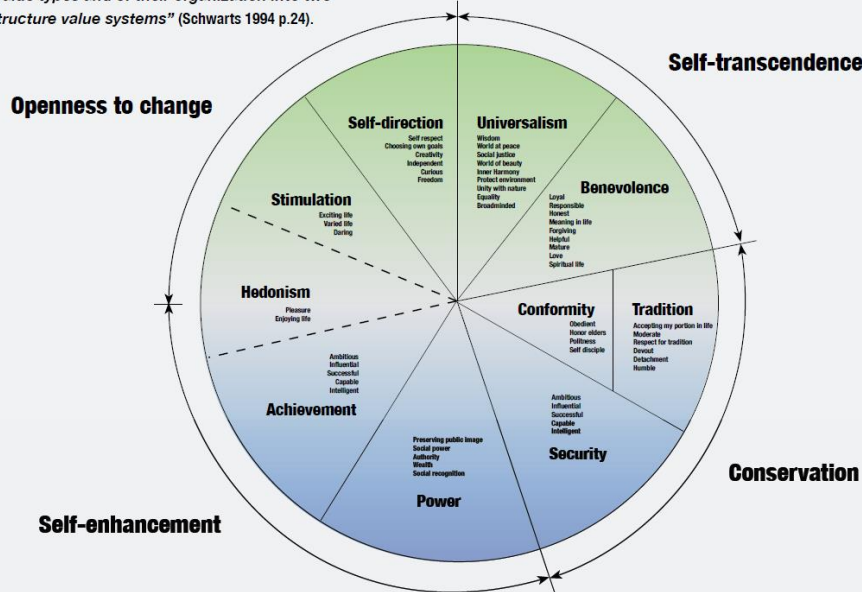


Figure 4: Schwartz's Values and their motivational goals. Adaptation of Schwartz 1994 p.24 Fig. 1

In using FBC as DaC's evaluation metric for achieving the 'good life,' we are simplifying for ease our positioning of what the 'good life' entails. We correspond FBC and the 'good life' explicitly towards Schwartz's study on the nature of human values and what he terms as Self-Transcendences (Figure 4) while possessing Openness for Change (See Schwartz, S. H. 1994 Figure 1 P.24 & Figure 2 p.31).

Whilst we acknowledge the difficulties of values in practice, social scientists Wilkinson and Pickett report that people, regardless of political background, desire a more equitable society. They state that, "in more egalitarian societies, more people are oriented towards inclusiveness and empathy" (Wilkinson & Pickett 2010 p.168), which in turn leads to lower materialism behaviours reducing a society's CO2 output. The benefits of a fairer society echoes in the work of Roberts and Parks (2007), Dorling (2010) and Kasser (2011) and suggests potential to assist redressing other societal problems (See Wilkinson & Pickett 2010).

The above, we argue, collectively indicates how drawing on the value of fairness provides the praxis of DaC with a principal principle moral basis for engaging in discourse whose 'aim' is for FBC to address sustainability.

Building a theory: The SSP of DaC

Civics is a systemic praxis of citizens considered by Aristotle as, "a moral and intellectual virtue," for delivering the 'good life' (Carr 2006 p.426). Civics concerns the development of the engaged citizens' skills of phronêsis – the practical wisdom to make the right choice in conditions of uncertainty (Poulakos 2004 p.54).

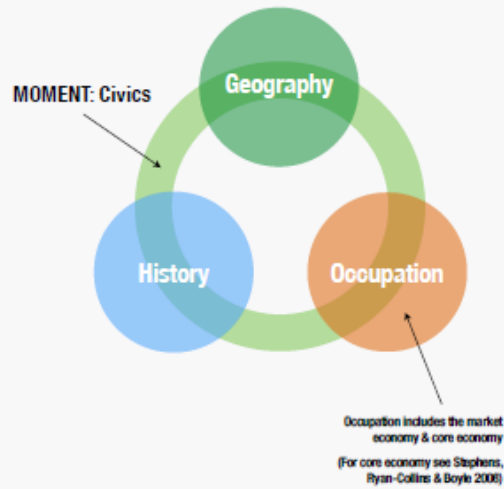
Epictetus, an ancient Greek philosopher (AD 55 – 135), states; “You are a citizen... ‘And part of the world...’ The duty of a citizen is in nothing to consider his own interest distinct from that of others” (White 1921 p.15). Civics is the ongoing political process of advancing the standards of citizens’ lives through engaging and nurturing the “knowledge, skills, values and motivation to make that difference” (Ehrlich 2000 p.xxvi).

