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Designing Together with the World Café: Inviting Community Ideas for an Idea Zone in a Science Center

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Designing Together with the World Café: Inviting Community Ideas
for an Idea Zone in a Science Center

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
Department of Communication
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science center design, communication practice

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Dedication

For our Designer, who gives us capacities for communication and learning. For my wife, Lori, and my daughters Kaylee and Elise, and their dedication to supporting me throughout the last five years in the largest singular endeavor yet of my life. Finally, for learning, and especially for *learning about our learning*, that as Paulo Freire, Myles Horton, Gregory Bateson, and others remind us may be generative of positive social change and even of necessary revolution.

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Table of Contents

List of Figures.....	iii
Abstract.....	iv
Chapter 1: Learning Space (Re)Design	1
Setting the Scene at MOSI: Evolving Inquiry Into Design and Communication.....	1
The Participation of Participatory Design.....	8
Shifting Toward Relationships of <i>Doing</i> Through a Focus on Communication in Design	14
An Invitation to the Reader.....	17
Chapter 2: Staking Out the Areas of Literature and Practice.....	21
To Whom Does a Designer Turn?	21
Communication in Design	22
Communication Ethics as Grounds of Ethical Participatory Design.....	24
The Evolving Social Roles of Museums.....	29
Planning the Science Center with New Forms of Participation, Media, and Design	32
Chapter 3: A Multi-Method Approach for Designing Communication for Design.....	37
Situating the Choices of Methods.....	37
Integrating Action, Research, and Participation	38
Participatory Design as a Form of Action Research.....	42
Designing Communication for Change	44
World Café as Ethical Framework for Action	47
World Café as Method for Participatory Design	56
Observations and Data	61
Designing the Analysis	63
Responsibilities of Method, Analysis, and Data.....	64
Chapter 4: Data and Analysis	69
A Beginning Before the Beginning.....	69
Planning the First Café.....	70
Hosting the First Café.....	78
Reflecting with MOSI Staff on the First Café	81
Planning the Second Café	83
Hosting the Second Café.....	87
Reflecting with MOSI Staff on the Second Café.....	94
Reflecting with Community Members.....	96
An Ending after the Ending	97

Chapter 5: Interpretation & Meaning-making	99
A Choice of Interpretive Focus.....	99
From Speculation <i>On</i> to Conversation <i>With</i>	100
World Café Conversations as Action.....	101
World Café as Entry Point for Participatory Design by Community and Staff Alike.....	102
Café Metaphor as Leverage Point for Engaging in Organizational Change at MOSI.....	104
Questioning the Game Being Played, or “Are We Doing a World Café Right Now!?”.....	107
An Invitation to a More Responsible Future.....	110
An Early Conclusion.....	115
 Chapter 6: A Closing Into Future Openings	 117
Summary of the Research and Research Outcomes	117
Relating the Primary Outcomes and Contributions	120
Contributions with MOSI.	120
World Café Contributions.....	122
Participatory Design Contributions.....	124
Communication Contributions.....	126
Broader Contexts for Future Work	129
Contextually knowing together.....	130
Taking communication seriously in design.	130
Flexible and ecological ways of designing.	131
Metaphor as a way of <i>seeing as</i>	131
Getting To “The Point of It All,” or Situating Future Work.....	132
World Café Redesigns for Second Floor Redesign	134
Watering the Seeds, or Keeping the Networks Alive	134
Locating Design Cafés in New Spaces	136
World Café as Performance	137
Further Future Applied Work	139
Further Future Theoretical Work.....	141
Closing With an Opening for Redesign With Others	142
 References.....	 144

List of Figures

Figure 1: A cabinet, once filled with dinosaur bones and fossils of ferns when part of MOSI’s library, is now filled with artifacts from 3D printers and Lego models as part of the Idea Zone.....	2
Figure 2: A 3D printer in the Idea Zone (seen in the right-center of the picture against a white background wall) and the computer that runs it are provisionally marked off from the public space of the Idea Zone with a retractable “belt barrier” from the IMAX theater.	2
Figure 3: Children and parents playing with a 3D printer in the Idea Zone after Anthony and I had a World Café planning session.....	74
Figure 4: MOSI staff and community members participating in the first World Café.	79
Figure 5: MOSI’s 3D Printing the Future Exhibition under construction.....	80
Figure 6: Café participants visiting the completed 3D Printing the Future Exhibition prior to the second World Café.	87
Figure 7: Participants in the second World Café. The picture faces large windows where the lighting was visible as a storm moved in; the museum lobby is to the left and the Idea Zone maker space is on the other side of the purple wall. A whiteboard with notes from a report-out is visible but cropped on the right.....	89
Figure 8: World Café participants building their second floor redesigns with Legos, wooden blocks, and butcher block paper.	90
Figure 9: A butcher block sheet of paper with drawings and sketches from participants at a Café table in the second World Café.....	91
Figure 10: A whiteboard with Fred’s graphic recordings and notes taken during a report-out in the second World Café.....	92

Abstract

This dissertation brings attention to the communication processes taking place during design of an Idea Zone at a science center. It focuses on the conceptual phase of design, during which designers seek to integrate the ideas and needs of stakeholders into design processes through such frameworks as Participatory Design (PD). In bringing a focus on communication process to conceptual design frameworks such as PD, I explore the assumed roles behind participatory design processes and the contexts created through those processes during actual design work. As these Idea Zone design efforts took place in a museum and also within the context of an ongoing action research program there, I explored the organizational challenges of cultivating spaces and conversations where designers, community members, researchers, and other participants cooperatively explored contexts and spaces for jointly designing together. A central assertion of this work is that the World Café, a designed discussion format, fits with the needs of a science center for inviting community participation in design processes. A related goal of this work was to test that assertion not as a success or failure but as an emergent and contingent process requiring changes and course adjustments through reflective practice.

To do this, my central method was an ethnographic engagement in the spirit of action research where with the Museum of Science and Industry (MOSI) in Tampa, Florida I planned for and hosted a series of World Cafés revolving around design of an Idea Zone in the science center. Café participants included MOSI leadership and board members, designers, community members, University of South Florida (USF) students, museum staff, and other stakeholders. Data sources from the World Café included the Café planning efforts, conversations and other

data generated during the Cafés themselves, as well as organizational outcomes from hosting the Cafés. Outcomes in this sense might include, for example, the potential for future Cafés around design of the Idea Zone or how what is learned in the Café becomes integrated into other Idea Zone design processes or everyday organizational contexts such as meetings at MOSI. In addition to the Café and as part of understanding Café outcomes, I also drew from data generated through follow-up interviews I conducted with Café participants including designers, community members, and others. Finally, I drew upon ethnographic data generated through my observations and interactions within the Idea Zone and the larger scene of MOSI, ranging from everyday conversations with museum visitors to the possibility of performances in the space.

With this research we (MOSI, the MOSI community, and I) learned together 1) how assumptions and issues of participation play out during group communication processes in the conceptual phase of design, 2) about ways of engaging in ethically challenging work of designing group communication processes for design, 3) how generative metaphors for the group communication process might emerge from the World Café that foster flexible and inviting space for participatory design, and 4) how each of these local questions related to designing communication for design of the Idea Zone play out within the larger organizational context of MOSI specifically and science centers more broadly. Key outcomes from these four research questions include practical contributions to design for learning spaces in MOSI, how the World Café fits with Participatory Design processes at a science center and also potential redesigns for the future, how the World Café metaphor became a way to rapidly prototype new museum experiences, and how democratic invitations offered by MOSI to the community brought about creative possibilities for community design of the Idea Zone *and* for staff to engage in designing MOSI's broader organizational processes of change.

Chapter 1: Learning Space (Re)Design

The Initial Mystery that attends any journey is: how did the traveler reach his starting point in the first place? (Louise Bogan, 1980; from *Journey Around My Room*)

I think that even though we need to have some outline, *I am sure that we make the road by walking.* (Paulo Freire, 1990; from *We Make the Road by Walking*)

Setting the Scene at MOSI: Evolving Inquiry Into Design and Communication

The first library inside a museum or science center opened at the Museum of Science and Industry in Tampa, Florida in 1995. MOSI, as it is more commonly known, chose a prominent location for the library, situating it on the first floor just off the main lobby area. As a unique and prominent feature of MOSI, the library quickly grew as a resource and place of inquiry for both museum visitors and staff, often in inquiry together to explore questions that emerged for visitors or that community members brought with them to MOSI. In 2011, Hillsborough County's budget challenges led to the closure of MOSI's library. Its prominent location at MOSI and also its integration into the way MOSI interacted with visitors prompted questions about what to do with the space. As concepts for the space evolved, an idea emerged for the space to become an "Idea Zone," similar in concept to MIT's Fab(rication) Lab, where state-of-the-art media and technology such as 3D printers and Computer Assisted Design/Computer Assisted Manufacturing (CAD/CAM) tools are available for rapid prototyping and design, and where participants can quite literally fabricate their ideas. As with MOSI's library, these "maker spaces" are innovative particularly in the museum and science center scene and afford organizations an opportunity to invite new forms of participation from visitors, community members, and staff alike.

Commencing in 2011 and accelerating into 2012, an Idea Zone began to emerge in the library's former space, beginning with a prototyping phase using temporary walls, mobile tables and seats, and movable interactive exhibits along with some of the



Figure 1: A cabinet, once filled with dinosaur bones and fossils of ferns when part of MOSI's library, is now filled with artifacts from 3D printers and Lego models as part of the Idea Zone.

permanent exhibits still remaining from the library including a cabinet of fossils and science artifacts. Through 2012 and into 2013, various configurations and arrangements of the space and exhibits were prototyped, eventually developing a more permanent feel to the space, with a semi-fixed wall demarcating portions of its large room and also a full complement of new equipment and interactive exhibits

including a 3D printer, CAD/CAM software, robotics hardware and software, television/filming equipment, a Computer Numerically Controlled (CNC) 3D milling machine, Legos, and even



Figure 2: A 3D printer in the Idea Zone (seen in the right-center of the picture against a white background wall) and the computer that runs it are provisionally marked off from the public space of the Idea Zone with a retractable "belt barrier" from the IMAX theater.

a sewing machine.

Thus, on the one hand the informal learning space of the Idea Zone had already been designed, yet on the other hand and at the center of these sorts of spaces is the idea that *ideas* may continually refresh or redesign the space. After all, who can say *exactly* what an innovative and creative space *should* be for *all time*? In the same way that the needs of Idea Zone visitors had evolved and MOSI had worked to evolve the space along with those needs, so, too, had the needs of MOSI changed along with innovations created in part through the Idea Zone. In a late November 2013 meeting, Mr. Wit Ostrenko, MOSI's President, and Mr. Anthony Pelaez, MOSI's Director of Innovation, together shared with me how the idea of the Idea Zone and the Idea Zone's physical space had evolved over the last three years and could be positioned as part of a substantially larger role in MOSI's long-range planning and development efforts. With this, the Idea Zone's design had evolved through its initial conceptual phase through a physical design phase into the use phase and was circling back to a phase of reconception. As with its first conception, the Idea Zone at MOSI was still intended to be understood not only as a space for creating *ideas* and making *things* but also as an informal learning space for people where the processes of innovation and creation involve inquiry into existing knowledges and relationships as well as the creative aspects of generating new knowledges and relationships through change. In other words, the Idea Zone was meant in part to reframe the traditional relationship of "visitor" and "MOSI" for both MOSI and its community. Importantly, spaces of learning and creativity need to meet the emergent needs of many different sorts of people in many different and emergent ways, and this pointed to a key question for MOSI: what do people think an Idea Zone might look like, and how does one (or a group) go about designing it?

In taking their role as a public science center seriously, MOSI sought a way (or ways) of going about the work that would invite participation of the community and of other stakeholders into the design process such that their needs for the new space could be discovered and incorporated into the process. Though there are many different possibilities that professional designers have in their repertoire for conducting this sort of work, a key dilemma in most approaches turns out to be the way the relationships of designer and “user” (or in the case of MOSI, “visitor”) are framed. Said another way, in so far as the design process was to be concerned with design of the space, the process would then revolve around role-based relationships to the space: designers would design and visitors would visit. But MOSI sought a closer engagement with the public in a way that allowed for ideas for the space to emerge from many directions and from many participants, and so had a need for a community-oriented design process that was flexible and inviting.

One possibility for MOSI in this choice of design process could have been Participatory Design, or PD, for example. With roots in the Scandinavian movement of cooperative design (Ehn, 1993; Gregory, 2003; Grudin & Pruitt, 2002), Participatory Design has expanded into a number of different fields to include architecture, engineering, software development, interface design, and many other fields with roots in design. PD is generally concerned with ways of inviting “participants,” who are often stakeholders in some fashion, into the conceptual phase of design such that their ideas might be included in the process. Over the years PD has evolved a number of practice-based methods or frameworks to invite participation of stakeholders, though the form and format of the participation often varies depending on the particular framework that is chosen. In the development of personas, for example, some form of research (whether ethnographic, market-based, field-based, or another) is often conducted by designers and/or

researchers who then compose “personas,” often between three to five of them, that generalize in narrative format a key type of imagined future “user” with a picture, a name, a backstory, and a particular situation they would put the future design to use in. These imaginary personas, in the form of a sheet of paper or poster board, then stand in for the participation of a real person by allowing the designer to ask themselves “how would [the persona of] Mary respond to this?” or Peter, or Bashinka?” (Norman, 2006).

Another form of PD is conducted through scenario-based design, where designers imagine scenarios or scenes of planned future use of the design. These scenarios often take a narrative form and generally are created alongside or after personas, where personas become the actors in the scenes. Like personas, scenarios stand in for an imaginary future and are intended to communicate “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). The “people” who do the grasping here, though, are the designers, and though scenarios are intended to invoke designer reflection, that reflection is often more on prior choices already made by the designer (such as noted by Norman about personas).

Two forms of Participatory Design that go a bit further in their engagement of participants include Needfinding and design thinking. Needfinding grew out of Stanford University’s product design program and takes as a central principle a process flow of “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). Unlike personas and scenarios, Needfinding is conducted through a joint frame of designer *and* researcher through its call for designers to engage in qualitative research with stakeholders in the field and in the situation in which the future design is intended

to play a part. This practical and hands-on engagement is perhaps motivated in part by Faste's observation that Needfinding is a "paradoxical activity – what is sought is a circumstance where something is missing" (Faste, 1987), and acknowledges that it is not only the designer's responsibility to specify what the need is or the way(s) in which the need might be met through design. Said another way, Needfinding suggests that the process of design is a mutual one that calls for designers and stakeholders to jointly learn together about the missing piece of the situation so as to also create the future piece together. Similar to the spirit of Needfinding, but in foregrounding more of an organizational aspect, design thinking acknowledges that humans and their needs are at the center of successful innovation and change processes (Brown & Katz, 2009) while also making moves to purposefully blur the role-based lines between designer and participant/stakeholder. To do this, the design thinking process involves a metaphorical "system of overlapping spaces rather than a sequence of orderly steps" and moves through a continuum of innovation (Brown & Katz, 2009) rather than the innovation being delivered primarily by the professional designer.

Hence, at one end of the participatory design spectrum, approaches such as personas and scenarios are helpful tools for designers to do their own reflection individually or as a group (Thompson, Steier, & Ostrenko, 2014), and at the other end of the spectrum approaches such as Needfinding and design thinking are able to substantially blur the roles of designer and user. Perhaps what was missing and was thus a need for MOSI's situation was a *communication process* for design that balanced both ends of the spectrum by offering opportunities for joint reflection and learning together among designers and stakeholders.

Although MOSI had these and many other options available as choices for designing the idea of the Idea Zone in a participatory way, MOSI also sought to continue building on their own

organizational processes and history as a learning organization. Thus, what their design situation seemed to call for was an approach for designing the Idea Zone learning space *with* others - as contrasted against designing *for* others (Greenbaum & Kyng, 1991; Schuler & Namioka, 1993) - that also fit within the contexts of MOSI's organizational learning processes. In other words, the concept of an Idea Zone needed to be (re)designed, and the designed space needed to afford a place where learning and design may continue to be done by others as well as by MOSI. The history of related work at MOSI, including a number of action research projects, along with the history and trajectory of design moving toward more participatory approaches, suggested an opening up of the design process to include others than designers and staff only. Participatory Design, as a way of inviting contributions of "users" in the conceptual phase of design, and related frameworks do this to some extent, but as Ehn (2011) and others have observed even those approaches involve challenges and paradoxes that generally cannot be directly resolved even through changes to the designer's immediate design process.

So, with questions about the paradoxes of Needfinding and with questions about the paradoxes inherent to the participatory design process itself, even more questions arose that began to circle back around to wondering, "where do we begin redesigning the Idea Zone?" Perhaps a turning point came when the idea arose of drawing on a familiar process at MOSI that took questions and paradox and ambiguity as its very starting point: the World Café. For a number of years MOSI had drawn on the World Café in various contexts and situations, with it becoming even a part of their organizational learning culture (Steier & Ostrenko, 2000). With possibilities of the World Café now at hand, further questions then emerged for the designers: So what if we were to host a World Café for design of the Idea Zone idea, and what if we were to host it in the Idea Zone itself? And what if the Café was set up so as to involve members from

the community and to focus on their needs for the Idea Zone? *That* Café had not been done before, and especially not one where the Café was hosted *inside* the space it was to be designing! These ideas for community-based participatory design sessions rooted in the World Café metaphor resonated with many of the stakeholders involved, both for MOSI and for the community, and set the stage not only for moving forward in their design situation but also set the stage for this dissertation. Though I will return in depth to MOSI's specific design situation with the World Café in later chapters, in the next section of this chapter I will broaden the scope of my focus to look at how design engagements more generally also have similar paradoxes and parallel challenges as those discussed as taking place at MOSI in design of the Idea Zone.

The Participation of Participatory Design

As learning spaces such as the Idea Zone need to afford more than simple “use” by “users,” designers are particularly challenged in moving beyond their imagined needs of visitors when designing exhibits and exhibitions for learning spaces. Rather than seeing those designed exhibits or exhibitions as objects of use, those designs could instead be seen as focusing on relationships and change, and even change of relationships. As Bateson (1972) and others (Wenger, 1998; Keeney, 1983) have noted, learning involves and *is* change – particularly of relationships between and among people, ideas, things, and ideas of things. In this sense, the learning that is hoped to take place there may be fostered though it cannot be strictly specified. That is, “good” learning spaces are ones where serious attention is given to creating contexts for learning and for processes of change to emerge in and through those spaces, and where those contexts are flexible and inviting for many different sorts of people who each bring their own needs and contexts to the space.

In seriously attending to creation of contexts for learning, though, a number of key questions then arise for designers: What is it that is supposed to be learned in this learning space, who is doing the learning, and where is the space? Though there are many possible directions to go with these questions, one avenue for inquiry in this project involved the learning of a museum in how it relates to its community, and a learning of a community about how it relates to its museum. For the Idea Zone, as with many similar and related spaces including MIT's Fab(rication) Lab, a matter of concern becomes a change in the context of relationship within and without the walls of the museum. Taking seriously the idea (and many ideas) of community opens up to questions and considerations of relationships between space and place, between ownership and participation, between public and private. This also opens up relationships of people to these things, including the relationship of people to the built environment, and especially in ways that people may be seen as active and actors in the shaping of their conditions and environments.

This focus on personal and interpersonal human activity suggests a shift in focus away from very large-scale design problems concerned only or primarily with *environments* (such as the design of a city or a website), and points to a focus on the *needs of people* as they move through more local scenes. Supporting this idea is the recent expansion of design practice to include such fields as "interaction design" and "experience design" (Redström, 2006). These expansions of what once were occasional or marginal practices into full professional roles suggests that organizations have also begun to recognize the need for attending to experiences and contexts of individual people while also balancing the need for scalable organizational processes and for adapting new technologies. Not only have design practices and roles evolved, some organizations have gone so far as to add a new executive role to the "C-Suite" through

creation of a Chief Experience Officer or a Design Executive Officer. These very additions as a new chief officer of an organization – joining such positions as the Chief Executive Officer (CEO), Chief Operating Officer (COO), and the Chief Information Officer (CIO) - suggests that whole executive boards of organizations are becoming attuned to the need for attending to the real needs and experiences of real people as they interact with an organization and its designs.

Relatedly, more than 15 years ago (as of this writing) Terry Winograd looked out into *The Next Fifty Years of Computing* and focused not on the machine but instead on the lives of the people using it. For Winograd, this entailed a shift from interface design to “interspace design” and taking seriously ideas of how “people and societies adapt to new technologies” (Winograd, 1997). In the case of MOSI, for example, questions arose about whether the new technology of 3D printing should simply be put on display or whether it should be opened up and problematized in ways that allow for visitors and community members to make sense out of it for themselves or with others. This question at MOSI points back to challenges identified by Winograd in design approaches that separate people, machines, and experiences of people *with* machines, often leading to a focus primarily on the machine’s design rather than attending to the human experiences and the meaning-making processes that go along with them. In other words, Winograd was suggesting a shift away from technological determinism and toward the difficult challenge of framing the design process in a way that attends to relationships and human experiences. But a dilemma then arises for designers: If technologies are not self-determined, and it is designers who must engage in the ethical dilemmas of designing for others, then how does one go about the profession of design in a way that is socially responsible and responsive to the many sorts of stakeholders involved in a design situation? As a way forward, and as a context

I drew on heavily for this project, Latour (2005) and Ehn (2011) suggest seeing the dilemma as one where the designer is working to move *private* matters of concern into *public* scenes.

Though more will be covered on this shift and the associated changes in practice that follow from it, the central idea here is that different metaphors of design are available as choices for designers to make, and that different metaphors afford different forms of communication by *carrying through* (Bateson, 1980) the metaphor's relational framework (see also Krippendorff, 2006, p. 198) so that it informs and infuses the relationships of scenes where it is in play. It is important to note one of the critical features of metaphor as characterized here by Bateson and Krippendorff: flexibility. Were a metaphor not sufficiently malleable there would be little opportunity for it to reframe the situation where it is hoped to carry through a new context. That is, a metaphor is often hoped to change a particular situation not into itself or into the metaphor but into a third thing, informed by a new context for seeing and understanding the now newly-situated relationships.

But why make the design of a thing “more complex,” or “more metaphorical,” than it “needs” to be? Why should designers not just draw on the recent trope of “failing faster” in order to also, and paradoxically, “succeed” faster? Similarly, why not consider the approach that Google and other companies have applied, of using Split A/B tests to present one design to one user, a different design to another user, then automatedly test to see which of those designs maximizes a desired behavior and implement the most “productive” one immediately with technology? Using this model, it is straight-forward to select the design that maximized the company's desired behavior and then apply it to all users uniformly in a way that also maximizes profit, output, or some other sort of organizationally pre-defined measure. In a real sense, this approach removes the designer from the situation entirely by substituting the maximization

algorithm for the design process they otherwise might have drawn upon. This key loss of flexibility and smartness of human situated action when automating critical systems concerned Susan Leigh Star, who noted that “as systems become faster and design more automated, we also may have come to depend inappropriately on the rollerskaters, literal and metaphorical—only to find out that no one can skate as fast as technology is demanding” (1995).

Design, more broadly considered than only the product of its process, may be held to and evaluated against standards other than imagined or used during the design process. Indeed, as Ehn (2011) has noted, many designers find the framework of design-for-later-design (or design-for-design) to be a productive way to incorporate the immediate and known needs of users into the conceptual phase of design while also creating the object in such a way as to remain flexible enough for the user to (re)design it themselves. This allows users to modify, change, or otherwise adapt the thing to them, rather than being forced to change themselves to accommodate the fixed thing. Similarly, in consideration of others than himself (as the designer), Dieter Rams, a notable German industrial and product designer, suggested that finite measures of design weren’t possible and instead moved toward 10 important principles rooted in the question “is my design good design?” (“Dieter Rams: ten principles for good design,” 2013).

By flipping the metaphor from design-as-automated-experiment (such as that used by Google), whole other worlds may be attended to and considered throughout the life of a design and a design process (Winograd, 1997). In choosing where to attend and what to attend to, though, this project proposes *not* to take a single existing design framework – not even an open-ended framework such as design-for-design - and apply it to a particular situation to see how people navigate it. This approach, of taking an existing framework or method and simply applying it, is in a very similar spirit as that used by Google in their Split A/B tests. Rather, what

I am inquiring into are the communication processes at play in the conceptual phase of Idea Zone design through attention to changing relationships between and among people, ideas, things, and ideas of things, much in the same way that Ehn suggests an inquiry into participation and representation that would go “beyond thinking of user participation as the ultimate solution” (2011). A key difference between these two approaches is their starting points, which then lead to differences among the assumed roles that participants are expected to fulfill. Rather than structuring MOSI’s design process with a general external framework, where the focus is primarily on the framework and people are expected to largely conform to the framework’s roles, the point is to begin with the context of MOSI’s design situation and to focus on a “role” that is more flexible and also shared. In attending to communication process first, that flexible and shared “role” can become one of *communicator*, where an invitation is put forward for people to participate as themselves rather than as a “user” while together in a group design process. In building on Tang’s observation that “more research needs to be focused on conceptual design tasks in order to better understand this earlier phase of design activity” (1989), this project’s approach suggests that the “design task” calling for more attention is *communication* and that such a focus might also help move beyond some of the current challenges of Participatory Design. In other words, MOSI had a need to involve the community in the conceptual phase of design but without a focus on maximizing simple “user participation.” Instead, the situation called for a focus on possibilities and contexts for creative (communication) design work in an early design phase that took seriously the paradoxes and challenges of designing *with* the community rather than *for* the community.

Shifting Toward Relationships of *Doing* Through a Focus on Communication in Design

Today, professional designers are not the only ones inquiring into the differences that design makes, or into the makings of differences through design. Much in the same way that design has begun to open itself up to others through such frameworks as human-centered design, co-design, and Participatory Design, so, too, have others begun to inquire into design as a way of changing things through such frameworks as design thinking (Brown & Katz, 2009) that balance creativity and reflection. “Things” in this case could be organizations or businesses, products, processes, ideas, systems, spaces for learning, and even new metaphors of design for communication and communication for design, though what all of these frameworks or processes share is their attempt to foreground *human action* over any of those *things*. Indeed, Bannon (1991), Winograd (1997), and others more recently (Krippendorff, 2008a; Ehn, 2011; ATELIER, 2011) discuss the need to shift the primary relationship of focus in design from one of what people *are* with respect to a design process to what they *do*. Ehn sets up this shift in focus through questioning how

Once struck by the "naive" Cartesian presumptions of a picture theory, what can be gained in design by shifting focus from the correctness of descriptions to intervention into practice? What does it imply to take the position that what a picture describes is determined by its use? Most importantly, it sensitizes us to the crucial role of skill and participation in design, and to the opportunity in practical design to transcend some of the limits of formalization through the use of more action-oriented design artifacts. (Ehn, 1993).

