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The Voice of Sustainment On Design Intelligence

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If asked by a client, journalist, friend or colleague from another discipline 'what is design intelligence,' what would you say? Would you communicate that 'understanding design requires more than just knowing how to design and how to evaluate what has been designed?'

Rather than assuming that there is a nice neat and fully packaged answer to the question, I suggest that engaging the question of design intelligence means confronting a still largely neglected domain of complexity. The consequence of this neglect is that designers and design educators, across the entire range of design practices, have actually failed to identify the fundamental importance of 'knowing design' and then communicating this knowledge to the arts, science and community at large. In response to this situation I am going to tender some thoughts.

As much as anything else I aim to show the richness of what awaits a more comprehensive inquiry of 'design intelligence' and hopefully help stimulate this to occur. For the moment, design intelligence will be defined as a 'higher knowledge than that mobilised by design studies and design facility'.

Design intelligence is one of those terms that one hears bandied about at design events; at least that's been my experience over the past few years. It is often used with the assumption of a common understanding. Not only does this assumption invite challenge but also, and more importantly, the very notion of design intelligence actually begs massive investigation and exposition. From even the most casual relation to this task, it becomes apparent that thinking it is essential for any designer¹ to embrace it if they really want to grasp the implications of what they are doing and take ethical, socio-environmental responsibility seriously.

It can be argued that to understand design requires a particular kind of recognition and intelligence, which neither the minds of science nor the liberal arts actually deliver. Yet currently, this intelligence can only be claimed to exist, and be capable of being communicated, in very fragmentary forms. Here then is a context that makes the development of the concept of design intelligence, and its elaboration, something requiring urgent attention. At the same time, a need also exists in another context that elevates it as a priority.

The complexity of contemporary life continues to increase and as human beings make ever greater demands on the environments of their dependence, it is clear that human society in general is heading toward an existence in ever more designed, regulated and managed conditions. In fact, 'management by design and designed forms' is slowly taking the place of 'a direct interface with a human agent of authority' – we already live, for example, in an environment of constant electronic surveillance, with its ever watchful video eye. In this situation, one can neither appeal to functionalism nor utopianism to provide a basis to construct a viable meta-design ethic. What is actually needed is that designing, and what is designed (in the broadest sense), be situationally judged by agents with an awareness of their 'design intelligence' and against criteria created from an expanded notion of the 'common good' (expanded to include the good of the non-human and the temporal reach of the imperative – which means its has to be for both 'the now and the futural'). Such action needs to be constituted to counter existing tendencies that lower a rationalist grid that disarticulates 'design problems' from their socio-environmental force field and accountability to sustainable futures. Unquestionably, design is going to become increasingly important, but whether it is able to increase its intellect, and thereafter mobilise its capabilities more effectively, is an open question, matter of concern, and figure of contestation that begs debate and timely action. In these circumstances, hiding behind a veil of pragmatism is not an option – as Black Panther Stokely Carmichael said in relation to race conflict in the US in the 1960s – "you are either part of the problem or part of the solution".

It must be recognised that design intelligence is not about knowing everything about design, designing and the designed;

rather what it names, is a rigorous thinking about what is designed, why and with what consequences within frameworks that expand understanding and accountability to the newly expanded common good.

Sketching an Archaeology of Elements of the Idea

In a limited sense, design intelligence had been implicit in craft practices well before design was constituted as a discourse. This was evident in the West from the rise of the first machine age in the 18th century. By the early 19th century, the ability to identify and resolve design problems within a practice had become a highly refined tacit knowledge – the performance and appearance of Henry Maudslay's machine tools are prime examples of this attainment. Likewise, conceptually a certain kind of design intelligence was being articulated by the historicist theory of style proffered by German architectural theorist Gottfried Semper in the mid 19th century, as well as by his American contemporary, and progenitor of a modernist of theory architecture, Horatio Greenough, who in his *Form and Function* of 1852 claimed buildings as machines seventy years before Le Corbusier gained notoriety for that idea.

