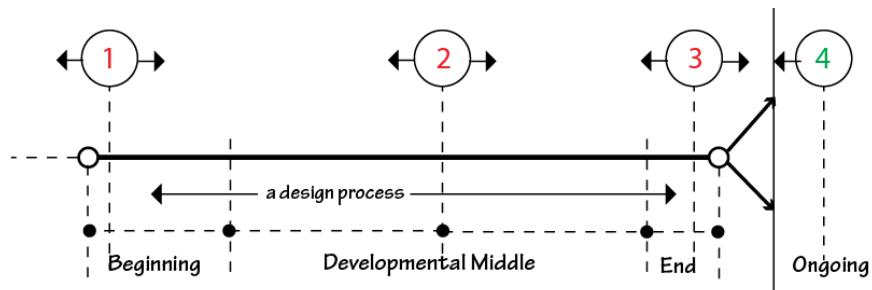


Three Sections through Designing

One of the common and proven ways that architects use for looking at the inside of things is to cut a section through them. Depending on the location and scale of the cut, much can be learned - and inferences made - about interior structure and function.

A section through the Grand Canyon, for example, opens up to a story of the Colorado River eroding through layers of stratified time down to its bedrock of Vishnu Schist. A section through a home reveals life-enhancing relationships such as might exist between its central living space and garden. An MRI with its rapid series of sectional slices lays the groundwork for a three-dimensional view of the inside of the brain. In this essay I apply the sectional knife to designing in order to look inside what some believe to be *the* central human process for reconciling significant qualitative difference in cultural change.

I've chosen three key points, one in each general phase of the process, which are characterized simply as beginning, developmental middle and end. Each of the sections is intended to vivify and open up to a descriptive taking stock of the state of the process at that time. They are located in an attempt to capture and describe the signature kinds of design thinking that come to the fore in each of the phases. It is unlikely that these three sections will be adequate to tell the whole story of



Three Sections Through Designing

designing, so an MRI-like strategy is being held in reserve for a later time.

The Three Sections

Section 1 is taken at a point of situational arousal, representation and what follows from that situational understanding. **Section 2** is taken at a revealing point in the developmental process. And **Section 3**, at a point in the endgame that gives insight into situational resolution, composition and expression. In the diagram, a fourth point, **Section 4**, lies outside the designing process and is a section through the

evaluation that takes place as the product, service or transformation produced is experienced, assimilated and accommodated by others.

Section 1

One of the first things **Section 1** opens up to is the essential difference between a problem oriented toward designing and those more associated with scientific research. Elsewhere, (in “Rendering Design Thinking from the Pattern Language”)¹, I’ve described these as class one (scientific) problems and class two (designing) problems because I believe that they represent two importantly different thinking orientations and have two distinctly different target resolutions. Problem here isn’t meant negatively, just that something has come up that needs doing.

Class one problems essentially focus on how things are and how they work. Class two problems on how to transform and improve cultural situations and the creation of cultural artifacts. My belief is that designing is about the conscious resolution of class two problems. Explaining the inner workings of class two problems is of course a class one problem. The strategy of dissecting designing at three key joints in order to get an inside look can be understood then as a class one strategy for explaining how a class two problem-solving process is and how it works.

To know is to cut. From the Latin "scire to know, perhaps originally meaning to separate, divide, and related to scindere - to cut, split" (Barnhart 1988).²

Qualitative Difference

A key characteristic at **Section 1** in a class two problem is the representation of qualitative difference. By qualitative difference I mean an evaluation of the gap or significant distance between an existing situation, as it is being represented and understood, and what it would take to satisfactorily improve or transform that situation. Significant qualitative difference is the “difference engine”³ or the “difference that makes a difference”⁴ that drives cultural creation, innovation and change. Important cultural change only begins when it is determined that the desire or need is great enough and that it is worth the risk, time, cost and committed effort needed to make that change.