Isocrates’s goal was to teach *logos politicos* – reasoned discourse concerning the city (Rahe 1994 p.21) – such that a citizen’s art of rhetoric in presenting discursive arguments that explore, theorise and invite actions to enhance their city, gain patronage. The citizen’s performance – of understanding their city, its citizens, and the implications of their actions within – was to Isocrates an approach to living: a practical philosophy. It is the; “means of training for life, which transforms human relationships and arms us against adversity” (Hadot 2004 p.50), such as our unsustainability. Isocrates’s teaching is the means for developing the citizen's skill of *phronêsis* – their practical wisdom – integrating their *doxa* – belief, opinion, conjecture, judgement – to create prudent conjectures towards realising the society they desire when conditions are uncertain (Poulakos in Poulakos & Depew 2004, p.52-56). Figure 5 - part C describes the multi-layered structure of DaC from interpreting Isocrates’s depiction of civics (Poulakos & Depew 2004).

However, *phronêsis*, like design, is amoral. As Eikeland explains, “it presupposes knowledge of ethically and political ‘virtue’” (Eikeland in Reason & Bradbury 2001 p.148). It is our contention to ‘aim’ DaC towards the value of FBC through drawing upon the intrinsic motivation of practitioners for self-determining (Ryan & Deci 2000) the interpretation of a generative conceptual metaphor. One possessing a nurturant parent moral politics. But before we describe the metaphor and its use in Section 5.1 we introduce the knowledge base required for civics.

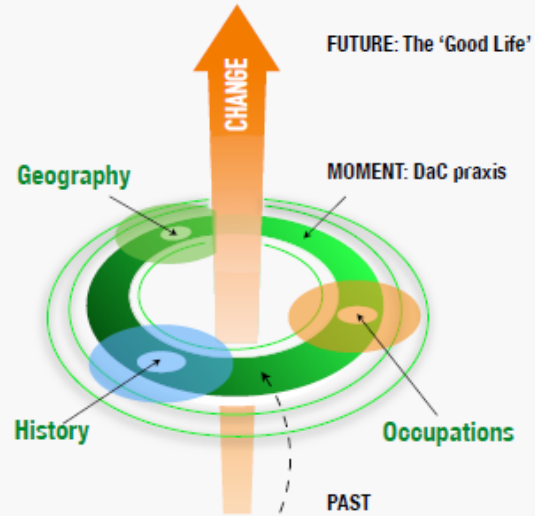
A Civics: A value-rational praxis

Civics is a praxis that mediates our shared understanding of the systemic relationship between our history, geography and occupations, and the state. It possesses the 'aim' for the 'good of the community' (White 1921 p.15).



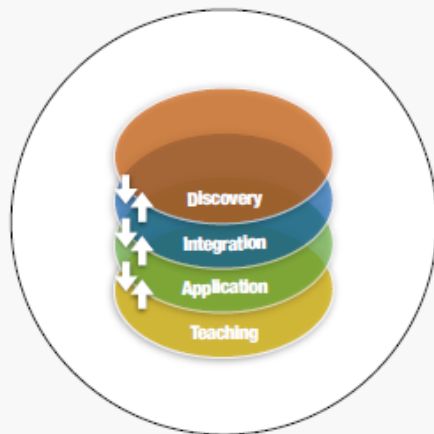
B Design-as-Civics: A democratic cultural practice

Developing a citizen's systemic critical consciousness as the means to achieve DaC's teleological goal of delivering the 'good life' for all. Citizens' 'aim' their thinking for 'fairness between citizens' using the reflexive generative conceptual metaphor of 'mother.'



D DaC integrates Boyer's engaged scholarship

DaC appropriates Boyer's thinking for engaged scholarship (Boyer 1990, 1996) as the means to articulate, clarify and make explicit the praxis of DaC.



C DaC integrates the interpretations of the ancient Greek scholar Isocrates's approach to the praxis of civics.

GOAL: THE 'GOOD LIFE' FOR ALL.
AIM: 'FAIRNESS BETWEEN CITIZENS'

DEVELOPING CONJECTURES OF SUFFICIENCY
PRACTICES & INFRASTRUCTURES

REFLEXIVITY ADVANCES
DAC'S PRAXIS

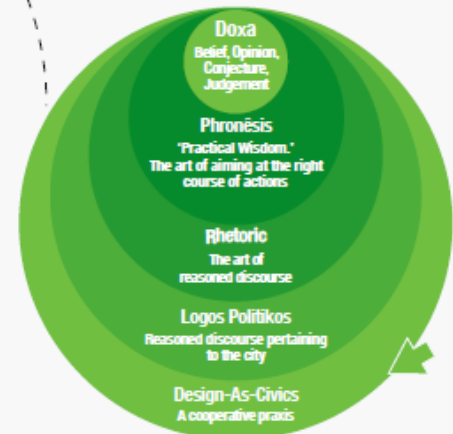


Figure 5: Overview of DaC – A value-rational praxis of citizens whose goal is to achieve the 'good life.'

