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Designing Communication Process for the Design of an Idea Zone at a Science Center

W. Travis Thompson, Frederick Steier & Wit Ostrenko

In this paper, we use the occasion of the design of a learning space (The Idea Zone) in a science center setting, the Museum of Science and Industry, to illustrate the importance of attending to communication issues in the design of a process to design the space. We explore communication processes in the conceptual design phase, with specific attention to bringing Needfinding to a participatory design framework. Use of the World Café is made to create a conversational space for the participatory design process. We reflect on the recursive nature of designing communication process for participatory design of the Idea Zone and offer seven principles that integrate the theories and practices of both communication and design, bringing particular attention to generative metaphors, reflective practice, and emergence of a “third language” for designing together with others.

Keywords: Communication Process; World Café; Needfinding; Participatory Design; Reflective Practice

While we may focus on the products of design activity, whether those products be messages, computer interfaces, organizational structures, or museum exhibits, the significance of the process of design must be acknowledged. Such concern with process surfaces when learning about design (Schön, 1983), as well as simply trying to understand how design teams work, including the culture of design teams (Bucciarelli, 1988). Concerns with design process need to recognize the importance of communication, yet the role of communication in the design

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process has not received the attention it deserves, particularly when focusing on design practice.

There have been several significant studies bringing communication to the foreground in the design process. For example, Bucciarelli's (1988) landmark study bringing ethnographic methods to understanding design teams developed a recognition of design as a social process, rooted in different modes of discourse. Tang and Leifer (1988) note the importance of gesture in design process. Sonnenwald (1996) notes the importance of attending to communication roles in multidisciplinary design teams. Weeks (1994), in his study of the conceptual design phase, notes how different phases of a design project may also afford different manners of interaction. Yet, in spite of these and other studies, there is much work to be done in understanding communicative processes that are coherent with design practice, including recognizing that the design process itself must be designed—and with communication as a key element. Indeed, as Senescu and Haymaker (2009) note, there is a real need to think about design process communication with attention to practices involving collaboration, sharing and understanding in design settings. This is particularly so in the multidisciplinary settings within which much design takes place.

Learning about communicative design processes and situating design practice, however, is not intended to set up a false dichotomy between product/process and theory/practice. Rather, this focus points to the need for a reframing of the problem as one of understanding how communicative products/processes and theories/practices of design emerge in parallel together. Where might we look for this emergence? Aakhus (2007a) provides one possibility for moving forward from a communication design perspective: the parallel emergence may arise through “practical and theoretical opportunities” provided by the “normative-empirical gap”. In other words, many interesting dimensions of navigating our social world may be observed by taking a practical empirical (design) stance toward the relationship between what *could* be and what *should* be by setting up a shared, back-and-forth dialog between communication design and design communication. Practically speaking, this back-and-forth dialog may be fostered through the design (or redesign) of the communication processes that take place during design activities as designers and future participants work together to negotiate what the conceptual designs could and should become.

In this paper, we use the occasion of the creation of a learning space (The Idea Zone) in a science center setting to illustrate the importance of attending to communication issues in the design or redesign of a process for creating that learning space. The process we bring forth for the design of the learning space is the World Café (Brown & Isaacs, 2005), which relies heavily on establishing a participatory and collaborative network of conversations. We are using design here, in both instances (the process *and* the space) in the sense of affording possibilities, rather than making something “fixed.” By bringing design of both the space and the communicative process together, we hope to create more of an ecological understanding of design process (Goodbun, 2012).

In keeping with an ecological approach, we note the importance of context for both problem-setting in and theorizing about design situations. To set this up, we open by exploring the ways in which design theories rely on principles of communication, particularly in the conceptual design phase, emphasizing a participatory design approach. We then introduce our setting, the Idea Zone, and its historical/spatial/conceptual context within its home of the Museum of Science and Industry (MOSI) in Tampa, Florida. We then mark the choice of the World Café as a designed conversational process for our design, and elaborate on the design principles of the World Café process, linking these principles to our setting, and to general ideas of communication and design. We close with seven concepts learned from our design of a communication process for design that may inform the efforts of communication scholars, designers and participants when working together, specifically in the conceptual phase of design, but with implications for the entire design process.

We begin these moves by first introducing a conceptual framework that draws together the needs of designers and community members when moving design into public scenes of interaction.

Making the Design of Things Public

Ehn (2011) offers a comparative account of his journeys through participatory design environments and other design environments, suggesting that participatory design has many potential merits despite its challenges when making interventions in controversial public events or when moving “out of the box” of design environments and into the public sphere. As both a communication scholar-practitioner and a designer, Ehn takes seriously the theories, practices, and philosophies of both communication and design when making communicative and designerly interventions into the interactions of others. In noting the importance of interaction when considering the design of objects which become matters of concern for others, Ehn shifts the object of design away from things in themselves and toward assemblies of sociomaterial, or collectives of humans and nonhumans. With sociomaterial as the assembly out of which designs are carved, the boundaries between things, artifacts, representations, participants, and communications about them all become blurred and afford the opportunity to shift away from attending to “hard facts” about the world and instead foreground the various sorts of interaction conducted by different sorts of participants (both human and nonhuman) in the design process. For communication scholars, designers, community members, and other participants, this perspective allows them to “draw things together” by composing communicative and designerly interventions into interaction *together*.

