Process of Integration

Integrating Designers, Values and Process

Pamela Napier

Visiting Assistant Professor
Visual Communication Design | Herron School of Art and Design | IUPUI

response_ability | Toledo, OH | May 2010

With shifts in society, technology and our environment causing complex challenges in our world today, designers are being called upon to transition from individual creators of things, to facilitators of innovation and transformation.

Embedded in The Living Principles for design, is the belief in "design as a powerful conduit for change." And that our unique opportunity as designers is to "weave sustainability into the broader fabric of culture;" as design educators, our challenge *and* our opportunity, is to equip students with the skills, tools and processes that allow them collaborate throughout the process of designing, and to make socially, culturally, economically and environmentally responsible design decisions.

According to John Thackara, author of "In the Bubble: Designing in a Complex World", "We have to learn new ways to collaborate and do projects. We have to enhance the ability of all citizens to engage in meaningful dialogue about their environment and context, and foster new relationships between the people who make things and the people who use them."

So how might we, as design educators, instill the capacity for our students to become thinking, ethical designers?

For my Masters thesis, it was discovered through conducting participatory design research, that by engaging both individual and collaborating designers in a process of discovery, they are enabled to, and can see how integrating holistic values, such as Environmental Stewardship, Economic Prosperity and Social Responsibility into the design process, transforms the dimensions of problem spaces, how we view contexts, design decisions and solutions, and the ability to manage complexity at a systems level.

This paper accompanies a presentation is intended to provide a case study that investigates tools for identifying, managing and evaluating design decisions throughout the process, for the purpose of integrating these values. In addition, it will also speculate on the transferability of these tools and experiences into the design studio.

Starting with a series of research questions, several different investigations were conducted before figuring out what a process of integration could be, how tools could enable this process, and what designers might need to work in an integrative manner.

In a human-centered approach, enlisted participants ranged from freelance practioners, to design educators, to undergraduate and graduate design students, to user experience experts. This provided a range of perspectives, worldviews and value-systems, and also intentionally engaged designers who want to make integrated sustainability *actionable*.

Although an understanding of holistic values and their implications through the lens of *sustainability* guided this design research, it was the experiences of designers engaging

with tools such as structured and collaborative visualization, make-tools and conceptual tools for generation and evaluation that truly explored a process of integrating those values. Tools allow designers to be aware, intentional, visual and reflective-in-action throughout the process of designing.

Designers may inherently reflect at different points in the process, but *reflection-in-action* as an intentional part of designing, and an important component to integrative thinking, too often gets set off to the side due to time constraints and other factors. Reflection-in-action requires thinking with a combination of dialogue, writing, making and doing.

Donald Shön, author of "The Reflective Practioner", emphasizes the importance of dialogue with the material, and that "the material responds to the practioner's questions" (Harvard 2). Shön believes that "when somebody reflects-in-action, he becomes a researcher in the practice context...he does not keep means and ends separate, but defines them interactively as he frames a problematic situation...he does not separate thinking from doing."

The broad notion of *designerly tools* provides a lens through which to view tools for integration. In the spirit of the "language of modeling" through making and doing, designerly tools are "ones that enable those who use them to engage in a participatory experience of creating tangible artifacts and/or as a way to create and communicate knowledge. Artifacts can be used to inform researchers about people's context, desires, concerns, needs and constraints...and can facilitate the construction of shared knowledge..." (Lindquist 1).

The framework for looking at designerly tools that was applied in all of the investigations, looks at tools for identifying, managing and evaluating design decisions. *Identify, Manage* and *Evaluate* represent dimensions of a Process of Integration.

IDENTIFY

Identification within the process of designing can represent a myriad of different approaches, methods and activities. In order to discover what aspects of tools allow designers to visually identify and share their personal values and perspectives in a meaningful way, list-making, collaging and mapping are used to augment the visualization of personal values. These generative *make-tools* allow individuals to express their thoughts, ideas and perspectives by making them visual. In addition, they allow for the expression of personal inspirations and motivations behind systems of values.

"The landscape of generative tools is revealing a new language whose components are both visual and verbal. These components can be combined in an infinite variety of meaningful ways, much like the linguistic elements we use in speaking and comprehending (Chomsky, 1965). The new language is, however, predominantly visual, as opposed to verbal" (Sanders, "Generative Tools" 4).