As a discipline, a field, a profession, a body of literature, a group of practices, and in other ways of organizing it, design today may be seen not as any one of these but more of an evolving body of activities that in some ways has been going on since the earliest days of human existence (ATELIER, 2011) and may be seen as part of what makes us human (Friedman, 2000). From the design of the first spear or the arranging of living spaces in caves to the design of the

Internet or the Large Hadron Collider, it is often the built environment or the things inhabiting it that first spring to mind when thinking of design. But how do designed things become things, and what are the ways that those things change our relationships to the world, to things, and to one another? What difference does design make, or what differences *should* be made through design?

Communication scholar-practitioners such as Aakhus, and particularly those who are also designers such as Krippendorff and Ehn, appreciate the relational differences made by design and inquire into the human symbolic capacities made evident through the intersection of our communication and design enterprises, often not drawing hard distinctions between either one (see, for example, Krippendorff, 1998 and Ehn, 2011). What Aakhus, Krippendorff, Ehn, and others with this perspective seem to agree upon is that the relationships at stake in a design situation, including possible change or differences made to those relationships, may be seen as preceded by and proceeding through communication. It is striking, then, to see how practitioners and researchers of both communication and design have recently arrived at parallel metaphors of their “own” fields that relate each “distinct” field to the other: *communication as design* (Aakhus, 2007; Thompson et al., 2014) and *design as communication* (Schön, 1983; Norman, 2004; Krippendorff, 2006). For both of these metaphors, they each appear to play out in the literature as ways of reconceiving or reframing dilemmas encountered during their respective practices for which the other practice seems to have a way forward through parallel challenges. Exploration of the *communication as design* metaphor in the field of communication, for example, appears to work as an integrator of theory and practice by seeing both done together through the actions of designing. From the field of design, exploration of the *design as communication* metaphor seems to work similarly in that it offers designers a body of theory to

anchor their existing professional practices. In other words, both fields see that the other has experience or a competency in addressing a dilemma that appears within their own field and for which the current mode of thinking/doing seems impractical.

This design engagement with MOSI, then, and with communication and design, entailed a reflexive turning back of the conceptual design situation onto itself in a way that afforded opportunities for other-than-designer participants to participate in design through a redesign of the communication processes for conceiving of the designed thing. As the process to redesign these communication processes itself called for an approach that accommodates and creates change, a stance of learning (or design-as-learning) was taken to frame and to reframe the conversations. In other words, I drew on the idea of designing learning conversations, or conversations that afford learning, as part of the process to design the Idea Zone's learning space. It is out of this idea that the first of my four primary research questions arose:

- 1) How might a learning-focused communication process be designed for the parallel process of designing a learning space (such as the Idea Zone) in a way that moves beyond the current challenges of role-based participation in participatory design and science center design?

This research question arose not only out of the Idea Zone design situation itself but also out of the theoretical literature in both communication and design. In this way, I have approached the development of this research question and the others so as to make them relevant both for MOSI and also for this dissertation. Before moving to the theoretical scene of this dissertation's inquiry, though, it may be helpful to offer you (the reader) a brief introduction to how this dissertation has been arranged along with a brief description of the grounds for those choices, with more background to follow in later chapters.

An Invitation to the Reader

In many ways, this research project both begins and ends with the scene of the applied research: MOSI. In beginning there, the context and texture of MOSI's design work for the Idea Zone largely set out the general boundaries of possibilities. In ending there, the outcomes of the research were to be measured against the goals of MOSI and of the designers, staff, community members, and other stakeholders involved in the work. In needing to balance both the rigor of doctoral research with the rigor of MOSI's everyday situated practice, both this dissertation *and* the work with MOSI emerged together out of a model of reflective practice where I took seriously the notion of bringing about change *with* MOSI. Choosing not to be a distanced observer but to engage in responsible change calls for different sorts of accountability than perhaps other research methods, which also informed my choices both to integrate an ethical perspective into the work and also to write in the first person. This sort of close engagement and the relationships that developed with MOSI leadership and staff over the course of this project's nearly two year effort in addition to the three years of partnership on related work that preceded this project informed my choice to inquire with each MOSI staff member on whether and how they would like to be referred to by name in this dissertation. Each appreciatively agreed that they would like to be identified by name and so I have chosen to first present them by their honorific and organizational title and then to refer to first names in keeping with the ways we worked together in the course of the project.

More will be covered on this in Chapter 3 where I discuss the choice of methods, though a key point to make here is that the research questions, the methods, and indeed the whole of this project were conceived as a joint endeavor through a collaborative relationship with MOSI. Although I have a professional background in web design, interface design, and information

technology that led me to a master's program in Computer Science before beginning this doctoral program in Communication, and though I have years of experience in the challenges of inviting meaningful stakeholder participation in design processes, the point was not to bring that "expertise" to MOSI and "use" it to design a communication process for them. Rather, the more encompassing work could be seen as needing to jointly (with MOSI) accomplish a successful participatory design process for the Idea Zone *and* to accomplish a successful doctoral research program in Communication at the University of South Florida (USF).

In taking this collaborative research project seriously, then, a number of key questions arose about how to undertake such an effort. In the same spirit as the research question above, though, there were parallels among the work that MOSI and I were each doing together. For example, participatory designers are working to push the boundaries of traditional notions of "participation" yet also do not have immediate alternative ways forward that allow them to honor their responsibilities to "users" for the things they create. As a designer myself I was in a similar position with respect to MOSI, attempting to contribute to their design process while also challenged in honoring my responsibility to them for the changes I was hoping to help them bring about. Out of this joint challenge, then, arose the second research question (that will be covered more deeply in the following chapter) on how shared ethical grounds among the practices and fields of communication and design might offer ways forward for honoring those responsibilities. The third and fourth research questions were similar in this joint respect, with the third being focused on the World Café's metaphor as generative of new joint possibilities for MOSI's design situation *and* for my dissertation, and with the fourth focused on how the Cafés in the Idea Zone might play out in the larger organizational setting of MOSI.

With this project's work and the research questions focused on the context of MOSI, and of the Idea Zone, and of MOSI staff and community, questions may also arise for readers about the generalizability and about the replicability of this work. Though MOSI did not seek to create "generalizable knowledge" in the traditional sense – and thus neither did I – together we were certainly seeking to bring about opportunities for situated learning for their designers, staff, and community members. In this way, what was learned in the context of the World Cafés, for example, by particular people in particular settings could certainly be applicable for them and their situations across time and future settings. This sort of situated-yet-extensible work also played out in terms of whether and how the method might be replicated. On the one hand, MOSI was not necessarily seeking a step-by-step method or process that could simply and easily be "used" to "generate" design ideas in science centers. On the other hand, MOSI had a long history of bringing about opportunities for learning by visitors and their organization, so the choice of hosting World Cafés for this dissertation also was intended to develop a flexible and sustainable framework *for MOSI* to guide their Participatory Design work. Said another way, MOSI was familiar with the situated and context-dependent nature of the World Café process and so for their organization the process is largely replicable as described here. Indeed, as will be discussed in the future work section of Chapter 6, MOSI has invited me to continue this work with them for an upcoming (as of this writing) redesign of the second floor of the museum.

As a way of bringing together and summarizing the participatory design work with MOSI and this dissertation, the World Cafés were situated as a participatory design framework rooted in communication principles and ethics as a way to attend to the challenges of designing science center spaces and exhibits for others, all within a history of ongoing action research projects at MOSI. Moving out from Chapter 1 where I set the scene of MOSI and development of the first

research question, in Chapter 2 I develop the literatures out of which the three remaining research questions arise and that complement the challenge of designing learning conversations for design in a science center. Following development of the literatures, Chapter 3 situates the choice of methods for the project by expanding on the challenges of an applied research project such as this and also discusses how the data and analysis are considered in relation to the method. In keeping with this project's commitment to the "lived detail" (Dourish, 2001) of the work, as part of the "data and analysis" in Chapter 4 I develop the first-person story of conducting two action/reflection cycles with MOSI in the form of planning, hosting, and reflecting on two World Cafés designed to invite community ideas for design of the Idea Zone. From there, in Chapter 5 I offer an interpretation of the World Cafés as they played out for MOSI staff, the community, and MOSI's broader organizational efforts, including how the Cafés developed not only as a participatory design process for inviting community ideas into design of the Idea Zone but also as a leverage point for MOSI designers and staff to participate in bringing about organizational change. Finally, in Chapter 6 I close the dissertation with a summary of key ideas that developed through the Cafés as well as the research questions, discuss the primary fields and practices where this work offers contributions, and end by offering pragmatic as well as conceptual possibilities for future work and refinement.

Chapter 2: Staking Out the Areas of Literature and Practice

And what is good, Phaedrus, And what is not good—Need we ask anyone to tell us these things? (Robert Pirsig, 1974; from *Zen and the Art of Motorcycle Maintenance*)

The need itself is a perceived lack, something that is missing. Needfinding is thus a paradoxical activity—what is sought is a circumstance where something is missing. (Rolfe Faste, 1987; from *Perceiving Needs*)

To Whom Does a Designer Turn?

If a museum designer ran out of suitable design patterns, perhaps for a particular exhibit, where is she most likely to turn? If a museum visitor found an exhibit too perplexing, where is he most likely to turn? If a communication scholar found one of his theories, perhaps social construction, no longer amenable for looking at a particular situation, where is he most likely to turn? In each of these cases – for the designer of applied communication theories, for the designer of museum exhibits, and for the designer of a museum experience – the designer may be most likely to *turn back* to their own knowledge or that of their (design) community to look for a new tool, a new design pattern, a new experience, or a new way to make sense of what was happening. In so far as the choice to turn back toward one’s own community precludes an opportunity to engage another, these very sensible returns to one’s own community for support in design challenges informs the larger communication patterns at play in design, pointing again to the role-based separation of designer and user and also evidenced through creation of such conferences as the “Inclusive Museum” (further discussed later) that seek to reinvigorate relationships that have lapsed between now-separate roles. Even computer “users” have established their own formal “user communities” to enhance their individual and collective

experiences with new software and technologies, but what substantive efforts on behalf of designers are undertaken to create a bridge where gaps in needs of those communities exist? What I claim this highlights is the need for an understanding of participation in museum design work, or, said another way, the need to understand how communication theories inform how community ideas of participation work in the museum and how museum design work is done through ideas of community, particularly in light of new forms of media and technology.

Communication in Design

Ehn suggests these and other paradoxes inherent to design may be resolved through a designer's reflection on and subsequent change of how things may be *drawn together* with others during the actual work of conceptual design, both in the sense of *drawing a sketch* and also a *shared relating of things*. This is similar in spirit to Schön's (1983) idea of reflection-in-action, where in the course of action (design) a designer reframes a problem and begins testing new moves against the reframed problem at hand while also evaluating the fit of those choices against the "discipline" or direction now chosen. Where Schön's conversation is primarily one of a designer with the materials of design at hand, Ehn's primary conversation may be seen as talk between and among designers about the resources for drawing things together, and importantly also the imagined future participants or "users" of the design in a joint drawing-together. Though Schön discusses a two-fold language of design, which includes 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), though this social dimension is a secondary process for Schön and generally involves professional designers rather than anticipated future users. By contrast, for Ehn design is a fundamental human activity and is necessarily one that draws together many different sorts of participants including designers, imagined future users,

community members, various publics, and other stakeholders, and where private designs enter public spaces through close communication together among designers and the public.

For Aakhus, seeing communication as design entails an action- and change-oriented stance to communication, or a “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, 2007). For Norman, the relationship moves the other way, going from completed design actions back in to the designer’s presumption of choices they built into the design on behalf of the user while holding on to the idea of an interactive give-and-take between designer and user: “design is a conversation between designer and user, one that can go both ways, even though the designer is no longer present once the user enters the scene” (Norman, 2004). Importantly, this bracketing of “user” appears to reinforce the idea that *designers* design and *users* use, despite the attempt to keep the conversation going even after the “use” phase begins. Redström calls this a “role-based account of relations between designers and users” (2008) and suggests that this pattern is literally apparent in the relationships embedded in *user-centered* design. For Redström, one way forward is to re-define use in a way that “focus[es] on what people *do* rather than who they *are* with respect to a design process” (2008, emphasis in original). Krippendorff holds a very similar position in suggesting that a human-centered approach is one “in which all those coming in contact with an artifact have the freedom of bringing their own meanings to it” and that “a preliminary task of designers is to explore how, why, and when (in which context) artifacts invite which practices,” including even those practices that could harm potential stakeholders (2008a). Here, Krippendorff, like Redström (2006; 2008), Bannon (1991), Winograd (1997), and Suchman (1987), point to the idea that what should primarily be attended to in the design process are relationships of activities

– of do-ings, of practices – of people who have meaning they both bring to and make during those activities. Krippendorff and Redström both also point to the place where designers and others may productively look for those meanings and change those meaning-making opportunities for designers and others: in and through language (see especially Krippendorff, 1995).

Though there are many differences among the positions referenced here, what all of these positions share is a foregrounding of the need to attend to the social dimensions of design, and to do that work through communication in ways that appropriately situate people for taking action by designing together. What constitutes “appropriately situated” and “together,” though, are value-laden and highly contingent on the contexts, the needs, and the perspectives of the actors involved. So how might a designer, or a community member for that matter, go about the process of communicating for design?

Communication Ethics as Grounds of Ethical Participatory Design

Where designers and perhaps communication scholars may have more recently been exploring the paradoxes and challenges of diverse meanings arising from diverse meaning-makers, ethics, on the other hand, has been at this game for some time longer. Though there is, of course, a productive field of design ethics, I instead turn toward a way of looking that carries forward a more ecological understanding than *design as design* and that connects with the metaphors of *communication as design* and *design as communication*. This turn entails a focus on communication ethics, which has at its center a focus on learning, or more specifically learning about the “narrative ground upon which a communicator stands” (Arnett, Fritz, & Bell, 2009). In the same way that Krippendorff and Redström advocate a process that begins with practices and activities (of others) that have meaning, Arnett, too, looks past the person to instead

consider the grounds or motivations, as seen/heard through language, that actively support a communicator's stance. Where many modern forms of inquiry may shy away from meanings, motivations, or values, communication ethics specifically does not. Instead, and in a spirit very similar to the communication/design work of Ehn, "communication ethics is sensitive to historical situatedness and is not value neutral. It involves searching for direction and recognition of diversity of values/virtues; the search is dialogic, open to others while still standing on one's own ground within a given narrative" (Arnett et al., 2009). To bring this more clearly into focus in a design situation, a communication ethics perspective might offer a way for designers, for example, to frame their inquiry as one of learning about the values and virtues that form the ground of a user's meaning-making stance while also reflecting on their own values and virtues that form the grounds of their meaning-making, all within the larger design narrative as a way to create shared grounds for conceptual design work. Strikingly, this very much parallels the work of ATELIER (2011) and Ehn (2011) in seeking ways to attend to the values of diverse participants in participatory design processes, going so far as to even attempt to attend to the values ascribed to designed things, such as their aesthetic qualities.

In relation to Arnett, Hyde approaches communication ethics from a related but different stance in looking at how *openings* are created "whereby we become interested in, attuned to, involved with, and perhaps awed by other things, other people, and, in moments of reflection, our own selves" (Hyde, 2012). For Hyde, these openings happen primarily through our symbolic capacities such as language, and Hyde explicitly connects those capacities to the symbolic capacities of designers when challenged in building moral character – both their own moral character and also the moral character they infuse into the dwelling places they design. In

framing the history of *ethos*, or our moral character, Hyde argues that the term in centuries past was used

in a more original manner: to refer to those “abodes,” “habitats,” or “dwelling places” (pl. *ethea*) where a person’s ethics and moral character take form and develop. The event of an opening echoes in the primordial meaning of *ethos*. Architects certainly must be aware of this fact as they design and build structures (e.g., homes, cathedrals, museums, schools, parks) whose form and function are intended to inspire people to dwell together in instructive, civilized, and virtuous ways. This architectural challenge also confronts the orator who would have his or her audience “feel at home” with the narratives and arguments being advanced. (Hyde, 2012, p. 17)

With this, Hyde brings the modern challenges of designers into view as perhaps not unfamiliar territory after all. Is it possible that the designer’s ethical dilemma of representing multiple conceptions of values and virtues in their creations is a parallel of the everyday speaker’s dilemma of narrating (building) a story or argument for another communicator? For Hyde, the answer appears to be a resounding *yes*, and this is made possible through creation of “the opening of a dwelling place where, with the help of language, a knowing together with others...can happen” (2012, p. 22). Hyde further expands the notion of *knowing together* in tracing the roots of conscience, or *con-scientia*, Latin for the process of “knowing together.” Where today conscience is often imagined as an inner voice guiding the way of an individual, Hyde understands it as a calling for architects (of narratives *and* of museum exhibits) to foster openings where knowing-by-doing-together may take place through language.

Remarkably, Schön’s meta-language of design, where designers in part *do* design by conversing together about the language of design, resonates closely with Hyde’s proposition of

knowing together as a way to do design. Both foreground the importance of language and the process of communication in the conceptual phase of design, and both engage others in those communication processes. Where they differ, though, is the *who* of the other. For Schön, a primary conception of design is the doing of a profession; in other words, design begins with and is primarily rooted in discourse with other professionals and the situationally relevant materials of the profession. For Hyde, and also for Arnett, Fritz, and Bell, design begins with and is primarily rooted in the ground on which the other stands and takes place “in the midst of our daily practical activities, or what is termed here ‘the everyday world of know-how’” (Hyde, 2012, p. 23). It is through this everyday, contextually bound world of know-how that communication ethics also resonates with design practice, as communication ethics “remains tied, from its very conception, to learning, adaptation, and change” (Arnett et al., 2009, p. xx).

To bring communication ethics full circle with the present challenges of designers only requires revisiting Redström’s challenge to re-define *use* as a way to describe “what people *do* rather than who they *are* with respect to a design process” (2008, emphasis in original). In other words, *users* are not simply users in the present sense of the term, but rather *do-ers*, and specifically *do-ers who best know how*. Out of this shift in perspective evolves my second research question:

- 2) What sorts of common ethical grounds do the fields of communication and design share that afford opportunities for each separately and together to engage in bringing about democratic change with MOSI and the MOSI community?

As a way of unpacking the related concepts of common ethical grounds and democratic change, first I point to the ideas of communication ethics as referenced earlier from Arnett et al. as well as Hyde, where an ethical framework rooted in communication “attends to nuance – not only

what is good, but what is the right amount at the right time in the right place – knowing full well that the right answer requires us to make a judgment each time” (Arnett et al., 2009, p. xx). This approach “acknowledges the public presence of multiple competing goods” while at the same time “permitting persons to function in the public sphere with those of differing maximal positions” (Arnett et al., 2009, p. xvii) by taking a stance of learning about the other through language. This situated decision-making resonates closely with the reflective work required by designers, particularly as they go about inviting ideas from stakeholders and communities that are likely to have widely varying positions on what constitutes the “best” public good that should be attended to during design. Here the common ethical ground, for example, might emerge as a communication process that attends to the situated balancing of multiple competing public goods by providing a minimal set of agreements or understandings on which joint specification of the conceptual design could then flexibly move out from (see Arnett et al., 2009; Hyde, 2012; MacIntyre, 1984; and Herbst’s [1976] minimal critical specifications). This process-oriented common ethical ground, then, connects with the idea of democratic change in that it provides a way for many persons with many different and perhaps competing positions to participate in the *milieu* of ideas put forward for attention during design processes. Fundamentally this is also a central goal of Participatory Design, though as discussed earlier often one that brings about an asymmetry of roles through designers’ aspirations to uphold an ideal of “participation.” In this dissertation project I did not seek to create yet another set of ideals for designers to aspire to, but rather sought to grapple with the challenges of exploring new forms of situated communication and design practice at MOSI through research that was “*with, for and by* persons and communities, ideally involving all stakeholders both in the questioning and sensemaking that informs the research, *and in the action which is its focus*” (Reason & Bradbury, 2006, emphasis

in original). It is this idea of *with, for, and by* all stakeholders that constitutes the center of this project's concern for democratic change to be brought about through design processes for the Idea Zone.

In linking concerns of communication ethics with concerns of design practice, where both are interested in ways of learning (knowing) about the needs and values of others, I have attempted to root the everyday practices of each (design and communication) in the other while also providing theoretical links for exploration of those practices. Purposefully, the focus of this link is rooted in conversations, in openings, and in building shared ground through a stance of learning – all of which are key dimensions of the World Café's designed discussion format. The next section builds on the possibilities of rooting design communication practices in communication ethics by linking the shift in museum design work to the evolving social roles of museums and their communities.

The Evolving Social Roles of Museums

As museums in general and science centers in particular have moved from spaces containing curated things to places of human interaction and informal learning, so, too, have the approaches to designing the spaces and even the exhibits within them changed. No longer are scientific objects such as dinosaur bones always and simply locked behind closed cases with labels beside them that describe their original place of discovery. Instead, exhibits are intended to do more than entertain (Allen, 2007) and often are designed essentially as starting points for further inquiry that perhaps might even take place later outside the museum. One striking example of this was MOSI's *The Amazing You* exhibition, which included a number of exhibits related to the whole lifecycle of humans from birth through death. In one exhibit within the exhibition, the effects of smoking were demonstrated on overall health and particularly the lungs.

Not only was this information offered as a learning opportunity for visitors to see first-hand these effects, an explicit goal of the exhibit (and not incidentally also the exhibit's sponsors, an insurance company) was to persuade those visitors who smoked to *stop* smoking. This goal was even built into the exhibition's evaluation framework such that the sponsor asked the museum to conduct a survey asking visitors whether they actually did quit after seeing the exhibit (Conley, personal communication). The point here is not to ask whether museums or science centers "should" take on such a role in society, for they already can and already do. Rather, the idea here is to understand how science centers go about understanding and learning about their relationships with visitors, with non-visitors, and with various stakeholder communities, and also to understand how science centers redesign themselves and their exhibits in an effort to be viable and responsible cultural stewards of science. To do this, I begin first with the broader patterns of museum inquiry into participation and relevance, and then move inside the walls of the science center to consider primarily two competing models that provide a productive tension to draw upon in moving beyond the current conception of how museums participate in society, and how society participates in the museum.

Particularly in the last few years, museums have moved out beyond the "cabinet of curiosities" model from Renaissance Europe, where interesting *things* were kept in small cabinets in a person's home for *private* enjoyment, and as The Amazing You example above demonstrates, have shifted to actively attempting to shape the lives and social experiences of *other people*. Attention to museum's recognition of this can be seen in a number of places relevant to and arising from the community of museum professionals, and particularly in the way they look at visitor's relationships to the museum (Allen, 2007; vom Lehn, Heath, & Hindmarsh, 2005; Rennie & Johnston, 2007; Heath & vom Lehn, 2008). Though I will further develop this

idea later, it is important to note this shift is not unique to museums and cannot be attributed only to developments there. Rather, this shift may be seen as part of a larger pattern arising within other areas as well, including the practice of design.

In the shift from a focus on things to a focus on people, museums have also shifted what it is they use in determining, for example, future organizations of exhibitions or designs for new exhibits. Beginning with early visitor studies in the 1920's and moving to visitor research in the 1970's, museums were then primarily interested in "knowing their audiences and their leisure preferences, ... learning how visitors behave during their visits, and what they learn" (Hauser et al., 2009). This functionalist approach to planning in museums had certain benefits but also a number of problems, including a substantive break between visitor needs and museum planning efforts (Hauser et al., 2009). In other words, the museum, in so far as it conducted both the planning of the exhibition and also the evaluations of it, left little room for participation of visitors or other stakeholders in designing future possibilities. In this sense, museums were largely still curating things despite their attention toward visitor behavior.

With time, and as museums became a scene where learning was seen as a primary activity taking place there, museums began to draw on ways of seeing that allowed them to move beyond the unit of a "visitor" to imagine not only new participants or stakeholders but also new forms of participation for themselves (the professional museum community) and for others. Questions being asked in the professional museum community more recently, for example, include: What role do museums play in social change ("Past General Conferences- ICOM," 2013)? How can museums become more "inclusive" and what does participation mean ("Scope & Concerns | Our Focus | The Inclusive Museum," 2013)? How can our museum become a "museum without walls" (see Malraux & Gilbert, 1953), or at least fairly construct places that

are outside the walls of the museum (Davis & Huang, 2010, p. 3803)? Indeed, the Northern Virginia Children's Science Center today has no actual museum building but yet is conducting a series of "Museum Without Walls" programs that include hosting "Mobile Labs Family Science Nights" in their local community where parents assist their children in science lab experiments ("The Children's Science Center," 2013). Of course, while most museums which draw on Malraux's "museum without walls" concept (see Malraux & Gilbert, 1953) do actually have physical walls, one way to see this shift is to consider how museum staff are appropriating and organizing around this image through everyday language in an attempt to "break down the walls" between their museum and its various communities.

Having looked very briefly at the shift "outside their walls" (or to have no walls!) that science centers and museums have made, it is helpful to move back inside the museum to understand what sorts of studies are conducted today and what more recent conceptions of the planning/evaluation cycle look like with an eye toward informing the shape of them in the future.

Planning the Science Center with New Forms of Participation, Media, and Design

As information technologies and new forms of media have diffused into everyday life, so, too, has interest grown in the everyday settings where they are used and take place (Dourish, 2006). From Castell's keynote speech at the International Council of Museums (ICOM) where he suggested that museums could be sites for reconnecting our society's fractured communication systems (2001) to Sherry Turkle's warning that we have already begun a "flight from conversation" and are comfortable being "alone together" with people while using our mobile devices (Turkle, 2011; Turkle, 2012), the stories of new forms of media (including 3D printing) are still being told. Importantly, this also means the situations where new and old media will take

place are open for shaping, as are the ways we can see and design those media and associated communication processes.