The cut at **Section 1** exposes a condition of qualitative difference expressed in storied form. It is the story of the unmet situated aspirations, needs, hopes and desires of a society of stakeholders who desire some form of change for the better. It is certainly a fact that it is *their story*, a story that is situated and owned by the people who are the principal arbiters of its construction and interpretation, those who have the most at stake in its resolution.

A **Section 1** not too surprising discovery, then, is that class two problematic situations are typically made up of “his-stories”, “her-stories”, and “their-stories; that “their-stories” are not “the stories;” and that these are situated and conditioned constructions, compositions, and narrative expressions of the stakeholders that they represent.

Sections, of course, cut both backward and forward implying process. Looking back in time at **Section 1**, allows one to gather up the ways in which this particular focal situation has arisen and evolved to the point that it has become a problem that now requires pointed design attention and action.

Looking forward at **Section 1** finds a story that, because it has become the official situational narrative and deemed transformationally compelling, is now being outfitted organized and managed for change. Two distinct kinds of design thinking; can be seen setting off from this point toward possibilities for resolution. The first seeks to identify and deepen an understanding of the content of the problem. The second tries to imagine what the future will be like when we get there.

The path of decomposition and analysis takes a closer look at the story’s valuing content in order to better understand what the situation is all about. This requires breaking down the narrative into its specific “aboutnesses.” It involves the sorting of valuing content into home valuing categories: functional; aesthetic; social; economic etc. It requires a critical evaluation of each component interest’s importance and the relational roles that it plays in the whole. It leads to a taking and ordering of valuing priorities and the setting of value-specific individual goals and objectives.

At the same time, the path of experience operates imaginatively to keep relationships vividly whole. Possibilities are projected and imaginatively explored. Relevant past experience is brought to the fore. Comparisons are made with known examples for resolving similar situations. Ideals appear and light up the distant horizon. Experience recalls and weighs experience and returns to experience.

The processes of deepening understanding and the experience that it implies interweave, play off and inform one another as the search begins.

Section 2

The texture of thinking at **Section 1** was first of all that of an integrated story that in part became lumpy through decomposition, while other parts continued to project and stream exploratory movies in the mind.

At **Section 2**, this mix of textures has become decidedly more fluid. A number of purposeful streams of thought are being pursued with respect to their role in resolving the qualitative gap, but also in their associative potential for adding to,

reinforcing, supporting and enhancing one another. This fluidity of thought is metaphoric, associative, comparative, and imaginatively vivid in abductive projection. Associations run the gamut from those with serious potential for the conceptual blending and integration of the separate issues under consideration to the playful overlaps of punning.

But even then occasionally, a good pun deserves to be drawn and quoted.

Matters stew. Ideas and possibilities “come up” and “suggest themselves” from sub-surface sources. Comparisons draw upon deposits from the image bank of past experience as well as the well of the imaginatively possible. Subtle and shadow overtones tease the mind, and connotations among the considerations rise to the fore.

Are poets the carnivores of this kind of connotation?

Hovering over all is an implied if still inchoate dimension of materiality to the thinking, a harkening anticipation that at some upcoming point all paths and parts must reintegrate, recompose and congeal into a new experiential whole.

The Thinking Eye

Looking backward at **Section 2** reveals multiple goal streams operating as both ends and means, goals serving as targets, as glowing possibilities, and goals serving as criteria, helping to evaluate and light the way from here to some new there.

The number of simultaneous purposeful searches has been multiplied by the more careful attention to the aboutness of the situation, with each individual interest contributing its own dimensional preferences for improvement.

The initial, clear hard targets for resolving qualitative difference are now serving as more as a beginning and base condition to weigh against the growth in understanding that has taken place in the heuristic process.

As the old saying goes, “If you’re not learning, you’re not designing.”

Project learning has caused the initial goals that came attached to the beginning situational imagery of the desirable, the ideal and the possible to evolve. An analogy might be the kind of course corrections that become a part of the process of catching a moving, modifying and changing target when the target itself is changing.