The Conversational Participation of Reflection-in-Action

Before exploring the theoretical frameworks of participatory design and Needfinding, it is useful to first revisit how ideas of participation and reflection have surfaced in

design efforts and the relationships they have to one another. Drawing on Schön's (1983) contrast of reflection-*in*-action to reflection-*on*-action, we foreground and call to attention to the new possibilities available for designers and participants alike when both groups converse together with one another and the materials of a situation. In Schön's model of reflective practice (1983), reflection-*in*-action takes place in the course of action (with others, with material, with a situation) concomitant with a reframing of a problem as the designer begins to test a series of new moves against the restructured problem. The new moves are a global experiment or an inquiry as a "reflective conversation with the situation" (Schön, 1983). In other words, the designer is reflecting on previous choices and current actions while experimenting and testing new choices and new actions against the reframed problem at hand. It is in the moment. In contrast, reflection-*on*-action is just that: a post-hoc reflection *on* the situation once the designer is no longer able to directly experiment or converse with the immediate problem or materials at hand. Extending these notions and integrating Bateson's (1972) idea of deutero-learning, or second-order learning (i.e. learning about the learning process itself), it is possible to speak of reflection-*in*-interaction, or reflection-*in*-action on reflection-*in*-action, where designers learn to reframe the problem of conversing *as a designer* through observations of themselves in networks of conversation with others *as they converse* about the design and the designed conversation. Here, it is the *in*-action reflection on reflection-*in*-action that stands in distinction to other approaches (such as Aakhus, 2007b) which foreground a *post*-action reflection-*on*-action. While this interactive feature was clearly assumed by Schön, noting it as reflection-*in*-interaction highlights the ongoingness of the activity as well as its mutuality.

For Schön, these two congruent conversations, one with the materials of a situation and one with the talk among designers, are parallel ways of designing and together make up the language of designing—which is also a language for doing design. This twofold language of design is not the only language game involved in the design process, however. Also at play is a "*language about designing*, a meta-language by means of which" others are introduced to design processes, such as reflection-*on*-action (Schön, 1983, italics in original). This observation of Schön's points to a fundamental tenet of both communication and design: an invitation to the participation of others, while recognizing the opportunities, but also the dilemmas, of this participation. The contributions of each participant in communication or design, though, are not necessarily symmetric (nor need they be). What is important here is that an opportunity be afforded for the participants together to reflect-*in*-action on the language of design as well as on the emergent design itself. In other words, one of the primary objects of design—though not always an intentional one—becomes the communication processes that are used to do design. Putting this observation into practice, however, opens up challenging questions around the roles played in the language games and of the nature of the work conducted through the auspices of those roles.

What theory of communication, for example, does not already have implicitly designed into its shape or its structure ideas about how communication works and

ought to work (for others)? Much in the same way, what designed object or process does not have implicitly built into its form ideas about how it works and *ought* to work (for others)? Asked another way, could a designer even be a designer if they could *not* articulate the way their (theory of) design worked, and should work, for those who engage the designed thing? Here, then, are distinctions and relationships between “could” and “should,” between a natural fact and a designable artifact, between the normative and empirical. As Schön and Aakhus both observe, there are practical and theoretical opportunities available in taking a design stance on communication (Aakhus, 2007a) and a communication stance on design (Schön, 1983).

In the case of design discussed below, we draw on both perspectives and offer some reflections on their intersections through questions such as these: in bringing participants and designers together in a situation of conceptual design, might it be possible for shared reflection-in-interaction to create a language of design for designers and participants alike (since design language is traditionally a “professional” language of designers, not necessarily of participants or others)? Taking this a step further, if “the language of design is a language for doing [a design profession]” and this doing is guided by local experiments “contributing to the global experiment of reframing the problem” (Schön, 1983), how might the shared language game (Wittgenstein, 1968 cited in Schön, 1983, p. 81) of the designers and participants itself be designed in a way that invites playful conversation and allows for a shared reframing of the design problems at hand as well as a mutual reframing of traditional participatory design?

These questions help frame our inquiry through the metaphor of *communication as design*, or the “reflective engagement with a circumstance using communication concepts and methods to figure out how to make forms of communication possible that were once difficult, impossible, or unimagined” (Aakhus, 2007a). Though we are interested in the communicative processes of all phases of design including fabrication, marketing, and redesign, and though the metaphor is a generative one for these phases as well, our focus for this paper is the conceptual phase of design. In taking a design stance on communication and a communication stance on design to seek out “the practical and theoretical opportunities” provided by the “normative-empirical gap” (Aakhus, 2007a), we argue that reflection-in-interaction shared among designers and participants through meaningful conversation in the conceptual phase of design can make contributions to the design problem at hand while also informing communication practice and theory. To do this, we next offer a brief history of participatory design’s model of participation and then develop the frameworks of Needfinding and design thinking within the context of that history.

A Brief History of the Participation of Participatory Design

Growing out of Scandinavia with roots in cooperative design (Ehn, 1993; Gregory, 2003; Grudin & Pruitt, 2002), the framework of participatory design has expanded to many fields including product development, software design, human-computer interaction (HCI), computer-supported collaborative workspaces (CSCW), and

engineering (Greenbaum & Kyng, 1991) to name just a few. As a multidisciplinary and cross-community approach, participatory design often brings together participants from various fields, disciplines, backgrounds, or communities to involve them in the design process, whether the design is of a product, an interface, a building, a neighborhood, or a space. The form and format of the participation varies depending upon the particular participatory method chosen, as do the sorts of people (participants) invited to take part and the roles they may play. Personas, for example, are generally regarded as a form of participatory design but may not formally incorporate real participants directly into the face-to-face design conversations. Personas are concrete representations of fictional people (Grudin & Pruitt, 2002) intended to engage designers in the imagined future in situ use of the designed object or artifact (whether real or virtual). As a communication tool of the designer (Norman, 2006) and primarily for the designer, personas may be built from various instruments or methods including surveys, market research, or ethnographic fieldwork (Grudin & Pruitt, 2002). These personas then stand in for the participation of a real person and act as a sounding board against which a prototype, feature, or change in design is reflected, “allowing the designer to ask ‘how would [the persona of] Mary respond to this?’ or Peter, or Bashinka?” (Norman, 2006). In this, designers can be seen as posing questions to themselves and reflecting on the sorts of imagined answers that the fictional persona might offer.