MANAGE

In order to determine what tools and activities would enable designers to manage systems of values and perspectives throughout the design process, it is important to first note that managing can mean many different things depending on people and context. Within this design research, it is defined to mean understanding and visualizing complex systems of values and perspectives, to make sense of them within a larger framework, and to connect to the context in which designing will take place.

The act of managing relationships could be carried out through many different activities. Within the design investigations specifically, managing takes place during understanding patterns and interconnections between multiple systems of values and perspectives. This is accomplished through the use of tools that involve mapping, responding to generative and evaluative prompts and reflection-in-action.

Thackara believes that "...tools can help groups foster complex interactions and design the context of innovation and learning." This type of learning by doing allows individuals to work together, visually connecting facts, thoughts and ideas, while reflecting-in-action about the decisions that are being made. Collaborators and individuals learn to manage complexity by adopting a systems-level perspective, and to use visualization to help *make fuzzy situations clear,* and *clear ideas tangible*.

EVALUATE

In order to determine how developing a holistic, systems-perspective can inform the generation and evaluation of design decisions throughout the process, designers need tools to prompt their thinking in a way that allows them to access their values, perspectives and holistic design values within a larger context, and to check back to them to see if why, how and what they're designing is aligned, so that they can make value-driven decisions throughout the process.

Generation and evaluation of information, ideas and solutions go hand-in-hand, but it's the "onus of designers" to make sure that the same holistic values drive them both. Generation and evaluation are components in the design process that cannot be separated. Criteria for evaluating design decisions should also be used during the generation phase as well.

Some initial investigations which engaged prototypes of designerly tools, included an "observation journal," which was intended to discover how participants might observe and identify things in specific contexts, both verbally and visually. Another investigation was a facilitated session of "collaborative visualization," in which participants were given prompting questions and sustainability frameworks and asked to navigate through their thoughts and answers visually. Yet another prototype was a tool containing both generative and evaluative prompting questions. These questions were organized according to environmental stewardship, economic prosperity and social responsibility, and linked to a simplified

version of the design process. The form resembled a color theory wheel, where you could turn the inner wheel and create certain sets of questions depending on which phase of the process you were in. Ultimately, it was the analysis and synthesis of these separate tools and experiences that enabled exploring an overall integrated process.

These activities and tools were analyzed, optimized and then synthesized into a toolkit that was sent out to various participants, which was also then collected and analyzed. The results revealed the importance of interaction and principles of participatory design when engaging in designerly tools, as well as the need for designers to form personal modes of inspiration and motivation, and personal connection and understanding to how their values and perspectives inform why, how and what they design. And in developing this perspective, throughout a process, designers need justifications, examples and guidelines to follow.

This *process of integration* begins first, by having each participant reflect on their process of designing. The process that was defined and utilized throughout these activities, for the purpose of having a shared, common process to work from, was defined in three phases: *Problems/Opportunities, Ideas* and *Solutions*. Participants were asked to identify certain tasks or skills that were most prominent for them in each phase of the process.

For Problems/Opportunities some responses were: "get information, research, map out context;" for Ideas, participants said things like "brainstorm and co-create;" and for Solutions, they said things like "prototype, revise, finalize." Within this step, the challenge for a few individual participants was to articulate how their personal process matched up to the one being defined. However, with collaborative teams, this was not an issue, as the defined process offered a shared, common ground for them to start from.

The next step asked participants to individually think about what personal values they bring to the design process. They were prompted with questions like: "What are factors that inform and influence the questions you ask, the decisions you make, and the things that you do during your process of designing? What issues have embedded values that you care about?" This was first done in a simple list form. Then, they were asked to converge and choose the few that were most important to them. In this activity, "important" was dependent on context. The design students had a more open and utopian perspective, whereas the design practioners and user experience experts derived their criteria for "importance" from their agency's or current clients' needs.

Participants then took those values and were asked to create collages that might visually tell a story about what inspires and motivates them to include these values into their contexts of designing. Research into participatory design methods and the use of make-tools and cultural probes, has used collaging as a way to draw out "creativity" and inspiration from people in a simple, child-like approach. However, the power in creating visual representations in this way should not be underestimated. The participants' collages became not only visual,

tangible representations of the personal values they bring to the design process, but also *artifacts* as sources for personal inspiration and motivation.