Now, looking forward, newer, better, and potentially richer possibilities have begun to occur. Fresh perspectives in thinking appear that are linked with newer, fresher perspectives on situational resolution.

As Paul Klee observed:

“Art doesn’t render the visible, it makes visible”⁶

And those new vivid possibilities carry baggage of their own. The process begins to take on a life of its own. In Pirandello like fashion, the actors have begun to take over the play.⁷ Ask any author who has set out to write an essay, play, poem or book if it turned out just the way they thought it would in the beginning.

Somewhere in this developmental middle, armatures of associated and interrelated goals with the potential for mutual resolution turn into preliminary proposals, schemes with conceptual structures that show promise as purposeful organizing strategies for situational resolution and expression.

The Fatal Flaw Experience

Those with experience in design teaching will recall how ordinary it is for a class of fifteen moderately advanced students to advance a variety of promising preliminary proposals at this stage of designing. This appearance of multiple conceptual schemes is a highly productive moment for comparative analysis and discussion and the next stages of more tangible forms of development. And this is just as true for working groups and teams of professional designers as it is for design students.

A difficulty at this point, especially for those still developing the habits of designing, is the need to switch mental modes. The purposeful, open, even playful, associative, and conceptually integrative mode of thought that had enabled the emergence of a preliminary conceptual scheme now needs to shift into a more rigorous mode of analytical thinking and evaluation.

To lubricate that mental shift as a design instructor, I would sometimes introduce the notion of “the fatal flaw” into a design group pin-up discussion by saying,

This is a very interesting set of preliminary proposals you have made, and it will be very helpful to try to identify some of their basic strengths and weaknesses, but after a cursory look at them, I think I’ve identified a fatal flaw that they all share. Anyone care to offer an opinion about what that might be?

And the probing questions would begin. Was it a matter of some of the basic assumptions being made, the wrong organizing goals, or the way the scheme failed to recognize...? Was something missing? Important qualities being lost?

The human desire to be the one to discover the fatal flaw, or even better, to find it embedded in someone else’s scheme is irrepressible. And when the very rich analytical session that followed had finally run down, I would of course, admit to the

deception and underscore their having successfully made and experienced the benefits of that valuable mental modal shift.

Call it theory on horseback.

Luke and Dale

And another teaching experience regarding **Section 2**:

An open question in designing has always been, at what point in the process should one have produced a preliminary conceptual proposal? (Not to mention, what should that look like and include?) At what point do the purposeful paths of design thinking merge into what looks like the best way forward? I'm indicating here that I think it falls somewhere in the developmental middle, and I'm fully convinced that it is a needed tangible step required for further development. It can happen earlier or later - quite early I suppose if one really has a celestial connection - but a tangible proposal eventually needs to be made in order for it to be ever made better.

Procrastination is the thief of development. And this is why, at least in my experience, those with perfectionist personalities have trouble as designers. It's because they can never know enough to make a proposal.

And if you can't make a mistake, you can't make anything.

At some point in my teaching, I realized that I had formed a model that helped answer this question about the emergence of preliminary schemes and that it was embodied in the persons of two of my old classmates from my architecture Class of '61: I'll call them Luke and Dale.

It was the late 50s at the University of Washington and the architectural curriculum had not yet fully escaped its Beaux Arts influence. Design problems were typically ten weeks long and one was expected to present a conceptual commitment scheme to work out after the first week.

Dale was a conceptual generator, an inspiration to all. At the end of a week, he would have identified several or more promising approaches to our problem, but not yet decided which was best.

Luke on the other hand would have quickly chosen a promising path and begun to diligently explore and develop it.

At the end of the second, third, fourth, fifth and sixth weeks, and often beyond, Dale would still be finding new possibilities, fresh ways to think about the project and intriguing new dimensions, without being able to evaluate or settle on any of them.

Others in the class had at one point or another adopted one of Dale's cast-offs and were happily on their way. Luke was much advanced and polishing his approach to perfection.