As an approach conducted before, after, independent of, or in conjunction with persona development, scenario-based design entails the creation of stories about people (participants) and their activities with the goal of making explicit the use of a system or application. Features or characteristics of scenarios generally include a setting, agents, or actors with goals or objectives, and sequences of action and events (Carroll, 1999). Like personas, scenarios are seen as a communication tool in that they can convey “issues in a way which is engaging, digestible, and compelling and that enables people to readily grasp subtle and complex points” (Fulton Suri & Marsh, 2000). Though scenarios are able to evoke reflection in design (Carroll, 1999), like personas they are intended to aid the reflections of *designers* in design. In other words, personas and scenarios create space for designers to reflect in and on action, of their own as well as the imagined actions of participants. These forms of participatory design, then, are participatory insofar as ideas of participants (in both senses) are brought into the conceptual design process, but largely on the terms of the design team.

A parallel is worth noting here that points back again to the relationship between general design theory and design in communication. Just as participants will draw from resources and strategies other than those provided to them through design of identities or face-to-face interactions (Aakhus & Jackson, 2005), so too will the participant’s crafting of an experience with a designed object draw from resources and strategies other than those afforded by the personas or scenarios which informed the design. With this in mind, it is understandable that designers often create multiple personas and multiple scenarios in an effort to enumerate the variety of strategies and modes of engagement of imagined future participants. Once the

strategies and modes of engagement are crafted, designers may then consider them for potential incorporation into the conceptual design process.

Needfinding

In the spirit of participatory design and also focused on the conceptual design phase like personas and scenarios, Needfinding grew out of Stanford University's product design program with central principles that include "letting consumers guide the flow of research, collecting data in a variety of different forms, and integrating research and design in a series of iterative stages as a way to fine-tune results" (Patnaik & Becker, 1999). Needfinding is a semi-structured process that draws on qualitative research methods to identify unmet or unrecognized needs and integrate them into the design process in a contextually relevant way during the conceptual phase of design. Importantly, Needfinding is particularly focused on placing designer-researchers in situations of first-hand experience through in situ observations and interviews. Insofar as Needfinding is a "paradoxical activity—what is sought is a circumstance where something is missing" (Faste, 1987), perhaps it is the conversation among designers and "consumers" together that generates multiple perspectives on needs and opens up ways for them to be recognized as such. That is, Needfinding provides an opportunity for needs or problems to be *seen as* needs in multiple forms: by the designer as a need of the participant (for design) and by the participant as a need of the designer (for needs).

Design Thinking

Like Needfinding, the system-based framework of design thinking evolved out of the recognition that humans and their needs are at the center of successful innovation and change processes (Brown & Katz, 2009). Design thinking encourages designers and participants to move together through a metaphorical "system of overlapping spaces rather than a sequence of orderly steps" where the spaces mark off boundaries of related activities that together form "the continuum of innovation" (Brown & Katz, 2009). By focusing on the continuous interactions of designers and participants in systems of bounded yet related activities, design thinking allows for iterative mutual reflective engagement on the problem(s) and constraints at hand while jointly specifying how to match up and relate the creative "could be" aspects of possible future designs with the normative "should be" aspects of feasible designs. Much of design thinking's creative potential to address complex, systemic challenges may be found in how the process is fostered: by putting multiple perspectives into conversation where framings of the problems and constraints are shared and specifications for potential solutions are jointly explored. Importantly, design thinking is a process not intended to be used only or even primarily by professional designers (Brown & Katz, 2009). Rather, design thinking is rooted firmly in the democratic values and extends the traditions of Scandinavian cooperative design

through its concerns for the human consequences of design processes, products, and roles.

A Communication Stance on Participatory Design Frameworks

Needfinding and design thinking blend normative and empirical processes into their frameworks while also problematizing traditional assumptions of roles, values, and whose needs are served by design. Both stances also suggest that boundaries, gaps, constraints, and unknown needs are relationships that offer opportunities for creative exploration and inquiry through iterations of joint specification and reflection. It is in this spirit of bringing together the acts of creation and inquiry that we understand Aakhus and Jackson's relationship between normative and empirical enterprises, particularly as they propose a (communication) design stance where "both descriptive and normative interests be tuned to the task of intervention" (2005).

Participatory design, scenario-based design, persona development, Needfinding, and design thinking can all themselves be seen as tools and also metaphors of the conceptual phase of design that entail certain perspectives or certain ways of seeing from within certain frames or contexts. As any participatory design metaphor (indeed any metaphor!) offers a certain frame for understanding rooted in that which it draws from, what we sought was to draw from a metaphor whose boundaries were more malleable than traditional participatory design metaphors and which might afford each person the opportunity to see through multiple perspectives. By seeing metaphors as designable (Madsen, 1994) and generative of new perceptions (Schön, 1979), we sought to make use of the flexibility of the design of the World Café in such a way as to attend to the meaningful frames or contexts of the designers, the community, museum visitors, and us (as scholar-participants) to undertake a "reflective engagement with [our] hypotheses about communication in communication-design work and designs for communication" (Aakhus, 2007a). As this reflective engagement calls for an understanding of the situated design problem at hand, we next introduce our setting, the Idea Zone, and its context as a community resource and public space for inquiry.