Modern pathfinders who strove to advance design intelligence – like, Buckminster Fuller, Bruce Archer, Herbert Simon, Reyner Banham, Christopher Alexander, J. Christopher Jones and Manfredo Tafuri – occupied various socio-cultural perspectives and political ideologies, while adopting diverse objects of focus. Although they all, by degree, made contributions to how design problems, objects, methods and practices are understood, none of them developed a comprehensive theory of design as a particular sphere of intelligence. Limited horizons equally applied to the arrival of the 'design research and design methods' agenda constituted in the 1960s (there were, for instance, several design methods conferences in the UK during this decade, as well as similar conferences in Europe and the USA). Additionally, the rise of architectural science during this period was also equally circumscribed.

In the 1980s, with the increasing profile of artificial intelligence (AI), the actual language and claim of design intelligence (in this context – DI) gained particular impetus. In fact, DI was characterised as a subset of AI, taking on the modelling of design problems, design solutions, design experience and creativity all as objects for 'intelligent systems' to learn and deliver as design tools. The irony here is that history repeats itself in under-recognised and sometimes tragic ways. Just as modern design knowledge/practice was largely a product of the appropriation of what was tacit in pre- and proto-industrial crafts, so now the 'advance' of technology is enabled by the appropriation of knowledge embedded in contemporary design skills. Rapid prototyping in industrial design; rendering and shadow diagram programs in architecture; photographic retouching

programs in graphic design and fashion – examples proliferate. Typography, for instance, once the domain of the typographer and compositor is now predominantly a software product available to anyone with access to the ‘resource.’ So while typographic design has been ‘democratised’, the price has been not just that the ‘art of type’ has died in its moment of aesthetic excess, but also that the foundation of judgement (the design intelligence of this skill area) has been lost. Typography now exists without rules – we have books on our shelves, magazines on our tables and catalogues in our filing systems that are totally unreadable. It is no longer possible to stand in the path of technology, notwithstanding the efforts of Luddites old and new. As with ‘nature’, it envelops us. Yet, again as with nature, one can be aware of it or not, have a disposition toward it (i.e., seduction, ambivalence, alienation) or not.

A few brief lines have stood in here for a complex history that invites considerably more research, and a longer exposition. Nonetheless, it is clear that design intelligence does have a pre-history. As said, it is a powerful concept that is massively under-explored and under-theorised.

Confronting the Need for Tools of Thought

The power of the idea of design intelligence is that it can speak the power of design disclosed (and thus act against that concealment which is design artifice/artfulness).

Currently, design is understood in contextually delimited ways, blocking recognition of its agency and world-shaping character. Almost every time the notion is evoked by an authorial figure (in written or spoken statements) a reduction occurs which diminishes the enormity of what an understanding of design can actually make apparent. For example, dominantly, the ‘design community’ reduces design to the process, product and expression of a professional practice; the media so often reduce it to an aesthetic form; likewise the art-world’s comprehension is mostly governed by aesthetically inflected perceptions; and as for science and technology, here design gets taken to be the specification and expression of the giving of organisational or material form.

This diminishment has serious consequences. It means that architecture and design education do not to equip future professionals with a sufficient literacy of what is assumed to be their core knowledge. Put bluntly – students are only partly educated because their teachers are themselves, by varied degree, a product of a culture of ignorance of design. It equally means that because design is not understood in the public domain, vast numbers of people are duped, make inappropriate life-shaping choices, waste money, believe many stupid things are ‘smart’ and myriad other things that help keep the wheel of mindless consumerism turning. It also means that decision-makers in every sector of private and public life lack sufficient wherewithal to grasp the full extent of

the designing consequences of what they decide. Furthermore, it means that so often design agency is posited with functionaries and inflated egos as well as in dumb things and systems. Finally, the failure to comprehend what design is and does means that the power that people could have over shaping the conditions of their lives and advancing a remade figure of the common good that is not just human-centred, is dramatically reduced. In this respect design is a form of power, thus it follows that the less the ability to design, the less power the individual or community has *per se*. It also follows, that to acquire the ability to design is to acquire a means of emancipation. In saying this, a distinction has to be made between 'designing under design direction' (which is what most professional designers do) and exercising a freedom to design (the presence of design in 'everyday life').

