A Paradigm Shift in Design Thinking

"I dwell in possibility…" Emily Dickinson

There is change in the air around design thinking. In fact it has been there hanging fire for some time now, signaling a paradigm shift in how we think about design problems.

Design problems, experience shows, don't behave quite like normal problems in the sciences and social sciences, which can be dealt with rationally, empirically and quantitatively. And when they don't behave, we have declared that misbehavior "wicked" and added an overlay of the qualitative to try to rectify the situation.

Qualitative information moreover has long been considered second-class information because it is not objective or factual. Despite real progress in the development of qualitative methods, the qualitative is still a fringe domain of subjective perspectives, opinions and feelings to a thinking orientation whose primary goal is to be as objective as possible as to how things are and how they work.

This is recognizably a view about design and designing from the heartland viewpoint of empirical science, which assumes that the problematically wicked can and must be tamed with the proper qualitative additives without undue adulteration to objectivity.

A shift in design thinking begins when one stops trying to repair this determinate problematic framework and turns to take the wicked point of view.[1]

Significant difference is not a fact

A useful and contemporary thinking stance about designing is that it is fundamentally a process for resolving the gaps that open up between what a people presently have in terms of their cultural artifacts and situations and what they long for and prefer. (Simon et al) Designing is about the easing, filling and resolving of the differential gap between deficiencies and possibilities in situations that are ripe for transformation.

And so the focus shifts from problems in the knowledge seeking sense to one of resolving gaps of difference significant enough to motivate a search for betterment in transformative situations. With this shift also comes the realization that a significant gap between an evaluation of deficiency and possibility in a transformative situation is essentially a qualitative difference, a comparative difference in goodness, and not a matter of objective fact. Transformation takes place and is driven by an evaluation of sufficient deficiency and dissatisfaction in a

situation that is sustained by the confidence that there are achievable possibilities for betterment.

Designing's generating heartland lies in evaluating situations and things qualitatively and not the other way around.

Quality in Design Thinking

With this shift in focus to the qualitative comes the need for a closer look at the concept of quality and its application to design thinking. It turns out that all three of its root meanings are importantly active, interactive and apply. In addition to the already mentioned comparative goodness (from the Old French, *qualité*, excellence or fineness), the use of quality in designing refers to the descriptive state of a thing (from the Latin, *qualitas*, state, basic nature, property, character or attribute), and also to its sort or kind (from the Latin, *qualis*, of what sort).[2]

Some say that quality speaks for itself. But qualities (*qualitas*) cannot and do not speak for themselves in the same sense that data doesn't speak for itself. The sun falling across the floor of the room where I type doesn't know its angle, care about where it comes from or that it can be interpreted to reveal a season or a time of day. Such data only comes alive as qualitative information when someone takes an interest in it and it is attended from a point of view. Quality is relational, a relationship.

If quality is relational, Aristotle's differentiation in kind into primary, secondary and tertiary qualities is collapsed into just the latter two because there are, by definition in this paradigm, no "primary" qualities. Light, for example, doesn't know its name or speed. Qualities are always secondary or tertiary because they incorporate personal and social relationships with "things." Qualities are bundles of personal and social interest-relationships with things.

Because all qualitative information has a social dimension, it can be willfully ignored but not lost just because there is no personal interest present. There will still remain what was called "primary quality" information that is objective, enduring, available and falsifiable because it is the valued product of an ongoing empirical social process. Call it information that is available for the uncompromised[3] and the willing.

An Ontology of Valuing and Meaning

A quality, then, is a personal and/or social relational interest in a "thing" (or situation…) from a point of view, a valuing that matters. And so the shift is to an ontology of valuing and meaning, a valuing-interest centered paradigm that follows Richard Rorty's pragmatic take that there are different ontologies that correspond to different interests we have in engaging with the world.[4]

> "What disturbs and alarms man are not the things but his opinions and fancies about the things." Epictetus

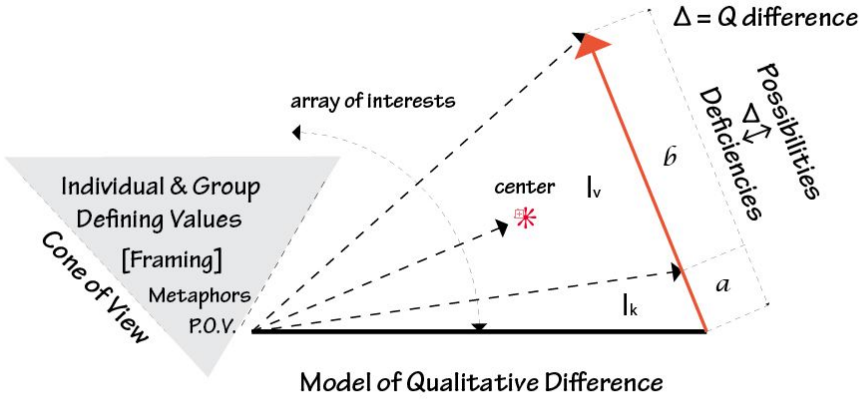
I am explicitly questioning the ontological privilege of knowing's interest in exercising causal control in the world. My assumption is that ontological privilege and emphasis depends instead on the nature and kinds of interests involved.