Setting the Context

The Public Library at MOSI as a Precursor to the Idea Zone

In 1995, the first public library inside a museum or science center opened in Tampa. The location was the Museum of Science and Industry, more commonly known as MOSI. Prominently positioned right off the main lobby on the ground floor of the four-storied building, it quickly became a key feature of the science center both conceptually and physically. In 2011, budgetary issues for the county forced the closing of the public library at MOSI. Given its prominent location, visible almost immediately on entry to the science center, the question arose about what to do with the space. The first floor already had a café and a gift shop. After some thought, the

idea to turn the space into something called an “Idea Zone” was put forth. But then the question remained: What is an “Idea Zone,” and how does one design it? And how does one design a process where the Idea Zone is seen as a community resource (as had been the library)? The way the question was posed suggested a participatory design process, but also one that would wonder about how a community might realize its need for such a space. Through this need another question emerged: How does one find the needs of another person, or of a community, for an “Idea Zone?”

As we played with these emergent questions and noted their recursiveness, we began to learn that our design problem at hand would holistically entail the *design of a communication process for design of a space*. In other words, two parallel and interrelated design efforts would need to be undertaken for the Idea Zone: the design of the library space, and also the design of a communication process (for design of the space). Furthermore, we understood this recursive design process itself to be connected to the larger scene at MOSI and calling for an understanding of those more encompassing needs as well, including the needs of MOSI’s staff and their organizational culture of participating in co-inquiry with visitors.

MOSI’s Organization of Learning Conversations

As the Idea Zone is to be located within MOSI’s former library space, holding to the ecological and situated perspective mentioned above, an understanding of some key features of that larger context and environment are important to our exploration. We next present some of that larger context as a key aspect of design by situating the library as central to and symbolic of MOSI’s second-order learning model and linking this to how learning conversations are afforded through a framing of the space.

MOSI is a large, 72 acre science center located in Tampa, Florida. As a major regional science center, MOSI houses both permanent and traveling exhibits, hosting over 800,000 visitors annually. MOSI attempts to be both a tourist attraction *and* a learning resource for its community (Steier & Ostrenko, 2000). Its location near the University of South Florida, as well as near the entertainment complex of Busch Gardens is significant for understanding what visitors bring with them as a frame for their visit (Bateson, 1972); such frames range from settings for “play” to settings for “learning,” as ethnographic studies of visitor communication behavior have illustrated (Steier & Jorgenson, 2003). Understanding the frames MOSI visitors bring to bear on their experience is an issue that is crucial to the design of the Idea Zone.

Related to understanding the frames that visitors bring with them to MOSI is an understanding of the frames that MOSI staff bring with them to interactions with visitors; in this way and in others, the library’s importance to the overall learning environment of MOSI was significant. MOSI’s floor staff, who had earlier been called “Explainers” but then were dubbed “Interactors,” developed a strategy to encourage collaborative inquiry by more than occasionally responding to visitors’ questions with “I don’t know—let’s go look that up in the library.” The decision to move from

“Explainers” to “Interactors” was an important lexical shift to signify and reframe the desired mode of relationship with visitors—namely that of a co-inquirer.

A key aspect of this approach to communication and learning in MOSI was an awareness of Gregory Bateson’s (1972) ideas of second-order learning. In his landmark essay, “The logical categories of learning and communication,” Bateson stresses the importance of and distinction between levels or orders of learning, including deuterio-learning. Attention to deuterio-learning was a key feature of the way that staff at MOSI, such as Interactors, behaved with visitors, and also a key aspect to how the actual design of exhibits and galleries took place. Indeed, the staff librarians, who were county library employees, were well aware of this context and operated in the spirit of this co-inquiry with visitors.

It is in the spirit of flexible and inviting frames that MOSI’s whole program is rooted in a learning-by-doing—a more participatory form of learning and inquiry. It is also a “doing-with” in the sense that the design of exhibits at MOSI invites playing and learning with both the material objects that form the exhibit designs and with other visitors. Thus, MOSI aims to foster participation as an essential characteristic of its culture—how it does business. This participatory aspect applies not only to the activities of its visitors, but also to its own staff. In embracing participation as a core principle of organizational design, the staff have also attempted to turn this vision into a researchable question, trying to learn about their own ways of inviting learning for others.

Ongoing action research projects are one form of MOSI’s participative inquiry into deuterio-learning which involve the design of various modes of learning conversations at various levels of organization. Such learning conversations are intended as “collaborative inquiries between people and among groups of people in which the possibilities for breakthrough thinking, insight, and innovation are enhanced. Learning conversations are a way of generating questions that matter” (Brown & Isaacs, 1997). These action research projects (Greenwood & Levin, 2007) include (1) investigating the dynamics between visitors and Interactors; (2) knowledge-sharing among staff and ways of organizing a science center internally to be responsive to evolving community needs; and (3) involving community members in redesigning MOSI as a community resource for learning. The range of these projects is meant to indicate that the design of a space such as the Idea Zone must be seen as located in a history of similar kinds of projects that addressed the processes of engagement that are crucial to a participatory design approach.

In fact, there has been much learning through error and self-correction along the way. Central to these action research projects has been a concern with finding effective ways of meeting in which lessons learned can be shared and possible futures explored. One such meeting form is the World Café (Brown & Isaacs, 2005), and MOSI has made extensive use of different kinds of World Cafés on its campus. These have included World Cafés for staff meetings, for board retreats, but also, most importantly, for engagement about issues with its local community.

Extensive use of large group processes with conversational formats has created a culture at MOSI in which participants are encouraged to think about and question

whose frames of reference are at play, and staff are invited to ask what frames visitors may be in rather than imposing their own “expert” frames on a situation. For example, we might wonder whether visitors to MOSI are, at any particular time, in a frame of “learning” (as one might expect at a center for informal learning), a frame of “play,” a frame of “doing something together,” or a frame of “being seen in a public space that is culturally acceptable” (Steier & Jorgenson, 2003). Such considerations of frame appreciation are crucial to the Needfinding process, as the needs for a space, whether a learning space, a playground, or a “third place” (Oldenburg, 1999) may be contingent on the participants’ frames.