Design Intelligence: Towards a General Theory

To speak of design in general terms, beyond it being bounded by a specific practice or practices is to expose oneself to the accusation that once 'opened up', design enfolds everything and becomes meaningless. But 'the fact of the matter is' that while design does not enfold everything, it almost does. Rather than this being a reason for not engaging it as such, the reverse is true. It is the very reason why it must be engaged, and why the current absence of a sufficient willingness to confront the actual import of design effectively adds up to a major void in 'human understanding'.

So characterised, there can be no expectation of design intelligence, as it could be developed from its proto-forms, just being lodged in one domain, or being the meta-knowledge of a specific discipline. Nobody expects this of science or the arts. It follows that design intelligence has to be seen and made to flow over cultures, the academy, industry, politics and the economy.

Obviously, design intelligence implies a greater and more rigorous understanding of design, which is able to be mobilised critically, and measured against fundamental figures of accountability in multiple contexts. To support this claim, let's consider it under four headings of understanding: Placement; Criticality; Accountability; and Design Schema.

Placement

How design has been understood has been dominated by it being constituted as an object at variable points along two axial lines of perception, or at intersections between them. This geometry invites disruption.

Scanning this geometry very briefly, we see that what can be posited as the vertical axis has been dominated at one end by commercial, functionalist and pragmatic concerns (like: systems/product performance evaluation, ergonomics and user-based studies) and at the other, by academic investigations of design

process and theories of design thinking. The agenda of ‘design research’ mostly moves up and down this axis, and the UK based Design Research Society, and its journal *Design Studies*, has provided a ‘flagship’ for this approach. One of the major concerns of researchers traversing this axis has been the attempt to turn design(ing) into a science, or at least study design(ing) scientifically. This ambition was given particular momentum in the 1960s, not least by the publication of Herbert Simon’s *The Science of the Artificial* in 1969. Subsequently, a whole industry, and instrumentalised academic pursuit, has centred on bringing such thinking to the creation of computer-based design tools and evolutionary systems to model and to facilitate designing. Counter to this objectification of the design process is its subjection to experiential interrogation via reflective thought – an area of research especially influenced by Donald Schön’s work on ‘reflection in action’ detailed in his 1983 book *The Reflective Practitioner* – a project that intersects with what has been designated as the horizontal axis.

The horizontal axis has been more interested in the designed, and its designing, than in the designer designing within a circumscribed process.

The two poles of the axis divide between the very specific readings of a particular structure or product via different modes of reading from the culturalist to the quasi-scientific (the applied rationalism of early semiotics, as exemplified by Gui Bonsiepe’s work on visual rhetoric in the early 1960s and by the later emergence of architectural semiotics with the take-up of Umberto Eco’s *Function and Sign: the Semiotics of Architecture* in 1973 by Geoffrey Broadbent, Charles Jencks et al). At the other end of pole, is the view of design from the perspective of a general theory of objects and agents that are world-formative and directive of the ‘nature’ of being and beings (the sadly deceased Vilém Flusser is a good example of a readable writer whose work has recently received considerable interest).

The challenge that an understanding of design intelligence faces is to break axial geometry by undoing the integrity of both ranges of positions, re-ordering the resulting fragments and binding them with new knowledge. The point of doing this is not that a general theory of design has to be mobilised in every situation, but rather that it needs to be a relational framework of legibility and dynamic forces that allows for very different deployments, with a heightened sense of its place and agency. Design, like language, has to be seen to exist within a structure of limitation – this being the very basis of what it enables practically, hermeneutically and politically.

The headlining of the elements of design intelligence is still tentative. The listing is a heuristic, as such, it is as much posed as an object to question, explore, research and elaborate. By necessity, the construction of a legible and employed notion of it has to be a collective project.