White argues that to practice civics requires studying three main elements of the city, the: “geographical, historical and the occupational or economic” (White 1921, p.35). Their meaning meditated and reflected upon through the city’s citizens’ practice of civics (Figure 5 - Section A). Such a strategy we see occurring in how the Tikopians of the southwestern Pacific Ocean maintain their society: by ensuring everyone knows their island resources on which their collective wellbeing rests (Diamond 2006 p.444). The town planner and sociologist Professor Geddes best captures the dynamics within civics, stating how; *“A city is more than a place in space, it is a drama in time. ... To realise the geographic and historic factors of our city's life is the first step to comprehension of the present”* (Geddes 1904 p.108). Thus, we contend, understanding of the present enables the designer’s ‘aim’ for FBC.

Figure 5 depicts the study of civics (A). To this description of civics, we integrate design to form the reflexive relationship DaC. Its practice being for citizens to apply their skill of *phronêsis* to ‘aim’ change towards the value of FBC and achieve their goal of the ‘good life’ (B). Figure 5 part C DaC’s inner layers formalise Isocrates’s thoughts graphically on teaching civics, with part D highlighting our use of Boyer’s engaged scholarship (Boyer 1996) approach to recording educational practice. Useful in the context of DaC to assist citizens’ in scrutinising conjectures and interventions as to if, and how well, they deliver the ‘good life.’

Controlling the ‘aim’ of DaC

Values, frames, metaphors and moral politics interactions are complicated. They shape our lives as SSP, and in our design decisions that affect the lives of others.

In forming the reflexive relationship DaC, as a praxis to develop a practitioner’s skill of *phronêsis* (Poulakos 2004 p.54), we report how *phronêsis*, like design is amoral. It too has no intrinsic principle value to ‘aim’ its practice. Although its rationale seeks to reveal the ‘good life.’

Thus, in positioning *phronêsis* centrally within DaC we integrate a conceptual generative metaphor explicitly to ‘aim’ DaC practitioners’ development of *phronêsis* for making wise decisions in uncertain conditions that resolve DaC’s principal principle value of FBC for achieving the ‘good life.’

Before discussing DaC’s use of metaphor, its useful to quickly observe metaphors in action shaping our conception of design practice. Schön reminds us that metaphors help us *“come to see things in new ways”* (Schön 1993 p.255) as illustrated in Suchman’s metaphor for design stating how design is *“like steering a canoe”* (Suchman 1987 p.52). While Glanville’s *“design is a conversation”* (Glanville 1999 p.80) provides new comprehension. Taking Glanville’s example, ‘conversation’ is the generative metaphor (the source) that maps onto ‘design’ (the target) as represented in Figure 6.

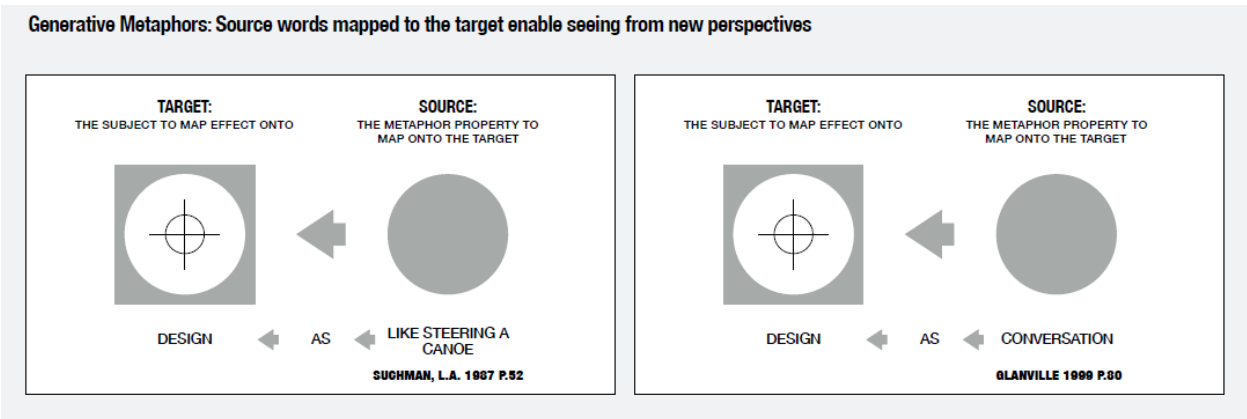


Figure 6: Example metaphors describing design

Earlier we expressed DaC as follows: *(design as civics) as (sustainability as fairness)*, and for ease of use, the expression ‘DaC as fairness,’ where fairness is FBC. Our goal of exerting metaphor is for practitioners of DaC to create their concrete representation of the reflexive, systemic radical political praxis of DaC by critically interpreting the source generative conceptual metaphor.

DaC’s source generative conceptual metaphor is ‘mother.’ And although this paper is a theoretical discussion, it’s helpful to reveal DaC briefly in praxis to appreciate the theory, while acknowledging, due to space limitations, we are unable to detail our methodological and epistemological position.