I am further assuming that ontologies need not be mutually exclusive and that one can support another. In the case of designing, it seems pointless and fruitless to posit or privilege an ontology of valuing and cultural meaning that is not supported by one of knowing and the production and application of knowledge.

In an ontology of valuing and meaning, the center of meaning for designing shifts from knowing to knowledgeable making.

Qualitative Interests in Designing

The diagram below shows an array of qualitative interests of two kinds, I_v, valuing-interests, and I_k, knowledge interests. I_v is inclusive of all the valuing categories and kinds familiar to social science. In aesthetics aesthetic-interest values are also known as felt-qualities.



Model of Qualitative Difference

Knowledge-interests, I_k, generate factual-qualities, where the angle of attention is bent toward understanding elemental qualitative structure and reliable function. Valuing-interests, I_v, create normative interest and felt-qualities with motivational and emotional content, where the angle of attention falls across a wide spectrum of human needs, desires, purposes and concerns.

The intent behind this concept of descriptive integration is first of all to consciously and explicitly widen of the arc of qualitative content for the designing of artifacts.

And secondly, to purposefully shift the attentional focus to valuing interests as the center of qualitative descriptions.

Implied is a critique that finds a general deficiency in the comprehensive and experientially deep consideration of critical valuing interest relationships in existing transformative situations. This I believe has to do with the difficulties of qualitative representation generally and of the representation of valuing interests in particular.

Because the diagram refers to designing, the center of interest is in I_v with I_k in active support. The angle of interest is subtended by deficiencies and possibilities characteristic of the nature of the kind of interest involved. The cords b and a represent comparative possibilities and instrumentalities, desirable whats and helpful hows.

Interests are from a point of view, here shown as a function of an individual and groups' defining values and the frames and metaphors they think through. Together these model the basic elements of an evaluation of qualitative difference in a transformative situation.

Qualitative Representation in Transformative Situations

The emphasis in the new paradigm shifts from describing what an existing condition is to how it is adequately, satisfactorily and comprehensively represented and how that representation is related to qualitative difference.

The premise is that the qualitative descriptions of existing situations that are needed for designing professional level artifacts are necessarily different from those more narrowly focused on the uncovering of knowledge. And that the kind of transformational descriptions in designing depends on a much wider representation of interests and concerns than those that are more purposefully focused on the discovery of the way things are and how they work. Appreciating and mapping out that divergence in qualitative description is a needed step in the development of design thinking.

This isn't, then, about how one gets from a designerly *here* to *there*, but rather about the dependence of the *there* that is carried on the broad shoulders of the ability to represent a richer *here*.

Modes of Representation

Symbolic forms of expression such as written and spoken language, imagery, and mathematics all have their important qualitative roles to play in representing existing conditions in transformative situations. A rich mix of representational patterns and structures sets a full table for the social construction of meaning. Each mode, however, has its representational strengths and inherent second watershed limitations that must be taken into consideration. Language, for example, is descriptive, metaphoric and expressive but not transparent. Language is a workhorse for stating straight declarative facts. But it does not however, as Richard

Rorty has written, "cut reality at the joints." And much of what makes humans human depends on metaphor for its expression.

Because we are so thoroughly immersed in language, we hardly notice the transcription of a multi-channeled simultaneity of experience into the end to end sequences Suzanne K. Langer has characterized as being "like birds on a wire."

If language is inherently sequential and linear, imagery is inherently relational - simultaneously and densely relational. The world we are immersed in is so overwhelmingly relational that William James described it as a "blooming buzzing confusion." But a healthy mind doesn't experience it as such or dwell much on the fact that the human visual field is itself a representation, a perceptual field that we have learned to see and make sense of.

The meaningful "reality" we perceive is a "sense-making" product of the filtering and sorting that takes place through innate mental schemas, socialized categories, concepts, and habitual expectations.

Imagery's strength is its capacity to represent and direct attention to simultaneous meaningful relationships over a wide range of abstraction. Its weakness is that the meaning of intended relationships is not inherently obvious and requires interpretation. The attentional interpretation of imagery is a reliable guide to the understanding of motivation and purpose.