The fourth step was to map their selected values to the diagram of the defined design process. They were asked to consider during which phases their values came into play, and whether or not they placed more emphasis on certain values during certain phases than others. In doing this step, either individually or collaboratively, participants are asked to first, place their values based on intuition, without giving much thought to it. Then, if working collaboratively, they are asked to discuss *why* they placed them where they did, while having the ability to move, add or take away if they choose. Individuals reflect internally, or in writing.

With one collaborative team, even though they both accepted the process, they felt as though there might be a "right way" to do it, and they were concerned with whether or not they were placing their values in the right phase of the process. In response to this issue, it was essential to be explicit about the fact that there are *no wrong answers.* The activities are meant to enable designers to be open, share their perspective and where they're coming from, and agree on a space to work within. The act of each person in the team placing their values within the process together, is intended to hold onto each individual's values as they are represented within the process, and that each of their perspectives are valuable and in turn, influence their decisions.

In step five, participants are prompted with this text: *"It is imperative for designers to be able to take the environment, economy and society into account when designing. Businesses, corporations, institutions, communities and individuals are realizing the power of design to shape, influence and impact the world we live in. So how do our own personal values come into play when we are designing? How might we see the connection between our values and design values that are imperative to socially and ecologically conscious design?"*

They were provided with a framework that connected Environmental Stewardship, Economic Prosperity and Social Responsibility, and asked to map their selected values again, only this time, placing them within this framework. Depending on the proximity of their personal value to the holistic value communicated emphasis or priority. After placing their value, they then had to answer *why* they placed it where they did. As in the previous step, participants are asked to first, place based on intuition, then reflect and revisit.

Again, when the design students were enlisted to participate in this research, they were not working on a particular challenge or project at the time, so they found repeated patterns that connected EVERYTHING. Whereas one group of practioners found a concentration of connections hovering between social responsibility and economic prosperity. This was due to the fact that the current state of the economy was having a negative effect on their working processes and client relationships, and this was in turn, was affecting everything they were currently working on.

The tools and activities in the first *five* steps of the process are intended to help individuals or teams collectively shape how they view and develop a problem space to work within at the very *beginning* of the design process. They also inform how the individual or team will then use a particular set of questions in step *six*, in order to help them navigate through the design process with these values and perspectives at the forefront.

This could seem like a lot at once; the whole experience with the toolkit took participants any where from 2-3 hours to complete. However, once the initial activities are completed, at the very beginning of the process of designing something, the results and insights from those activities can then inform every decision a designer or team of designers might make.

A set of cards with prompting questions on them were created to help designers to *slow down,* and to inspire generative thinking, conceptualizing, and criteria for evaluation. The cards pose questions which make you refer back to your defined perspective to see how you are connecting your values and holistic design values to *why, how* and *what* you're designing. The outcomes of the previous activities serve as a platform, for which an individual and/or team can use the cards to collectively shape how they will move together through a particular challenge or project.

The first prototypes of the prompting cards were fraught with issues in form and function. After receiving feedback and analyzing the work from the participants, they evolved from essentially, a list of questions, to having a fill-in-the-blank functionality, in which you are taking the answers you developed in the mapping exercises and filling them into specific parts of pre-determined questions. (think, *Mad-libs*)

The final design of the toolkit took an even more human-centered approach, not only with the activities and instructions, but also with the parts and pieces. The instruction booklets and supplies within the kit are designed to be easily xeroxed or replenished -- all of the pieces are either 8.5 x 11, or 5.5 x 8.5. The booklets are saddle-stitched with staples so that they are easily taken apart and xeroxed. There are enough supplies for three designers to engage with the toolkit at one time, however *all* of the materials are easily obtainable and replenishable. The disk included in the kit contains pdfs of all of the cards, so they can easily be reprinted. There are two instructions booklets; a quick, abbreviated, step-by-step version, and one with a more detailed explanation behind the activities, as well as images, drawings, and resources to reference.

