Collective Creativity through Enacting:
A Comparison of Generative Design Research Methods

THESIS

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Abstract

This thesis explores how dynamically moving one's body, while problem-finding and problem-solving in a group, can impact one's creative abilities and expression.

The behavior and creative output of small groups of people engaged in creative sessions was investigated. They explored the question “What’s next?” using one of four methods:

~ traditional focus group
~ image collaging\(^1\)
~ Sandquery\(^2\)
~ Enactavision\(^3\)

People’s use of the three participatory methods (image collaging, Sandquery and Enactavision) was compared to the control condition (traditional focus group). Each method followed a similar script and used the same activities and post-session questionnaire. Triangulation of data using several measurement techniques was performed because of the exploratory nature of the research. Analysis focused on where similarities and differences occurred when comparing dynamic body movement and collectively creative expression.

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\(^1\) The image collaging method uses paper, scissors, glue and the provided images and printed words as tools.

\(^2\) The Sandquery method uses sand, a wooden box called a sand tray, and the provided toys and objects as tools.

\(^3\) The Enactavision method uses the Kinect, a wall, a projector, two computers, a touchscreen and the Enactavision application as tools.
This research shows that groups of people who make meaningful movements, play pretend, or enact while thinking and generating creative possibilities produce very different output than do people in a group who brainstorm with minimal body movement. Thus, enactment enhances collective creativity. Activities designed to generate creative possibilities and solutions are more effective when they are more embodied, kinesthetic and playful than the more traditional and static or reserved methods used for design research.

This research explores collective creativity because collective creativity will play an important role in everyone’s future. Because wicked problems require transdisciplinary teams to envision possible futures, collective creativity will be used to inform and inspire innovation and the solving of very complex problems. Having research that endorses an attitude of activity and playfulness as fundamental in the generative phase of the design process brings attention to the unique benefits of co-designing with people.
Dedication

To all the wonderful people of ACCAD, past, present and future.
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Vita

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Fields of Study

Major Field: Industrial, Interior and Visual Communication Design
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Chapter 1: New views on creativity: Embodied interaction and creativity

1.1 Creativity, movement and enactment

We explore with our bodies, with movement, touch, sight – with all of our senses. Mind and body share intricate connections whether we are alone or whether we are communicating with other people. Robertson reports on “cooperative work and lived cognition” in a 1997 field study of Computer-Supported Cooperative Work in a distributed company. Robertson's study concludes that a relationship exists between the mind and body in terms of cooperation. “Whatever the designers did was accomplished not just by internal cognitive processes, but by different combinations of their purposeful, embodied actions. Cooperation was achieved by the mutual perception, by the actor and others, of these actions as the basis for the ongoing creation of shared meaning” (Robertson, 1997, emphasis is in the original. p. 210). This shared meaning, made visible through “purposeful embodied actions” reflects research about different embodied learning styles within the sphere of education.

Howard Gardner outlines a number of learning intelligences to highlight different styles of learning in the context of education. Of the nine types of intelligences that he describes, the spatial and bodily-kinesthetic intelligences, among others, are extremely relevant to this thesis. Gardner describes how bodily-kinesthetic intelligence works:

When we pick up an object that we have not lifted before, we draw on muscle memories of lifting objects of similar bulk and density as a natural mode of anticipating what our body will have to perform. Past experiences of lifting are symbolized in a kinesthetic language, which is drawn
on directly by the body, without the need for any other symbolic intervention (Gardner, 1983, p.241).

How might spatial intelligence be important for creativity? “A final facet of spatial intelligence grows out of the resemblances that may exist across two seemingly disparate forms, or, for that matter, across two seemingly remote domains of experience” (Gardner, 1983). Taking two disparate forms and making new and interesting connections is one of many characteristics of creativity. The bodily-kinesthetic intelligence involves moving the body creatively and sometimes as a means of creative and improved communication.

How can playing with objects, tools, props, and artifacts inspire creative embodied interactions? This thesis experiments with generative tools and different 'mind and body spaces' that may evoke collective creativity. Recent creativity research has expanded to include the study of embodiment, interaction, tools and environment. “One might argue that there is limited scope for developing knowledge in this field if we fail to attend to or question the design of the environments within which we exercise creativity – individually or together” (Ivey and Sanders, 2006). This quote is central to this thesis as it encapsulates the main area of exploration: “the design of the environments (broadly defined) in which we can exercise creativity.”

Embodied interactions help shape our understanding of the world. Klemmer and Takayama researched “How Bodies Matter” in the context of themes for interaction design. In their 2006 paper, they describe the relationship between the world and embodied experiences, communication and interactions. “Our physical bodies play a central role in shaping human experience in the world, understanding of the world, and interactions in the world” (Klemmer and Takayama, 2006, italics in original).

As many technologies are embodied, haptic, tangible and/or multimodal, they require research surrounding embodied interaction. There is a growing interest in technologies that integrate with the physical environment of artefacts and space and, connected with it, in ‘embodied interaction’ and ‘tangible’ and ‘multimodal’ user
interfaces. More and more studies draw attention to the performing body, to spatiality, and to the haptic qualities of physical artefacts as crucial for interaction, experience, and understanding (Jacucci and Wagner 2007).