Mathematical representations bring precision and certainty to qualitative descriptions and the capacity for the higher order modeling of complex relationships. The results from abstraction in representation, however, require verifiable calibration and need to be weighed against the losses of direct and actual experience.

And then there is "the fallacy of misplaced concreteness," and the matter that some things that count can't be counted.

Representation/Comparative Evaluation

The *qualité* in qualitative representation is about the comparative evaluation of situational qualities in whole and part (*qualitas*) of which there are three kinds (*qualis*): quality of representation (adequacy, accuracy, appropriateness and satisfaction); quality of difference (deficiencies and possibilities); and quality of perspective (defining values, [framing], metaphor, and p.o.v.).

Qualitative representation is suffused with evaluation. Each act and construct of symbolic representation carries an integral oversight process from three qualitative points of view, one that determines its relative significance, one that evaluates its appropriateness with respect to mode, accuracy and expression, and the third to its practical formative relationship to the task at hand.

In general, better qualitative representations for designing seek to cover interest-qualities more comprehensively, consciously work to understand and manage the motivating forces behind felt-qualities, and take full advantage of factual-qualities' instrumentality.

Experienced designers can and often do short-circuit this ideal. Prototypical project situations allow them to take advantage of their qualitative representational experience, such as knowing which qualities to represent, how best to fine tune their representations formatively for the particular situation, which qualities will model most effectively, which deserve priority attention, and which will likely command the center of attention in expression.

Representing to type, while efficient, can however result in too great a conformity to type and stifle needed innovation in qualitative representation. It also presumes a greater uniformity of valuing-interests in stakeholder groups, especially as they increase in size, than may be the case.

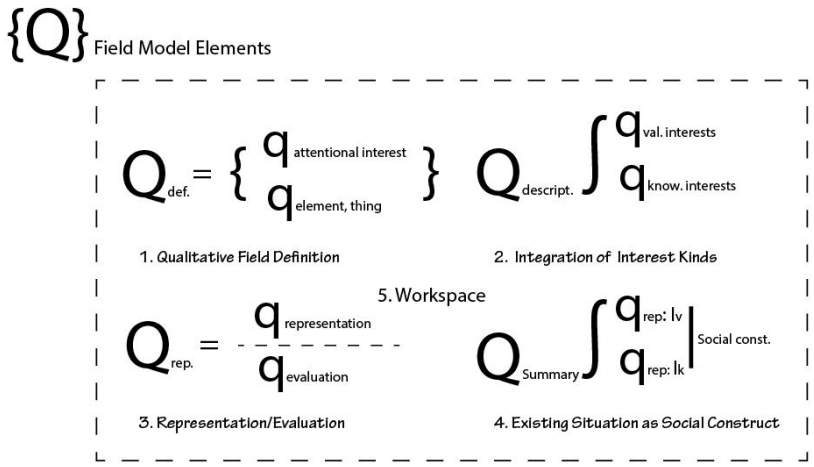
Qualitative Difference is a Social Construction

It follows then that any qualitative description of an existing condition in a transformative situation is a social construction and all that entails. It turns out that it entails quite a lot. Even homogeneous groups of modest size will have differences in their beliefs and values that they need to work out as they go about building an acceptable common narrative of qualitative difference. And designing in the new paradigm is conceived as taking place in an attentional workspace where people come together to democratically represent and resolve their interests with one another. I call it designing in a qualitative field.

A { Q } arises, then, "when the time is ripe" i.e. when there is an adequate social interest and sufficient social pressure to initiate a serious consideration of situational change. This is the social force that occurs when there is inertia-overturning agreement, momentum and the resources available to reach toward situational betterment.

A Field Notation for the New Paradigm

The field model below is a summary of the ideas presented. {Q} is the qualitative



field. $Q_{def.}$ is the definition of quality as a valuing field interest in a thing. $Q_{descript.}$ portrays the integration of valuing and knowledge interests. $Q_{rep.}$, the idea that every representation is always a situation-dependent evaluation. And $Q_{summary}$, that qualitative descriptions of qualitative difference are always social constructions.

A Paradigm and Ontological Shift

The privileging of an ontology of valuing and meaning is a needed paradigm shift for designing. It overcomes the conflicts of fit between design thinking and the (problem definition/problem solution, determinate/indeterminate, and quantitative/qualitative) conceptions of scientific thinking. It simply changes the focus of designing to what people care about, what they want, need and desire their lives and cultures to be about. It helps to explain why designs are relatively good or bad, apt, poetic and just, and not merely true or false.

A paradigm shift in designing comes with the ontological shift of recognition that one sees and feels the world differently in designing, that in setting aside the belief in only one ontology we make a breakthrough into a new philosophical world, where language, images and maths are no longer understood as representations of a mind-independent reality but of human situations whose outcomes people have a cultural stake in.