For museums, like their form of curation, media have progressed from static, archival forms of things placed on shelves to more fluid forms of media, including even “wet labs” in the science center where media may be biological cells or organic material. Along with this pace of change, and particularly for science museums in their need to keep pace with the advanced rate of scientific change (Hauser et al., 2009), new ways of exhibition and exhibit planning have become necessary to remain relevant to and engage their communities (Allen, 2007; Hauser et al., 2009). In the past, this planning has typically taken two primary forms: research-based planning and evaluation-based planning. In short, evaluation-based planning uses surveys and other related tools to evaluate the effectiveness of an exhibit or exhibition and then uses those results from the present as a springboard for future designs. Research-based planning in museums, on the other hand, looks more for the underlying causes of a present condition as a way to understand in detail the causes of those conditions. Hauser et al. (2009) argue that both models have their places but that the evaluative model is more often implemented as it essentially creates results that may more directly be applied to design efforts. In part, this has led to a turn toward design-based research as a way to integrate evaluation and research into situated plans and future designs. This “design turn” is not unique to museums but has become an important focus of many recent studies in museums, and particularly in science centers with their progressive media forms that are often themselves highly technical or engineering-related and by extension already rooted in engineering design traditions; computer-based interactive exhibits, exhibits that engage visitors through their mobile devices, and 3D printing exhibits are but some examples of these.

This turn toward design and the social dimensions of learning in museums involved a shift toward a perspective of the museum as a place for learning (Gregory & Miller, 1998), and designers drew on this perspective with a focus on “interaction” and “engagement” of visitors with exhibits or exhibitions as a way to foster that learning (Hindmarsh et al., 2005). Hall and Bannon, for example, developed a series of design guidelines to be used by designers in the creation of interactive exhibits developed for children’s learning (2005). Similarly, in her work at the Exploratorium, a science center with a stated mission to “change the way the world learns,” Allen noted the challenges of connecting research, evaluation, and design in a way that can ongoingly sustain the engagement and interaction of audiences whose various visits may be focused on things other than learning, such as leisure activity (2004). Related to visitor experience but approaching it from a different direction are studies on the larger museum space. These efforts tend to still consider individual exhibits or exhibitions and the interactions taking place there but primarily focus on and problematize the relationship of a museum designer’s creation of space and the visitor’s appropriation of that space as a more personal place. This is similar in spirit to the distinction between *a house* and *someone’s home*. Ciolfi and Bannon (2007), for example, draw on spatial concepts from the field of interaction design to understand the ways visitors experience the museum space and move within that space in relation to an interactive museum exhibit they designed. Davis and Huang, in their article *Museums as Place*, argue that the successful design even of whole museums may hinge on the museum’s ability to balance “the dynamic interaction between people and place – the creation of the cultural landscape” (2010). It is interesting to note here that Davis and Huang use “*creation* of the cultural landscape” in contrast to “recreation” or “representation,” as they take museums as a place where culture and meanings are made.

Where these studies and others have primarily focused on interaction between a visitor and an exhibit or exhibition, interest has recently opened up toward the broader experiences of a visitor and studies now consider more than only interaction between visitor and object or environment. This fits also with the design turn and concern for more than “interaction” only. For museum design, “experience” takes on different forms here, often as a way to foreground the importance of attending to the ecological whole of a visitor’s interaction, similar in spirit to the move in design practice from “interaction design” to “experience design.” In one study, Heath and vom Lehn even discuss how visitor interaction with an exhibit may in some cases actually disregard the *museum’s* disregard for them as an active creator of their own meaning by framing them as a “spectator” (2004). In other words, the visitors in their study who found the museum was not open enough in its consideration of their individual needs clearly went beyond the institutional suggestion to be a passive spectator and instead navigated the museum in ways that made sense for them. In another study, vom Lehn, Heath, and Knoblauch opened up the idea of visitor interaction to include the experiences between and among visitors who may or may not know each other but who find themselves, for example, talking while queuing up at an exhibit. One key conclusion they drew from their observations was “how the organisation of the conduct of visitors rarely reflects the models and theories that are found in the literature in museum studies” (2001), pointing to the need even for new models and theories for museum visits and exhibit design.

Perhaps one starting point for a new approach would be through a shift in the unit of analysis. Moving from exhibit to human interaction, or to personal experience, or to museum/space/place, or to culture would certainly be a shift, yet the communication processes underlying all of these often are not attended to during the evaluation/research/design cycle.

When the communication processes are attended to, it is often either through the perspective of the discipline or technology at hand, such as the communication process undertaken in the use of a new interface designed through human-computer interaction (HCI) principles, or conducted as a post hoc/post design process, such as a visitor survey or interview. The challenge, then, with translating research and evaluation into meaningfully different designs is further amplified as multiple disciplines and professions contribute to a design (such as museums professionals, designers, and HCI researchers) must synthesize their findings and integrate them, all in an effort (presumably) to meet the various needs of many visitors. Out of this challenge and by integrating the four theoretical areas discussed here arise my third and fourth research questions:

3) If communication and context are central to design process, how might the metaphor of the World Café be generative of new metaphors and possibilities for participatory design of the Idea Zone in its attention to setting contexts for group communication?

4) In context of the other three localized research questions, what does the World Café in a participatory design context mean for the larger environment of MOSI, and for science centers more broadly?

With the initial stage set in Chapter 1 and with the literatures and research questions developed in Chapter 2, in the following chapter I discuss the methodological frameworks, the data, and the analytical stance I took in this engagement with MOSI and in exploration of the research questions.

Chapter 3: A Multi-Method Approach for Designing Communication for Design

I beg you, to have patience with everything unresolved in your heart and to try to love the questions themselves as if they were locked rooms or books written in a very foreign language. Don't search for the answers, which could not be given to you now, because you would not be able to live them. And the point is to live everything. Live the questions now. Perhaps then, someday far in the future, you will gradually, without even noticing it, live your way into the answer. (Rainer Maria Rilke, 1903; from *Letters to a Young Poet*)

Always the more beautiful answer who asks the more difficult question. (Attributed to E.E. Cummings)

Situating the Choices of Methods

The choice of method for this project was an important point of entry into the ongoing organizational work already in play at MOSI at multiple levels or layers of the organization. One layer, for example, and perhaps the most immediate, is the practical participatory design work to redesign the Idea Zone. A layer “above” this immediate redesign work might include efforts to make sense of the changes brought about by the Idea Zone redesign within the larger environment of MOSI for both staff and visitors. Yet another layer above this might be a rooting of MOSI within its community, which is to be informed by the practical participatory design work. And yet another layer of the work might include MOSI's culture and history as a learning organization. And, somewhere within all of these layers is, of course, this dissertation work and the expectations of research that are part of a dissertation. This sort of complex layering in applied projects often lends itself to a combination of multiple methods in action research projects as deemed appropriate depending on the aims of the people involved (Reason & Bradbury, 2001).

Said another way, the scope and interconnectedness of MOSI's design project as well as this dissertation were such that no single method or framework might offer everything that was necessary for a successful participatory redesign of the Idea Zone. Rather, as described in the opening chapter, there was serious work involved in exploring how the redesign work itself might even be started. Through that initial process of exploration and reflection prior to the conceptual design phase (or perhaps as part of the conceptual design phase), a number of possibilities for methods and frameworks emerged that resonated with the stakeholders and that seemed to offer ways forward. More in retrospect than having been prescribed at the beginning of the project, those layered frameworks could now be situated as: the World Café as a method for participatory redesign of an Idea Zone within the context of an action research project in a large and complex science center. To unpack this layering of method, in this chapter I begin with an introduction to the outermost layer (action research) and then move to the innermost layer (World Café) before moving to the middle layer that connects the two (participatory design). Of course, these layers are not as separate as this description would suggest, for in many ways my focus alternated among each layer as the project developed and new situations emerged. After covering each of the layered methods and relating them, I will then discuss the "data" that was "generated" in the research as well as the stance that informed my analysis.

Integrating Action, Research, and Participation

In attending to the context of prior studies at MOSI (Steier & Jorgenson, 2003; Steier & Ostrenko, 2000) and in keeping with MOSI's culture of participatory inquiry (Jorgenson & Steier, 2013), this work took place in the spirit of and from the perspective of action research (often referred to as AR). With a fundamental stance of research *with* (contrasted against

research *on* or research *for*), action research offers a framework of inquiry that “can help us build a better, freer, fairer society through collaborative problem analysis and problem solving in context” through “the conjunction of three elements: action, research, and participation” (Greenwood & Levin, 2007). In similar spirit but different language, Reason and Bradbury suggest a working definition of action research as “a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory worldview which we believe is emerging at this historical moment” (2001). Where both of these perspectives bring together *action*, *research*, and *participation* into a way of engaging practical problems in the world through research, those three elements in other research methods are often done by separate people or not brought into scope at all. In this, action research problematizes ideas and roles of “observer” and “observed” such that joint participation and reflection over time may even wipe out (or at least backstage) notions of “inside” and “outside” the research situation (Greenwood & Levin, 2007). With its reflective and inclusive approach toward change of the research frame and the situation of those involved, action research takes a stance similar to design in that it engages possibilities for change from within the system it participates in. This approach stands in strong contrast to other research methodologies that attempt to stand outside a system to observe it at a distance without introducing “outside” change, and allows for a systemic perspective where the observer is part of the system and participates in its ongoing change. Action research does not take the integration of action, research, and participation lightly, but rather engages seriously in ongoing reflection with the participants in ways that attend to the complex challenges that emerge through such an engagement, all the while approaching these challenges through a joint focus with the participants on learning and knowledge production. In action research, this ongoing cogenerative

process is conceived of as a “rolling discourse, an ongoing dialectical cycle” (Greenwood & Levin, 2007) where the goal is not to resolve conflict but rather to keep the problem open for the organization or participants through focus on broad goals and a working set of rules for the debate.

Both the starting point of action research and also its goals of engagement are strongly connected to the practice of design. In terms of starting points, in the same way that design begins with (and is) framing the problem at hand, so the starting point for an engagement rooted in action research is to define a problem for resolution (Greenwood & Levin, 2007). For action research, this entails (as introduced above) a letting-go of binary ideas about roles of *researcher* and *researched* and instead calls for engaging in an ongoing dialectical cycle that alternates between and cycles among pairs of action/reflection. Elden and Levin describe this empowering participation between insiders and outsiders as *cogenerative dialogue*, where insiders and outsiders “operate out of their initial frames of reference but communicate at a level where frames can be changed and new frames generated” (1991), and Greenwood and Levin describe this sort of learning as done through “creation of arenas where discussion and collaborative research facilitate cogenerative learning” (2007). From both descriptions, perhaps what is most striking is the interconnectedness of *learning* and *dialogue*, and the role of an action researcher in bringing about spaces with contexts for cogenerative frames of learning to emerge through dialogue. These spaces or arenas for dialogue are not intended to guide a simple arrival at consensus, but rather should be designed to foster and maintain conflicting frames of reference through sustained communication such that change may be brought about in the form of new combinations generated through different conceptualizations of alternative pasts and futures.

Similar to its starting point, and also paralleling design engagements, action research takes as a goal or an “ending” point (but not as a stopping point) the evolution of the jointly defined problem to a situation where the “solution,” reached through cogenerative learning, fits with the conditions or context of the problem and provides a sustainable way forward. In other words, the initial “goal” in action research is not to solve the immediate problem at hand so that the researcher may move on to find another problem needing resolution, but rather to begin the process by jointly defining the problem and to learn together over time what constitutes a sustainable resolution. Greenwood and Levin describe this as “the results of an AR process must be judged in terms of the workability of the solutions arrived at,” where “workability means whether or not a solution can be identified as a solution to the initial problem or whether revision of the interpretation or redesign of the actions is required” (2007). In other words, solutions generated through AR are always context-bound, require meeting the needs of multiple stakeholders, and are both dependent on and consequential for real people in real situations. Taking this dependence and context-boundedness even further, action research sees and understands “truth” as always provisional, always challenged by new sense-making abilities of the group.

It is from these ideas of action research that I drew heavily for the engagement with MOSI, and that also gave shape to the pattern of my work with MOSI and the community. At the same time, though, this project was not intended to be a “pure” action research engagement and the pattern of work was not necessarily designed to explicitly follow an action research model. Yet, as Greenwood and Levin note, the choice of technique and work forms in action research projects are context dependent and lean toward both reflection-on-action and reflection-in-action (2007). In these ways and in others, this dissertation was certainly in the spirit or genre of action

research and would resonate with practitioners of action research, particularly those with practice in participatory design, as both share strong roots in democratic processes designed to integrate participatory planning in collective actions for change. In the next section I briefly develop this connection further and root participatory design methods broadly within the context of action research methods and communication.

Participatory Design as a Form of Action Research

As noted by Greenbaum and Loi (2012), there are a number of striking parallels among action research and participatory design including their concerns for mutual learning, the practice-based orientations of their theories and techniques, ways of equalizing power relations, and fundamental concerns for democratic practices. Another shared concern of both action research and participatory design, and one that informed the choice of drawing from both methods for this project, are issues of *participation*. In a parallel to action research's shift from research *on* to research *with*, Participatory Design is most often “done *by, for, and with* people who are using some kind of digital technologies” (Greenbaum & Loi, 2012, emphasis in original). Another key parallel among AR and PD are their histories and roots, both growing out of worker's struggles to establish political equality, social justice, and more democratic ways of working in the face of rapidly industrializing economies and shop floors. Where PD often cites its roots in the 1970s with Scandinavian worker efforts to become engaged in designing their increasingly technical work (Ehn, 1993; Gregory, 2003; Grudin & Pruitt, 2002; Greenbaum & Loi, 2012), AR's roots may reach back to the 1940s with the early work of Kurt Lewin and spans a number of countries or areas including Scandinavia and Norway, the United States, and many rural and urban locales in other countries throughout the world (Greenwood & Levin, 2007). With these substantial histories of applied work, both AR and PD bring to the table many

decades of focused work that has brought about ecological and holistic change through attention to democratic issues of participation and challenges of equality.

In addition to their histories and underlying values, AR and PD also share ways of working that resonate strongly with one another. Indeed, an underlying tenant of both disciplines is their focus on and commitment to practice. One of these connections in their commitment to practice is a focus on communication, and in particular communication that conveys while also maintains different ways of seeing. Similar to how Norman describes personas (2006) and how Fulton Suri and Marsh (2000) describe scenarios as communication “tools” that allows designers to reflect on how an imagined future person might respond and to then change the design direction accordingly, AR methods and techniques are centrally concerned with mutual learning through action-reflection cycles about the joint needs of those in the situation, and the “enabling mechanism for this is communication” (Greenwood & Levin, 2007). In this way and in others, both AR and PD take as a necessary (but not sufficient) condition for their success a focus on what communication *does*, and perhaps even what it *means*, for those involved in and affected by the work. Indeed, as Greenwood & Levin note, AR often works both ways, moving from the generation of new meanings into collective action, as well as from action into the generation of new meanings through collective reflection (2007).

As a way of transitioning to the next section where I discuss communication as a form of social change in design, I would like to briefly revisit and make a connection of the participatory work of AR and PD to the communication ethics work of Arnett and Hyde. In both AR and PD as with Hyde and Arnett, each seek to foster the emergence of ethically responsible forms of social change through reflection and learning together, and though to different degrees, all acknowledge they draw on communication processes as their central way of going about that

joint reflection and learning. By drawing on these different but interrelated areas of practice, theory, and method, one goal of this project has been to not only theorize about the role of communication in design, but also to practice its change in ethical and democratic ways.

Designing Communication for Change

On the whole, this engagement with MOSI involved potential change of many sorts and from many perspectives: change for patterns of communication, change for design process, and even change for the change itself. By seeing change this way, I mean to suggest that my participation and “intervention” in the situation at MOSI not be either taken for granted or forgotten, but rather foregrounded as part of the work that MOSI and I jointly undertook together. The patterns of communication were different than they otherwise might have been if I were not involved, as was the process for design; even the process for bringing about change was different in part through my involvement. In this respect, and in the same way that a primary form of AR and PD evaluation is against the situation or use for which the design is intended, so too did I compare and evaluate the work I did and the change I was involved in bringing about against its fit to the scene of my inquiry at MOSI. Schön might frame this approach as the work of a reflective practitioner (1983), a designer who engages the materials at hand to create new possibilities and possible designs while also testing those possibilities against the moves made so far *while still in the situation*. It is the situated, in-action work of reflection-on-action – appropriately called reflection-*in*-action - that Schön argues may become a transformative process generative of new possibilities. The parallel here of reflection and action within the frameworks of AR and PD, and exemplified by Schön’s work of bringing these ideas together in some ways, provided intriguing opportunities to engage the parallel scenes of communication design work and the Idea Zone design work.

In other words, one goal of this project was to make a contribution to the design situation at MOSI through design of communication process(es) taking place during the Idea Zone's conceptual design, and an important dimension of the value of my contribution was to be weighed against the fit and usefulness of it for designers, the community, and others involved in the situation. In Krippendorff's terms, this might frame me as a designer-researcher if "the task that distinguishes designers from researchers is their ability to materially intervene in support of future practices that will be meaningful to their stakeholders" (2008a). Tang, in his dissertation work of understanding how design teams use their shared spaces, also discusses these sorts of related methodological challenges of inquiring into design practice in noting that many issues cannot be determined a priori due to, for example, how key issues emerge in, through, and during the creative process itself (1989, pp. 5, 43). As a designer-researcher, my material involvement and meaningful contributions to stakeholders may have become possible by engaging theories relevant to the situation and working through them in practice, then folding back what is learned into the on-going practices and their relevant theories. The bringing of a communication stance to Schön's perspective on design in this way resonates with Aakhus' 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, 2007). In so far as design is about framing a problem at hand (Krippendorff, 2006; Schön, 1983), attending to the communication practices involved in framing a problem may be a powerful leverage point for learning and change within a design situation.

In the same way that communication theorists have begun to recognize that their theorizing has a significant impact on the lives of those whom they theorize about, so, too have

designers begun to recognize the importance of attending to the concerns and values of others during the creation of their designs. For some communication scholars this concern is often discussed in terms of transmission-oriented theories of communication and ritual-based theories of communication (Carey, 1989). Where transmission-oriented theories of communication might hold that theories are simple descriptions or explanations about how *the* world works, ritual-based theories of communication, in contrast, hold on to the meaning-making and sense-making processes of not only the theorist and the conceptual theorized other but of actual people as they navigate their individual yet shared makings of meaning and experience. In other words, the acts of practicing and theorizing of design and communication share a fundamental challenge in accounting for the static “pictures” or theories of the world they create through the lenses or frames of their worldviews, while also allowing others to move fluidly between their own forms of representation and the perspectives of multiple observers acting in and creating their worlds. In this way, both designers and communicators have begun to see the processes and products of their efforts not as singular events or outcomes but as changes in the lives of others and in ongoing processes for which they are ethically responsible. This is particularly relevant for design of learning spaces such as the Idea Zone. In her 2007 article on dealing with a constructivist dilemma when designing science center exhibits, Allen points to the key issue of designing what are essentially static exhibits – even if there is “interaction” involved – intended to foster individual learning for each and every person who visits it. Thus, the exhibit is supposed to be *open* for interpretation while simultaneously also “communicating” *a* specific scientific principle or concept. Though Allen offers examples where particular approaches have seemed to work well in science centers, she admits the challenge is still open for designers and visitors in figuring out how to work through the dilemma.

World Café as Ethical Framework for Action

Out of this ethical choice for working through the dilemma, and rooted in MOSI's history of drawing on the World Café and action research to engage in processes of change, emerged the fit of the World Café with MOSI's need for a participatory design framework. Created by Juanita Brown and Davis Isaacs, the World Café is a designed discussion format (Bunker & Alban, 2006; Brown & Isaacs, 2005) centered around "questions that matter" and has three primary components or constituent elements that work together: the World Café process, the principles, and patterns (Brown & Isaacs, 2005). In addition to the three interrelated constituent elements and infused across them is also the metaphor of a café or coffee shop, much as the name *World Café* implies, that developed as an image to guide the nascent explorations of the Café's creators and early participants for a new collaborative meeting form (Brown & Isaacs, 2005). The process, principles, pattern, and metaphor of the Café are covered in further detail below, along with how they work together as a flexibly designed conversational process centered around learning together.

The World Café process involves a series of evolving rounds of conversation meant to invite a sense of warmth and sharing through a café-style environment or context. Tables are often circular and arranged to seat four or five participants together and facing one another, perhaps also sharing coffee together. Markers, pens, and other drawing tools are often included at the tables along with poster board-size paper for shared reflections, sketches, or notes. Once the host begins the first round of conversation with a question that matters to the participants involved, conversation and reflective sketches evolve for a period of time at each table, after which one person stays at each table to keep the conversation going and the other participants depart the table to each join in continuing a conversation that took place at another table. For

each new round of conversations, a new question that matters may be offered as a generative prompt to build on the previous conversations, or the host may choose to begin again with the same or perhaps another question that emerged out of the conversations. This cycle is repeated three or more times with each round lasting approximately 20 minutes. At the end of these small-group rounds, a “harvest” or sharing phase begins where all tables are invited to share their conversations and insights with the larger group. As with the small groups at the tables, the large-group harvesting phase often involves a graphic recording process to reflect the insights visually, perhaps through notes or sketches on a whiteboard or post-style paper at the front or side of the room.

The World Café process is informed by seven principles not meant to dictate behavior but rather to offer guides for the process and conversations that evolve out of it with a frame of mutual learning and sharing of patterns. As developed by Brown and Isaacs (2005), these principles include: 1) setting the context; 2) creating hospitable space; 3) exploring questions that matter; 4) encouraging everyone’s contribution; 5) connecting diverse perspectives; 6) listening together for patterns and insights; and 7) sharing collective discoveries. As a practice-based way to put living systems theory into action, these principles can immediately be seen in the World Café process described above, and in a way the principles may be seen as the “seed” for each individual Café “tree” as well as for an ongoing series of Cafés building into a “forest” through conversation. Perhaps this is one of the Café’s features that have already made it an integral part of the way MOSI today fosters its culture of participation in meeting many different sorts of organizational challenges. It is important to note that the Café principles are relevant for the host as well as for the participants, though hosts and participants might have different ways of attending to each principle. In the first principle, for example, the host may help set the initial

context for the Café through the invitation and then through arrangement of the physical space, while the participants might support the principles through the conversations at their tables during the Café. As the seven World Café principles, both individually and as an integrated set, provide the foundation upon which World Cafés are hosted, I cover them further in depth here while also offering an expansion of the principle as it relates to MOSI's community World Cafés for design of the Idea Zone.

Set the context. In attending to Café context, part of the idea is for the host both to lay out some friendly rules of play while also allowing for flexibility and different frames to be in conversation, or perhaps even at times in conflict. That is, the broad goals of the group's time together should be proposed while also noted as being provisional and with space for collective insights to emerge through dialogue. For MOSI's Cafés in this project, for example, the broad contexts of the Cafés were designed (and stated) to note MOSI's desire to take the needs of its community seriously and to invite their (the community's) ideas for design of the Idea Zone. In the same way that action research is seen as holistic yet context-bound (Greenwood & Levin, 2007), so are the insights and connections of Cafés somewhat latent and tied to both the context that is set and the context that emerges through the course of the Café. Attention to Café context, then, is required not only by the Café host as part of his or her initial opening of the Café and during its course, but also for the relationship(s) assumed by the host through the invitations sent to participants, for the host's participation in the planning meetings that take place before the Café, and for the post-Café reflection meetings that take place after as well. Additionally, Café design calls for attention to context by participants other than the host as well, with an expectation of the host to also attend to and perhaps even prompt changes in contexts that emerge through the course of the Café. As I will describe further in Chapter 4, this attention to

context played out in my hosting of the Café in trying to be mindful of participants' time as the Café neared its ending point. A lightning storm had recently passed through our area with strikes hitting close to MOSI so I drew on the idea of a "lightning round" to help move the Café along without seeming to rush things and without shutting down conversation.

Create hospitable space. Creating hospitable space for the Café takes place in multiple forms and includes the physical space, the conceptual space, the soundscape or aural space, and perhaps even the sorts of language(s) or symbols that might be "in play." For example, a part of the MOSI Cafés for design of the Idea Zone involves a context of Participatory Design, but the practice of PD will likely be unfamiliar to the community members or anyone who is not a practicing designer. Taking this a step further, if traditional PD is role-based and an effort is being made to move beyond that sort of arrangement, how might the Café offer a creative space to play with new forms of PD without the participants even knowing the boundaries of their roles, or their relationship to the Café? This sort of question connects to Wenger's idea of *place as process* (1998), particularly as it relates to design of a learning space like the Idea Zone, where he points to the interconnectedness of the space where design is done to the possibilities that emerge through that process/place. Hyde also offers something to go on in creating hospitable Café space with his idea of *openings* that may be created through attention to, among other things, the language drawn upon when designing a conversational "dwelling place" (2012). Coming from the other direction as Arnett who went from language to design, Christopher Alexander's ideas of *pattern language* (1977) connect how the diversity of natural or designed arrangements of space at many levels of scale give rise to a "language" of patterns that designers may draw on for their "conversations" with other designers and with their design situations. As a preview of how creating hospitable space played out in the Cafés for this project, and to build on

the idea of *place as process*, the Cafés in this project demonstrated how the idea of hosting Cafés in the Idea Zone (prior even to actually hosting one) developed into a whole new way for MOSI staff to think about the process of prototyping new exhibits and exhibitions. In other words, even the *idea* of Cafés in the Idea Zone became a “hospitable space” during a planning meeting Anthony and I had in the Idea Zone, and out of the “place” of that idea emerged new organizational processes.