It is into this background that a process for finding needs within a participatory design framework, for the design of the Idea Zone at MOSI, was desired. In contrast to more traditional approaches to participatory design (Ehn, 1993; Gregory, 2003) that tend to aid the reflections of *designers* in design, we sought to inquire on the grounds of a long-term engagement with the MOSI community and also attend, through reflection and conversation, to the contexts, frames and values of the participants which inform their needs of the design. Planning for how to do this involves the very communication processes that are integral to understanding in the design process.

The Planning Meetings

In a very real sense, design begins before it begins. Previous conversations that lead to design are part of the “design,” with the formal beginning of a design project often taking place inclusive of a process of retrospective sense-making (Weick, 1995). In the design of the Idea Zone, MOSI faced a dilemma. That is, it was being used (for summer camps, for example) as it was being designed as “The Idea Zone.” An awareness of this dilemma inspired the decision to create a process for Needfinding in the actual space of the Idea Zone. Also significant was that, as a “work in progress,” the Idea Zone had also accrued some major equipment including large workbenches, a 3D printer, and a laser cutter, connected to a desire to also establish a “maker-space” in the Idea Zone, similar to the Fab(rication) Lab at MIT. In addition, some remnants from the library were still there, including cabinets with valued artifacts.

The design team held preliminary meetings exploring how to make the communication design process, particularly this Needfinding phase, also fit with the participatory design goals. Building on MOSI’s previous success with using the World Café as a designed conversational process, the planning group decided to hold an initial World Café with members of MOSI staff *and* the community in order to allow designers to listen and interact with community members, and to have their own assumptions challenged (Aakhus, 2007b), while offering the community an opportunity to make the Idea Zone “theirs” through active participation. Here again appeared the two parallel design tasks at hand, this time foregrounding the design of the communication process to design the space.

Thus, there was an acute awareness of the importance of having a participatory design process where clear attention was paid to the communication process involved in that design. Indeed, as Smørdal and Stuedahl (2013) have recently noted in their work on collaboration and co-design, there is a clear need for a more interactive and participatory communication process in designing. While design firms (IDEO, for example) are well aware of this issue, we are adding to the “toolbox” by bringing in the World Café and its strong commitment to many layers of participation. Attention to a more interactive and participatory process could also allow for an expansion of Needfinding itself, to include more of a collaborative, learning-with, process, as needs can be seen as emergent in the conversation of possibilities in a networked session, such as the World Café.

The World Café

The World Café, as developed by Juanita Brown and David Isaacs (2005), is a designed conversational format (Bunker & Alban, 2006) that rests on systemic principles with an intent to establish a bounded and “safe” conversational space where traditional rules of participation and authority structures are suspended. In order to achieve the creation of this distinctive conversational space, World Café design is predicated on the idea, first set forth by Bateson (1968), that all communication behavior has both a report and command function, or as more commonly stated, a content and a relationship aspect. A key feature of a World Café is that it involves the creation of a network of conversations, with participants moving and creating “new groups” over the course of a session. A World Café process consists of a series of evolving rounds of discussion with participants sitting “café”-style, at small tables for four or five people (Brown & Isaacs, 2005). After an initial round, one person will remain and “hold the conversation” at that table, hosting a subsequent round, while others who had been at that table bring the conversation in which they had participated to other tables. This process of hosting and movement is repeated over the course of a World Café session. The World Café makes use of various spatial and symbolic markers designed to foreground the relational, including the physical layout of the space itself. On occasion, a World Café may make use of a graphic recorder to create a visual depiction of the ideas generated, and invite multiple forms of expression of ideas, as well as collaborative reflection on the emergent conversation.

The World Café’s design principles emphasize the importance of conversation, with the root metaphor of “café” meant to invite a frame of conviviality. The experience is designed to be highly participative while also remaining open to different forms and levels of participation (Arnstein, 1969). In support of the idea of The World Café as a network of conversations there are several design principles at play. These design principles are in accord with the sociotechnical design principle of “minimal critical specifications” (Herbst, 1976). This principle recognizes that some constraints are needed for any design (lest there be no organization at all) but that these should be minimized so as to allow for the flexibility needed for evolving forms

and new circumstances. That flexibility is crucial to World Café design and is also a key to its use in a Needfinding phase in participatory design, where on-the-spot adjustments to the structure might be needed.

Design Principles of the World Café

The design of World Café conversation rests on seven guiding principles. These principles are aimed not to legislate specific behavior, as could be the case with rules, but rather intended as, much like the games at the heart of Wittgenstein's language games (1968), friendly guides for action within an overall context of learning together.

Developed from Brown and Isaacs (2005; see also Tan & Brown, 2005), these principles call attention to: (1) setting the context; (2) creating hospitable space; (3) exploring questions that matter; (4) encouraging everyone's contribution; (5) cross-pollinating and connecting diverse perspectives; (6) listening together for patterns, insights, and deeper questions; and (7) harvesting and sharing collective discoveries.

The first three of these involve the design of the Café space itself (including the relational, contextual, and physical space) while the others can be seen as important communication process design features that need to be considered while hosting or participating in a Café. Depending on the intended use of the Café, if the "questions that matter" are also, as is often the case, to be emergent in the Café itself, then that design principle would be part of both groups. In a design setting, such attention to allowing for emergent questions is crucial, as successive "rounds" may build on what emerges from earlier rounds, in a highly recursive process. The main point is that new group formats for meeting, such as the World Café, fit well with the needs of a Needfinding process insofar as they are "designed" processes, where the design is about creating a communication process that fits with the exercise at hand.