This became in my mind a model of the two extremes, Dale the unbridled conceptual explorer who could generate ideas but couldn't evaluate and decide among them, and Luke who's strength and pleasure lay in working out a beginning idea in great and convincing detail, to the nth degree and beyond as they say, which was at that time described as "gnat's ass."

The Luke-Dale model also brought into clearer focus the important tie between having a point-of-view and the generation of conceptual proposals. "There are," as architect José Luis Sert liked to say, "many possibilities." But the set grows inappropriately large and loses all focus when it is ungrounded and untethered to some worldview, some set of committed beliefs and valuing considerations, some point of view that makes it possible to weigh differences, guide preferences and make choices.

With respect to Luke, it became an unavoidable truth that a designer's work must reflect what they have considered. If their considerations of situational content are narrow and shallow, it is unlikely that their proposed resolutions will turn out to be broadly satisfying, lasting or profound. Shallowly considered work, even when carried out successfully in great detail, cannot escape being bound up with and reflective of its shallow-dimensionality.

Section 3

At **Section 3**, looking back from the end of the middle, one sees lines of inquiry and purpose that have discovered important associative connections and commonality. One sees armatures of interest that have formed into conceptual structures with varying capacities for incorporating other secondary and tertiary goals. One sees the promising, if still inchoate outcomes of ambitious attempts at blending and integration. One sees the building of conceptual models and prototypes and preferred palettes for exploring the materiality and alternate meanings of expression.

The central activity of the end game as seen from **Section 3** is reintegration, composition, expression and evaluation. The search has been for a fresh, apt, higher order integrative pattern of relationships and expressions that fills the evolved gap and brings meaningful satisfaction and success to the resolution of its qualitative difference.

Composing the new whole requires a new and intentional ordering of emergent component integrative elements to one another and to their whole. A useful analogy here might be the way that it is in the editing room that the component scenes of a film are composed into expressive form and meaning.

Because a design process is owned, valuing centers appear and stakeholders naturally find some qualitative relationships to be more important than others. Some considerations will have become (and may have remained) sine qua non, heartland concerns without whose resolution there is none. And even among these, there are possible hierarchical variations of emphasis that will affect the project's overall construction of meaning by its target and other audiences.

All qualities are equal, i.e. they are all qualities, but some qualities are more equal than others when it comes to expression.

Typically, it is the more central and significant elements of the composition that become the drivers and coordinators of formative expression. In stories, for example, some characters are purposefully created more equal than others and become the story's intentional protagonists, its centers of interest and action. In much of modern architecture, the protagonists were light and space. Today that focus has shifted for many to matters of energy efficiency and sustainability.

Expression, the way that variations in composition and material choices affect an artifact's meaning, is one of the more poorly understood and under-taught aspects of designing. It matters whether the oboes carry the main theme backed up by the violins or vice-versa. It matters whether the glass is scratch-able or gorilla. It matters whether ease of use and advanced technology have combined into a product that is "insanely great."

It is always far easier, and much more comfortable, to limit evaluation of a designed project to a class one accounting of the satisfaction of its most objective-like criteria than to engage it in the broader dialog of design criticism that is required for all class two problems.

Class two problematic situations, however, don't have resolutions. They have meaningful resolutions, whose significance, satisfaction and success are evaluated in social arenas of experience over time.

Section 4

At **Section 4**, one sees others, those outside the stakeholder center of the process, looking back at the screen that is projecting what the stakeholders are proposing or have made.

In the diagram, the meaning that this situational transformation has had for its makers is not passing directly through the screen to become the meaning that is constructed by the others. Meaning, considered as a meta-evaluation of owned experience, is bouncing back at the groups on either side.

Each is experiencing the proposed changes or products from their own point of view. The *others*, like that of the *makers*, have constructed their “owned” version of the proposal’s meaning, one that reaches back to their worldviews, reflects their scared beliefs, is built out of their qualitative perceptions of the present social circumstances, their own interests, expectations and needs – in sum, the full situational repertoire of who and how and where they are. Shared meanings can and do occur however wherever there is an adequate overlap of common interests and a shared core of cultural concepts, vocabulary and experience.