After undertaking photographic research and discussions to understand the city (See Figure 5B), Figure 7 depicts how a group of undergraduate students working together, assisted by the PhD researcher, started generating their interpretation of ‘mother’ in the designing of a public Makerspace

– akin to MIT’s Fablab – (Fab Foundation 2017) for City Library Newcastle (CLN) UK.

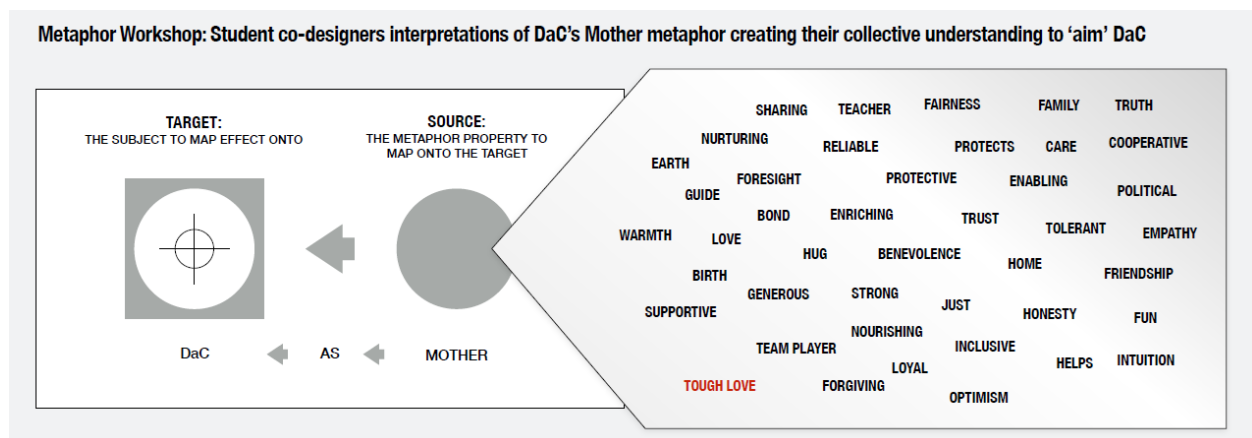


Figure 7: Mapping the source metaphor ‘mother’ to the target ‘DaC’

Providing context for Makerspace’s purpose, Aude Charillon of CLN, states how librarians “stand for the sharing of knowledge, information and culture and believe in enabling citizens to exercise their rights by providing opportunities for learning and support for realizing ideas”

(Charillon personal communication 2015). Additionally, recognising our, “*need for an infrastructure within the municipality that is able to utilize the innovation power and knowledge within civil society*” (Stigendal and Östergren’s in Emilson 2014 p.29), our goal was to use the infrastructures (See Le Dantec et al., 2013) supporting Makerspace, within CLN’s value-rationality ecosystem, to demonstrate DaC and its suitability for replicability within the world’s library networks.

Interrogating their DaC prototype conjectures (Figure 8) the students question, ‘*does this feel like mother, is the design welcoming, warm?*’ It transitions their generative interpretation of ‘mother’ from the realm of abstract words, to real world understanding, whereby they use their bodies (and brains) in praxis generatively and reflexively to ‘feel’ the meaning of words as subjective critical analysis of their experiences of themselves within the space. In other words, as the means to reason and theorise their aesthetic interpretation of the room’s layout in the praxis of DaC, where words are ‘felt’ and are emotional, their design thinking is embodied (Lakoff and Johnson 1999).



Figure 8: Makerspace prototype made from corrugated cardboard converted to form modular parts. The students walking and situating themselves in the space, sense-making with their bodies to ‘feel’ their ‘feelings’ towards their design.

Embodied thinking, according to Lakoff and Johnson, is how humans draw upon the body’s perceptual and motor systems to sense-make and reason their experiences (Lakoff and Johnson 1999). For example, the students walk the room looking to ‘*feel*’ how they feel, examining how their bodies flow and interact with their designs – ‘*is it welcoming, warm?*’ And in empathising with an imaginary novice user’s apprehensiveness on entering the Makerspace for the first time, sensing ‘*experienced gazes fall upon theirs,*’ these accounts, we posit, represent how the body and brain work synchronously to shape humankind’s conceptualisation of the world as embodied cognition (Lakoff and Johnson 1999 p.19).