Explore questions that matter. More than their ability to offer opportunities for turn-taking, questions can be powerful ways to maintain movement and differences of frame through such openings for serious play as “how might we...?” and “what if we...?” Particularly for PD engagements, questions offer ways of thinking about possible futures currently not in existence, of testing new ideas that might be seen by some as impossible at that point, and on reflecting on design choices made to that point; the question-asking nature of personas and scenarios as identified by Norman (2006) also demonstrate this. To take this principle a little further, and to play with the ideas of Ehn (2011) and Latour (2005) for design, the *questions that matter* for exploration, then, need to include the *matters of concern* for the community and others as well as for the designers. Indeed, in some ways this is the critical question of participatory design, or of any design: whose needs matter? The World Café allows this question to be answered, perhaps by another question, by even allowing for exploration of the “matterness” for the participants as a collective group. In terms of action research, this exploration of important questions can connect to AR’s process as “a rolling discourse, an ongoing dialectical cycle” (Greenwood & Levin, 2007) that also helps set the context of the Café as one of learning and knowing together. Connected to the idea of learning and knowing together is an explicit expectation of the host to collaboratively develop the *questions that matter* and then to explore them in ways that attend to

the needs of the particular Café gathering as a whole – not for any one person or stakeholder, including the host. For example, the questions that matter are likely to be very different across any two Cafés, though it might be that a particular group’s way of exploring their Café-dependent questions could be similar across time. This sort of difference could be something that a host notices and draws upon as part of their Café-hosting repertoire by, for example, pushing a group into new ways of exploring their questions so as to move beyond prior patterns into new ideas. For the Cafés in this project, I learned how it was important to design Café questions that were open-ended and that built on one another in terms of time, beginning first with a “big” question for which there are no “right” answers and no specified period of time, then on to a question rooted in the present, and then with the next two questions each moving further out into the future. This approach seemed to provide space for participants to explore possibilities of new shared futures together while also offering a common starting point to begin that exploration.

Encourage everyone’s contribution. Connected to the principle of exploring questions that matter, this principle is also a central tenant of a participatory design process – indeed, of any meaningful democratic process! With its respect for the individual meanings and meaning-making abilities that people bring into the conversations they share with others, the Café takes seriously the AR principles of a cogenerative process and works to “enliven the relationship between the ‘me’ and the ‘we’ by inviting full participation and mutual giving” (Brown & Isaacs, 2005). In recalling Buber’s community work, Arnett builds on this idea in suggesting that the work involves “looking for a common ground of shared interests that might encourage a triple focus of concern for self, other, and the principles of the group” (Arnett, 1996, p. 22). The point here is not to lose the needs of individuals to only discover the needs of a faceless “everyone,” but rather to bring into focus the needs of individuals in the context of a community or group.

Not only does this principle apply to the Cafés as they are taking place, it also applies to the Café planning meetings that happen prior to the Café itself. Who is “at the table” or who is “invited” to the planning meeting can also set up the invitations to and the context for the Café, so folding the Café principles back on the planning meetings is an important aspect of a meaningful Café for participatory design, particularly in organizational settings. Related to encouraging *everyone’s* contribution, this project showed me how important it was to remain flexible with who invitations might be sent to: where invitations for the first Café went only to specific individuals pre-identified in the planning meetings, invitations for the second Café went out with an invitation to also invite others. As will be discussed in Chapter 4, the first Café was lightly attended while the second Café had almost four times the number of participants, demonstrating the power of networks even in setting up the Café.

Cross-pollinate and connect diverse perspectives. This principle foregrounds the Café’s ecological and systems thinking roots, and points to the power not only of the Café metaphor but also its pattern in practice as a *network of conversations*. Much work has been done by Castells (1996), Granovetter (1983) and others to build a case for the power of communication networks, particularly in the diffusion of innovation, and this Café principle in particular is designed to foreground the communication process work necessary to build new networks and reinforce existing ties. In terms of group process for participatory design, this principle is particularly important as it underscores the meaningful commitment to a democratic process in building upon the contributions offered at the intersection of “me” and “we.” Without a commitment to connecting diverse perspectives, a participatory design process might only be such in name rather than action. For the Cafés in this project, connecting diverse perspectives was very much related to the encouragement of everyone’s contribution. Especially when modeled as a network,

it is immediately apparent how small numbers of participants often may not provide as diverse of a set of perspectives for cross-pollination. This was literally visible during the report-outs between rounds and also in the harvesting phase when tables were invited to share with the whole Café what was learned at their particular table. Not only were butcher block sheets of paper used sparingly at each table with fewer participants in the first Café, the whiteboards from the report-outs and the harvesting phase were lightly used as fewer connections were built across tables, too.

Listen together for patterns, insights, and deeper questions. This principle points to the idea that participation takes place in many forms, and one important form of a participatory design process is *listening*. Both for MOSI's community and for MOSI's designers, this Café principle is particularly important for allowing different frames not only to be noted but for new collective frames to emerge during the Café itself. This in-Café reflection process connects strongly with Schön's idea of a reflective practitioner (1983) and Krippendorff's idea of a designer-researcher (2008a), both of whom reflect on design choices while the materials of design are at hand while also drawing on those reflections to reframe the situation for continued action. Here, the "materials of design" are conversation and each Café participant is a reflective practitioner invited to participate through listening (reflection) and deeply questioning (reframing) the group's collective design problem at hand. Through this sort of reflective action, perhaps the Café's patterns, insights, and deeper questions may also help open up or reframe the paradox of Needfinding's search for "a circumstance where something is missing" (Faste, 1987). Finally, in the context of hosting a Café for design of the Idea Zone at MOSI, this Café principle connects closely with Wenger's idea of the need for learning space design to simultaneously generate creative social ideas while also seeking to direct those ideas (Wenger, 1998). Here, in

admitting the challenges of talking about the differences between needs of individuals and needs of a group (or the “me” and “we”), designers and community members alike can both to some extent let go about “not knowing” and instead “know together” (*con-scientia*) through this principle’s roots in learning conversations. For the Cafés in this project, the idea of listening together emerged as an important way of moving to new possibilities for action for both the MOSI staff in listening to the community (and vice versa) as well as for the MOSI designers and staff to listen to one another. More detail on this is developed in Chapter 4, though the key idea here is that this Café principle and the metaphor of a convivial coffee shop afford the emergence of a different communication pattern than might normally be going on in an organizational setting of design.

Harvest and share collective discoveries. The seventh and final Café principle is a critical one for transforming the collective knowledge and design needs discovered through the Café. At the same time, this principle may also be one of the most challenging to uphold in terms of a participatory design process. The harvest phase, often taking place toward the end of a World Café, should be designed so as to bring forward, in an actionable way, what was learned through the networks of conversation taking place at the tables and through the Café’s movement. A guided synthesis is often done to “bring it all together” and recorded in some fashion, but shaping this in a way that the Café’s design process becomes recorded as a “product” for future processes by the designers, the community, or the organization is a non-trivial challenge. MOSI’s need for a Café “product” that lives on after the Café itself concludes was discovered during the course of this project and is discussed both as part of the analysis as well as the future work. Related to this principle, the Cafés in this project highlighted how in an organizational context it is not only the host who shapes these discoveries for future action but also the

organization's leadership. As a preview of further detail in Chapter 4 and 5, I learned how conditions created by leaders in an organization also play a major part in carrying innovative ideas forward (Kelley & Kelley, 2013, p. 200) as the organization goes about its everyday work.

These seven principles, individually and together, lead to the third constituent part of the World Café: patterns. The Café process, through its principles, is intended to foster conversations that “simultaneously enable us to notice a deeper living *pattern* of connections at work in our organizations and communities – the often invisible webs of conversation and meaning-making through which we already collectively shape the future, often in unintended ways” (Brown & Isaacs, 2005; italics in original). In being mindful of the context they are entering and intervening into, World Cafés are designed and organized to build upon the already ongoing sensemaking patterns and processes of groups that may grow its network of conversations into even networks of networks of conversation – similar to the forest analogy. Through these connections emerge new possibilities for new connections and with this the collective (and individuals within the collective) may find new possibilities for action through conversation. In fact, for Brown conversation *is* action (Brown & Isaacs, 2005), and this stance on situated action (Suchman, 1987), standing in stark contrast to more structured forms of future-oriented planning and design, is a primary feature of the World Café that drew me to it as a choice for this project's method.

World Café as Method for Participatory Design

The choice of a World Café for this project is an intentional one meant to attend to the needs of MOSI, its designers, the Idea Zone participants and stakeholders, and the broader community. Though action research would and could have also provided a solid framework alone for the central method, I am also interested in the power of “conversation as a core

[organizational] process” (Brown & Isaacs, 1996) within the conceptual phase of design and seek to show that attending to the design of a conversation for design is productive both as a communication and a design activity. By productive here I mean to imply *of value*, where something of value might even be learned through a “successful failure” in attempting to attend to the communication design work even if it does not play out as intended. Strikingly, designers with an eye toward communication have framed and explored the metaphor of *design as communication* (Schön, 1983; Norman, 2004; Krippendorff, 2006), while communication practitioner-scholars with an eye toward design have framed and explored the metaphor of *communication as design* (Aakhus, 2007; Thompson et al., 2014). This project is intended to bring both sets of theories and practices literally into conversation to develop them in an integrated way as a core organizational process for participatory design.

The method MOSI and I drew upon for this study was to conduct two World Cafés at MOSI in the Idea Zone using the principles, process, and pattern as described above. Participants in the Cafés included MOSI leadership and staff, members of the Idea Zone staff and design team, MOSI board members, MOSI government and business partners, and other members in similar capacities or relationships with the museum. Additionally, and perhaps most importantly, the Cafés included broader members of the community who also have a stake in ideas for the Idea Zone and its design. These community members may have themselves or their children been visitors to the museum or the Idea Zone in the past or potential future, were from the surrounding local communities including nearby neighborhoods or the University of South Florida, and had similar as well as dissimilar stakes and relationships to MOSI and the Idea Zone. In this way, the natures of the stakes of community members was not specified, constrained, or restricted to only certain “legitimate” stakes. Rather, the kinds of stakes and

interests that community members could have were left open and contingent upon what they brought to the Cafés through their conversations, participation, and actions. It is important to note that the two broad groups named here (MOSI employees and MOSI community members) are not meant to form a dichotomy but are identified in this way as a parallel to the challenges often experienced by designers and those for whom designer's designs are intended: namely, moving "out of the box" of design process (Ehn, 2011) and into the public sphere.

Related to moving design processes into the public sphere, choosing to conduct the World Café inside the Idea Zone was not based on convenience or accident but rather as an explicit way to enter the ongoing design process happening there through conversation in public spaces. In terms of fit with the needs of MOSI for inviting community participation, there did not at the time appear to be a better way to inquire into the Idea Zone's complex webs of interaction and foster the emergence of *place* out of *space* (or *home* out of *house* in Hyde's terms) than to have conversations *take place* (Thompson & Steier, 2013) in the Idea Zone in the form of the Café. Further, as the contexts for design are an important part of framing the work that emerges through the process, hosting the Cafés inside the Idea Zone was also a sort of recursive move so that we might play with ideas for the Idea Zone while actually having the "materials" of the Idea Zone at hand, much in the way Schön discusses reflection-in-action. Similarly, and as noted by Steier, Mesquita da Silva, and Brown in their work in action research settings, "how we create opportunities for engaging WITH our co-researchers merits significant attention" (in press) and World Cafés in a Participatory Design frame offer an opportunity to recursively fold that attention to context back into the design work so that communication process becomes a "material" at hand for reflection-in-interaction along with the Idea Zone materials and ideas.

As a part of setting the context of the Cafés, a key organizational aspect of the Cafés in this project involved planning sessions conducted before each Café with MOSI leadership, including MOSI's President Wit Ostrenko and the Director of Innovation Anthony Pelaez. Generally, these discussions included possibilities for the Café topic, connections to ongoing work at the science center, possible Café questions, potential invitees, arrangements and context-setting opportunities for the Cafés, scheduling of times and dates, and related topics; further details on these planning sessions will be covered in later chapters.

Before offering detail in Chapters 4 and 5 on how the Café actually played out as a method for design of the Idea Zone, it is important here to situate the way the Café was put into play and the way that it was drawn upon for this project's work work MOSI. As with all methods, the World Café also has certain conventions, expectations, values, assumptions, and so on that go along it. Much of that ground has already been covered here in this chapter and elsewhere, including by the Café creators (Brown & Isaacs, 2005), Thompson and Steier (2014), Bunker and Alban (2006), and others so I will not recover it here. In relation to this, though, it is important to note the basis for this project was not that the Café had a better set of values to aspire to, or fewer assumptions made, or higher expectations for "honoring" the method than any other method, but rather that all methods involve particular ways of seeing and that the World Café's way of seeing emerged as a close fit with the needs of MOSI and of the community for a collaborative design process. Importantly, the Café's way of seeing is a shared way of seeing, much like the ways of seeing that action research affords in jointly defining a situation. Also in the spirit of action research, the World Café is a contingent process - not one of "guarantees" in the sense of perhaps other research methods where "the" method may be "applied" in a step-by-step fashion to "generate" generalizable knowledge. Rather, the World Café for this project was

put into play much in the spirit of Wittgenstein's language games (1968), as a friendly guide for shared action within an overall context of learning together (see also Thompson et al., 2014). In this way, MOSI's history with the Café and the fit-ness of the Café for the work at hand were not assumed to generate a "successful" participatory design Café by themselves. Indeed, much of the Café's entire framework is about creating *conditions* for conversations and learning – no conversations or learning are specified or legislated, though certainly in working to bring about those conditions in this project there was an expectation or at least a desire for those conditions and processes to successfully emerge. In other words, I remained skeptical not only about the World Café as a method with MOSI and with this dissertation but also skeptical about the possible emergence of these conditions and of any learning that might or might not take place. In taking a stance as an ongoing participant and a first-person action researcher/observer with the Café in this way, my skepticism was turned back into the research as one of the challenges calling for regular attention. For example, rather than asking "will the Café work to create generalizable knowledge?" I was instead asking of myself and of the community and of MOSI "how might we learn together for design of the Idea Zone?" In this way, the uncertainty became an opening for us to shape our learning in a process-oriented way together, rather than having to return to the constraints of a particular method for evaluation of "success." In some ways, then, and like an action research project, the success of each Café and of the Cafés as a whole related more to accomplishing the goals of MOSI and for designing a sustainable process (Greenwood & Levin, 2007) than to "fulfilling" the values or expectations of the Café principles – although certainly the Café values and the goals of MOSI are related as described earlier. This focus on learning and alignment of values and goals with MOSI stands in strong contrast with other methods or frameworks for Participatory Design or Needfinding such as focus groups, where

participants are invited to share their feedback or ideas on a product or prototype under development. While MOSI was certainly inviting of “feedback” from the community, what they sought as a science center and as an informal learning space was much more than simple feedback; what was sought was a learning together with the community and the World Café provided a possibility for bringing about those conditions.

Observations and Data

In addition to drawing on the World Café as my primary method, I also conducted informal ethnographic observations in and around the Idea Zone MOSI, including the physical space of the museum “itself,” and also of its conceptual space, such as the MOSI website and the museum professional community more broadly. In conducting observations at MOSI, I drew from the sorts of ethnographic methods used by other researchers in prior design studies focused on the design of tools and systems to support design work that attend to the context of the situation (see also Bucciarelli, 1988; Button, 2000; Dourish, 2001; and others) as well as the lived detail (Dourish, 2001) of the work.

A primary source of data for this project was created through the hosting of the actual Cafés described above, including conversations that took place during the Café processes, efforts to follow in the path of the Café principles, and attending to contexts related to the Café pattern. In addition to conversations emerging out of the World Cafés, other data include the processes and corresponding content (including maybe even some content that does not correspond!) that both preceded and proceeded from the Cafés. That is, the design of these Cafés began before it began and ended after they ended in so far as design has an ongoingness that calls for attending to its lack of a singular beginning (except maybe the caves of prehistory) and no singular identifiable end (except maybe the end of time). As design has no beginning or end

(Krippendorff, 2006), and in the spirit of both Participatory Design and action research, the data and subsequent analysis conducted in this dissertation do not begin and end with the design and “use” of each Café. Instead, I attempted to draw on context from the Café studies and follow-up conversations to bracket the data in a way that fit with the emergent design: beginnings marked here in this dissertation, and an end that marks a contextual boundary of another beginning (such as future work). Additional data that were bracketed for inclusion in the present study include: conversations with MOSI staff, the community, and others on the “matter-ness” of the Café questions; discussions with Café participants arising out of the invitation and setup process; observations of participants or visitors in the Idea Zone before, during, and after the World Cafés; feedback from participants and others after the World Cafés; interviews of MOSI staff following the Cafés; and personal reflections-in-action and reflections-on-action. In keeping with the systemic perspective of action research and an ecological design perspective (Goodbun, 2012), we (MOSI and I together) chose not to use an electronic or tape device to formally record Café conversations, planning meetings, or follow-up discussions and interviews. Rather, with a focus more on what the conversations *meant* (contrasted against what was *spoken*) and how the Cafés might play out in terms of design and organizational processes, “recordings” in this project most often took the form of ethnographic notes made in the course of observations and planning meetings, as well as the drawings and graphic recordings made at the Café tables and through the Café report-outs along with photographs of various activities. This distinction between *meant* and *spoken* is highlighted by Lave (1993) in describing her ethnographic work to understand how math was used in various settings, including within grocery stores. There, in taking a learning stance to understand situated practice, she refers to “shelves” and “aisles” with quotes around the words to suggest that those sort of simple descriptors, while named appropriately, do not paint a

colorful picture of the situated practice of a shopper or of a stockperson. Rather, what the situated practice generates as meaning through the activity of a stockperson placing “cans” on a “shelf” might be how they relate to the work at hand and how the shelves and rows of cans organize the work of stocking. In the case of this project, this distinction highlights how I attended to the detail of the situated and contextually dependent activities of the World Cafés and related work while in the moment, rather than, for example, archiving or saving the audible portions for later analysis.

Finally, to situate this study within the larger organizational context of MOSI, I informally drew from other ethnographic studies I have conducted at MOSI since 2010 as historical context, including a study of The Amazing You exhibition as well as two additional Cafés I participated in previously. Both of these prior Cafés were also related to the Idea Zone, with one focused specifically on the ongoing design of the Idea Zone.

Designing the Analysis

As design of both the World Café communication process as well as the Idea Zone space may emerge out of many forms or modes of communication such as talk, gesture, making of objects, drawing of sketches, taking of notes, and so on, I did not draw on a singular mode of analysis to interpret “the data.” Indeed, in one sense I intended *not* to be the only or even the primary evaluator of the data. In a very real sense, designs are evaluated based on their fitness (fit-ness) for the situation for which they were designed, and in this way an appropriate analysis or evaluation for this project with MOSI is one that takes into consideration the design of the proposed World Cafés and their contributions to designers and community members alike in understanding their and the organization’s needs of the Idea Zone.

To bring these ideas or approaches together, I took a design studies approach to the analysis that, like Tang (1989), turned the analysis of both the method *and* the data (rather than analyzing only the data) back into a design problem. In making an analytical ending point the beginning of another design problem, my intention was to keep the conversation going and reflectively build on the choices that matter most. This design studies approach stands in stark contrast to other sorts of approaches that render the designer's critical design choices opaque and inaccessible through a process of formalizing or sedimenting them as fixed or hidden specifications (Star, 1995), or approaches that miss opportunities to make a choice because no choice *as such* was seen (Tatar, Foster, & Bobrow, 1991). As with the method for my study, this approach is intended to resonate with action research and Participatory Design as a way to meaningfully engage in ongoing conversations with those for whom the designs and design processes are matters of concern.

Responsibilities of Method, Analysis, and Data

With a focus on the conversations among designers and those for whom the World Café and Idea Zone designs are intended, this dissertation sought to explore the challenges that both groups have in developing a “third language” (Elden & Levin, 1991) for the design of their shared, possible future worlds (Winograd, 1997). I anticipated discovering differences among ways of speaking and acting, differences among values and evaluations, differences of ideas of meaningful participation, and differences in choices of meaning-making and sense-making processes. However, the observations of *differences that make a difference* are also ways of relating or understanding relationships at higher orders of learning and abstraction (Bateson, 1972). In so far as design takes problems and turns them into opportunities, the primary opportunity and anticipated outcome here was to learn about and better understand ways of

relating and negotiating the different needs of designers, of participants, and of others in theoretical and practical terms of both communication and design, and to do so by acting in ways that accord with the ethical imperatives laid out by communication ethics to *learn about the other*, as well as von Foerster's ethical imperative to "act so as to always increase the number of choices" (von Foerster as quoted in Poerksen, 2004, p. 19).

The conversations I sought to enter with this project were where design is done, where differences are made. In other words, I seek to make a difference where differences in design are being made. This project and its contributions are primarily aimed at conceptual design situations, especially the design of learning spaces, and are intended to bring desired change and difference to the situation at MOSI. Of course, *desired* is a value-laden concept and so a part of this project and a large part of the future work is learning how to theorize about communication and design practice while also holding on to the "should" of design: this should go here, that should go there, this should relate this way to that. As Schön pointed out, much of the difference-making of design is brought about through the choice of a "discipline" that then guides subsequent moves reflectively made (Schön, 1983). It is the discipline against which both currently conceptualized and future projected differences are tested, and without which a designer might have little or nothing against which to reflect. Choices, then, may be made from among different differences: both those noted during the conceptual design phase and those anticipated to be available in the future. This idea calls for a method that can look at the testing of the discipline in terms of the values that inform the decision made in the process of testing. For example, if in Schön's model a designer chooses a discipline or a direction to go with the design that future design choices are reflectively made back against, how could the values of that choice be uncovered and discussed in a way that considers the values of those for whom the

object is being designed? The parallel here is striking between the uncovering of a designer's choice among values and the attempts that are made to do the same thing through surveys given to, for example, museum visitors after they have been to the museum. Questions in the survey are often aimed at the quality of the experience across different dimensions or areas of their visit experience. In doing so, these surveys also seek to uncover values that inform a visitor's choices, such as their decision to visit the museum that particular day, or to not visit the museum again. Might attention to communication process in design open possibilities for the emergence of a new "grammar" of design evaluations (valuings), similar in concept to a third language, where the relationships of values among designers and other stakeholders may be integrated into the parallel processes of design and experience? In this sense, it would not be important to talk so much about the differences between choices made (such as a visitor "liking" something about the museum or a designer "not liking" a visitor's feedback) as it would be to focus on the relationships, assumptions, and values upon which the evaluative declaration stands.

This project's work was intended to indirectly explore the idea of a value-based – or ethical – grammar or framework for making design choices, in part a response to the call for moving out and away from more traditional approaches to Participatory Design as they are currently conducted. In part, today's Participatory Design approaches (as of this writing) do not hold on the cooperative design roots from which they emerged (Grudin & Pruitt, 2002), where *values* were valued, and particularly the values of those for whom the design was intended. Participatory Design, for example, brings in ideas of participants (in both senses) but does not include them in person as conversational participants. Instead, designer-created constructs such as personas are used as a proxy. Because of this, those for whom the design is consequential have little or sometimes no opportunity for evaluative reflection until the object is in their hands

and already “complete.” Design-for-design, through its stance of designing an object in a way that affords users future (re)design opportunities, offers a bit more symmetry to the designer-user relationship but does still not go far enough (Ehn, 2011). One way forward is from Hyde’s idea that architects (of *houses*, for example) need not deal with the challenges of refraining from engaging in how dwellers may transform a dwelling into their *home*. Rather, Hyde creates an opening to see the architectural work of design, whether in building a museum or narrating a story, as a way of jointly crafting our abodes together.

Not only does this *seeing as* call for a different way of enquiring into the conceptual design phase, it also calls for a different way of speaking. Instead of describing, for example, the world of designed things as the “built environment,” it might instead be described as an “environment made of differences by difference-making.” A primary move made by focusing on difference-making is that relationships become foregrounded and an opportunity for reframing the relationships of a situation might emerge. Instead of asking why someone designed an object in such-and-such a way, the question might be reframed as what differences were made by the designer in the making of the thing, what are the designer’s relationships to those things, what are the relationships she intends users to find in using the thing, and what are the values ascribed to those relationships by infusing the design with them in this way?

Communication relates these differences and relationships, both as a field and as a practice, not only as a window onto the scenes of design and the activities of the actors, but also in its consideration and balance as an active process that takes place in public scenes. Communication’s concern, for example, regarding the importance of designing communication theories that make room for real people to live their everyday lives through their own terms and experiences strongly parallels design’s concern for incorporating future participants into the

conceptual design phase as a way of creating objects of concern that matter to others. It is the reflexive capacity of both communication and design that make them such a fitting pair to integrate and bring together as context for this project's methods.

Chapter 4: Data and Analysis

Between the conception / And the creation / Falls the shadow (T.S. Eliot, 1925; from *The Hollow Men*)

I don't paint things. I only paint the difference between things. (Attributed to Henri Matisse)

A Beginning Before the Beginning

A primary focus of this dissertation is on the two World Cafés I hosted with MOSI, though in the same sense that design begins before it begins, this dissertation began before it began. That early beginning got its start through a call for papers in the first part of 2013 to appear in a Special Issue on Communication and Design in the Journal of Applied Communication Research (JACR). My major professor, Dr. Frederick (Fred) Steier and I spoke with Wit, MOSI's President, about the possibility of hosting a Café with MOSI as part of their broader work to invite community participation in designing the emerging Idea Zone. Wit was excited about the opportunity and after much focused planning Fred hosted the Café and I joined as one of the many community participants. A number of good ideas emerged from the Café, both for the community and also for MOSI, and through the remainder of 2013 Fred and I along with Wit refined our paper for JACR, with a focus on the parallel process of designing a communication process for design of the Idea Zone in an inviting and participatory context. While the paper was accepted for publication (see Thompson et al., 2014), my focus on it here is not about the article as a product but rather the Café process as a rehearsal. In this sense, Fred's hosting of the Café and involvement of me in the planning phase offered me a successful performance to consider drawing from as I began to stage my dissertation with MOSI. In

referring to the work of hosting a Café as a performance here, I call attention to the orchestration of people and things, of processes and boundaries, and of flows of movement and time, all taking place across space with particular contexts and relationships in play. Significantly, this staging of my dissertation took place in parallel with the journal submission through the second half of 2013 and culminated in approval of this study's proposal in December of 2013. Though noting the rehearsal's significance for the present study, but also acknowledging its outsideness, I now move in greater detail to the two Cafés I hosted as part of this study's engagement with MOSI that followed.