The Final Cut

It must also occur that there is also a **Section 5**, a less visible cut that that draws attention to the concepts and vocabulary of this discourse itself.

The concept of cutting into a process is of course metaphoric and the tools employed are the specialized conceptual tools chosen to expand that point of view. Section 5 cuts backward through to the lens through which we look and the vocabulary and concepts through which we think and speak.

Wittgenstein (PI: 43) urges us to look to the use rather than the definition.

In this essay, three concepts in particular are doing the majority of the work: problem, value and quality, but the way they are being used has altered their meaning.

Problem:

Horst Rittel’s writings in the 70s set planners and designers thinking about the difference between conventional problems and “wicked problems”. Karl Popper in a similar vein

“... observed that there are clock problems and cloud problems. Clock problems can be divided into parts, but cloud problems are indivisible emergent systems. A culture problem is a cloud, so is a personality, an era and a social environment.

“Since it is easier to think deductively, most people try to turn cloud problems into clock problems, but a few people are able to look at a complex situation, grasp the gist and clarify it *by naming what is going on.*”⁸

I’ve just taken this a step further by describing regular problems and wicked problems, or if you like, clock problems and cloud problems, as separate classes of problems whose distinctly different interests and targets call forth characteristically different orientations of the thinking process. The wicked, cloud, cultural problem solving situations are most effectively dealt with through designing.

The cultural bias of our late-Enlightenment period is to expect to be able to treat all problems deductively, and so such concepts as abduction find themselves quickly

pulled into this orbit. From a Class One perspective abduction is a weak form of the ideal that is logic. But from a Class Two perspective, abduction as it appears in the developmental middle of designing is far more about the imaginative projection of possibilities and the intuitive weighing of potential directions for investigation. Experienced designers will speak about being able to “smell” the right way to go and “see” how things might come together.

Another example is rigor.

A story about Justice Felix Frankfurter has one of his clerks expressing how important it is that the law brings order to society, and the great Justice responding, “Yes, yes, we must have order, but not too much.”

So, yes, yes, we must have rigor. But Class Two problems tend to require the lessening of its grip in some places in the process. Creativity studies all recommend the benefits of holding off judgment when involved in the brainstorming and generating of ideas as is taking place in **Section 2**. One is well advised to play the rigor piano in designing the way one chooses when to play the dampening and sustaining pedals on a piano.

Value and Fact

Since David Hume it has been axiomatic that there is a forever cleavage between fact and value, is and ought, between knowing about all something and deciding what to do.

Class One problems are clock problems whose principal product is empirically derived knowledge. The cultural cloud problems of Class Two are bound up in the normative and prescriptive process of designing. And because Class Two problems are all about resolving what to do, choose, make or prefer, it should be unsurprising that such differently focused needs lead to the search for concepts, such as value, valuing and quality, that enable inquiry into the workings of the normative and prescriptive.

In this discourse, and in my previous essays, value is used conceptually:

As valuing, to mean a purposeful thinking process that conceives of the conative, cognitive and the affective as an integrated whole;

As a font of ownership of worldview, beliefs, and values, from which emanate the purposes, interests, needs and desires that form and apply a point of view;

As situational content. As an organized array of the “aboutnesses” that both describe and drive a situation;

As a basis for goal setting, the making of goal arrays, search and developmental strategies, and as imaginative productions, comparisons and projections;

As a basis for the evaluations, preferences and choices in composition and expression;

And as the ground for the evaluation of meaningful situational resolutions.

A more common use of the term is that design adds value to a project, meaning worth. I believe it does. But limiting the meaning and application of the value concept to worth in Class Two situations is like cutting using only the dull backside of a very sharp knife.