Exploring the first three principles as an integrated set demonstrates the importance of the intersection of communication and design principles. For example, in setting the context, it is also important to realize that each Café contains seeds for a future Café, as they can, particularly in a Needfinding exercise for a space such as the Idea Zone, be seen as a recursive process. Setting the context also involves taking seriously Gregory Bateson's (1972) idea of metacommunication, or communication *about* our communication, and how the invitation affords a frame (although it does not specify) a participant's sense- and meaningmaking of the Café. While we may try to create a shared frame with our invitation, and clarifying what the Café is "about," at the same time we need always be open to recognizing when participants are, in fact, not in the same frame, and be able to make adjustments to this. Thus, setting the context also can be seen, at the metacommunicative level, as inviting *all* participants to pay attention to ideas of reflection-in-action, allowing for the flexibility of diverse perspectives to emerge, and processes of self-correction about that assumed shared context.

In the same vein, it is important to realize that what counts as "hospitable" is very much an open question. Different aspects of the designed or natural environment

may signify or represent different possibilities to each participant (Gaines, 2006) as a design semiotic. What might have been “a mess” or “noise” to some may be precisely what is needed to foster creativity if that is desired. In an attempt to afford a warm, convivial space that may also be a scene for serious play, Cafés often consider such elements as table size (small, round, so those seated are close to each other, with no “head of table”), table covering (checkered table cloths are often used), and things to play and draw with (crayons, butcher block paper), as well as perhaps a bud vase. As with setting the context, Café designers need to be open to realizing that the cultural norms of what makes for a hospitable space for the specific context of a given Café, and how this may not be shared. We should note an important parallel between the design of a Café and the design of the Idea Zone, in that both were intended to produce evolving learning conversations. At the same time, we need realize that having a Café in the Idea Zone itself could push the Café into more of a technological space (so having legos on each table, as things to play and think with, for example, could work as context markers for playfulness).

The third principle of offering “questions that matter” requires paying careful attention to what our questions *do*. As such, the design of a World Café requires attending to what we do with words (Austin, 1962; Searle, 1969); this suggests yet another way that attending to design from a communication perspective, and to communication from a design perspective, illuminates the practices and theories of both. Eliciting an answer—the way we might think of a question in a strict information transmission model of communication—is only one thing a question can do. In fact, questions that place participants in a “direct answer” mode are precisely the kind of questions we might try to avoid. Brown and Isaacs (2005) noted that hidden assumptions may frame the activity for participants and incorporated this insight into the Café’s design. For example, a question such as “How can we improve our community?” may have a hidden assumption that the present community is not working, and participants who are active in the system might hear this as a criticism and adopt a defensive posture. Instead, in the spirit of Steven Johnson’s (2010) book of the same name, we might consider asking, “Where do good ideas come from?” Taking into account the Café as a whole, we have also found that allowing participants to create their own best practices for interaction can be important. Bearing this in mind, Cafés often have as an opening question, “what makes a good conversation?”

The other four World Café design principles make clear an intended commitment to communication *process* in the conduct of the Café itself, to all being fully present in the ongoing conversation at many levels. Building on our earlier discussion of a normative/empirical relationship, it is important for Café hosts and other participants to pay attention to the content (for example, seeing patterns in ideas brought forth) and relationship (collaborative participation in seeing those patterns) aspects of the designed Café process. While these latter four principles are based on normative ideals of what a learning conversation about questions that matter might be like, they also invite learning from the “data” of the conversation as it unfolds. Thus, a “conversation” between norms and practices is also at play.

It is also important to note the ways in which these World Café design principles cohere with the communication process design principles put forth by Aakhus and Jackson (2005) in their article, "Technology, Interaction and Design." There, Aakhus and Jackson develop seven critical things that interaction designers need to know, and these seven, when considered both individually and also as a set, allow for precisely the issues that World Café (and then Idea Zone) hosts and participants need pay attention to in the design process. For example, Aakhus and Jackson note the importance of how conversation is organized, including processes of turn-taking. One of the key features of the World Café, its reliance on creating a network of conversations and movement throughout the course of a session, is meant to make more rigid and predictable turn-taking procedures more difficult, allowing for more variety of conversational organization. Aakhus and Jackson also note the importance of recognizing the often tacit nature of culturally shared assumptions about communication. By calling attention to the importance and yet challenges of setting the context, as well as allowing "questions that matter" to include questions about a group's own communication practices, there is a hoped-for affordance of an unconcealing of these assumptions. By noting how speech is action with collateral commitments, the importance of participant identity and face, and the idea that consequences of design are interactionally emergent, Aakhus and Jackson's work finds remarkable resonance with the ways in which the Café design principles of "listening together for patterns," "connecting diverse perspectives," and "harvesting and sharing collective discoveries" allow for connections across speech communities. Indeed, one key emergent feature for Cafés such as that proposed for the design of the Idea Zone, is the recognition that designers and community members may indeed interact in different language worlds, with designers, for example, working with each other in their own professional language. Here, a key affordance of the Café, and of the interaction design principles of Aakhus and Jackson, is that of creating space for what Elden and Levin (1991), in their work in action research, refer to as the needed creation of a "third language." By calling attention to a third language, Elden and Levin note that if collaboration across language communities is sought, professionals, or practitioners (such as action researchers or designers) need recognize the importance of their language as a way of being together, but also how that same language may not be shared by those in the communities with which they are interacting. The same holds for that community—thus, the need for realizing a newly emergent third language in participatory design settings making use of the World Café.