Planning the First Café

Soon after Fred hosted the early Café I spoke with Mr. Dave Conley, MOSI's Vice President for Design, and Wit – both of whom had attended the early Café - about the possibility of doing my dissertation research in partnership with MOSI. They were very inviting of the idea and though at the time it had not been firmly decided that World Cafés would necessarily be a focus we would share, it was also apparent that future Cafés would fit well with where the Idea Zone was at in its phase of design. However, between that conversation with Dave and Wit and the point we planned to kick off more formal conversations, Dave had transitioned out of his role at MOSI, as had the then-director of the Idea Zone (but not simultaneously). Even with and perhaps in relation to the organizational changes at MOSI and the Idea Zone, Wit was inviting of my participation in their Idea Zone design work so we met in November 2013 with Anthony to explore the idea of hosting a World Café in the Idea Zone. Wit opened up the meeting with discussions about the challenges of maker spaces and fab-labs around the country, including that many of the participants in those sorts of spaces are somewhat independent and that it is often the availability of advanced equipment that attracts them to the spaces more than the social

experience or dimensions. This then led into the ways that Wit saw how the future of the Idea Zone might fit into the broader future of MOSI, including in MOSI's formal Master Plan, and its connections to other future initiatives including a planned Tech Park and the MOSI Technical Institute (MTI). Following Wit's observation that the Idea Zone "is an entry point to all" of those plans for the future, we closed with agreement on concertedly continuing to move forward together with a Café and its planning by drawing on the conversations from that day.

A couple months later, in February of 2014, I met with Wit and Fred to build out more of the planned Café, including discussion on possible Café topics and potential participants. While the pattern of this meeting followed many of the prior meeting patterns, with initial discussion about MOSI's Master Plan and other related efforts taking place at the science center, an exciting turning point took place when we began to discuss potential participants. Where conversations on participants for more traditional meetings might lack excitement and revolve around only those who "have to be there," the key importance of participants in a World Café are highlighted by the Café's principles and are a fundamental dimension of the democratic roots of the Café process as well as action research processes. In taking seriously the exploration of possible participants, Wit excitedly mentioned a particular high school student who had been at MOSI for a number of years and had recently created an intriguing 3D printed object. Immediately Wit grabbed onto the idea of a World Café hosted in the Idea Zone around 3D printing and connected that Café idea to an upcoming 3D Printing the Future Exhibition that was then being planned. From there, the conversation jumped back to other possible invitees or participants including Summer Science Camp attendees, public figures including MOSI Board Members, "makers" from the community, staff from MOSI, a newspaper journalist, and others from around Tampa Bay who, for the most part, already had connections or an established relationship with MOSI

and who might be interested in joining a Café around 3D printing. While the names of participants remained somewhat open as we closed this meeting, it became clear that the idea of a Café topic revolving around 3D printing and the Idea Zone was important for both MOSI and the MOSI community.

A few weeks later, after I prepared a few possible Café questions, worked through initial plans for “logistics” including parking coins for attendees (as MOSI charges visitors for parking), and in the spirit of action research reflected on the process up to that point, I scheduled time to meet with Anthony and discuss specifics of the Café such as potential dates. As the conversations grew during that planning meeting, Anthony shared his vision for the Idea Zone and, remarkably, for the World Café we were planning as well: that they both could be a space to rapidly prototype new museum experiences. Combined with the planned 3D Printing Symposium, he suggested that what we might be doing was rapidly prototyping a rapid prototype exhibition. The parallel here of designing communication process for design of the Idea Zone is significant, particularly the fluid way that “design” was connected to communication design. In other words, the conversational work we were doing then for Café planning, and also the hoped-for sorts of conversational work we were to be doing at the then-future Café, emergently fit with the larger redesign of the science center experiences that Anthony hoped to accomplish. This recursive connection of rapidly prototyping a rapid prototype exhibition was an exciting one for both of us, and Anthony even asked that I send him the notes I was taking because the conversation was moving so quickly he was afraid to lose the connection! In Schön’s terms, what was going on here was reflection-in-action, where Anthony was reflecting on the design situations at hand - to include design of the Café as well as design of the Idea Zone - while at the same time reframing the design problems for future action and testing of the reframing’s “fit”

with the emerging situation. The materials of design in this case, though, were conversation (communication) and metaphor (ideas for ideas) rather than physical materials such as 3D printers or Legos. Further, through the metaphor of the Café as rapidly prototyping new rapid prototype museum experiences, in some ways we were also jointly reframing the more encompassing design situation of redesigning the visitor experience of MOSI through bringing that work into the scope of the Café design work at hand.

After this connection emerged for us, Anthony moved on to discuss some of the challenges of designing for the Idea Zone and also for designing within the larger context of MOSI. One of these related challenges was how overall museum attendance at MOSI was down over previous periods, and that it seemed to be an open question as to why that was going on. He noted that the amount of leisure time people have per day seems to have declined over the last few years and wondered aloud if this might be a possible cause of the decline. Yet, while the overall decline of visitors to MOSI was happening, at the same time he noted that the Idea Zone was the highest performing exhibition at MOSI in a number of metrics or measures including the number of visitors to the Idea Zone, the dwell time of visitors at the Idea Zone exhibits, and the number of return visitors to the Idea Zone. So, in a connection to the larger organization, the Idea Zone was being seen as a way to attract additional visitors to the space and into MOSI, prompting a context for the redesign effort as one that might be done in such a way as to accomplish the goal of attracting additional visitors. Related to the goal of bringing in new visitors, and also connected the idea of *rapidly* prototyping new museum experiences, was the challenge of engaging those visitors in a learning *process* with such a short amount of (leisure) time devoted to visiting MOSI – much less to visiting the Idea Zone as part of their visit to MOSI. As an example of this, he shared his observations of past visitors that sought out the Idea

Zone so that they could play with the 3D printer but were disappointed to find out that what they saw on television actually took a couple hours to “accomplish.” It was a design challenge, then, to develop exhibits that fostered an enjoyment of the learning *process* when the time for that process was so constrained and competed-for within MOSI and even against other “leisure” activities including Busch Gardens (that is just five minutes down the road), Disney World (only an hour or so away), and other key local attractions. Anthony then described this design challenge as one involving a shift of visitor perceptions of MOSI and the Idea Zone “from leisure or luxury to *necessary*.”

Following this description, it was clear the time we reserved for this planning meeting was coming to a close and that other MOSI work was pressing so we closed with an agreement for me to select a few dates that might work for hosting the Café and to send those to him and

Wit’s executive administrative assistant for comparison against MOSI staff and Idea Zone calendars.

While Anthony made his way to other work, I



Figure 3: Children and parents playing with a 3D printer in the Idea Zone after Anthony and I had a World Café planning session.

stayed in the Idea Zone for a while to observe visitors, play with some of the Idea Zone exhibits, and reflect on our conversation while also beginning to reflect forward on the upcoming Café.

A few days later, after selecting a date in early May that worked for MOSI staff and also for scheduling in the Idea Zone, I again visited MOSI to connect with Wit for a follow-up Café planning session. Anthony was not able to attend the beginning of this meeting so Wit and I began drafting the body of the invitation that would be sent out to participants. While on the one hand a simple thing to draft, in attending to how the first Café principle of “set the context” also applied to the planning meeting, we recognized that the invitation we were drafting would also set up context for how invitees saw their choice of participating (or not) in the Café, as well as the context of the Café itself. In building on other invitations Wit had developed, he opened his laptop and began laying out the organization of the invitation in an easily readable memo-style format. We played a bit with the language of the invitation and worked to make it both inviting while also marking its significance for MOSI, the Idea Zone, and the nation’s first 3D Printing the Future Exhibition planned to be hosted in MOSI’s large exhibition space and guest-curated by USF faculty and their students. After working on the draft for a bit, we settled on a final version that was later sent out by Wit’s executive administrative assistant with a subject line of “3D printing Café invite:”

From: Wit Ostrenko and Travis Thompson

What: MOSI needs you! You are invited to participate in a World Café of 20 idea people to create the future of 3D Printing Programs in the MOSI Idea Zone. If you know what I am talking about, you know it will be very cool. If you don’t, that is OK as we need your ideas as well!

When: Friday, May 9, from 1:00 to 3:00pm

Where: In the new Idea Zone at MOSI

Who: Travis Thompson is hosting this World Café as his Ph.D. research. The conversations we’ll have in the Café will become the design process through which MOSI’s 3D Printing Programs will emerge.

Why: This conversation and its results will be the pivotal creation of a cornerstone

program in the Idea Zone and the nation's first 3D Printing the Future Exhibition.

RSVP: lciorro@mosi.org or 813-987-6304 by Friday, May 2.

Reminder: The first 20 respondents will be selected

Though I did not think much of it at the time and though it was Wit's invitation to participants, the invitation's characterization of "Travis Thompson is hosting this World Café as his Ph.D. research" was strictly true – with an emphasis on *as* – while at the same time somewhat problematic as *I* saw the Café's hosting as more about making contributions to MOSI's design efforts than to my dissertation. With time and further reflection on the invitation, this difference in perspective brought about a number of questions including whether this really was research *with* MOSI, or research *for* MOSI, or research *on* MOSI? In revisiting this distinction, I looked back on the pattern of my involvement with MOSI and considered whether we were still jointly determining how to proceed and what really mattered in proceeding. Though this question did not surface as a problem or issue that needed immediate "resolution" as I did see that we were continuing to partner as co-researchers and so did Wit, even crafting this invitation pointed to the ongoing negotiation and balancing act required of a project conducted in the frame of action research and participatory design.

After we finalized the invitation, we then moved into considerations of possible participants. Anthony had by this point joined us so he and Wit began exploring different sorts of people with connections to MOSI who might be interested in attending, and who could also be a good "fit" for a 3D printing Café at MOSI. There were a number of possible participants they considered, and particularly those with an affinity for or who worked with technology, new media, or more technical sorts of systems. It was also important to bring in ideas from the community and so we briefly explored what that might mean for MOSI and for the Café.

Quickly a number of specific names began to emerge and there were soon about 40 different possible participants who had been identified. As Wit had another meeting to move to, I worked with his executive administrative assistant then and over the new few days to gather email addresses and contact information for the participants so that the invitation could be sent out.

After working up the email list and after Wit's executive administrative assistant sent the invitation, I began concerted working on possible Café questions in the spirit of the third principle "explore questions that matter." The questions I began playing with were modeled after other good Café questions, such as those from the early Café written up for JACR, but also contextualized for the 3D printing community Café. One big idea for Anthony in our planning sessions was clearly around the development of new and innovative experiences at MOSI, so in the context of the community's ideas for that together with MOSI staff emerged the opening question "where do good experiences come from?" This could, I hoped, get participants thinking and talking about activities involved in bringing about enjoyable experiences and offer an entry point into making (designing) those kinds of experiences. For the second question, and also the third question, I developed one that revolved around participants drawing something made by 3D printing and to then consider what that process looked like, or felt like, and what they learned through the process. Though in reflection this question was a bit impersonal, it was intended to involve them in the process of 3D printing (if only in mind) and to think of it as a learning process while also prompting a connection to ideas generated from the first question around "good" experiences. The fourth question of the Café I left somewhat open in the hope that as host I might build on what emerged through the Café table conversations and report-outs to develop the fourth question during the Café itself. After developing these questions and then playing with them for a bit, I "finalized" the Café's questions but did not send them to Wit or

Anthony, which later proved to be problematic during the Café as I will discuss in the following section.

Hosting the First Café

Setup of the Café in the Idea Zone on the chosen day was purposefully kept close to Café tradition, with butcher block style paper in the middle of each table, and with crayons and markers on the table at each seat. I also placed Legos and other small “building” toys on the table along with at least one 3D printed object that had been created in the Idea Zone as well, to invite a spirit of creativity and play that fit with the context of this particular Café focused on 3D printing in the Idea Zone. While the lights were out in the Idea Zone during Café setup and the doors were closed because the room was locked, MOSI visitors continued to rattle the doors while attempting to enter the Idea Zone space. The noise was not a distraction (for me) though the idea that we were keeping out visitors who wanted in, and who might become Café participants, certainly was!

As the starting time approached and despite having fewer attendees than we hoped, we went ahead with the Café and Anthony opened with a video on 3D printing and then an overview of the Idea Zone. After the overview, it was here the challenge of having not sent the Café questions arose, when Wit asked Fred (who was an invited participant) if he would like to open with the first Café question. Though it was clear to me I was hosting the Café, it was not clear for Wit as the questions had not been shared with him by the host. (I had discussed them with Anthony verbally but not with Wit). Quickly, we got things back on track with the generative question-asking - a central concept of the Café - though it was Wit primarily generating the questions as the Café went along. The questions were good and the conversations flowed well, though the small attendance by the community members and MOSI staff alike seemed to prevent

the sorts of break-through idea generation and networks of conversation that developed in prior Cafés. We moved through three rounds of questions with report-outs following each and then I closed with a synthesis of the conversations and a final “thank you” to participants. In reflecting with Wit and Anthony immediately after the Café, feedback was positive and included an excited comment from Anthony “that was fun!” and his reflection that the World Café can “make organizations fun, like Google [does].” Wit also excitedly shared that a key MOSI staff member “had a gem” in discovering how a key MOSI initiative (STEAM, or Science, Technology, Engineering, Arts, and Math) conceptually fit within the larger environment of MOSI.

Interestingly, a number of good ideas also emerged through the informal post-Café conversation as participants began to filter out, including the possibility of conducting a performance, a simulation, or another sort of “doing” activity in a future Café, and also the idea of actually hosting the next Café inside the upcoming 3D Printing the Future Exhibition. Though these post-Café ideas have not actually taken place (as of this writing), they did become conversation points or features in a number of discussions over the months that followed,



Figure 4. MOSI staff and community members participating in the first World Café.

often in a reflection of the sort, “remember how we talked about doing _____? Could that work for this?”

The first Café, by some measures or perspectives, might be seen as a successful failure (or perhaps a failed success). On the one hand, for MOSI staff and as an organization there was excitement generated in the transformation of “work” to fun and meaningful relationships were established by staff to broader MOSI initiatives. Perhaps most importantly, Anthony and Wit explicitly recognized the Idea Zone, and the World Café in the space of the Idea Zone, as an “entry point” and “seed” for reframing the museum experience and the importance of involving community members in that conceptual design work. At the same time, though, some aspects of this first Café were rather challenging. Attendance, for example, was very low, with only about two-thirds of those who RSVP’d actually attending. With this, a “critical mass” of Café participants was not made available and the conversations were at a smaller scale than otherwise possible. Also, nearly half of the attendees were MOSI staff, and this disproportional balance did not lend itself to a session meant to really be for and about community members’ ideas. Both of those features, or lack of features, point to both a strength and weakness of a key dimension of World Cafés: networks

of conversations and the ability of those networks to scale (or not). In other words, ideas for design of the Idea Zone and organizational change for MOSI, or at least the



Figure 5. MOSI’s 3D Printing the Future Exhibition under construction.

possibility of these, informed by the World Café seemed to scale in proportion to meaningful relationships, connections, or insights created or reinforced through the Café. As the Café is designed to foster networks of conversation, the impact of “enough” (for the context of the particular Café) participants is a key dimension for change of the situation at hand - and fewer than 10, as this Café had, was insufficient for the immediate design need.

Reflecting with MOSI Staff on the First Café

Around four weeks after the Café, I visited the 3D Printing the Future Exhibition while it was under construction in the large exhibit space in the right-hand rear corner of MOSI’s first floor. Anthony, Mr. Mike Knapp (a MOSI designer who participated in the Café), along with other staff and contractors were in the latter stages of initial construction of the Exhibition. Temporary walls were mostly in place, lighting was going up, and many of the exhibit spaces were partially framed but without objects or signage. I spent some time on ethnographic observation and engagement in the space while taking notes and pictures of the progress. While there I informally spoke with (interviewed?) Anthony and Mike about the Café, and before we even got into the conversation Mike asked “are we doing a World Café right now!?” while laughing. I also laughed along with him and offered that we certainly could, while also noting how much Cafés seem to have become a part of MOSI’s organizational process. While they only had a few minutes to discuss as the Exhibition opening was days away, Ms. Vomacka, MOSI’s Vice President of Guest Experience & Marketing and an attendee who participated in previous World Cafés, offered that from our recent World Café Anthony had shared his philosophy of the exhibition as well as ideas for exhibit layout in the context of the Café with other staff who had not participated in the Café. There had not yet been much discussion about hosting a Café in the Exhibition, and it sounded as though the idea had since been sidelined as it “may be too formal.”

The conversation closed quickly and I did not get clarification on whether it was the World Café or the Exhibition that was too formal, though in either case the idea seemed to have developed such that the formal-ness of the Café did not fit the formal-ness of the Exhibition. In other future conversations, Anthony also seemed reticent to the host the Café in anything other than a dedicated space at a time when other activities would not be taking place and where visitors who were not Café participants would not become involved or be interrupted. While this seems to fit the larger pattern of MOSI's space, in that the museum is generally separated into distinct spaces, such as the 3D Printing the Future Exhibition being marked off by walls from the lobby, or that activities in the spaces are also separated such as by program, or educational activity, or by general visitor use, this also points to a larger challenge of Participatory Design frameworks (including the World Café) in that substantial planning and coordination work is involved prior to the collaborative session. This up-front work, for both MOSI and myself, became a primary challenge for our planning work, including what amounted to delays in when the Café could be hosted. Anthony's dedication to constructing the 3D Printing the Future Exhibition, for example, prompted me to wait until after the Exhibition's opening before meeting with him again to plan the second Café. Perhaps related to this bracketing of Café planning work in terms of time and the need for dedicated Café space where other activities would not be going on, the scale of the planning work somehow seemed to "cordon off" the Café from more everyday settings within the science center. Though on a number of occasions I revisited the idea of hosting a Café in more of an everyday context, including the possibility of doing a "Café-as-performance" at the round tables in the middle of the lobby where the Idea Zone was close by, Anthony held to the perspective of only hosting a Café in dedicated space and time – so I put the idea to the side as the Café contexts were not for me to decide alone!

Planning the Second Café

At the first planning meeting for the second Café, Anthony and I discussed putting into place a few changes from what we learned through hosting the first Café, including the hosting of it during non-business hours so that the space did not need to be closed to regular visitors, and also the possibility of inviting different community members. This time, rather than the members of MOSI's professional community, Anthony was more interested in learning about ideas of college students, and particularly students from USF, for 3D printing in the Idea Zone. This community fit closely with the 3D Printing the Future Exhibition, which was guest curated by Dr. Lori Collins and Dr. Travis Doering of the Alliance for Integrated Spatial Technologies (AIST) at USF, as well as their students. For some time MOSI and USF had been working on growing their relationships and both the guest curation and the USF student-focused Café resonated closely with these efforts.

Preparation for the second Café was markedly different than for the first Café on at least two different grounds. First, different communities were invited to participate, shifting from mostly invitees who were very closely affiliated with MOSI in the first, to primarily USF students whose connection to MOSI was somewhat looser in the second Café. Where in the first Café it was largely Wit who identified invitees, in the second it seemed to be largely for me to identify invitees. Closely related to identification of invitees, it was also somewhat up to me to create the invitation to be sent out. Though I largely carried forward the invitation Wit wrote for the first Café, I was the sender of the invitation for the second Café and added additional context with introductory text that related the Café to ongoing work at MOSI around inviting community participation for the Idea Zone and 3D printing. While the drafting of the invitation could on the one hand be seen as a minor detail, I could not help but revisit my questions from the first Café

about “whose Café is this?” and did my best to honor the spirit of the work as a collaborative venture while also to some extent improvising as well. Again in the spirit of the Café’s principle of “encouraging everyone’s participation,” here I had not only to balance the participatory context set up by the invitation for the community members but also for MOSI staff as well. In balancing this participatory context I made a choice not to include a formal statement in the invitation about the Café as part of my dissertation research as was done in the first invitation. This was not done because the second Café was fundamentally different from the first regarding its relationship to my dissertation, but rather that the primary frame of “research” that might then be brought by attendees to the Café could be *research on* – and this was not the context being sought. The final version of the invitation sent out via email included a subject line of “invite for 3D printing at MOSI on 8/22” and the body read:

What: MOSI needs you! You are invited to participate in a World Café of 20 idea people to continue creating the future of 3D Printing Programs in the MOSI Idea Zone. The Idea Zone is MOSI’s new “do-it-yourself” laboratory and MOSI wants to hear about your ideas for the Idea Zone, particularly if you’re a USF student or alumni!

When: The World Café will take place Friday, August 22nd from 5:00 to 6:30pm. Café participants are also invited to take a free tour of the *3D Printing the Future Exhibition* prior to the Café from 4:00-5:00pm.

Where: In the new Idea Zone at MOSI.

Who: You and 19 other idea people from the USF/MOSI community along with MOSI staff! The conversations we’ll have in the Café will become part of the design process through which MOSI’s 3D Printing Programs will emerge.

Why: Building on prior World Cafes in the Idea Zone, this conversation will connect with the nation’s first 3D Printing the Future Exhibition now open at MOSI and will be pivotal to the creation of new ideas for the Idea Zone and its programs.

RSVP: lciorro@mosi.org or 813-987-6304 by Monday, August 18.

Reminder: first 20 respondents will be selected

With the “Who” section of the invitation, I saw my participation as somewhere between the USF/MOSI community and MOSI staff; though I was not present in name as in the first Café, I was present in the more general sense as part of the “we” of the invited conversations in the Café and also as sender of the emailed invitation itself.

Though I identified many of the individual invitees through the Internet, such as student members of the AIST lab and also USF’s Advanced Visualization Center (AVC) Lab, it turned out that many invitees also invited others by posting the invitation on social media sites and bulletin boards as the invitation invited them to do. Others I sent invitations to included various relationships I had through either my administrative role at USF or through my student role, such as the Graduate Communication Association (GCA) mailing list and Fred’s Creativity and Communication class. Importantly, the second World Café invitations went out to both *groups* of people - such as GCA and the creativity class members - and also to *individuals*, with the individuals being invited to also invite others. This open invitation, for invitees to also do inviting, appears to be a substantial difference-maker in creating a critical mass of participants.

A second basis that led to differences in preparation for the second Café was the departure of Wit from MOSI just three days before the Café. Though much of the preparation work had already taken place at that point, Wit was also a primary contact that much of the preparation was organized through, creating questions of continuity for the quickly approaching event. With this in mind, and also with the challenges of hosting the first Café, I sent a draft outline or informal “agenda” for the Café to both Wit and Anthony with an invitation for them to provide feedback and suggested changes. Also in the agenda were suggestions on who might facilitate each “agenda item” by adding a name in parenthesis, such as “Setting Café context and rules of play (Travis),” as a way to address the challenges of the first Café in identifying who

was hosting the Café. A final important component of the outline was inclusion of the proposed question or “seed” for each round of discussion at the tables, rather than only bringing them the day of the Café, so that Anthony and Wit could build on our prior preparation. As a way of holding onto this informal agenda as an artifact for reference in planning future Cafés and Café questions it is included here as sent to Anthony and Wit:

2nd World Café on 3D Printing in the Idea Zone
Flexible/draft outline - August 22, 2014

Intro

Brief welcome (Travis)

Intro to Idea Zone, 3D Printing The Future, Symposium (Anthony);

[MOSI's 3D Printing Exhibit video](#) (or a different “seed”?)

<https://www.youtube.com/watch?v=tXyYUHQypY>

Setting Café context and rules of play (Travis)

1st question

Where do good science center ideas come from?

Conversations at tables

Report-outs from tables & brief synthesis

Rotate

2nd question

Imagine you’ve been commissioned by MOSI to make or create ideas for the upcoming 3D Printing Symposium. You’re in the Idea Zone bringing your ideas to life. What is the experience of creating those ideas like? What does it look like, sound like, smell like, and feel like to create those ideas?

Conversations at tables

Rotate

3rd question

Builds on prior question – though now you’re invited to build or sketch the Symposium that features your commissioned ideas

Conversations at tables

Report-outs from tables & brief synthesis

Rotate

4th question

Imagine it’s 4 weeks from now and you’re visiting MOSI with friends to show them your 3D printed *ideas* from the Idea Zone being featured in the Symposium. What were the sights, sounds, tastes, and feelings of sharing that excitement of your idea?

Conversations at tables

Report-outs from tables

Synthesis

Bringing it all together

Wrap-up

Hosting the Second Café

As the planning phase closed and the day of the Café came, I arrived at MOSI early to connect with Anthony and begin the initial setup of the Café tables. The Café was to start at 5PM after MOSI closed, though

we invited participants to tour the 3D Printing the Future Exhibition

beginning at 4PM. Some arrived early and I chatted with them while waiting to set up the tables as visitors were still playing in the

Idea Zone and would be until close to 5PM. I also



Figure 6. Café participants visiting the completed 3D Printing the Future Exhibition prior to the second World Café.

toured the 3D Printing the Future Exhibition with Café invitees for a bit before returning to the Idea Zone to begin setting up close to 5PM.

To prepare the Café space, along with 4-5 chairs at each table I also placed markers and crayons on larger butcher block-style post-it notes with Legos on top of and beside the paper. In addition to the Legos, 3D printed objects created at MOSI were again placed on each table to invite play and creativity, and also to help set the context for this particular Café. As the day's visitors began to depart the Idea Zone, Café participants began to trickle in with many coming from the 3D Printing the Future Exhibition. Anthony opened the Café as planned with an introduction to his role and background as well as the context and “purpose” of MOSI for the

Idea Zone. As part of his introduction, Anthony mentioned the Idea Zone as an “area of transition and dynamic space” and Ms. Molly Demeulenaere, the then-recently appointed interim President and CEO, introduced the idea of MOSI as *also* in a period of transition and change. This calling-out or marking of a relationship between the Idea Zone and the larger environment of MOSI happened a number of times through both the Café planning and this Café itself, and in this case helped the large and perhaps challenging change of executive leadership become grounded in the regular and “expected” sorts of change fostered in the Idea Zone. Indeed, a follow up comment immediately after this by Anthony was focused on the potential of challenging organizational change to be experienced in different ways through his expressed hope that participants (MOSI staff primarily?) could “enjoy the process of change.” After his introduction, I then offered some opening “flexible rules of play” before the Café moved into the small group phase with an opening question of “where do good science center ideas come from?”