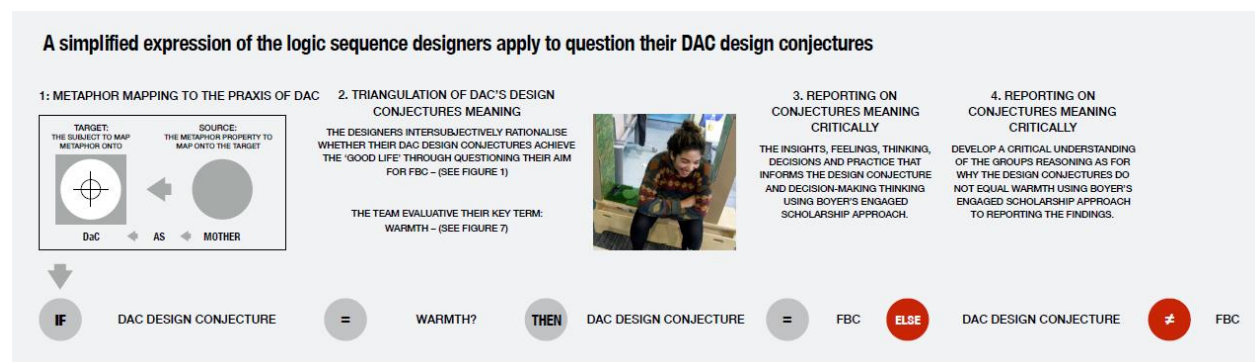


Figure 9: Designers using the source metaphor ‘mother’ to question their DaC conjectures aim for FBC

To clarify, the students are drawing on the embodied cognition premise of how the body's perceptual understanding of warmth corresponds with the conceptualisation of the conceptual metaphor, "Affection is Warmth" (Lakoff & Johnson 2003 p.255). Its conceptual metaphorical meaning conceptualising from how "our earliest experiences with affection correspond to the physical experience of the warmth of being held closely" (Lakoff & Johnson 2003 p.255). Importantly, recognising embodied cognition helps develop our appreciation of how we understand the nature of FBC.

Discussion

In creating our theory of DaC we introduced how humankind's capacity of 'shared intentionality' formalises as mutuality, whereby the co-evolution of cooperation and morality arose for the undertaking of 'joint goals' reveals the normative human nature value of fairness (Tomasello 2009 p.187). Of how when we work together we share the rewards equally.

However, held within languages are metaphors that frame how humans conceptualise the world – many deriving from the body brain relationship termed embodied cognition (Lakoff and Johnson 1999) – and that often they direct one's thinking and actions unconsciously (Schön 1993 pp.262-265). Lakoff (2002 p.213) reporting how the moral politics of the 'free market' ideology of capitalism frames the use of nature's bounty as morally right. Such framing we argued is against the goal of the 'good life' as it promotes individualism, and possesses an instrumental rationality at the expense of FBC: it prevents a sustainable future (See Figure 4 and Schwartz 1994 p.24). We argue how the value-rationality practice of DaC as a practical philosophy (Figure 3) developing the citizens' critical consciousness, rhetorical skill and *phronêsis*, controls instrumental rationality.

In our brief description of students engaging in DaC at NCL, we report how their praxis incorporated their bodies through using the generative conceptual metaphor 'mother' to critically analyse their design conjectures. We argue this represents – accepting the embodied cognition premise – that the drawing upon 'mother' and its generative metaphorical mapping to the target DaC, is helping activate the students' conjectures. Their collective political agency towards making wise decisions in uncertain conditions that tend towards the normative morality response of fairness (Tomasello 2009 p.187) – as we hoped.

Significantly it suggests, that as a pedagogy, the SSP of DaC as a practical philosophy, offers a reflexive, systemic radical political praxis with strong potential to enable citizens to redress 'wicked problems' though their goal setting of achieving the 'good life' through their 'aim' for FBC. Importantly, that as Wilkinson and Pickett (2010) and others identify, how more equal societies signify the turn towards sustainability, such that in the praxis of DaC "we become just by doing just acts" (Aristotle AD350 NE Book II p.1).