Theoretical progress thus begins by moving away from things qua things to things as qualitative relationships, relationships that include the experientially personal as well as the social legacy of knowledge. It may be hard to hear it, but a dominant picture of mind-independence and a mind-independent reality has been holding us captive.

"One of Plato's worst ideas was the idea that we can divide up the culture into the hard areas where the non-human is encountered and acknowledged and the softer areas where we are on our own."[5]

Changing ontological perspective and position thus opens the way to the development of a fully humanist culture, one which "will emerge only when we discard the question, "Do I know the real object or only one of its appearances?" and replace it with the question "Am I using the best possible description of the situation in which I find myself, or can I cobble together a better one?"[5]

Of course there is much more to be said about this way of valuing and engaging with the world.

O brave new world for all who'll don their Wellies and invest in its betterment.

Jerry Diethelm

Notes:

1. “Wicked Problems in Design Thinking.” Buchanan, Richard. 1992. Design Issues, Vol. 8, No. 2 (Spring, 1992), pp. 5-21.

The first commentary is from the Buchanan article that includes the original 1972 formulation of wicked properties. The second and later list is taken from Ken Friedman’s March 27, 2014 PHD Design communication. I include them both because the former is more pointedly about the importance of representation (formulation) and its relationship to designer (stakeholder) world views (values and beliefs) while the latter mentions representational discrepancy (qualitative difference?).

Buchanan: Rittel argued that most of the problems addressed by designers are wicked problems. As described in the first published report of Rittel's idea, wicked problems are a "class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing.

This is evident, for example, in the ten properties of wicked problems that Rittel initially identified in 1972.3

(1) **Wicked problems have no definitive formulation, but every formulation of a wicked problem corresponds to the formulation of a solution.** (2) Wicked problems have no stopping rules. (3) **Solutions to wicked problems cannot be true or false, only good or bad.** (4) In solving wicked problems there is no exhaustive list of admissible operations. (5) **For every wicked problem there is always more than one possible explanation, with explanations depending on the Weltanschauung of the designer** (6) Every wicked problem is a symptom of another, "higher level," problem." (7) No formulation and solution of a wicked problem has a definitive test. (8) Solving a wicked problem is a "one shot" operation, with no room for trial and error. 1 (9) Every wicked problem is unique. (10) The wicked problem solver has no right to be wrong - they are fully responsible for their actions.

And from Friedman:

The ten properties of a wicked problem: 1) There is no definitive formulation of a wicked problem. 2) Wicked problems have no stopping rule. **3) Solutions to wicked problems are not true-or-false, but good-or-bad.** 4) There is no immediate and no ultimate test of a solution to a wicked problem. 5) Every solution to a wicked problem is a ‘one-shot operation’; because there is no opportunity to learn by trial-and-error, every attempt counts significantly. 6) Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan. 7) Every wicked problem is essentially unique. 8) Every wicked problem can be considered to be a symptom of another problem. 9) **The existence of a discrepancy representing a wicked problem can be explained in numerous ways. <u>The choice of explanation</u> determines the nature of the problem’s resolution.** 10) The planner has no right to be wrong.”

2. qualities. Dictionary.com. Online Etymology Dictionary. Douglas Harper, Historian. http://dictionary.reference.com/browse/qualities (accessed: March 23, 2014).

3. Sinclair Lewis: “it is difficult to get a man to understand something when his salary depends on his

not understanding it."

See also: "How Politics Makes Us Stupid," Klein, Ezra. Vox.com, April 6, 2014. Klein discusses Yale Law professor, Dan Kahan's research on Identity-Protective-Cognition, which describes the tendency toward "the avoidance of dissonance and estrangement from one's valued group," in situations when the answers to questions might tend to threaten the tribe or ones social standing in the tribe. (Individual & group defining values)

4. Gary Gutting interviewed by Richard Marshall in 3:AM Magazine on Dec. 10, 2012 on "What Philosophers Know"

Gutting: The skeptical thought that science might have important cognitive limitations was important in my early work. But an even stronger influence was Sellars' idea that science has an ontological primacy (as he put it, "science is the measure of what there is, that it is, and the measure of what there is not, that it is not").

Like Sellars, I never took this to mean that science was the only way of knowing. There is normative knowledge (about meanings and values) that is not about what exists in the primary sense of exercising causal power in the world. Science tells us nothing about this domain of non-ontological truth. ….

I've also become more sympathetic to Rorty's pragmatic take on different ontologies as corresponding to different interests we have in engaging with the world.

5. "A Pragmatist's View of Contemporary Analytic Philosophy." Rorty, Richard. 2002. Articulos, Vol. 7, No. 16. Pp. 29-40