Even though many participants were sitting near others they knew or had established relationships with, the conversations started slowly, perhaps as everyone was not familiar with science centers much less “the” origin of science center ideas. This was also the point in opening with this particular question, as a way to invite a focus of discussion around the idea that science center ideas come from places just like the Idea Zone and World Café, and similar people just like them! The conversations picked up and then settled back down after a few minutes, then in a few more minutes we moved into report-outs from the tables where an exciting idea emerged about the possibility of an “artist in residence” in a public space of the museum. Related to this in the report-out was an idea of the setting or environment of the Idea Zone as one of inspiration

and a way to connect disconnected things, and also as a space where quickly-changing but important public science topics could be kept alive and current.

Following the report-out, participants were invited to change tables while one table-host remained to share ideas with the incoming table-mates, when I then posed the second round question, asking the participants to

Imagine you've been commissioned by MOSI to make or create ideas for the upcoming 3D Printing Symposium. You're in the Idea Zone and bringing your ideas to life. What is the experience of creating those ideas like? What does it look like, sound like, smell like, and feel like to create those ideas?

After posing the question, but before participants engaged their table in conversation, one Café participant asked loudly whether they were “actually doing that or not?” In other words, were they right now being asked to contribute to the Symposium? Perhaps



Figure 7. Photo of participants during the second Café. The picture faces large windows where lightning was visible as a storm moved in; the museum lobby is to the left and the Idea Zone maker space is on the other side of the purple wall. A whiteboard with notes from a report-out is visible but cropped on the right.

the most fascinating moment of the World Café came at exactly this point when Anthony stood

and offered that the current 3D Printing the Future Exhibition was being moved to the second floor of the museum and that the Café participants “could actually have things there!” This offer of turning an imagined possible future into an organizationally-possible real future seemed to excitedly elevate the Café conversation and participants in context of the challenges and uncertainties of Wit’s departure. Indeed, as a storm with bright flashes of lighting and loud thunder had developed outside the large glass windows, and even as the power went out in the building with the lights turning off

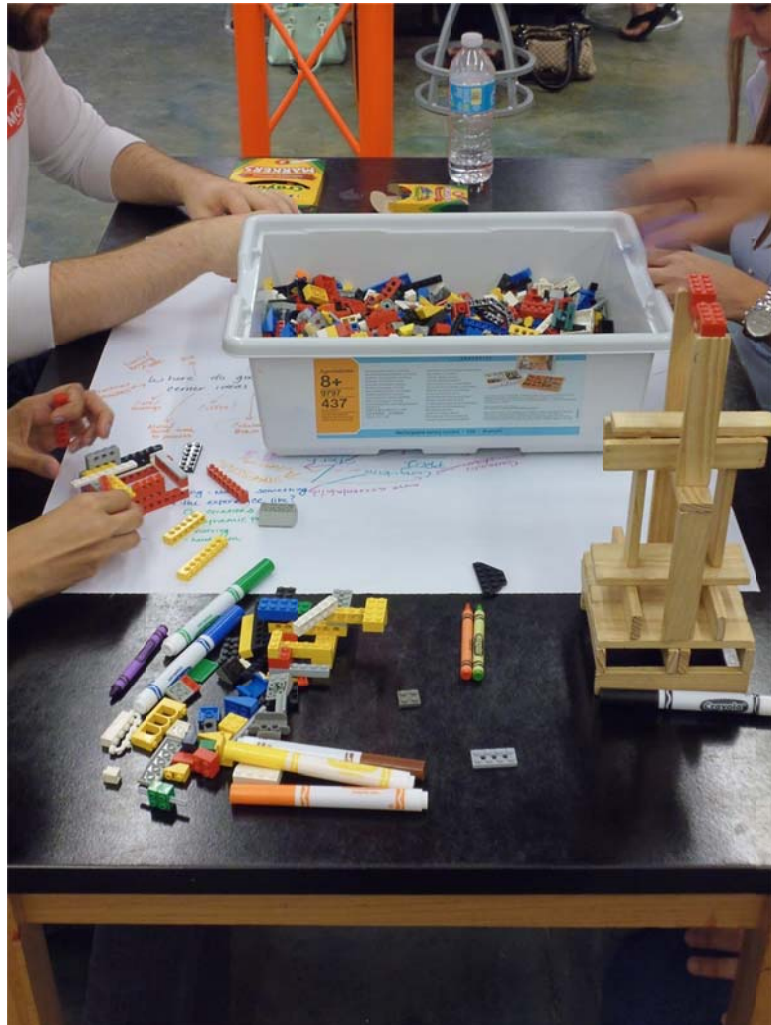


Figure 8. World Café participants building their second floor redesigns with Legos, wooden blocks, and butcher block paper.

momentarily, the conversations kept right on going at the tables

for the second round without missing a beat! This excitement connected nicely with Anthony’s opening statement about enjoying the process of change, and perhaps through the recognition that ideas such as this one can emergently change the process of change in ways that positively resonate with the stakeholders involved. In other words, it felt exciting for MOSI to learn in-the-moment that the community wanted to participate in new forms by contributing to the second

floor redesign, and at the same time and space of the Café, the community saw their ideas could literally come to life both in the World Café and also in the second floor redesign. This evolution from current state to future-possibility is an important part of design, and also of the World Café, in contributing to design situations and particularly to the networks of conversation that support design situations.

With positive excitement still high, we moved into the next round without doing a report-out. The third question built on the second question and was planned ahead of time to do so, though in an unanticipated way I was able to further connect the third question to emergent Café conversation by building on Anthony's on-the-spot invitation for participants to contribute to the second floor redesign. With this on-the-fly adjustment I recalled Anthony's "commissioning" of the Café participants and asked them to build or sketch their design for the second floor

Exhibition redesign with his commissioning in mind.

As the third round conversations began and then progressed, most of the tables were now playing with Legos and the blocks, some as part of the third question's invitation to build their ideas, while other tables



Figure 9. A butcher block sheet of paper with drawings and sketches from participants at a Café table in the second World Café.

were sketching their designs on the large butcher-block paper with markers and crayons. Participants who had not been as active became more involved, both in their conversation and their building. Some tables had more individual building processes, with participants each building directly in front of their seat, but even those “individual” building processes involved gesture and conversation among their tablemates. Where the first round report-out involved little mention of 3D printing - a focus of this World Café - the third round report-out contrasted strongly with the first. The reporters often shared their sketches or pictures with the tables through gesture and pointing, sharing in some sense their “completed” ideas. The Lego constructions, on the other hand, were shared with more of a focus on design process than designed product, using active words or verbs like “build,” “scan,” and “print.” In other words, the Lego designs seemed to afford more of a “making” description than a “made” description; this was something I had not expected. Perhaps the “finished-ness” of Legos and 3D printed objects was less than the “finished-ness” of sketches? Or maybe it was not about the paper or printed objects themselves, and rather about the ideas in (the conversations about) the creations? In any case, I took note how this round involved more spatial references and signifiers than prior rounds, with reporters even moving to the center of the room for their reports while also using words such as “central” to describe their designs.

As just an hour and a half was allotted for the World Café and with many having plans for their Friday evening, I suggested we move into a



Figure 10. A whiteboard with Fred’s graphic recordings and notes taken during a report-out in the second World Café.

“lightning round” - playing on the storm that had developed outside - and asked them to “imagine it’s 4 weeks from now and you’re visiting MOSI with friends to show them your 3D printed ideas from the Idea Zone being featured in the Symposium. What were the sights, sounds, tastes, and feelings of sharing that excitement of your idea?”

The mood was now playful and there were many smiles, with conversation moving at a medium level and pace for the fourth round. Again with time in mind, we moved to an integrated fourth-round report-out and harvesting of the evening’s conversations and ideas. Fred continued, as he had for prior rounds, writing notes and capturing big ideas on the whiteboard as the community was invited to share what they thought MOSI heard, and MOSI staff invited to share what they thought the community members heard. One idea that emerged through the harvest process was to create or establish an informal learning space at USF by building connections between the Idea Zone and existing resources at USF. Along these lines, connecting this community-based “work” to service learning opportunities at USF became another possible relationship for the MOSI/USF community to expand. Both Anthony and Molly offered that this (the World Café) was a great way of connecting the people of MOSI (to include staff *and* the community) and that they wanted to be “doing more of this.” Interestingly, the idea then emerged that the World Café is a way of “modeling the community” and that it is a “nice way to do what we’re saying,” perhaps playing on the metaphor of 3D printing in that there, too, people can make (do) what they imagine (say). Just after this, Anthony mentioned that the 3D Printing the Future Exhibition at MOSI was the first of its kind in the country, eliciting a number of out-loud exclamations of “wow!” from the participants. When he then asked what their printing needs might be for the Exhibition’s move to the second floor, conversation moved to the idea of a contest, perhaps even with limits or constraints added to the competition as a way to foster

creativity. Someone then suggested a “3D print-off” where contestants from the community might be invited to create something for the Exhibition, and this idea seemed to resonate with many participants through excited comments. However, time had already passed for the Café to conclude so I transitioned to a closing by inviting participants to keep the conversation going after the Café. Some participants stayed for an after-Café conversation with one another while many moved on to their other activities for the evening. Interestingly, my own activity for the evening was dinner at a south-Tampa restaurant as part of the Communication department’s Orientation Week activities where I and a number of participants - including some who were invited to the Café but unable to join - continued sharing excitement around the ideas that emerged and reflecting on the possibilities that developed through the Café. It was almost as if I were now a table host who had stayed while my table mates moved on, and my new Café table and table mates were at a restaurant across town!

Reflecting with MOSI Staff on the Second Café

In keeping with the reflective practice of participatory design and the importance of meaningful engagement with stakeholders around shared goals in action research, about three weeks after the Café I met with Molly and Anthony to reflect on the Café and any developments that might have taken place at MOSI since then, with an opening question around how or whether the Café made a difference for them or MOSI. One direct response of Molly to this question was that “it all helped” – though I was at first unsure how to understand the comment. Was it a “gloss” because the Cafés offered little in the way of substance, or might it be just an initial opening for a larger and more complex discussion? Quickly moving past her opening response, the conversation moved into a comparison and contrast of the first and second Cafés, with each of us alternatingly and together noting features that both worked well and also some

challenges or issues that might be done or approached differently in the future. (These key challenges or issues, such as a “critical mass” of participants, have already been covered above). Then, as the discussion continued, the contrasts became a way of talking about a future Café (or series of Cafés) focused on inviting community ideas into the upcoming redesign of the entire second floor of the museum, planned to be unveiled in the first quarter of 2016. This redesign, they shared, would cost more than \$1 million and would be one of the largest recent exhibition projects undertaken in the museum. Initial efforts were underway with discussions already taking place to engage donors, sponsors, equipment and product manufacturers, and others from around the world. As with MOSI’s efforts for the Idea Zone, Anthony and Molly shared that understanding the needs of the community for this new space would be a major feature of the large-scale effort’s success and they wanted to begin those conversations with community members as quickly as possible. They connected these conversations with community members to a new coffee shop that was being built in the lobby to replace a portion of the prior food court area and suggested the possibility of a “Science Café” connected to this new coffee shop. Some Science Cafés, they shared, have been successful in other science museums while some have been “duds” but that one possibility “could [be to] try things out and connect the World Café to [the Science Café]” because they “wanted to keep the World Cafés going” and that “even making one community idea happen” from the Cafés would be a significant accomplishment. For a few moments they played with the idea of a Science Café and where it might be hosted, suggesting the possibility of USF or perhaps a World Café elsewhere - which I understood to be other than the Idea Zone. They then quickly moved to the “next step” and asked reflectively of the community “what do they want to do [in the new space of the second floor]?” This transitioned to possible invitees for the Café, including adults from the community, and then a

project management-style report on where various discussions were at with company partners, vendors, architects, and others. Molly then shared that they “need thinkers” to help with the effort and that things are “too go go go.” Despite this tension, or perhaps because of it, she said a Café would assist with the organizational pressures of their timeline as “ideas from the community” should come first and “then architects and others to make [community ideas] cool.” Before hosting a Café, they suggested, a community charrette should be done first to find “alignment” and then a Café could follow. Anthony and Molly then asked if I would be willing to help with the charrette and to host a Café or series of Cafés as part of their need-finding effort for this second-floor redesign. I happily accepted while also sharing some of the pressures of my dissertation timeline and goals for defense by 2014 or soon after. We closed the conversation with an agreement to move forward with these ideas and to reconnect again to continue further planning and organization for the next round of Cafés around the new design effort.

Reflecting with Community Members

Following the second Café, a number of participants who attended as well as invitees who were unable to attend approached me to ask how things went at the Café or how things “have gone at MOSI” since then in terms of progress or outcomes. Most of this feedback was offered informally while, for example, playing with my children in the front yard of my house (as some of the USF community invitees also live in my neighborhood) or when talking with other students about “my” research with MOSI. When asked these questions, I was often unsure whether they were referring to progress on “my” dissertation work, “MOSI’s” progress with the redesign, both, or something else. In trying to hold to the same spirit as Café planning, with a central focus on MOSI’s needs rather than the needs for my dissertation, I often responded first with updates from discussions on progress with Molly and Anthony and then moved into sharing

how the dissertation work was connected and proceeding in parallel. All of the feedback from community members was positive and offered with smiles, reflections of enjoyment either in the Café or at MOSI during their previous visits, and with appreciation for MOSI's involvement of the community in these processes. Strikingly, the only critique offered at the point of this writing came from one member and related to difficulty hearing during portions of the report-outs and the synthesis. Perhaps just as strikingly as receiving only one critique, nearly all of the follow-up conversations with both participants and invitees have included or closed with an inquiry on when the next Café will be hosted or a direct request to be involved in future Cafés organized by MOSI.

An Ending after the Ending

Following with the design studies approach of this project and in keeping with the spirit of an action research project, this chapter has described both the engagement's data and analysis in an integrated way, perhaps standing in contrast to projects that utilize "external" analyses to evaluate "internal" data derived or generated by the imported method. As such, the work was conducted in the spirit of what Schön (1983) might call a reflective practitioner and what Krippendorff might call a designer-researcher, where I have ongoingly made design choices or interventions while at the same time doing in-the-moment reflections with others for reframing the collective design problem at hand. In this way, my analysis was not saved for a post-mortem *after* the project had ended but rather was regularly put back into play throughout the 18 months of engagement with MOSI *during* the project. These reflections-in-practice, of course, have not been done only by me (individually) but rather have been done in concert with MOSI and the community through regular communication and reflection through meetings, conversations, email, phone calls, texts, and many other forms.

In that those reflections and action are ongoing now (as of this writing) and also planned for the future with MOSI, and in the same way this work began before it began, it will also end after it ends. Though I am marking the end of the formal dissertation data/analysis phase with the interviews conducted with community members and MOSI, the encompassing design work at MOSI has and will continue on in preparation for the second floor redesign and supporting Cafés.

Similar to how this chapter has integrated method, data, and analysis into a singular narrative form that fit with a design studies approach, the following chapter is an integrated interpretation of the “fit” of this applied study in two distinct but related forms: the “fit” of the World Café with science center design projects and the “fit” of the Café as a possible beginning point for responding to the call for moving beyond traditional conceptions of participatory design and “interaction.”

Chapter 5: Interpretation & Meaning-making

Teach me my, not your language. / Teach them their, not your language. / Teach us our, not your or their language. (Brün, 1986; from *My Words and Where I Want Them*)

The aspects of things that are most important for us are hidden because of their simplicity and familiarity. (One is unable to notice something — because it is always before one's eyes.) (Ludwig Wittgenstein, 1953; from *Philosophical Investigations*)

A Choice of Interpretive Focus

Though there are many foci for interpretation of this project, in keeping with its foregrounding of ongoing design work at MOSI around the Idea Zone, I center this chapter on the organizational design work of these World Cafés against a backdrop of museum and science center design work more broadly. Rather than re-covering theoretical ground, this focus is intended to be a practice-oriented reflection that takes into account the broader scene of science center design while also engaging with the work of this project that took place in a particular design situation with particular contexts and people at play.

Following a focus in the late 1990's and the early 2000's on designing museum and science center exhibits that would better foster interaction both between visitors and the exhibit and among visitors themselves, an informal call was made by museum design practitioners to rethink and move beyond concepts of “interaction” and “participation” among people in general and toward design approaches that make space for personal meaning-making and individual learning by particular people in particular contexts (Allen, 2007; vom Lehn et al., 2005; Rennie & Johnston, 2007; Heath & vom Lehn, 2008), and especially in regards to technology-based exhibits (Heath, vom Lehn, & Osborne, 2005). Their recommendations for moving forward,

though, still generally followed the traditional pattern of *design > use > research/evaluation > repeat* and do not as immediately allow for in-action reflection among the designers and future “users” together. Allen, for example, reflects on the challenges and numerous iterations required of designers even for design of even simple objects such as telephones, then asks:

How much more challenging, then, is the design of a unique and novel exhibit that must be robust, easily usable by people of any age and background, and lead to the learning of some aspect of science or the world in a personally meaningful way? In the face of irreducible complexity of both physical systems and humans, we are unlikely to ever create generalizable enough design principles to obviate the need for research, prototyping, and evaluation. (Allen, 2007)

From Speculation *On* to Conversation *With*

Where the World Café entered this challenging yet evolving work of science center design is through the creation of space for networks of conversation to contribute both to the design of the exhibit as well as to the communication processes for design of the exhibit. Importantly, these networks of conversation were opened prior to design (rather than, for example, post-hoc visitor interviews or surveys) and brought designers and future “users” to the literal (Café) table together. In creating this space, speculations about personal learning contexts did not need to be made generally, but rather could be posed personally - or not posed at all if not part of the particular Café's context - as part of the Café's conversation around *questions that matter*. Not only in this way can speculations or assumptions be foregrounded, but it also offers a way to perhaps move past some of the dilemmas involved in constructing learning spaces: a “better” theory of social learning in museums is not necessarily any longer a primary need or a singular focus *of designers*. Similarly, giving “more complete” feedback to the museum about

visitor experiences or “greater” interaction with other visitors is not necessarily any longer a need or a primary focus *of visitors*. Instead, the collective focus of the *Café participants* can be directed toward discovering the joint needs of “designers” and “visitors” together, as seen through the joint frame of “Café participant” rather than as separate roles with separate needs. In other words, the Cafés offered an opportunity to develop a shared language for design that fit with a particular situation at MOSI where particular people and contexts were at play. This shared language contrasts strongly with the separate languages of designers (in their terms of learning theories, design research, visitor studies, and so on) and visitors (in their terms of visiting MOSI, having fun or not, being entertained or not, and so on) in that it does not only support the marking of distinctions and perspectives but purposefully supports the active maintaining of differences necessary for creative activity (Bohm & Nichol, 1998) and the emergence of shared ground (Arnett et al., 2009) or perspective (Winograd, 1987) through learning.

World Café Conversations as Action

In taking the World Café conversations seriously as an activity of collaborative action, it became apparent that the conversations afforded opportunities for learning and change at both the level of the individual and at the level of the MOSI organization. Though for some time MOSI has seen themselves through the frame of a learning organization (Steier & Ostrenko, 2000), the staff seem to also acknowledge that a learning organization requires actively attending to the contexts of learning of their visitors as well as of themselves, and orient to the World Café as one way of ongoingly undertaking that work. On more than one occasion, both during the Cafés and in my follow-up conversations with staff, it was striking how the Café afforded individual staff an opportunity to learn about a dimension or activity or aspect of the

organization and how this in turn oriented them to making organizational change around that topic in new ways. Though I have covered other examples in the chapter on hosting the Cafés, it is worth revisiting here the reflection of Anthony that the World Café “can make organizations fun.” While on the surface a somewhat distanced description, Anthony was my primary contact in organizing and hosting the World Cafés and was also the Director of Innovation, so the comment can also be heard as his immediate engagement in (re)designing the organizational work of designing the Idea Zone and other exhibits or exhibitions in new and innovative ways. When connected with his reflections during preparation for the first Café that he saw 3D printing and our hosting of the World Café on that topic as a way of rapidly prototyping new rapid prototype museum experiences at MOSI, it is clear that the learning-oriented conversations even of the World Café planning sessions are important not only to the conversational networks of the MOSI community but also to the organizational fabric of MOSI staff, and by extension to the *MOSI organization* as well. Said another way, the Café conversations not only strengthened MOSI’s existing organizational fabric, in many ways the conversations also knit new patches onto the quilt: in this case, a knitting of the community and their needs into MOSI’s physical and organizational space.

World Café as Entry Point for Participatory Design by Community and Staff Alike

In an interesting and somewhat unanticipated (for me) turn, this engagement in organizational change by MOSI staff through the Cafés is rooted in and parallels the staff’s efforts toward opening that same ground for the MOSI community. Through the World Café’s form as a Participatory Design framework or process (Thompson et al., 2014), where stakeholders such as the MOSI community are invited by designers to provide input or feedback during the design phase, these World Cafés in the Idea Zone also created space where the

designers and other MOSI staff could engage in participatory design *of their organization* to see new ways of overcoming the challenges of narrow perspectives that Allen, vom Lehn, Heath, Hindmarsh, Ciolfi, Bannon, Rennie, and others have called for designers to move beyond. In other words, by opening and sharing common ground during the design phase rather than seeking simple feedback during the use phase, designers and the MOSI community were able to together bear what could otherwise be the other's later individual burden. For designers, these burdens carried now by community members might be the constructivist dilemma of creating a learning environment in a science center (Allen, 2007), “mak[ing] the tedious engaging” for museum visitors (Meisner et al., 2007), fostering the free-choice of visitors while also providing a coherent learning environment (Hawkey, 2004), the challenges of understanding an individual's understanding of an exhibit (vom Lehn et al., 2005), or being constrained by traditional notions of interaction, participation, or engagement (Heath & vom Lehn, 2008). For the MOSI community, some of the burdens carried by MOSI staff through the Café might include a lack of inclusion in design of community-centered spaces such as the Idea Zone, a deficit of understanding of the complexities of MOSI's organizational design challenges such as those cited immediately above, or issues or challenges in understanding what it is they “should” be learning or doing while at the Idea Zone. So what to make of this parallel, two-fold change: that of designers and their organizational processes and that of the MOSI community and their meaningful engagement with MOSI as a community? Where did the change come from and where is it taking the Idea Zone?

In a very real sense, the change can be seen as emerging through the everyday work of (re)designing the Idea Zone in a new and metaphorical way, both the work involved in the Cafés that have already been hosted as well as the future design work imagined or planned during the

Cafés. Though I will cover more of this everyday future work in the final chapter, here I will unpack some of what I understand was a primary leverage point for the possibility of change: the World Café metaphor.

Café Metaphor as Leverage Point for Engaging in Organizational Change at MOSI

Through the World Café's designed discussion format and through MOSI's regular organizational processes that include Cafés, a series of World Cafés in the Idea Zone was an immediate fit for the joint need of MOSI and the community to engage in participatory design of the Idea Zone. In that sense, though there was certainly much challenging work involved in the planning and hosting of the Cafés, there was no real leverage or organizational change necessary to host the Cafés for these design sessions. A large part of the fit of the Café with the Idea Zone design challenge might have been found through the innovation leadership (Kelley & Kelley, 2013, p. 200) at MOSI, and particularly of Wit. In their book *Creative Confidence*, Kelly and Kelley share characteristics of organizations they observed that are able to regularly innovate and creatively bring about change. One of the key characteristics they noted of these types of organizations was the presence of innovative leaders who worked not to dictate *their* culture of creativity or innovation but to nurture the conditions for *others* to innovate and create. Those innovative leaders, Kelley & Kelley observed, would “find a worthy challenge or mission that motivates people to stretch their thinking” and to “encourage spirited debate that allows different views to be expressed” (2013). These two ways of leading innovatively strongly reflect the World Café principles, process, and patterns, and may also speak to Wit's long history of drawing on the Café for creatively engaging many challenging organizational situations. Metaphorically, the conditions at MOSI were ripe for new Café seeds to be planted and for those seeds to blossom into new possibilities that then create new seeds, and so on. What this

dissertation project did not make clear, though is planned now as future work, is how or whether less favorable conditions in other organizations might change the possibility for Café seed growth, or for Cafés to fit with design situations there at all.

Through the fit of the World Café with the design problem at hand and with the creative confidence of MOSI's leadership, then, the Cafés became a leverage point and a seed for *MOSI staff* to engage in possibilities of larger organizational change through the everyday work and communication involved in the planning, hosting, and reflection of the Cafés. Perhaps the hidden or backstage leverage point, and what I call attention to here, was the Café's opening up of shared ground and a creative meeting space through the *Café metaphor*. In the same way that metaphor carries forward or relates one thing or perspective *through* another, the Café metaphor also opened up conversational space for new perspectives and relationships to develop, including some perspectives that otherwise might not have emerged. Could a MOSI staff member, for example, reasonably talk about or share their perspective of the Idea Zone design process as “not fun,” or as tedious? Yes, though perhaps not without also establishing new perspectives by others about him or her. The Café did, though, create space to see the design process as *becoming* fun: as transitioning from one state to a “fun, like Google” state. In other words, the Café metaphor afforded seeing the organizational work of redesigning the Idea Zone at MOSI through what was known about another organization's design process and thus afforded new possibilities for engaging with and moving forward in that designer's everyday work. Without the Café metaphor and planning work at hand, this designer's engagement with making organizational change very well could have only been a latent possibility rather than an actually afforded possibility.