Criticality

Criticism, the critical, critical practices and criticality all fuse. Life, and its conditions, has always been critical, it has always been 'on the line'. This was always existentially very evident to most people in most places over the expanse of human history. With the arrival of modern society, mass production and consumerism, this longstanding sense of the critical diminished, at least for the privileged. Yet ironically, rather than marking a fading of the critical, 'the modern' has created two contradictory situations: it has brought into existence a new crises; while criticism as a practice, becomes increasingly disengaged from the actual criticality of what is 'on the line', with critical practices that directly articulate the critical becoming less an element of everyday life. Structures of falsified consciousness, among the world's privilege, create illusions of security – science will solve the environmental crises that threaten, food is abundant on supermarket shelves and the police will protect us from those who would harm us. But slowly there is a realisation that this illusory bubble will burst, and that dangers will grow rather than fade. The efficacy of the means created to shelter us from the weather become increasingly questionable as anthropogenically induced global warming increases (in fact the entire built environment, and ambiguously, the systems that support it, is a source of biophysical and social problems that invite a massive exercise in designed retrofitting). Likewise, notwithstanding food health regulations, much of the food on supermarket shelves harms rather than improves human health (moreover, the international supply of food is continually at risk from a world that is unstable geo-politically). The police are mostly impotent in the face of that which are the greatest threats to late modern society – terrorism and drugs. There is so much to criticise yet such a limited capability of effective criticism in a world that wants more of what drives what threatens, while placing faith in technologies that actually form part of the materiality of threats. This is why 'the danger grows', and why one cannot step out of the space of the critical – there is no place of safety.

Against this backdrop, and in the recognition that so much that is designed is directly implicated in the critical (frequently as the cause of problems, sometimes as solutions), it seems extraordinary that design criticism of the made world, its objects and images is so totally inadequate, and mostly completely trivial.

Accountability

Even if there is no intrinsic authority, community or deity to whom design/designers/design theorists and educators are accountable, some kind of accountability has to be imposed. The proposed figure put forward as that to which to be held account against is 'the expanded notion of the common good'. Accountability, in this setting, is indivisible from a placement of design in the frame of the

critical. It is also a means to assist the transformation needed to shift the relation of 'design and ethics' to 'design as ethics'.

Design Schema

Headlined schematically below are some starting points of what could become the operational field of design intelligence.

On Intelligence in Relation to Design

The gathering of knowledge, by direct observation and various forms of spying, is clearly crucial in defining design problems (an activity to displace foregrounding design as 'problem solving', not least because design is currently equally viewable as 'problem causing'). At the same time, there is an imperative for design to be directed by a far more powerful, critically informed and constructive application of knowledge – knowledge that in turn is viewed by reflective processes that mean that 'the design act', and the wider scrutiny of design, is bracketed by a learning before and after the designing event and prior to the arrival of the design object. Of course, it could be claimed that all that has just been described is going on already – this claim though would be facile. What currently occurs, in almost all cases, is instrumental and superficial.

On Design

Understanding design cannot be stratified via disengaged levels. While there will always be an evident focus in the direction of how design is made to discursively and materially appear (as word, image, object) what, however, remains in silence will still exercise agency. The divisions and levels of design that seem so real to us are in reality abstractions that the actual complexity of design contradicts.

The observations now about to be made are brief registrations of some of the disaggregated components of design's complex relational nature. They neither represent discrete areas or any particular hierarchy.

Design as an Element of Mind

The ability to prefigure, the essence of the ability to design, while intuitive, itself constitutes part of the essence of what it is to be 'human'. 'We' do not simply occupy a world or make a world via incremental material constructs, but contemplate context, contemplate what we know and select options of how our proximate world might be, prior to acting. This is different to the forms of intuitive patterning that (other) animals manifest. Our world is one of produced difference rather than an inter-generational repetition of forms. The degree to which design becomes a developed act of cognition itself determines the occupation of the ontology (and subject position) of a designer, yet it remains vital to acknowledge that all humans design. The extent, or not, to which the ability

to design is exercised, is indivisible from the power to shape and modify one's world and the world of others. It is crucial to re-emphasise this. In this respect, design is a figure of freedom. Like freedom itself, what it liberates is always the product of creation within limits. Conversely, design has been continually deployed to curtail freedom. Of course, this is often not recognised beyond blatant examples, and certainly, this is not how the designer usually sees it. Numerous ruses exist which distance the designer from what is most critical – service, functionalism, economy and political ideology all being deployed to this end.