Parallel Learning: Bringing World Café Communication Process to Idea Zone Design

A key insight here is the parallel nature of the two design processes: design of the Idea Zone, and design of the conversational space for the World Café to design the Idea Zone. Indeed, it could be that a dominant metaphor for an Idea Zone emerging through a Needfinding process is that of a meeting place, a network of conversations

that would bring different communities together, even as they play with such new (at the time of this writing) objects as 3D printers. Perhaps, along the lines of Mary Catherine Bateson's (1991) "Our Own Metaphor," her book describing a systems conference on conscious purpose and human adaptation, each of the parallel design activities could be a metaphor for the other. The design of a World Café is an Idea Zone, and the design of an Idea Zone is a Café, where good ideas play with each other. This could echo Steven Johnson's (2010) "fourth quadrant," in his *Where Good Ideas Come From*, which is the scene of nonmarket/networked spaces and conversations that allow for the interplay of people and ideas, and also Schön's (1979) ideas about the importance of generative metaphors that afford creativity and how we come to see things in new ways. By attending to the importance of our own communication process in design, as afforded by meeting formats such as the World Café, we can recognize the parallel processes of designing a communication process for the design of the Idea Zone, and the design of the Idea Zone itself. The parallel with the goal of MOSI in being hands-on, including attending to communication processes in design, is striking.

As a way of closing, what follows are seven summarized central principles we learned through this design of a communication process for design of the Idea Zone:

- The language of designing is a shared one and takes place on multiple levels and in various forms. By seeing designed things (and processes) and the processes (and things) through which they emerge as jointly specified by words and actions of people together, ideas of second-order learning offer a way for communication scholars and designers alike to recognize (re-cognize, or re-learn) how communicating and designing are done in design.
- A design cannot be informed by the needs of a person or a group until they are recognized as needs by other persons or groups. In other words, needs must become joint needs before they can be accounted for in the conceptual phase of design. The creation of conversational space, such as that offered by the World Café, is one powerful possibility for attending to matters of concern and needs of others.
- Complexities, paradoxes, and ambiguities are to be fostered rather than eliminated when trying to identify needs that are unknown or when designing a thing that does not yet exist. It is out of these "problems" or "situations" that new future possibilities emerge. Metaphors offer a powerful way to hold on to a problem while at the same time being generative of new perceptions by reframing them (Schön, 1979).
- Attending to the conceptual phase of design (of things and of communication) through both a communication stance and a design stance offer complementary perspectives, particularly when seeking to incorporate the needs of a community into a design for future use by the community. Designers and communication practitioners alike are naturally familiar with making interventions into public spaces and interactions outside of the environments where they are designed.

- Outcomes of design encompass much more than the designed space or object and may include, for example, new possibilities of interaction that emerge through intervention of the design processes, the communication processes, the constituents of the design objects, or other interventions. Attending to outcomes as interventions in assemblies of human and nonhuman things brings balance to the lifecycle of designed objects and the people who interact with them.
- In the same way that all future uses of a designed object or space cannot be completely stipulated or dictated, the designs of communication or conversation for design should nurture new opportunities and be hospitable to differing contexts or frames of participants.
- Finally, Bateson (1979; Harries-Jones, 1995) bases his ecological perspective on recursive patterns of all human communication. Design in all forms, particularly when considering the importance of attending to communication process issues, is a recursive process. Design, whether of a space or product, builds on the design of the communication process to enable the design of the space or product, which enables the ongoing redesign, and so on. Realizing this has powerful implications for bringing communication to participatory design of spaces like an Idea Zone.

In offering these principles as central to the conceptual design work of designers, community members, and other participants when working together to design communication processes for design, we also intend them, as in the spirit of the World Café, to be an invitation to converse together with us on their redesign.

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References

- Aakhus, M. (2007a). Communication as design. *Communication Monographs*, 74, 112–117. doi:[10.1080/03637750701196383](https://doi.org/10.1080/03637750701196383)
- Aakhus, M. (2007b). Conversations for reflection: Augmenting transitions and transformations in expertise. In C. McNerney & R. Day (Eds.), *Rethinking knowledge management: From knowledge objects to knowledge processes* (pp. 1–20). Berlin: Springer. Retrieved from http://dx.doi.org/10.1007/3-540-71011-6_1
- Aakhus, M., & Jackson, S. (2005). Technology, interaction, and design. In K. L. Fitch & R. E. Sanders (Eds.), *Handbook of language and social interaction*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Arnstein, S. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners*, 35, 216–224. doi:[10.1080/01944366908977225](https://doi.org/10.1080/01944366908977225)
- Austin, J. (1962). *How to do things with words*. Cambridge: Harvard University Press.
- Bateson, G. (1968). Information and codification: A philosophical approach. In J. Ruesch & G. Bateson (Eds.), *Communication: The social matrix of psychiatry* (pp. 168–211). New York, NY: Norton.
- Bateson, G. (1972). *Steps to an ecology of mind*. New York, NY: Ballantine Books.
- Bateson, G. (1979). *Mind and nature*. New York, NY: Bantam Books.
- Bateson, M. (1991). *Our own metaphor: A personal account of a conference on the effects of conscious purpose on human adaptation* (2nd ed.). Washington, DC: Smithsonian Institution Press.
- Brown, J., & Isaacs, D. (1997). Conversation as a core business process. *The Systems Thinker*, 7(10), 1–6.