The outcomes of integrating holistic values through a process of engaging with designerly tools and reflection-in-action, are the abilities to:

+ navigate through a challenge with collaborators

+ collaboratively develop shared understandings

+ develop an appreciation for/an understanding of the multiple perspectives and values of those involved

+ collectively shape how to view/develop a problem space

+ visually and verbally:
  make sense of personal values
  connect personal values to the design process
  connect personal values to larger social, economic and environmental contexts in which design decisions are made

+ make more responsible, ethical design decisions

While many principles, visions, frameworks and tools for integrating sustainable practices exist today, not all of them focus on the use of visuals and reflection, and provide a bridge between values and context. Some only focus on an end-of-pipe approach and offer ways to innovate at the end of the design process, rather than at the beginning and continuously throughout. Information and material driven frameworks are not enough to be able to fully integrate a holistic perspective into a process of designing, specifically when trying to understand how our value systems and perspectives influence and inform why, how and what we design.

The intent of this research is not to say that all frameworks for integration must support the inclusion of personal values, but is to investigate designerly tools and experiences that further inform the understanding of what designers *need* to engage the process of design in an integrative manner, and how to *motivate* them to do that.

Designers are often unaware of how their values, perspectives and worldviews affect their process of designing. Due to factors that are dependent on people, contexts and time, designers go through their process of designing with different values and perspectives being accessed at different times. Designers need to be able to personally connect to the context they are designing within in order to shape and apply a holistic, systems-perspective. They must be able to use designerly tools to be able to visualize and transfer ideas, information and perspectives into different contexts.

Emerging trends in design research are focusing on the use of generative tools for *participatory dialogue* and as a *way of knowing*. This research offers a conceptual demonstration of how generative and experiential tools, which focus on visualization and reflection, can create shared understandings between collaborators, and reveal connections between systems of values and the process of designing.

Today, design practices are shifting in response to an awareness that in order to find problems and develop meaningful, innovative solutions, designers must work in cross-functional, cross-disciplinary teams. “Complex systems are shaped by all the people who use them, and in this new era of collaborative innovation, designers are having to evolve from being the individual authors of objects, or buildings, to being the facilitators of change among large groups of people” (Thackara).

Within design education, institutions that are preparing for a changing field recognize the need for their students to learn new design skills. These institutions value not only the core competencies of design, but also the value of enduring understanding: “These are things that are at the heart of a discipline and fundamental to lifelong learning and potential contribution to that discipline” (Davis, “Exploratory Seminar”). It is an opinion within this research that the patterns behind why, how and what we design, along with holistic design values, represent a part of enduring understanding within the discipline of design. Students entering higher education institutions to study design, should be introduced to these concepts at the very start of their education, and build their skills and understandings through a scaffolding of integrated experiences.

A few opportunities within the design studio/classroom have been identified in which the experiences within the toolkit can be engaged.

From a *content* perspective, the activities themselves are explorations in:

- reflection or reflection-in-action
- thinking, making sense, and framing problem spaces visually
- engaging with designerly tools

From a *process* perspective, the process of integration enables designers to:

- engage in issues like values, worldviews and the larger context of design at the beginning of the process
- understand how decisions are impacted throughout the process
- to work at a systems-level
- be open and participatory

Design education *contexts* for utilizing this process could include:

- the start of a collaborative design project
- the beginning of a particular course that may integrate this as a methodological approach for any challenge or design project
- as an evaluation or reflection tool used at the beginning and end of a semester or course, to assess growth in particular areas

This participatory design research is not the end, but merely a foundation upon which to build an understanding of the relationships between values, processes, integrated sustainability and design education. The investigations are steps in an iterative process exploring how to integrate holistic design values into the process of designing.

By engaging design students in experiences that enable them to work collaboratively, reflect and visualize at a systems-level, and connect value-systems and perspectives to the larger context in which design decisions are made, they can begin to develop an understanding of, and responsibility to, *integrated sustainability*.

BIBLIOGRAPHY

* Davis, Meredith and Samuel Hope. "NASAD: Post-Meeting Exploratory Seminar on the Future of Design and Design Education." Minneapolis, Minnesota: 1993.

* Harvard, A. "Prototyping Spoken Here: Artifacts and knowledge production in design." Working papers in Art and Design. 2004.

* Lindquist, S. & B. Westerlund. "Artifacts for Understanding." Working papers in Art and Design. 2004.

* Sanders, Elizabeth. Generative Tools for context mapping: Tuning the Tools. Third International conference on Design and Emotion. Loughborough, Taylor & Francis, 2003.

* Shön, Donald A. The Reflective Practitioner: How Professionals Think in Action. USA: Basic Books, 1983.

* Thackara, John. In the Bubble: Designing in a Complex World. USA: The MIT Press, 2006.