Building on this, and connected to the Café's recursive theme of creating networks of conversation, perhaps an even more powerful example of a leverage point created through the

Café metaphor was Anthony's perspective on the 3D Printer Cafés as themselves a way to rapidly prototype new rapid prototype experiences in MOSI. Though this can also be heard as new experiences for MOSI staff (such as described in the preceding paragraph), his primary reference in the context of our Café planning discussion seemed to be in relation to new experiences of the MOSI community (such as visitors) through the form of novel exhibits and exhibitions. In that the necessary work of designing these novel exhibits had not yet been made known, and in that this new work would in many ways contrast with the historically grounded processes of designing museum exhibits (such as those discussed in the second and in this chapter), Anthony was drawing on the Café to not only see this previously “unknown” work *as* the Café, but also to effectively and in a fun way *do* the work - thus transforming or reframing the then-future collaborative conversations of the Café into organizational action and change for the MOSI community as well as for MOSI design staff. In a sense, by connecting what 3D printers symbolized or meant (for him) to what the Café symbolized (for him), Anthony extended the Café's affordance of a leverage point in the form of a “seed” that could be “planted” and might “grow” into wholly new and transformative forms of museum experiences. What a striking opportunity to arise from a Café: the ability for a stakeholder to contribute to redesigning their organization! Of course, though, and as with any seed, the 3D Printer Café seeds that were planted during the planning discussions and watered during the Cafés themselves will continue to need water and a nurturing environment to continue their growth. As I will return in the “future work” section to the idea of Café seeds as needing ongoing nurturing so that they may continue to grow, I will now come full circle in describing how the Café's grounding in both communication and design principles offered (and continues to offer) MOSI a way forward where there is need for creative needfinding or design space for stakeholders with differing

perspectives to establish common ground.

Questioning the Game Being Played, or “Are We Doing a World Café Right Now!?”

To begin, an important point to address in this project has been: Why the World Café for this design situation, and could not some other metaphor or method have been just as appropriate? Indeed, design practice might respond that there are always many openings and opportunities to be explored for making change in a situation. However, in that design is also about the doing/making of change, and also moving that change into public spaces (Ehn, 2011), design practice also suggests a reflective doing with the materials at hand and for this design situation at MOSI the World Café was (and is) close at hand. Importantly, the Café is not only an idea of a metaphor, it is also a physically embodied and performed communicative metaphor that, like the Idea Zone and in line with Ehn’s point of moving design into public spaces, is itself designed to create space where ideas can physically come to life. For visitors in the Idea Zone, this coming-to-life of ideas is through Legos, through printing 3D objects, through design of video games, through the building of robots, and many other building activities. For the World Cafés in the Idea Zone, this coming-to-life of ideas was through the planning sessions, through stakeholder conversation at the Café tables, through shared notes on the butcher block paper, through the table report-outs, and through participant interaction and movement. Having many (but certainly not all) of the constituent stakeholder groups present and in a position to contribute to the new world they were creating is an important dimension of successful moves into public spaces. No complex 3D CAD/CAM software had to be learned, no seminars or trainings on how to do design practice needed to be attended, no modeling or drawing skills were necessary or even preferred. Rather, people simply came together and talked, sketched stick figures, and built with Legos all while seriously playing with and sharing ideas around questions that mattered for

them. Though this characterization certainly glosses over the complexities of even a “simple” task as “playing with Legos” or “sharing ideas,” in some ways it also gets at the immediateness of the materials at hand and how well those materials fit with MOSI’s design situation that was fluid, ambiguous, emergent, and paradoxical - as all design situations often are!

The question, then, of whether other metaphors or design methods than the World Café could have been found is transformed into a reflection on how the World Café fit with the design situation at hand and, as Schön suggests, how the (communication) design challenges might be reframed for future action. As that in-action reflection has been an ongoing part of this project while planning and hosting the Cafés, and as future Cafés are now (as of this writing) being planned for future design situations at MOSI, I now move “up” to a longer layer of time for in-action reflection on the Café’s design principles in relation to science center design work, with an eye toward possible change or adaptation of the World Café communication process for future design situations at MOSI.

One way of approaching this is to place the design work of the World Cafés described in this paper next to a synthesis of the traditional design work of the science center through a focus on the primary perspective afforded by each:

World Café design work: framed through networks of conversation among designers, community members, and other stakeholders, and where outcomes include immediate learning about the needs and contexts of the joint situation at hand.

Traditional science center design work: framed through visit as (visitor) interaction with exhibit and/or other visitors, and where a primary outcome is for a visitor to learn specific “facts” from an exhibit.

Through this contrast, it becomes apparent how the World Café’s metaphorical frame offers

leverage points to designers and community alike, and how those leverage points have potential to influence not only the immediate design situation at hand (such as design of the Idea Zone) but may also extend to organizational “situations” or challenges as well. Where traditional science center design work largely brackets its perspective squarely on the visitor and the exhibit, the World Cafés hosted in the Idea Zone flexibly focused on many stakeholder activities and remained open to many “objects” of design. Where traditional science center design is focused on visitor learning, the Idea Zone World Cafés made space for learning by staff, by community members, by applied communication researchers, and even forms of organizational learning. Where traditional science center design allows for post-design reflection, the Idea Zone World Cafés allowed for reflection-in-action and even in-action reflection-on-action (see also Thompson et al., 2014) during the parallel or recursive tasks of *designing communication for design* that afforded more immediate change based on shared contexts and emergent joint perspectives.

Though the scale of the contrasts and the scale of the differences in leverage points are great between the World Café design sessions and traditional science center design, the roots of the scale can be seen as small while also recursive. In the spirit of a number of second-order concepts - of Bateson’s *orders of learning* and *communicating about communication*, of Schön’s *language about designing*, of the World Café’s *networks of conversation* - the World Café in design contexts offers a way to design organizational design work by moving beyond conversations about the rules of the game to begin setting contexts where people in everyday situations might even converse about changing the rules of the game. Or, taking this idea a step further and connecting it to the experience of hosting these Cafés at MOSI, perhaps what “actually” happened through the Cafés was a questioning of the game that was even being

played: “are we doing a World Café right now!?”

An Invitation to a More Responsible Future

As a way of closing this chapter, and also of foreshadowing some of the future work discussed in the next chapter, I momentarily return to this paper’s opening pages to recall the “Split A/B” tests where Google and so many other organizations seem to be turning today for their “design” choices. In a Split A/B test, most often a population of users (typically on a website but sometimes in other fast-paced non-virtual settings) is segmented into two groups where one is presented one design and the second group is presented a differing design – though the differences may often be as small as a very subtle change in the shade of a piece of trim or a border. What is “behind” or on the “other side” of each design is a preferred action or outcome for Google called a “conversion,” perhaps of someone adding an item to her or his online shopping cart or the purchase of some object. Users will never know they’re being researched, or presented two different choices, yet the assumption of the “designer” is that the “option” garnering the maximum number of preferred outcomes is the “best.” Then, once a pre-determined threshold for determining the best design has been reached, say by 70% of the purchases being made through one of the options, the winning design is switched over so that all visitors to the site now see only that one - at least until another unknowable Split A/B test is presented to an unknowing group of unknown people. The point of all this is not to highlight the efficiency or measurability of design in 2015 but rather to revisit a parallel challenge that Klaus Krippendorff shared with his professional design colleagues almost 20 years ago at a conference in observing how the profession of industrial design had lost much of its ground to “Trojan horses” and “parasitical paradigms” from other disciplines, offering “measurability” from the ergonomics discipline as a specific example in noting how its “values easily confuses design

with the control needs of large hierarchical institutions...whose purposes much of [their] research was intended to serve” (Krippendorff, 1995). With this, he noted the extent to which designers had allowed their processes to be reduced to measurement, and in particular measurement informed by values of large hierarchical institutions rather than by the humans whose lives the designs are meant to complement. He even went so far as to state “in sum, current *design discourse has lost much of its rhetorical strength*” (Krippendorff, 1995, emphasis in original).

From Krippendorff’s observations, it is clear that 20 years on what has changed is the “what” of measurement - moving from ergonomics to web interfaces and exhibit interfaces - but not the unspoken values that inform what the measurement *means* or *implies* for those being measured. Thankfully, Krippendorff contended that the loss of rhetorical strength “need not be so” (1995) and invited change by sketching a new and more responsible future where professional designers *redesign design* through their attention to discourse. Today, as the prominence of Split A/B tests and the still-current museum research practice of measuring visitor’s dwell time at exhibits suggest - for what does a shorter or longer dwell even *mean*? - it appears we may not be living in that more responsible future (yet). Perhaps, though, revisiting the five dimensions Krippendorff sketched for the future of responsible design practice with the World Café at hand might offer a way forward. To move beyond a past in design where “discourse has not been the target of conscious design efforts,” Krippendorff’s defining dimensions of a more responsible future for professional design were (are): “1) A discourse surfaces in a body of textual matter... 2) A discourse is kept alive within a community of its practitioners... 3) A discourse institutes its recurrent practices... 4) A discourse draws its own boundary... 5) A discourse justifies its identity to outsiders...” (1995). Through Krippendorff’s

perspective of discourse “as a particular way of languaging” and “as a social phenomenon with a life of its own” (1995), these five dimensions were intended to open up the profession of design to consideration of both the ongoingness and also the recursiveness of its communication practices and the relations of those practices with Others. Said another way, Krippendorff’s focus was clearly on the forms of communication that designers practice through their everyday work and to turn attention to those (communication) practices as designable aspects of their practice. In drawing this parallel of communication practices to design practices, Krippendorff was calling for professional designers to no longer lament the entry of Trojan horses into the work of being or becoming a designer, but rather to make communicative change in the situation just as they would do as if it were their design product at stake. After all, what is a design product or the design profession if not the recursive product of communication processes?!

The parallels here, not only among the World Café principles and Krippendorff’s five dimensions but also among Café practices and the practices suggested by his dimensions, are striking. Indeed, the outcomes of this project suggest that the World Café may offer professional designers possibilities for attending to just the sort of communication design work that Krippendorff advocates as a way of ethically and practically constructing a responsible future - a future both for professional designers and for those who live together with them in that future. In other words, Krippendorff’s call for attention to designing discourse is also part of what the World Café is designed to do, and also what this project showed the World Café to be in the context of design work at MOSI: *designable design conversation for design* that builds on and holds people accountable for responding to the diverse needs and values of many participants.

Drawing on Krippendorff’s serious attention to everyday communication processes as a way to quite literally change the course of the design profession, I conclude this chapter by

revisiting two complementary ways of seeing design and communication and connecting them to what this dissertation might “mean” for communication as a field. As briefly mentioned earlier, designers with an eye toward communication have framed and explored the metaphor of *design as communication* (Schön, 1983; Norman, 2004; Krippendorff, 2006), where communication practitioner-scholars with an eye toward design have framed and explored the metaphor of *communication as design* (Aakhus, 2007; Thompson et al., 2014). In short, both types of professionals see their own work as the work of the other, and that the other’s perspective makes available leverage points without which they could not see or act upon. While of course neither communication nor design *is* the other *at the scale of a profession*, both quite literally *are* the other *at the scale of everyday lived experience in a social world* in so many different ways. That is, the practices that constitute the *professions* of communication and design have very different discourses while the practices that constitute *daily human experiences of communicating and designing with language* often have very complementary discourses. So, while neither profession is the other, both can be seen *through the eyes of the other* (see von Foerster, 1991).

But this arrangement leaves both sets of professionals in somewhat of a dilemma as each side seems to call for a way of seeing through the other’s eyes, but then also calls for a return to their own profession’s discourse or “house” once that seeing is done. Examples here include Krippendorff’s call for accountability *from other designers* to redesign design discourse (1995) as well as Jackson and Aakhus’ call *for communication scholars* to articulate a design project in communication (Jackson and Aakhus, 2014). So if these two sets of professionals are on the one hand taking the idea of being a professional in their field seriously, yet on the other hand speaking on behalf of another professional’s field, what does this say about our ability to together design a language or design conversation for collaborative work in a design situation?

Certainly there are those, such as Krippendorff, who perhaps straddle the fence and are both a design and communication professional, but what about the rest of us?

The answer to these questions, I believe, is in part found through this dissertation work and might most aptly be described in a play on a quote from Krippendorff, himself playfully quoting Heidegger: we could choose to see “language as the house of (our [professional]) being” (2008b). In adding “[professional]” to Krippendorff’s quote, to which he appears to have added “(our)” to Heidegger’s original statement, I intend to signify a shift from design professionals and communication professionals doing their own separate work, to both sets of groups doing work together *as professionals* and building a more responsible future through a new shared professional discourse. Though both a simple and a complex idea at the same time when speaking on such a large scale, this could in practice be exemplified or at least demonstrated through the World Café, and perhaps was done in the 3D Printing World Cafés with MOSI. In those Cafés we brought about an intentional focus on conversation, itself a form and part of discourse, which could be seen as *conversation design for design situations*. In other words, this project’s folding back of the communication design work into the work of designing the Idea Zone afforded a way to see the conversational “space” as being designed at the same time that the Idea Zone was being designed. With the capacities for reflection that both design and communication professionals have developed through their practices, and with the recursive nature of both communication and design work to create large-scale, systemic transformation through small-scale (but large in leverage) changes as suggested by this folding-back, what better way to enter the conversation on some of our world’s most pressing issues than through the coming together of these two professions to design communication and communicate design through questions (and language) that matter?

An Early Conclusion

Perhaps, then, a part of what this project contributes to communication and design practice is an initial establishment of the World Café as a formative research method for Participatory Design situations. Much of the theoretical work done in this dissertation includes conceptually grounding design practice and the communication design of the World Café within the field of communication, linking them to areas of concern that connect to communication theory and communication practice at the same time through a metaphor of conversation. Importantly, and as the work of this dissertation has shown, these areas of concern for the field of communication are very much related to and an irreducible part of current key concerns within many design disciplines, and particularly within the area of design for learning spaces in science centers. Indeed, even as Krippendorff alludes, it is through a particular way of languaging (discourse) that professions emerge. Said another way, there could be no design profession or perhaps even ideas of design if not for human communication. What this project has brought serious attention to is group *communication process* within a science center design situation and the importance of setting contexts through that communication design work that also fit with the creative work of conceptual design.

As with any design engagement, of course, there is an always-ongoing need for more work to be done in future iterations, and this project's future needs include refining the practice of the World Café as a research method for Participatory Design. Though much of the detail of this will be covered in the final chapter, the future work necessary to build on the Café's process-oriented contributions revolves around keeping the *products* of the World Café design process alive between Cafés and among other parallel design or organizational processes that take place around the design problem. These products that need to be kept alive include not only physical

things, artifacts, and objects, but also the ideas, conversations, and “ah ha” moments that emerge through the Cafés and their planning, as one of the foremost challenges was keeping pace with these “ah ha” moments and sustaining them in ways that afforded future re-sourcing, reference, adaptation, and so on. Where traditional participatory design methods have perhaps gone too far in focusing on the products of their processes as stand-ins or as proxies for real people (Thompson et al., 2014), the World Café’s focus on communication process and its attention to setting appropriate contexts *with others* may afford closer relationships among design processes and artifacts than possible with other approaches.

To briefly summarize and to also transition into the project’s future work, a primary contribution of this project is the rooting of Participatory Design processes within group communication process and the demonstration of practical contributions of the World Café to concerns of both communication and design. What emerged as needing more attention, though, and is the primary focus of future work in the next chapter, are ideas for adapting (redesigning) the Café communication process in ways that generate “products” (or artifacts that may be referred back to) that fit with the World Café as well as other design processes within the larger organizational context of MOSI. Importantly, however, a foregrounding of the creation of designerly products and artifacts through the Café should not overtake the focus on designerly Café communication process. As noted by much of the recent science center design research cited here, both the processes and the products for design need be held in focus simultaneously, or perhaps alternated between, for successful design of exhibits intended to foster contexts of learning for others.

Chapter 6: A Closing Into Future Openings

The painter should not paint what he sees, but what will be seen. (Paul Valéry, 1941; from *Mauvaises Pensées et Autres*)

It is communication that makes a difference and gets results. (Krippendorff, 1995; from *Redesigning design: An invitation to a responsible future*)

Summary of the Research and Research Outcomes

This work with MOSI has involved ongoing reflection and negotiation with many sorts of players and stakeholders, and I have learned much about stepping into an already-flowing river of organizational work where there are eddies and currents, bends and turns, backwaters and lakes, and even the occasional unforeseen rapid leading to what looked like a waterfall - that was thankfully avoided by a fork in the river that lead to calmer waters. As a way of summarizing the work more immediately, I engaged with MOSI in an ethnographic and action research context (while not being wholly either an ethnography or an action research project) through the hosting of two World Cafés where MOSI community members were invited to participate in the redesign of the Idea Zone and to create ideas for the future of 3D printing at MOSI. This applied work was informed and infused by MOSI's context as a community-based learning organization and also by this dissertation's roots in bringing together theoretical and practical grounds of museum planning and research, of design practice, of communication, and of the relationships among design and communication design processes. Outcomes of the nearly two year engagement include the emergence of many design ideas that were "gems" for MOSI as well as a number of "ah ha" moments when close relationships were made or renewed among people and MOSI. Other outcomes include the emergence through the Café of a recursive metaphor that speaks to

large-scale possibilities for change of design practice at MOSI as well as the organization itself, and connected to this were the establishment of plans to host future World Cafés for redesign of MOSI's second floor. This work also brought about a number of insights into the Café communication process in design contexts, one of which includes the value of non-tangible design “products” such as the connections made during “ah ha” moments, and that though ambiguity and paradox are to be sustained in design work, tangible ways of keeping the conversation going may also be necessary for some types of change, and particularly change at the organizational level.

And, for me, an outcome of this engagement at MOSI includes insight and new contexts of organizational learning that have also spilled over into even my administrative work at the university as I have sought to understand the needs of my colleagues through attention to communication process and context. In that administrative work at USF work, too, the design principles of the World Café have opened up new ways for me to engage in organizational design situations and has afforded new perspectives on old problems. In some cases I have even been able to share those perspectival leverage points with colleagues for even greater positive collective change. And, as with my administrative work at the University of South Florida, the work at MOSI is not concluded but rather continues into the everyday work of today, and tomorrow, and the days and months and years after. But if the organizational river of work has no headwaters or tail waters, how can the work of shaping the river's course be assessed, and what sorts of conclusions can be drawn from that work for future shaping of the currents?

Fortunately, through a focus on the everyday communication and design work involved with the Idea Zone World Cafés, three strong currents already flowing within the river begin to come into focus: first, the designer's ethically rooted *opening* of design through designed

conversation with the community; second, the community's orientation to active engagement and participation in designing the Idea Zone through invitation of MOSI and the World Café; and third, the collectively planted seeds for everyday redesign of the larger organizational work of MOSI. If these are the three primary currents, or at least approximations of the currents, then each of the four research questions I posed in setting out on this work with MOSI has source for conclusion, though perhaps a fluid source. Drawing from the previous chapter, conclusions from the research questions might be summarized as: 1) assumptions and issues of participation involved in the group communication processes of conceptual design can be foregrounded and reframed through attending to communication design for design, and the World Café was one way among perhaps many others to effectively move away from traditional assumptions of roles and forms of participation for design of the Idea Zone; 2) that attending to the ethical contexts of designing group communication processes for design - even if the attending is orchestrated from backstage through democratically-rooted processes such as action research and the World Café rather than brought to the front stage - can open up new perspectives and leverage points not only for the other stakeholders but also for the designers and the organization; 3) as a generative metaphor itself, the World Café creates space for new metaphors to emerge that can be powerful leverage points for conversation and collective action, evening becoming a "host" for other metaphors such as the 3D printing metaphor of rapidly prototyping new rapid prototype museum experiences through the World Café itself; and 4) though the World Café may not generalize to all design situations at MOSI, it did afford many sorts of playful and flexible space for collaboration among MOSI designers and the community for design of the Idea Zone, with relevant organizational outcomes and further plans for future Cafés at MOSI, and also afforded possibilities for moving beyond current challenges in science center design more broadly.

Relating the Primary Outcomes and Contributions

As suggested by the layering of methods in Chapter 3, this project has worked to integrate both theory and practice in the course of an action research project that itself had practical aims: to bring ideas from the community into design of the Idea Zone at MOSI. Thus, the contributions of this work are not solely practical, theoretical, empirical, normative, or otherwise. Rather, each of these possible dimensions of research was a major part of the project but not necessarily in those terms. Instead, more conversational terms such as “could,” “should,” “might,” “would,” “I believe,” “I have seen” and similar terms were used regularly during Café planning sessions and the Cafés themselves. In the pages that follow, I summarize or outline the more immediate primary contributions of this project in the context of four related major areas: MOSI, the World Café, Participatory Design, and Communication. Following an expansion of these four areas, I then offer a second set of broader contributions or observations intended to call attention to key aspects learned through engaging in this project that may offer context for future projects and related work.

Contributions with MOSI. With its focus perhaps most centrally on ways of inviting community participation in design of the Idea Zone, some of the most immediate contributions of this project were to MOSI’s process for designing the Idea Zone: in setting context for the community’s invitation and participation, in focusing on questions that matter for the community and for the designers, and in fostering space where creativity and innovation may take place in a way that brings about desired change. Through this process a number of very good ideas and “gems” emerged both for community members and for MOSI designers alike through the course of the planning meetings and the Cafés, demonstrating that MOSI takes seriously its commitment to and roots in the community as a part of the way it operates. Further, not only were ideas

generated and gems discovered, practical contributions for design of the Idea Zone and the 3D Printing the Future Exhibition were brought about through the process.

This idea leads to a related contribution of this project for MOSI and also for science centers perhaps more broadly, in offering a new way for science centers to be with their communities, their visitors, and the public. This way of being together is a personal one and quite distant from the more traditional sorts of visitor surveys and exhibition assessments that might have otherwise informed this sort of engagement with the community. Of course, a challenge of this sort of community engagement is how messy things can sometimes become - but that is also the point! As Allen (2007) and others note, it is important to learn about the individual learning styles of real people, not as they are represented by generalizations or blunt instruments but through the dilemmas and paradoxes and conflicting points of view that are part of everyday life in living together with others. In so far as “making science real” means making it real for *real people*, then the sorts of learning conversations afforded through the World Café are instrumental for both the community and for the science center staff in design of spaces for learning. This focus on learning conversations and reflection together connects closely not only with Schön’s ideas of a reflective practitioner but also extends his ideas of *reflection-in-action* to *reflection-in-interaction* (Thompson et al., 2014; Steier & Ostrenko, 2000). That is, a reflection done in the moment while the materials of the situation *and the other stakeholders* are at hand. Though reflection with others may have been an implicit part of Schön’s framework, this work made real the ways that desired change might be brought about through an intentional focus on communication process (in the form of conversation through the World Café) during the course of a design problem, and did so by bringing the designers and the stakeholders (community members) literally to the Café table together. Perhaps, then, what museums and science centers

in particular might look for is not an opportunity to move “beyond the walls” of the museum in the spirit of Malraux, but rather to strengthen the very boundaries of the museum by questioning what those boundaries are with relation to the specific communities they serve. In this approach, and in the case of MOSI, opportunities then arise to bring about a shared understanding of science and also the science center’s role as an informal public learning space rooted in its community.

As a third and perhaps final summary contribution with MOSI, this project has also developed along organizational dimensions for the staff and designers at MOSI. Perhaps unintentionally, though in the context of Arnett and others’ work around the openings created through communication the idea also emerges, that the learning conversations afforded by the World Café created openings not only for community members’ participation in design of the space but also designers’ and staff members’ participation in design of the organization and its processes. This was most clearly demonstrated through Anthony’s drawing on the Café as a metaphor for new ways of working, though also played out in a number of other situations (discussed previously) as well. In other words, through MOSI’s focus on the needs of its community, conversation also naturally emerged around the related or corresponding needs of MOSI designers and staff for learning about (and designing for) those community needs.

World Café Contributions. The World Café was a constituent part of this project, and in the same way that much was learned through the World Café in conducting the work, this work might also offer learning opportunities back to the World Café and its practitioners. Through Fred’s relationship with Juanita Brown, one of the co-creators of the Café, I understand this project to be unique in that it brought the Café to the center of a particular Participatory Design project, and also was rooted within a larger context of action research. In so far as “novel” Cafés

were hosted through this project, then, the process and outcomes created through those Cafés are one sort of contribution that may give back to the Café community. A second possible contribution to the Café community may also be found in the folding back of the Participatory Design project back onto the Café (communication) design, or, from the other direction, folding Café (communication) design back into PD processes. Aakhus calls this “taking a design stance on communication” (2007) and Krippendorff also discusses a similar idea, but the point here is to see design of the communication process as a parallel part of designing “the object” - whether that object or those objects are a learning space like the Idea Zone, a conceptual thing like the idea of an Idea Zone, a process, or some other thing(s) entirely.

A second and important contribution to the Café community is “use” of the Café in this project as the central method for both conducting the research and also for interpreting the “data” that emerged through the course of the project. Action research certainly provided the larger context for the World Cafés, but it was the Cafés in the form of a Participatory Design framework that provided the practical grounds upon which the engagement grew. Of course, a Café was a latent possibility in so far as MOSI had conducted many Cafés before, but the choice of Cafés for design of the Idea Zone’s idea was certainly a choice nonetheless. Though for MOSI the Cafés may not have been a formal “method” in the sense that I have drawn upon it here in the dissertation, still the contribution remains of framing the Café as a method for Participatory Design in a science center and in learning about how that plays out in the context of a public space for dialogue on topics that matter - in this case about building the joint future of MOSI and its community together.

Connected to the idea of the Cafés as a Participatory Design method is how the Cafés also provided a way for MOSI designers and staff to make sense of the changes that were going

on in the science center: both changes they wanted to be a part of bringing about (such as understanding community needs for design of the Idea Zone) and also other sorts of change that may not have been “fully” understood (such as how the STEAM initiative fit at MOSI, or why the transitions in leadership changes were taking place). Though the Cafés themselves did not feature more than a few moments or mentions about these changes, the idea is that the Cafés afforded inviting space where organizational transitions and challenging changes were discussed in the flow of daily activities - something not always offered through everyday conversation. Of course, Cafés likely cannot be held in a daily fashion, though this project suggests that a Café could offer a way for organizations to intentionally draw upon the metaphor when approaching times of substantive organizational change to afford individuals an opportunity to make sense of the changes in a facilitated group process focused around conversations for learning. In so far as learning involves change and *is* change (Bateson, 1972; Wenger, 1998; Keeney, 1983), and people go about the process of learning *as* organizations, a contribution of this work may be to offer practitioners of innovation leadership (Kelley & Kelley, 2013) and other leaders a starting-point for designing Cafés focused around *people* (rather than, for example, hierarchical organizational relationships) to facilitate organizational change through learning.