- Brown, J., & Isaacs, D. (2005). *The World Café: Shaping our futures through conversations that matter*. San Francisco, CA: Berrett-Koehler.
- Brown, T., & Katz, B. (2009). *Change by design: How design thinking transforms organizations and inspires innovation*. New York, NY: Harper Business.
- Bucciarelli, L. L. (1988). An ethnographic perspective on engineering design. *Design Studies*, 9, 159–168. doi:[10.1016/0142-694X\(88\)90045-2](https://doi.org/10.1016/0142-694X(88)90045-2)
- Bunker, B., & Alban, B. (2006). *The handbook of large-group methods*. San Francisco, CA: John Wiley and Sons.
- Carroll, J. (1999). Five reasons for scenario-based design. *Proceedings of the 32nd Annual Hawaii International Conference on System Sciences* (pp. 3051–3061). Wailea Maui, HI. Retrieved from <http://www.computer.org/csdl/proceedings/hicss/1999/index.html>
- Ehn, P. (1993). Scandinavian design: On participation and skill. In D. Schuler & A. Namioka (Eds.), *Participatory design: Principles and practices* (pp. 41–77). Hillsdale, NJ: L. Erlbaum Associates.
- Ehn, P. (2011). Design things: Drawing things together and making things public. *TECNOS-CIENZA: Italian Journal of Science & Technology Studies*, 2(1), 31–52.
- Elden, M., & Levin, M. (1991). Cogenerative learning: Bringing participation into action research. In W. F. Whyte (Ed.), *Participatory action research* (pp. 127–142). London: Sage.
- Faste, R. A. (1987). *Perceiving needs*. Warrendale, PA: Society of Automotive Engineers.
- Fulton Suri, J., & Marsh, M. (2000). Scenario building as an ergonomics method in consumer product design. *Applied Ergonomics*, 31, 151–157. doi:[10.1016/S0003-6870\(99\)00035-6](https://doi.org/10.1016/S0003-6870(99)00035-6)
- Gaines, E. (2006). Communication and the semiotics of space. *Journal of Creative Communications*, 1, 173–181. doi:[10.1177/097325860600100203](https://doi.org/10.1177/097325860600100203)
- Goodbun, J. (2012). Flexibility and ecological planning: Gregory Bateson on urbanism. *Architectural Design*, 82, 52–55. doi:[10.1002/ad.1428](https://doi.org/10.1002/ad.1428)
- Greenbaum, J. M., & Kyng, M. (1991). *Design at work: Cooperative design of computer systems*. Hillsdale, NJ: L. Erlbaum Associates.
- Greenwood, D., & Levin, M. (2007). *Introduction to action research: Social research for social change* (2nd ed.). Thousand Oaks, CA: Sage.
- Gregory, J. (2003). Scandinavian approaches to participatory design. *International Journal of Engineering Education*, 19, 62–74.
- Grudin, J., & Pruitt, J. (2002). Personas, participatory design and product development: An infrastructure for engagement. In T. Binder, J. Gregory, & I. Wagner (Eds.), *Proceedings of the participatory design conference: Participation and design: Inquiring into the politics, contexts and practices of collaborative design work* (pp. 144–152). Palo Alto, CA: CPSR.
- Harries-Jones, P. (1995). *A recursive vision: Ecological understanding and Gregory Bateson*. Toronto: University of Toronto Press.
- Herbst, P. G. (1976). *Alternatives to hierarchies*. Leiden: Martinus Nijhoff.
- Johnson, S. (2010). *Where good ideas come from: The natural history of innovation*. New York, NY: Riverhead Books.
- Madsen, K. (1994). A guide to metaphorical design. *Communications of the ACM*, 37, 57–62. doi:[10.1145/198366.198381](https://doi.org/10.1145/198366.198381)
- Norman, D. (2006). Ad hoc personas and empathetic focus. In J. Pruitt & T. Adlin (Eds.), *The persona lifecycle: Keeping people in mind throughout product design* (pp. 154–157). Boston: Elsevier.
- Oldenburg, R. (1999). *The great good place: Cafés, coffee shops, bookstores, hair salons and other hangouts at the heart of a community* (2nd ed.). New York, NY: Marlowe.
- Patnaik, D., & Becker, R. (1999). Needfinding: The why and how of uncovering people's needs. *Design Management Journal*, 10, 37–43.
- Schön, D. A. (1979). Generative metaphor: A perspective on problem-setting in social policy. In A. Ortony (Ed.), *Metaphor and thought*. Cambridge and New York, NY: Cambridge University Press.
- Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York, NY: Basic Books.
- Searle, J. (1969). *Speech acts: An essay in the philosophy of language*. Cambridge: Cambridge University Press.

- Senescu, R. R., & Haymaker, J. R. (2009). *Specifications for a social and technical environment for improving design process communication*. Stanford, CA: Center for Integrated Facility Engineering, Stanford University.
- Smørdal, O., & Stuedahl, D. (2013, September). *Collaboration and co-design*. Presented at The Future Museum Public: Approaches to Media and Meaning Making conference, University of Oslo, Norway.
- Sonnenwald, D. (1996). Communication roles that support collaboration during the design process. *Design Studies*, 17, 277–301. doi:[10.1016/0142-694X\(96\)00002-6](https://doi.org/10.1016/0142-694X(96)00002-6)
- Steier, F., & Jorgenson, J. (2003). Ethics and aesthetics of observing frames. *Cybernetics and Human Knowing*, 10, 124–136.
- Steier, F., & Ostrenko, W. (2000). Taking cybernetics seriously at a science center: Reflection-in-interaction and second order organizational learning. *Cybernetics and Human Knowing*, 7, 47–69.
- Tan, S., & Brown, J. (2005). The World Café in Singapore: Creating a learning culture through dialogue. *The Journal of Applied Behavioral Science*, 41, 83–90. doi:[10.1177/0021886304272851](https://doi.org/10.1177/0021886304272851)
- Tang, J. C., & Leifer, L. (1988). A framework for understanding the workspace activity of design teams. *Proceedings of the 1988 ACM Conference on Computer-supported Cooperative Work* (pp. 244–249). Portland, OR.
- Weeks, C. (1994). *A study of similarity and analogical decision making in collaborative design* (Unpublished Doctoral Dissertation). Old Dominion University, Norfolk, Virginia.
- Weick, K. (1995). *Sensemaking in organizations*. Thousand Oaks, CA: Sage.
- Wittgenstein, L. (1968). *Philosophical Investigations* (3rd ed.). New York, NY: Macmillan.