Design, Difference, Culture and Exchange

While we currently exist in a globalising age that strives to erase cultural difference, we need to acknowledge that this ambition has much in common with the project that preceded it (modernity). The former differs from the latter in that now the objective is an unrestrained exercise in strident economic pragmatism that echoes 19th century 'free trade liberalism', whereas modernity travelled with an idealism based on the illusion that its actions were actually liberating people from the shackles of un(der)development.

The establishment of design as universal discourse directly links to this history's both unwitting and malevolent erasure.

Different cultures at different times and places created various ways to symbolically and materially prefigure, constitute and give historical direction to the world they formed and inhabited. How they did this, from a Eurocentric perspective, is classified as designing, but this is not necessarily how the activity was understood, named or enacted by the cultural actors at the time. In this respect the retrospective classification of the action as 'design' can so easily be sign of failure to perceive an often profound difference in which 'modern' assumed distinctions between self, world and environment were just not present; or where an underpinning rationale for ordering a world was based on understandings of agency and matter not corresponding to views predicated upon reason. Acting out of that ignorance which is ethnocentrism, 'non-modern' was deemed to be lower on the evolutionary scale. What this particular form of myopia failed, and still fails to see, is the complexity, virtues and thus potential of the other's culture; if the latter had been validated as having something to exchange, while this would not have shielded it from change, it would mean that there would not have been only corrosive, external imposition.

It is equally important to realise that for people whose culture has been erased, or seriously degraded, and who have not been inducted into the culture and economy of 'the modern' (be it always in some hybridised form) a vacuum exists. This gets filled by whatever scant cultural resources can be found. What is registered here is the lifeworld of the old and new underclasses of abandoned or forgotten people that are now found everywhere globally.

Although many of these peoples may well have been rendered totally dysfunctional and are spiritually broken (a condition of easy, but off-time misplaced, judgement) many others manage to build cultures of survival that sustain them. In so doing, they transcend merely being victims, create solidarity and commence a new learning about how to identify and employ resources, and form a complex culture of bricolage from whatever cultural fragments can be recovered or discovered. Such affirmation in adversity has potency for ‘the moderns’, as they generate that momentum which hurls them ever faster toward their nemesis – the unsustainable. This is not to romantically suggest ‘they’ can save ‘us’ but rather that the most pertinent lessons on survival come from survivors.

Certainly, the relation between design and cultural exchange is extremely problematic. And yes, design practices appropriate knowledge, images and forms from other cultures that can appear (and be claimed) as being ‘culturally respectful’ – but this is not exchange. In almost all cases, it is not ‘give and take’ in conditions that are remotely equitable. It is mostly ‘more of the same’. Unambiguously, as is being emphasised, cultural exchange depends upon reciprocal relations that both acknowledge difference *and* respect it.

Design as Implicated in an Existential Function of Being-in-the-world

Just as design is a feature of humanness, so also is it a feature of how human beings act in and on their world. As such, it is ontologically present in directing numerous human actions of making, organisation and communication. Occupying the subject position of a designer means bringing this ontological quality of design into visibility so that it becomes an object of conscious education that itself is prefigured – this often triggered by the designing power of already designed ‘things-in-the-world’.

Design as a Key Expressive Register and Structuring Force of a Culture

Culture is a meta-designing; as such, it creates the contextual elements in which designing occurs. Once this was most evident in the power of tradition to direct the form, function and style of, for example, dwellings, places of worship and communal gathering, clothing, diet, transport, craft tools, rituals and graphic iconography. Now, the forms of cultural meta-designing are powered interactively by: the electronic media (especially the designing of imaginaries emplaced by television); the commodity economy (especially the ever proliferating world of consumer goods); and technology (especially audio and visual electronic entertainment, domestic and business products). In this setting, globalisation is reducing design to delivering a hyper-real world of universal things – it is structuring the ‘culture of globalisation’ (functionally and dysfunctionally).

The Designer as Economically Directive

Epitomised by 'designer' products and 'signature' buildings, the symbolic presence of the designer has become an instrument of commodification independent of the designing of a 'live' subject directing the form, function and production of material objects, systems, services, style and environments. Here, the sign/symbolic/branding value of design is employed to create difference amongst the same, in order to increase exchange value. What the phenomenon indicates is the powerlessness of 'powerful' designers (as evidenced in the disjuncture between the proper name and the actual person).