Participatory Design Contributions. Perhaps the most substantive contribution of this work to Participatory Design is in the integration of a research dimension (action research) into the practice of PD such that they are not separate goals or processes, but are rather done in parallel as the same work and are conducted by various stakeholders jointly together through conversation rather than by individual external professionals or experts whose primary role is “researcher.” Krippendorff called this role a designer-researcher, or someone whose work of research was linked to their practice as a designer through the “ability to materially intervene in

support of future practices that will be meaningful to their stakeholders” (2008a). This work goes a step beyond Krippendorff’s notion of designer-researcher, though, through its engagement of all stakeholders - to include community members - as designer-researchers. Indeed, this is perhaps a fundamental tenant of action research as well as a foundational difference between it and other forms of research. The World Café, then, as demonstrated in this work, offers designers interested in the meaningful participation of community members or other stakeholders a way forward that pushes the notion of participation for stakeholders and designers alike, while also offering a framework that values reflective practice as well, to push *together* without pushing too far *individually*. Related to this, and also connected to the insights and opportunities for engaging in organizational change that MOSI staff were afforded through the Cafés, is Greenwood and Levin’s notion that technology and organizational design are inseparable and part of the same web of relationships (2007, p. 5). Though the Café is not necessarily an everyday sort of “technology,” in the more traditional sense of the word (*techne*) it certainly could be seen as such for participatory designers, and especially in the design work of learning spaces such as the Idea Zone where technologies (including 3D printers) are a major part of the learning processes.

A second contribution of this work for participatory designers and designers more broadly is the evolution of the reflective practitioner model as a formal professional who reflects alone or with other professionals on the design situation to a model where all stakeholders are afforded opportunity to reflect together. This is closely connected to a contribution for MOSI discussed above (moving to reflection-in-interaction) but also has other connotations for participatory designers. In this way, not only are designers able to talk about design and thereby evolve the language of design, other stakeholders are explicitly brought into that conversation

and invited to both learn about and change that language. This evolution is similar to a shift discussed in Chapter 5 when moving from conversation about a game of cards that is being played to a discussion about changing the rules of the card game at hand, and to do so through a process where mutual agreement may emerge around the game's changes and the new game being played, and also around the changes brought about by the playing of the new game. In this sense, participatory designers need not only a way of talking about designing the object of design, but also for designing the process for design - which in turn calls for ways of designing the communication processes for design together with others. As participatory designers continue evolving their repertoire for moving away from models of technical rationality and formal specifications, the World Café as demonstrated here offers one "method" or framework to draw upon that supports a model of knowing-in-doing, or knowing-in-doing-together.

Closely connected to this idea, and also connected to a contribution for the World Café, is for designers to see the World Café as a possible method when engaging in participatory design work. While much has already been said about the Café as a Participatory Design method, it is worth offering here in the form of a contribution to the field as a practical opportunity for designers to engage in evolving the professional design model with strong roots in democratic forms of social change by taking communication seriously.

Communication Contributions. For the field of communication, this project is most relevantly seen at the intersection of theory and practice, or perhaps as a way of relating theory and practice. Parallel to a contribution for participatory designers, this work may be seen as a way of drawing on communication theories and putting them to work in a practical situation that fits the context, the goals, and even the language of that situation. Recall, for example, the parallel Hyde drew between the work of an architectural designer and the work of a

communicator in designing a home that others felt comfortable in. Where Hyde and Arnett created theoretical ground and conceptual openings for communication to bring about change, the World Café complemented those openings and in this project offered a way to put those theoretical ideas into action through research. As discussed later, part of the future work is to “close the loop” on how the practical work of the Café might (or might not) circle back to inform the theories where it was put into action, but as action research might suggest the loop is already always closed - or perhaps was never open depending on the choice of frame of those involved. In either case, the idea and contribution for communication here is how the World Café affords an opportunity to creatively play with theories while also keeping practices in mind, and ways of playing with different forms of practices while also keeping theories in mind.

Related to this cyclical relationship among theory and practice (among both communication and design) is a contribution of this work to the literatures around *communication as design* and *design as communication*. Where *design as communication* has been a part of the design literature with a focus on practice since at least the 1980’s through the work of Schön, the much more recent communication literature primarily revolves around communication theory and does not so much explore the interpersonal communication that takes place during design processes as much as it works to establish a design enterprise inside the field of communication. In other words, where *design as communication* is a metaphor primarily by and for designers, and *communication as design* is a metaphor primarily by and for communication practitioners, this project has worked to relate both of those theoretical perspectives through practice in a way that does so without collapsing to a duality of normative/empirical work.

As a third and last contribution to be discussed here for the field of communication, this work's approach to drawing upon communication theories in the course of changing (designing) everyday conversation in an organizational context offers communication practitioners a case to draw upon in their work to make a difference that matters with others. Perhaps this point might be highlighted by a brief story about an early experience of ethnographic work at MOSI. After taking notes in pencil one day while exploring the Idea Zone along with visitors from that day, I shared my notes with a colleague who noticed that I had jotted down a question in the margins: "how can I help MOSI here?" My colleague, though certainly with good intention, offered that I should reconsider ideas of "helping" the organization as that was not particularly the goal of research and should not be part of my role as a researcher. I grappled with this feedback for quite some time asking questions mainly of myself: What is wrong with helping MOSI? Why must research be separate from action? How can communication (including even this communication of my colleague) *not* be both normative and empirical at the same time? Eventually I was able to move past this seeming dilemma, perhaps in part through the communication ethics work of Hyde, Arnett, and others, to eventually see that communication is both more and less than what it is (or seems to be), and that any act of communication brings about meanings and values for others that cannot and need not be fully known by me. Once comfortable with the idea and practice of communication as a process that *always* brings about change, my focus shifted from a kind of psychosis about the "correct" role of a communication researcher to ways of engaging in ethically and socially responsible ways of practicing communication and design theory together with others through situated reflective practice. As action research suggests, that sort of work is highly contextual and depends greatly on the particular needs of the particular people whose lives are part of that particular work, but those dependencies, contexts, and peculiarities need not

prevent action on the part of a researcher. Indeed, in many cases these situational challenges *call* for action on the part of researchers. Reason and Bradbury discuss what I am trying to get at in terms of first, second, and third person research/practice, where

First person action research/practice skills and methods address the ability of the researcher to foster an inquiring approach to his or her own life, to act awarely and choicefully, and to assess effects in the outside world while acting...Second person action research/practice addresses our ability to inquire face-to-face with others into issues of mutual concern...[and] Third person research practice aims to extend these relatively small scale projects so that “rather than being defined exclusively as ‘scientific happenings’ they (are) also defined as ‘political events’ (Toulmin and Gustaven, 1996).” (Reason & Bradbury, 2001)

The point here, then, and also a contribution of this work, is to invite communication scholars and practitioners to engage in the sort of work described here as *third person action research/practice* through applied work in organizational contexts with a focus on group communication process so as to make it (communication process) available as a leverage point for democratic change in the situation.

Broader Contexts for Future Work

As described in the opening chapter, this project was not intended to be one from which generalized conclusions or “knowledge” could be extrapolated; rather, from the outset this work was designed to see knowledge as a creative process to be conducted with others in a mutual frame of learning together and taking place in settings with particular contexts and conditions and stakes in play. Through this contextual and specific way of knowing, though, there was also a sort of continuity across time that emerged in this pattern of learning together from which some

broader contexts for future work developed. In the sections that follow I build on ideas discussed in prior chapters while emphasizing and expanding on them here as key developments of the project that offer points of departure for future work.

Contextually knowing together. In taking knowledge as a process, this project's roots were grounded in practical and everyday ways of going about what otherwise might be processes conducted solely by professionals or experts who brought their own knowledge to the situation to meet needs that only could be seen through professional eyes or discussed in expert language. Needs were not sought to simply be met in this project, but to be learned about and for new possibilities to be explored together. This approach helped to work through what Nord & Connell refer to as the knowledge controversy, or disruptive arguments over what counts as knowledge (2001). In coming to the table as joint participants in a shared knowledge-creating process, the knowledge of things and practices and roles "out there" was backgrounded while local knowledge built through acting together emerged as a focus.

Taking communication seriously in design. This way of contextually knowing together connects closely with taking communication seriously in design. Just as in the spirit of Elden and Levin's "third language" (1991) where people with two different frames begin to communicate at a level where they develop a shared frame for communicating *and* learning together, this work with MOSI demonstrated it is through communication processes that knowledge processes are rooted. In the context of design, attention to communication process in this way might offer steps for moving past the current (as of this writing) controversy over roles, such as that of *designer* and *user*. Building on the approach of contextually knowing together, "knowledge" about what a design should become and how it should get there can remain open and emerge through jointly

designed communication processes that foster knowing together: both about one another and about future designs that might best fit their joint needs.

Flexible and ecological ways of designing. This open-ended and emergent process for knowing together and for doing design with a focus on communication also contributes toward more flexible and ecological ways of doing design work (Goodbun, 2012). If design, as Winograd suggests, is a process for bringing about whole new worlds (1997), then certainly there is more to be concerned with than shifts of *roles* and of new forms of *participation* when working to bring about those shared worlds. As suggested through this Participatory Design work with MOSI and the MOSI community, a more ecological way of designing could focus instead on relationships among people, things, and ideas of things, and how those relationships emerge and change across time through communication and learning. In this sense, design might take as its “object” not things but *relationships*.

Metaphor as a way of *seeing as*. Finally, connected to the idea of attending to relationships and flexibility in design are how metaphors can be a powerful way to see design challenges in new ways. Indeed, a key outcome of the Café was Anthony’s ability to see and reframe what was a crucial challenge as *fun*. In the same way that Anthony found the Café metaphor was generative of new perceptions (Schön, 1979), he also found that metaphors themselves are designable (Madsen, 1994). In expanding on the metaphor of World Café in the Idea Zone, he was able to build on or redesign it in such a way as to bring about new perceptions of the more encompassing organizational challenge of wholly redesigning the design work itself. The designability of metaphor here played a key role in providing for a new way of seeing that challenge as one of rapidly prototyping new museum experiences which, by seeing it this way, had already begun through the Café’s “rapid prototype” process.

Where the first set of four primary contributions were more immediate in the sense of having already been brought about, this set of four broader contexts for future work is intended to offer starting points for both my future work and perhaps also the future work of others. In the section that follows I develop ideas for building on this dissertation project through future work in practical and theoretical ways at MOSI and in other scenes.

Getting To “The Point of It All,” or Situating Future Work

In having completed many action/reflection cycles within the larger “action” of hosting these two Cafés, and with this dissertation standing for much of the reflection cycle on a longer layer of time, the next and perhaps a key phase for this design work with MOSI becomes the next action cycle on that longer layer of time. Indeed, as Agar points out about his ethnographic work with organizations in a multi-genre tale from the field (2010), the “final crucial step, where something new is actually put into practice on an experimental basis,” which is the “point of it all” in ethnographic work, so often goes missing. In many of those cases, “recommendations” generated by the research are made to the organization but go undone as time moves on and as other priorities wash back in to the space vacated by the research work’s conclusion. In similar moves and motivation, Dourish discusses the challenges of ethnographic design work in his recommendation to avoid concluding with “implications for design,” or simple statements meant to “close the [design] gap through application of ethnographic methods” as it is in the gap “where all the interesting stuff happens” (2006). Putting both of these ideas together, and as basis for including this project’s recommendations for changes in the future work section, I begin the conclusion of the dissertation here with a discussion of those possible changes in the context of planned future work with MOSI. In other words, the “implications for theory” or “implications for design” that traditionally are featured in a conclusion are replaced here with practice-based

ideas for further possible redesign of the World Café's communication process that in some ways can only come to life through future practice. Fortunately, that future work is close at hand through the invitation of Molly and Anthony to host World Cafés for the now (as of this writing) quickly approaching redesign of MOSI's second floor.

As part of my "interviews" with them following conclusion of the second World Café, when asked about the World Café's contributions to MOSI and the conversation began to shift toward possible future plans, Molly and Anthony opened up the possibility of hosting a Café or series of Cafés as part of the multi-million dollar and multi-year efforts that were then in the early discussion and planning phase for redesign of the second floor. Sponsors were being solicited, as were exhibit designers since some would be coming from outside MOSI, and possible ideas for exhibits were beginning to bubble up as part of the planning processes. Molly specifically stated that an important part of a successful redesign would be to bring in feedback of the community, and to do it early enough in the process that those ideas could be incorporated into the large-scale and long-term efforts that were then beginning to ramp up. When asked if I would participate as host of the Cafés I responded "of course," though with the caveat that I would like to, if possible, complete the dissertation writing process before ramping up that work. As we planned then and as of this writing, my plans are to revisit this opening with Molly and Anthony as soon as I am at a transition point with the reflection cycle (this dissertation) from these two Cafés. If the World Café for the redesign of the second floor continues to fit with their broader plans underway since we last spoke, those Cafés will perhaps have the greatest opportunity for change through communication design and design of the space than perhaps other Cafés coming before. In this sense, the two Cafés described in this dissertation will have been a great opportunity to rehearse and practice for the upcoming performance.

World Café Redesigns for Second Floor Redesign

As part of the upcoming Cafés for the second floor redesign, and to shift from “implications” for World Café design to an integration of these reflections into future practice, I anticipate incorporating - or at least *attempting* to incorporate, which will *also* provide an opportunity to learn about what works - many of the future work dimensions that I have covered through this dissertation, particularly those from Chapter 4’s data and analysis work. Briefly, the primary dimensions for communicative redesign of the future World Cafés are planned to include: 1) post-Café follow-ups for both MOSI and the community that will afford both sets of stakeholders an ability to stay in communication about developments and outcomes from the Café, 2) hosting the Cafés in spaces other than the Idea Zone or informal learning spaces, and 3) hosting a World Café exhibit, where the Café itself is contextualized and hosted as a “performance” within a larger space and where there is focused attention on performing the activity being designed for (rather than on the activity of design). Each of these three opportunities for redesign is discussed in further depth below.

Watering the Seeds, or Keeping the Networks Alive

For Café follow-ups, and though Brown and Isaacs (2005) highlight the importance of these as part of good Café practice, I found that post-Café follow-ups were rather difficult to follow through with as Café host/designer/researcher. Between efforts involved in the planning work that preceded the Café, the Café itself, and then the post-Café interviews and research reflections with an eye toward hosting the next Café, the follow-ups often seemed to lack enough immediate priority to take the place of those other sorts of work. Perhaps a possibility for upcoming Cafés, and one I plan to test, could be a sort of co-host of the Café. This would preferably be someone with an “inside” role at MOSI, such as a designer or staff member like

Anthony who is close to the design work, who might partner on the follow-up work with MOSI designers (whether internal or third-party consultants), staff, and other internal stakeholders to keep the conversations going there. In this co-host arrangement, I would also partner on parallel follow-up work with the community members to keep conversations going there, and together we would regularly share updates with one another about our conversations and outcomes, all with an eye toward the next Café or putting Café outcomes into action in the spirit of Agar. In essence, we would build on the Café's concept of networked conversations, in that we would be two connected "nodes" in the network while also being simultaneously connected to many others through "another side" of the node. These follow-ups within each network could be as simple as a summary document of the Café's report-outs and pictures of the notes and diagrams made on the butcher block paper, or as complex as secondary Cafés hosted within each "side" or sub-network that made a deep dive on key questions that matter which emerged from the primary Café where all stakeholders were present. Those derivative Cafés (or networks within a network) and the artifacts from them could then feed back into a future primary Café, where all stakeholders are again present, to evolve the discussion and strengthen the collective network. In the case of the upcoming second floor redesign, this pattern (or pattern within a pattern) might include an initial MOSI/community Café that leads to two parallel-in-time but separate-in-space cafes involving 1) MOSI/designer/sponsors and 2) the MOSI community, into which all three Cafés feed into a collective fourth MOSI/community/designer/sponsor Café. In all four of these Cafés I would anticipate the co-hosts (myself and possibly Anthony) would be present and co-hosting so as to provide continuity across the Cafés by connecting the conversational networks and conducting respective follow-ups. This could fit nicely with the concern voiced by Molly regarding getting the community involved soon enough - as designer and sponsor discussions

have already started - while also allowing the designers and sponsors to continue their work in parallel without a perceived need to pause or slow their pace. Further, through these parallel and networked Cafés, the needs and perspectives of all stakeholders could begin to emerge through coherent communication patterns within the larger World Café pattern such that the different languages begin to take shape as a collective language of design for their shared situation in redesigning the second floor.

Locating Design Cafés in New Spaces

The idea for hosting future World Cafés in spaces other than the Idea Zone, including perhaps outside even the museum itself, surfaced in this project in one of my follow-up interviews with Anthony and was directly connected to another metaphor rooted in the idea of a café, though this time as a “science café” such as those hosted through sciencecafe.org that “are events that take place in casual settings such as pubs and coffeehouses, are open to everyone, and feature an engaging conversation with a scientist about a particular topic” (Sciencecafes.org | Home, 2015). Though we did not then dive into the motivations behind the suggestion of hosting a World Café outside the museum, the context of our discussion seemed to suggest that the move would be to engage the community in new, perhaps more “public” scenes outside the walls of the museum (see also Davis & Huang, 2010, p. 3803; Malraux & Gilbert, 1953). Though World Cafés are often hosted in settings that hold onto the context of the situation without necessarily being in a physical space immediately related to the situation, one possible next step in the second floor redesign Cafés is to consider hosting at least one near MOSI’s third-floor café/bar just outside the IMAX theater entry. Not only could this connect with the “science café” idea from Anthony, the third floor balcony just a few meters away also affords a look across and down to portions of the second floor space that will be the redesign’s focus. This could also

allow community members to visit MOSI as part of their Café participation just as was offered for the second Café's participants in their free pre-Café visit to the 3D Printing the Future Exhibition and that featured in their post-Café discussions with me as an enjoyable opportunity to reconnect with MOSI, for some after having not visited in a while. As was demonstrated during both 3D Printing Cafés, and also as highlighted by Schön and here in this dissertation, there is benefit to having the “materials” at hand and available for reflection during the action of design work. This availability for the second floor redesign could afford not only gesture and pointing such as that described by Tang and Leifer (1988) but also first-hand walk-throughs and explorations of the current space or even mockups or diagrams of future plans in the current space as part of (before, during, or after) the Café. Perhaps after hosting one of the Cafés on the third floor in the café/bar area, and building on what was learned in the movement out of the Idea Zone into that space, the “community café” as described above could be hosted in a space fully outside the museum that still holds onto the context of the Café as rooted in design contributions for the MOSI community.

World Café as Performance

Building on the idea of a Café outside the Idea Zone, though likely still within the museum, is an opportunity to host a design-oriented Café as a performative exhibit within a larger exhibition space. In drawing on the idea of a Café as a performative design exhibit, I mean to suggest an involvement with bodies, materials, and language in such a way that it is not only the immediate doing of a design activity but a *doing of* and *attending to* the future activity that is being designed for through conversation. This suggestion is in the spirit of Austin (1962) and Searle (1969) in attending to what we do with words, though it extends the idea to foreground performance of the future activity or exhibit that is emerging through the language/act of design.

As discussed in Chapter 4's data and analysis, this possibility did not seem to fit with the needs of MOSI for the 3D Printing Cafés at the time. I plan to reintroduce this idea to Anthony as a possibility for locating one of the upcoming Cafés, though, as an option for addressing some of the challenges we experienced in Café planning such as the need for dedicated, closed space for the Café. In the performative Café "exhibit" we would hold onto the Café context of a convivial, inviting space for conversation and the larger Café planning and hosting process as discussed by Brown and Isaacs (2005) and drawn upon for the two 3D Printing Cafés. A major difference, though, would be in the process for inviting community members to participate in the Café. In the idea for this model, the invited community participants would not necessarily be identified weeks or more beforehand and receive a formal invitation, but rather would be invited to participate on-the-spot in the Café exhibit as part of their regular visit to MOSI or perhaps even their visit to the space where the Café was being hosted. Visitors-turned-Café-participants might come and go as their visit and those with them would allow, temporarily performing a design process (the Café) that is itself intended to contribute to design of the larger exhibition space. Although there are many opportunities for playing with this idea, the central motivation as briefly described here is in the spirit of the applied work by Jacucci and Wagner with design students where they focused on the design process rather than a final product through explorations of body and material, or what they called "performing materiality" (2007). In this performative design setting, the students iterated through the building of models as part of their conceptual design work "as if" producing a performance of a design concept in the making" (Jacucci & Wagner, 2007). For the second floor redesign, perhaps the performance of material could take place through Café participants' play with and redesign of actual miniature models of the proposed redesign created by the designers, or perhaps the participants could do the initial

designing of those miniature design models in three dimensions, such as with Legos, with physical engagement or performance of the models to follow. Both of these approaches or others could focus attention on the “as if,” or the metaphorical, process of producing a design concept with their bodies and with artifacts. Not only could this work produce artifacts or products in the form of iterative models, the idea and process also fits closely with Anthony’s metaphor of the 3D Printing Cafés as a rapid prototype way to design rapid prototype museum experiences and practically could afford new ways to reconceptualize traditional notions of “engagement,” “participation,” “visitor,” and “interaction” as called for by Allen, vom Lehn, Heath, Hindmarsh, Ciolfi, Bannon, Rennie, and others. Interestingly, this approach might also engage Café participants as if they were reflective practitioners in the spirit of Schön, where they are in-action reflecting on their design work while working with the materials at hand, and simultaneously reframing the design problem together so as to make future moves and reflections jointly.

Further Future Applied Work

As the work of this dissertation was not intended to generalize a set of research findings or implications for all design, or all science center design, but rather was a close engagement in a particular setting with certain contexts, materials, and stakeholders involved, much of the future work described thus far has been reapplied back to the larger environment out of which it emerged: MOSI. As MOSI itself, though, is situated within a larger environment of, for example, science museums, that are also themselves situated within larger environments and so on, it also makes sense to consider the fit of World Cafés for design situations within these other broader layers as well. Of course, those “broader” layers will also have specific contexts, materials, and stakeholders at play as well so perhaps one starting point for locating that work would be in a context *not* like MOSI.

In addition to the future work at MOSI described above, and perhaps after completing that work given the timeline for the second floor's redesign, I also would like to explore how the World Café fits with design situations in other organizations, and particularly in organizations or contexts where a history of learning conversations is *not* present or where a culture of innovation leadership (Kelley & Kelley, 2013) is *not* present. In other words, a future research question might revolve around whether or how the success of the Café design work was dependent upon MOSI's years of engagement as a learning organization or upon its innovation leadership, where contexts of learning and innovation are created both for science center visitors and for the organization. And, if so, how might World Cafés be incorporated into those organizations and situations for Participatory Design where there is a need for involvement of community members or other stakeholders in the design work?

In the case of MOSI, for the 3D Printing Cafés and also for the anticipated second floor Cafés, both MOSI and the community already saw, at least to some extent, the need for community involvement such that the Cafés were a close fit for the situation. Through this fit, or perhaps through the emergence of the fit created through conversational openings of Fred and me with MOSI designers and the community, the World Cafés were able to move right into other sorts of needs for the immediate design situation: Idea Zone redesign and the future of 3D printing at MOSI. In other situations, though, it may be that a case must be built for even incorporating the community or ideas from the community into the design process in a participatory way - much less actually drawing on the World Café to do that conversational participatory design work. What I have learned from the process of setting up and hosting these Cafés as well as from my follow-up interviews suggests that the Café could help orchestrate the context-setting of a participatory design situation by taking the focus of the questions back a step

or two in the design process, such that the need for community involvement is not assumed to be a need, but rather may be explored as a possible need. (And this stepping-back may need to be done even if I “know” that community involvement *is* a need for them; see Arnett et al., 2009). In other words, the Café questions would not focus on the immediate redesign at hand but rather the process of the redesign, perhaps opening the Café with “where does collaboration come from?” or “what does a good partnership look like?” These sorts of conversational openings, just as with the 3D Printing Cafés, could create spaces where shared ground for the participants might emerge that would move them toward shared understandings and values around the collaborative work that *needs* to be done as part of an ethical design process when moving “private” ideas into the public (see also Ehn, 2011).

Further Future Theoretical Work

In addition to the possibilities described above along with many others for future applied work, there are also many possibilities for growing this project by rooting the insights discussed here more deeply within the grounds of communication and design theory. Though I have made initial moves in this dissertation linking the work to particular areas of communication theory, with a focus on recent work relating communication and design along with communication ethics, and though the JACR article (Thompson et al., 2014) made some initial links to design theory with a focus on Participatory Design, there are opportunities to explore relationships of this work to other theoretical areas across the fields of communication and design, much in the same way that the future applied work included exploring opportunities outside the immediate environment of MOSI. There is more to design than Participatory Design, and there is more to communication than what surfaced here, so where in addition to these theoretical areas might there be opportunity to locate this sort of everyday change-making work? If the fields or the

professions of both communication and design are bound up in patterns of recursive theorizing and reflective practicing that change the theorizing and the practicing, how might this sort of work enter key conversations about the relationships of theory and practice? I leave these questions and others to be explored as part of future theoretical work around this project, perhaps initially begun even during the second floor redesign at MOSI.

Closing With an Opening for Redesign With Others

If “it is communication that makes a difference and gets results” (Krippendorff, 1995), then this project cannot *not* have made a difference in the lives of MOSI community members, designers, USF students, and so many others through its focus on designing group communication process for design with MOSI. Indeed, this dissertation was an explicit attempt with MOSI to make a difference and to get results, although the differences and the results were largely left open so that they might emerge through communication process and be open to shaping by participants rather than be formally specified a priori. The ambiguities and paradoxes involved in such an attempt, though, also bring along questions that are hard to answer, or perhaps have no answer at all or only lead to more questions, making challenging both a design project at MOSI (the Idea Zone) and a design project at USF (this dissertation) that need some answerable questions and some concrete “results,” for what are differences that do not make a difference to those with a stake in the game? Although both too little and too much has been said here about those differences and results, and what those differences and results might mean for those involved, the point is also that design work is always ongoing just as with the meaning of the differences and results that emerged through this dissertation. It is my hope - and I believe it is the case - that the attention given through this applied project to design of everyday design conversation has opened up shared ground and created a sort of model or prototype space where

designers and stakeholders “feel at home” (Hyde, 2012) not only in the immediate design work at hand but also in re-modeling the home. With this in mind, I open up this dissertation work to the ideas of others for their redesign of this communication design work and the making of new differences perhaps even unimaginable here.

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