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References

- Alexander, C., Ishikawa, S., & Silverstein, M. (1977). *A Pattern Language: Towns, Buildings, Construction*. New York: Oxford University Press.
- Aristotle. (350AD). *Nicomachean Ethics*. (W. D. Ross, Trans.). Retrieved from <http://classics.mit.edu/Aristotle/nicomachaen.mb.txt>
- Barrett, L. (2011). *Beyond the Brain: How Body and Environment Shape Animal and Human Minds*. Princeton, N.J.: Princeton University Press.
- Bechara, A., & Damasio, A. R. (2005). The Somatic Marker Hypothesis: A Neural Theory of Economic Decision. *Games and Economic Behavior*, 52(2), 336–372.
- Berger, P. L., & Luckmann, T. (1971). *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. Harmondsworth: Penguin.
- Brown, W. (2006). American Nightmare: Neoliberalism, Neoconservatism, and De-Democratization. *Political Theory*, 34(6), 690–714.
- Brown, V. A., Harris, J. A., & Russell, J. Y. (2010). *Tackling Wicked Problems: Through the Transdisciplinary Imagination*. London ; Sterling VA: Earthscan.
- Boyer, E., L. (1996). The Scholarship of Engagement. *Journal of Public Service and Outreach*, 1(1), 11–20.
- Carr, W. (2006). Philosophy, Methodology and Action Research. *Journal of Philosophy of Education*, 40(4), 421–435.
- Carr, W., & Kemmis, S. (1986). *Becoming Critical: Education, Knowledge, and Action Research*. London; Philadelphia: Falmer Press.
- Conklin, J. (2005). Wicked Problems and Social Complexity. In *Dialogue Mapping: Building Shared Understanding of Wicked Problems*. England: Wiley.
- Cooper, T. (2000). Product Development Implications of Sustainable Consumption. *The Design Journal*, 3(2), 46–57.
- Cooper, T. (2005). Slower Consumption Reflections on Product Life Spans and the "Throwaway society". *Journal of Industrial Ecology*, 9(1–2), 51–67.
- Cross, N. (2007). *Designerly Ways of Knowing*. Basel, Switzerland: Birkhäuser.
- Diamond, J. (2006). *Collapse: How Societies Choose to Fail or Survive*. Penguin.
- Dorling, D. (2010). Is More Equal More Green? Presented at the Presentation to Monday Night Lecture Royal. Geographical Society, London. Retrieved from <http://sasi.group.shef.ac.uk/presentations/rgs/>
- Dreyfus, H., L. (1997). Intuitive Deliberative and Calculative Models of Expert Performance. In C. E. Zsombok & G. A. Klein (Eds.), *Naturalistic Decision Making* (pp. 17–28). Mahwah, N.J: L. Erlbaum Associates.
- Dubberly, H., & Pangaro, P. (2007). Cybernetics and Service-Craft: Language for Behavior-Focused Design. *Kybernetes*, 36(9/10), 1301–1317.
- Ehrlich, T. (2000). *Civic Responsibility and Higher Education*. Phoenix: Oryx Press.

- Eikeland, O. (2001). Action Research as the Hidden Curriculum of the Western Tradition. In P. Reason & H. Bradbury (Eds.), *Handbook of Action Research* (pp. 145–155).
- Elkington, J. (2002). *Cannibals with Forks: The Triple Bottom Line of 21st Century Business* (Reprint). Oxford: Capstone.
- European Environmental Agency. (2012). *Consumption and Environment Rio+20 Update*. Europe: European Environmental Agency. Retrieved from <http://www.eea.europa.eu/publications/consumption-and-the-environment-2012>
- Fab Foundation. (2017, May 3). About Fab Foundation. Retrieved from <http://www.fabfoundation.org/index.php/about-fab-foundation/index.htm>
- Fehr, E., & Fischbacher, U. (2003). The Nature of Human Altruism. *Nature*, 425(6960), 785–791. <https://doi.org/10.1038/nature02043>
- Flyvbjerg, B. (2001). *Making Social Science Matter: Why Social Inquiry Fails and How it can Succeed Again*. Cambridge: Cambridge University Press.
- Freire, P. (1972). *Pedagogy of the Oppressed*. (Bergman Ramos, Myra, Trans.). Harmondsworth, Middlesex, England: Penguin.
- Fry, T. (2009). *Design Futuring: Sustainability, Ethics and New Practice*. Oxford - New York: Berg.
- Fry, T. (2011). *Design as Politics*. Oxford - New York: Berg.
- Geddes, P. (1904). *Civics: As Applied Sociology*. *Sociological Papers*, 1, 103–138.
- Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., & Trow, M. (1994). *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*. London: SAGE Publications Ltd.
- Gintis, H., Bowles, S., Boyd, R., & Fehr, E. (2003). Explaining Altruistic Behavior in Humans. *Evolution and Human Behavior*, 24(3), 153–172. [https://doi.org/10.1016/S1090-5138\(02\)00157-5](https://doi.org/10.1016/S1090-5138(02)00157-5)
- Glanville, R. (1999). Researching Design and Designing Research. *Design Issues*, 15(2), 80. <https://doi.org/10.2307/1511844>
- Glanville, R. (2009). Second Order Cybernetics. In F. Parra-Luna (Ed.), *Systems Science and Cybernetics* (Vol. 3, pp. 59–85). Oxford: United Kingdom: Eolss Publishers Co. Ltd.
- Hadot, P. (1995). *Philosophy as a Way of life: Spiritual Exercises from Socrates to Foucault*. (A. I. Davidson, Ed.). Malden, MA: Blackwell.
- Hadot, P. (2004). *What is Ancient Philosophy?* (M. Chase, Trans.) (First Harvard Univ. Press pbk ed). Cambridge, MA: Belknap Press of Harvard Univ. Press.
- Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H., ... others. (2005). ‘Economic Man’ in Cross-Cultural Perspective: Behavioral Experiments in 15 Small-Scale Societies. *Behavioral and Brain Sciences*, 28(6), 795–815.
- Heylighen, F., Cilliers, P., & Gershenson, C. (2006). Complexity and Philosophy. arXiv Preprint Cs/0604072. Retrieved from <http://arxiv.org/abs/cs/0604072>
- IPPC. (2014). Summary for Policymakers. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability*. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (No. Fifth Assessment) (pp. 1–32). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA: IPCC. Retrieved from <http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/ar5wgIIspmen.pdf>