Quality

The primary meaning of quality in Class Two situations is that of an entity or aspect of a situation relationally connected to its stakeholder interests and intentions. Here a quality is not thought of primarily as an isolated element to decompose for its secrets, but becomes a quantum of attentional interest in the world.

A secondary meaning is the relative aptness or excellence of the qualitative relationship in situations. And a third meaning differentiates between kinds. There is a distinct qualitative difference between clocks and clouds, between Class One and Class Two problems, and between an ontology of science and an ontology of valuing and meaning.

Like value and valuing, the meanings of quality bend to reflect Class Two situational needs. A Class Two moon is pulling on and affecting their meanings.

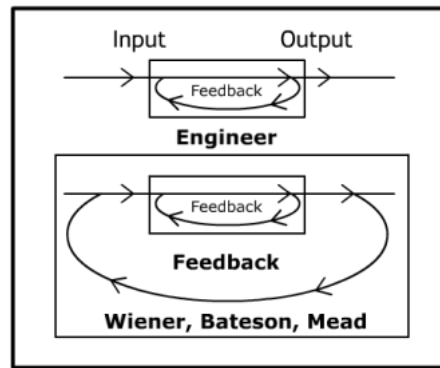
On this view existing situations are qualitative stakeholder constructions. Preferred situations are qualitative projections and resolutions. And the situational gap that opens up between these experiential poles is expressed as a qualitative difference.

The Upshot

As an empirical operation on designing, the essay patient slipped from the table and expired. Cutting metaphorically into designing is better understood as a philosophical inquiry. It opens up a process of designing and design thinking that others can compare with their own design experience and their own metaphoric ways of telling the story.

Cloud problems are as Popper noted more difficult to decompose and not just because they are ecologies. The main reason has to do with the complications from the seeding of a valuing consciousness into those clouds.

This is hardly a new idea. One sees its origins early in the pioneering thought of second order cybernetics. Here, for example, is a diagram showing the input of cultural considerations and a personal accounting into the process of “engineering” by Weiner, Bateson and Mead from 1973.⁹



When and where axiology reigns, stakeholder deeds of ownership must become principal shapers of the reality of that experience and the meanings of creative and transformational change.

Empirically, one looks for a correspondence of experience in designing and better ways to share and talk about it.

Yes, yes, we must have our science, but perhaps what is most needed right now is an ontology of valuing and meaning and a human-centered discourse of the artificial.

- Jerry Diethelm – Eugene, Oregon - March 21, 2015

Notes:

1. This is discussed in more detail in:
Diethelm, J. (2013). “Rendering Design Thinking from the Pattern Language”,
<http://uoregon.academia.edu/JerryDiethelm>
And in:
Diethelm, J. (2014). “A Paradigm Shift in Design Thinking.”
<http://uoregon.academia.edu/JerryDiethelm>
2. Quoted from “Towards a poetics of designing” by Keith Russell, in Durling, David and Ken Friedman, editors. 2000. Doctoral Education in Design. Foundations for the Future. Proceedings of the La Clusaz Conference, July 8-12, 2000. Stoke-on-Trent, United Kingdom: Staffordshire University Press.
3. Quoted from : Burnette, C. (2015) “Evaluative Thought in A Theory of Design Thinking.”

4. Bateson, G. (1972). *Steps to An Ecology of Mind*, New York and Toronto: Ballantine Books.
5. The two paths of design development mentioned in this essay are described in greater detail in Diethelm, J. (2013). "The Vivid Presence of Design Thinking" at <http://uoregon.academia.edu/JerryDiethelm>
6. Klee, P. (1968). Felix Klee, ed. *The Diaries of Paul Klee, 1898-1918*. Berkeley: University of California Press.
7. Pirandello, L. (1921). *Six Characters in Search of an Author*, New York: E.P. Dutton.
8. Quoted from Brooks, D. in "Skills in Flux," The New York Times, March 17, 2015.
9. Source: wikipedia.org. Second-order cybernetics.