Design as an Applied Practice

With the exception of architecture, all other professional design practices were latecomers in the history in the rise of the professions (with some still aspiring for this status). The impetus for design to become an occupation, then professional practice and eventually, a profession, came from the burgeoning industries of the industrial revolution. The passage of 'machinofacture' to mass production, and then to mass consumption and mass communication carried not just an explosion of products to be designed but also the designing of product differentiation, commercial and domestic product environments and all the facets of marketing. Design practice, as it is now understood as a cluster of distinct specialisms, arrived out a particular history.

For millennia, design was inscribed in the repetition of forms and appearances of traditions of building and making, while designing was embedded, as artifice, in a variety of craft practices, however, as a consequence of the capitalist division of labour from the late 17th century onward it became developed as an increasingly distinct service of the industrial economy, its means of production, the commodity sphere, urban form and 'modern' culture. In addition to this, design practice also appropriated a number of other skill areas, not least 'decorative arts'. Clearly, this history affirms that a good deal of design intelligence pre-dated the establishment of design as an independent practice. Yet designing prior to, and immediately after, this moment lacked any formally recognised and managed design process (a feature of designing that did not gain recognition until the 20th century). This process was characterised in terms of sequential operations from initial ideas to final specification, and in conceptual stages (like, analysis, synthesis and evaluation). Rationalist and reductive attempts to model this process continually struggled to deal with the intuitive; however, in the momentum to technologically embody the design process there have been concerted efforts to create expert systems to capture functional design processes and even creativity. The rise of design tools that replicate components of design intelligence are effectively blurring the distinction between the professional

designer and the general human facility to prefigure. Anyone with the money to buy design software can design a book, boat, vineyard, weekender and so on.

Design as an Agency of the Artefact

In the dominant discourse of design, the designer/architect is viewed as the primary agent of design. Yet ontological design theory adds considerable complexity to the notions of design agency and design intelligence. First, it acknowledges that 'the already designed' acts reflectively as a foundation of designing (be it as incremental change or radical departure) – in this respect, design intelligence is manifest as 'a way of seeing'. Second, the conceptual capital of a culture as carried in its language, worldview, common sense and aesthetic regimes has an enormous influence on the formation and exercise of design intelligence. Third, design process is itself a designing of the actions of the designer. Finally, and most important, the agency of design (as the designed) extends to this designing of things as they themselves are imbued with direction, abilities, information and temporal measure. All this is to say again that everything designed goes on designing, and in so doing contributes to either the creation or negation of futures. Design intelligence can thus become a reified quality of things, but equally, the reverse can be true. A lack of design of intelligence has the propensity to bring stupid (future negating) things into being. Seen from this perspective, many 'smart buildings and products' are *de facto* stupid.

Design as a Specific Hermeneutic Domain

Linking back to the nature of the intelligence of design intelligence, it can be both viewed, and developed as, a reflective mode of 'reading the world' that is able to interpret forms and material relations. This practice of seeing acknowledges that the vast majority of what we see in the world is there by design.

The designing of the designed pervades: the structures of the built environment and the content of built structures; urban and rural landscapes; the ecology of images in which we are immersed; the technologies that provide the infrastructure upon which contemporary life turns and that surround us as we use them in our homes and workplaces. It also inflects what we wear, eat, learn, how we travel, where we travel, what we read and myriad other things, services and systems.

Faced with this hermeneutic complexity, design intelligence is the ability to read things, relationships, direction, pasts and futures plus cultural inflection. Design education, so framed, begs to be a mode of literacy that designers need in plenty, and that members of the entire community would enormously benefit from as a means to make sense of the world they occupy as it acts upon them (as design designs).

Concluding Comment

Design intelligence clearly has significance beyond any current community of interest in design. While the idea needs substantial research, once embraced it takes on a life of its own, especially as an area of discovery and illumination. More than this, as design intelligence does not strive to be exclusively owned by the design community, or simply serve designing, it could be regarded as the basis of an invitational dialogue with other practices. It thus has the potential of constituting a 'language of engagement' of a new collectivity that recognises the existing and coming importance of design.

Note

1. All references to designers include all professional design practices, including architecture.