- Jonas, W., Morelli, N., & Münch, J. (2009). Designing a Product Service System in a Social Framework: Methodological and Ethical Considerations. In *Undisciplined!* Sheffield: Sheffield Hallam University. Retrieved from <http://shura.shu.ac.uk/526/>
- Jones, J. C. (1981). *Design Methods: Seeds of Human Futures* (1980 ed. with a review of new topics). New York ; Chichester Eng.: J. Wiley.
- Kasser, T. (2011). Cultural Values and the Well-Being of Future Generations: A Cross-National Study. *Journal of Cross- Cultural Psychology*, 42(2), 206–215.
<https://doi.org/10.1177/0022022110396865>
- Lakoff, G. (2002). *Moral Politics: How Liberals and Conservatives Think* (2nd ed.). Chicago and London: The University of Chicago Press.
- Lakoff, G., & Johnson, M. (1999). *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought*. New York, NY: Basic Books.
- Lakoff, G., & Johnson, M. (2003). *Metaphors We Live By*. Chicago: University of Chicago Press.
- Le Dantec, C. A., & DiSalvo, C. (2013). Infrastructuring and the Formation of Publics in Participatory Design. *Social Studies of Science*, 43(2), 241–264.
- Levin, K., Cashore, B., Bernstein, S., & Auld, G. (2012). Overcoming the Tragedy of Super Wicked Problems: Constraining our Future Selves to Ameliorate Global Climate Change. *Policy Sciences*, 45(2), 123–152. <https://doi.org/10.1007/s11077-012-9151-0>
- Hawken, P., Lovins, A. B., & Lovins, L. H. (2004). *Natural Capitalism: The Next Industrial Revolution*. London: Earthscan.
- Macdonald, T. (2013). What Makes us Human? M3U8. Horizon. UK: BBC. Retrieved from <https://learningonscreen.ac.uk/ondemand/index.php/prog/057C130C>
- Manzini, E., & Cullars, J. (1992). Prometheus of the Everyday: The Ecology of the Artificial and the Designer's Responsibility. *Design Issues*, 9(1), 5–20.
<https://doi.org/10.2307/1511595>
- Margolin, V. (2002). *The Politics of the Artificial: Essays on Design and Design Studies*. Chicago; London: University of Chicago Press.
- Margolin, V. (2006). The Citizen Designer. In M. Bierut, W. Drenttel, & S. Heller (Eds.), *Looking Closer 5: Critical Writings on Graphic Design* (pp. 118–128). New York: Allworth Press.
- Mauch, U., North, N., & Pulli, R. (2001). Between Efficiency and Sufficiency. The Optimal Combination of Policy Instruments in the Mobility Sector Towards Sustainable Development. In *Changing Things—Moving People* (pp. 133–150). Springer. Retrieved from <http://link.springer.com/chapter/10.1007/978-3-0348-8314-65>
- Mont, O., & Plepys, A. (2008). Sustainable Consumption Progress: Should we be Proud or Alarmed? *Journal of Cleaner Production*, 16(4), 531–537.
<https://doi.org/10.1016/j.jclepro.2007.01.009>
- Nelson, H. G., & Stolterman, E. (2012). *The Design Way: Intentional Change in an Unpredictable World* (2nd edition.). London, England: The MIT Press.
- Papanek, V. J. (1974). *Design for the Real World: Human Ecology and Social Change*. Frogmore, England: Paladin.
- Poulakos, T. (2004). *Isocrates and Civic Education*. (T. Poulakos & D. Depew, Eds.) (1st ed.). Austin: University of Texas Press.

- Rahe, P. A. (1994). *Republics Ancient and Modern* (Vol. Volume 2). Chapel Hill and London: University of N. Carolina Press.
- Reckwitz, A. (2002). Toward a Theory of Social Practices: A Development in Culturalist Theorizing. *European Journal of Social Theory*, 5(2), 243–263.
<https://doi.org/10.1177/13684310222225432>
- Rittel, H. W., & Webber, M. M. (1973). Dilemmas in a General Theory of Planning. *Policy Sciences*, 4(2), 155–169.
- Roberts, J. T., & Parks, B. C. (2007). *A Climate of Injustice: Global Inequality, North-South Politics, and Climate Policy*. Cambridge, Mass: MIT Press.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-being. *American Psychologist*, 55(1), 68.
- Schatzki, T. R. (1996). *Social Practices: A Wittgensteinian Approach to Human Activity and the Social*. New York: Cambridge University Press.
- Schön, D. A. (1979). Generative Metaphor: A Perspective on Problem-Setting in Social Policy. In A. Ortony (Ed.), *Metaphor and Thought* (2nd ed, pp. 254–283). Cambridge England ; New York, NY, USA: Cambridge University Press.
- Schön, D. A. (1995). Knowing-In-Action: The New Scholarship Requires a New Epistemology. *Change: The Magazine of Higher Learning*, 27(6), 27–34.
- Schwartz, S. H. (1994). Are There Universal Aspects in the Structure and Contents of Human Values? *Journal of Social Issues*, 50(4), 19–45.
- Schwartz, S. H. (2006). Basic Human Values: An Overview. Recuperado de <Http://Www.Yourmorals.Org/Schwartz>.
- Schwartz, S. H. (2012). An Overview of the Schwartz Theory of Basic Values. *Online Readings in Psychology and Culture*, 2(1). <https://doi.org/10.9707/2307-0919.1116>
- Scott, B. (2004). Second-Order Cybernetics: An Historical Introduction. *Kybernetes*, 33(9/10), 1365–1378. <https://doi.org/10.1108/03684920410556007>
- Shove, E. (2010). Social Theory and Climate Change: Questions Often, Sometimes and Not Yet Asked. *Theory, Culture & Society*, 27(2–3), 277–288.
<https://doi.org/10.1177/0263276410361498>
- Shove, E. (2011). *Science and Technology Select Committee Behaviour Change*. (Cabinet Office, Department of Education and the Government Economic and Social Research Team, Ed.). House of Lords. Retrieved from <http://www.parliament.uk/documents/lords-committees/science-technology/behaviourchange/BCOralandWrittenEvCompiled180711.pdf>
- Shove, E., Pantzar, M., & Watson, M. (2012). *The Dynamics of Social Practice: Everyday Life and how it Changes*. London: SAGE Publications Ltd.
- Stephens, L., Ryan-Collins, J., & Boyle, D. (2008). *Co-production A Manifesto for Growing the Core Economy* (p. 24). London United Kingdom: New Economics Foundation. Retrieved from http://www.thinklocalactpersonal.org.uk/_assets/BCC/nef_Co-production_1.pdf

- Stern, N. H. (2007). *The Economics of Climate Change: The Stern Review*. Cambridge: Cambridge University Press.
- Suchman, L. A. (1987). *Plans and Situated Actions: The Problem of Human-Machine Communication*. Cambridge: Cambridge University Press.
- Tomasello, M. (2009a). *Why We Cooperate*. Cambridge, Mass. London, England: The MIT Press.
- Tomasello, M. (2009b). *Origins of Human Cooperation (The Jean Nicod Lectures)*. Massachusetts. London: MIT Press.
- Tomasello, M. (2014). *A Natural History of Human Thinking*. Cambridge, Massachusetts ; London, England: Harvard University Press.
- Tomasello, M., Carpenter, M., Call, J., Behne, T., & Moll, H. (2005). Understanding and Sharing Intentions: The Origins of Cultural Cognition. *Behavioral and Brain Sciences*, 28(5), 675–692.
- Tomasello, M., & Vaish, A. (2013). Origins of Human Cooperation and Morality. *Annual Review of Psychology*, 64(1), 231–255. <https://doi.org/10.1146/annurev-psych-113011-143812>
- Von Foerster, H. (2004). At Each and Every Moment, I can Decide Who I Am. In B. Pörksen (Ed.), *The Certainty of Uncertainty: Dialogues Introducing Constructivism*. Exeter: Imprint Academic.
- Voss, J.-P., Bauknecht, D., & Kemp, R. (Eds.). (2006). *Reflexive Governance for Sustainable Development*. Cheltenham, Glos, UK ; Northampton, MA: Edward Elgar.
- Vygotsky, L. S., & Cole, M. (1978). *Mind in Society: The Development of Higher Psychological Processes*. Cambridge: Harvard University Press. Retrieved from <http://site.ebrary.com/id/10698709>
- Vygotsky, L. S. (1989). Concrete Human Psychology. *Soviet Psychology*, 27(2), 53–77.
- Walker, S. (2008). Following Will-O'-The-Wisps and Chasing Ghosts: Design-Centred Research, Sustainability and the Bottom Line. *The Design Journal*, 11(1), 51–64. <https://doi.org/10.2752/175630608X317904>
- Warneken, F., Lohse, K., Melis, A. P., & Tomasello, M. (2011). Young Children Share the Spoils After Collaboration. *Psychological Science*, 22(2), 267–273. <https://doi.org/10.1177/0956797610395392>
- Weber, M. (1978). *Economy and Society: An Outline of Interpretive Sociology*. Vol.1. Berkeley: University of California Press.
- White, E. M. (1921). *The Philosophy of Citizenship: An Introduction to Civics for Adults*. The Macmillan Company.
- Wilkinson, R. G., & Pickett, K. E. (2010). *The Spirit Level: Why equality is Better for Everyone*. London: Penguin Books.
- World Commission on Environment and Development. (1987). *Our Common Future*. Oxford: Oxford University Press.