Designers around the globe race to create an intuitive interface, a device, an application that is seamlessly integrated into our cognitive, emotional and physical lives. Because products and services provide for embodied experiences, for instance, touching a smart phone to activate one's email, this thesis proposes that design research methods should also be embodied very early in the design process to understand how people want to interact, and to see how people interact naturally. If we aspire to design a better future, design research methods could be interactive and embodied from the beginning, and in so doing, potentially inspire interactions that are more human-centered and can facilitate people to be and feel creative.

Embodied, creative interactions are often highly emotional and expressive experiences, like dance, for instance. The hands and body “can convey emotions and expression, as well as geometry and (inter)actions” (Hummels et al. 2007). Embodied creativity includes the body in imaginative, intellectual and emotional processes. “Because interaction creates meaning, it can stimulate designers to explore, study and design the relationships between a variety of aspects such as sensation, dynamic character, story, interaction style, experience, emotion, function, form and semantics” (Hummels et al. 2007). Embodied and creative interactions are often expressed via play. “Humans have a need and desire for play to free creativity, inner feeling, perceptions, and memories and bring them into outer reality” (Boik and Goodwin, 2000).

1.2 Creativity, playfulness and play therapy

There are two kinds of play: 'ludus' refers to play with active goals, challenges, rewards, penalties, etc. The other kind of play, 'paidia', is open-ended with no rules, and few expectations. “Whereas paidia (or “playing”) denotes a more free form, expressive, improvisational, even 'tumultuous' recombination of behaviors and
meanings, *ludus* (or “gaming”) captures playing that is structured by rules and competitive strife toward goals” (Deterding et al., 2011). Woven into our sense of touch, sight, and sound, play is often an embodied experience. To play we move our hands and sometimes our bodies, to expressively move, manipulate and build things according to our personal aesthetics or goals of a game. As people move objects expressively, one can anticipate that sound effects are soon to follow the playful enactments.

When playing, we re-enact what we've seen or done before. Or we can enact our dreams, wishes or hopes, strategizing for more positive futures. Playing can also bring out the exploration of worse case scenarios, and sometimes includes how the people in the story cope, adapt, and heal – or die.

Play therapy, also called creative therapy or expressive therapy, evokes embodied experiences used for personal growth and healing. There are many kinds of creative therapies including: art therapy, music therapy, drama therapy, dance/movement therapy, poetry therapy and bibliotherapy, play therapy, Sandplay therapy, and integrated arts approach, also known as intermodal or multimodal approach (Malchiodi, 2005). The power of play therapy lies in an ability to express an experience, whether set in the past, present or the future. Play therapies provide a person or group the tools and environment to create an artifact that not only explains a problem or opportunity, but also sometimes gets used as a prop to visualize and enact strategies for actualizing, growing, healing and resolution.

Playing, in the context of design, supports both intellectual and emotional expression. “Roleplay methods allow designers to imagine and empathize a given design challenge” (Vyas, Veer and Nijholt, 2012). From their recent ethnographic study of creative practices in professional and academic product design studios, Vyas, Veer and Nijholt found that “when designers enact a particular scenario, they go through a set of emotional and experiential “phases” that not only make their actions personally meaningful, but also lead them to envision how a potential experience should be.” Due to threads of roleplay within most *paidia* in nature play, people are able to clearly
illustrate and articulate past, present and future experiences using Sandplay therapy. Sandplay has been, and continues to be a creative method of psychotherapy.

1.3 Sandplay therapy for creativity and embodied interaction

Sandplay combines two powerful tools for expression: sand and play. What's so special about sand as an expressive medium? “Throughout the world and across cultures, sand has long provided – and continues to provide – the medium for drawing, writing, calculating, teaching, and divining...It is a readily accessible medium for which a finger is the only necessary tool; it is cooperative, yielding, tolerant, and re-workable – and ephemeral” (Welland, 2009). As described in the next paragraph, Sandplay got its start with a story, and from this story blossomed techniques and methods combining sand and play.

In 1911, H.G. Wells published an influential book called *Floor Games*. With all the seriousness that pretending brings while immersed within a story, Wells describes rehearsing the future with his two sons. “Equipped with pieces of wood, paper, plasticine, and miniatures of people and animals, they played games and built cities and islands” (Boik and Goodwin, 2000). Wells observed that appropriate objects, tools, and environments can inspire creativity, via embodied interactions and open play activities. “Wells's contribution to the field was not only in recognizing suitable materials, but in honoring the activity of creative imagination” (Thompson, 1981).

*Floor Games* inspired Margaret Lowenfeld, an English pediatrician with a passion for child psychology, to develop the “World Technique” in 1929. Notably, Lowenfeld gives the children in her practice credit as co-creators to the technique. The tools and materials of the World Technique facilitated play for the children in Lowenfeld's practice. The tools of the World Technique include: “two zinc trays placed on tables, one filled with sand and one with water. The 'Wonder Box' contained ‘miniature models of ordinary people and objects now housed in a cabinet called 'The World'” (Thompson, 1981). Using the World Technique, children played without the constraints or complexities of language to describe past, present and future experiences.
Kinesthetically, spatially, and at times, collaboratively, children playing with the World Technique shared both their difficult or traumatic past experiences as well as future dreams, hopes and fears.

Lowenfeld's World Technique inspired Jungian analyst, Dora Kalff, who studied with Lowenfeld in the 1950s (Boik and Goodwin, 2000). “Kalff adapted the World Technique to Jungian theory and named it Sandplay” (Boik and Goodwin, 2000). What the World Technique and Sandplay have in common is the emphasis on open and expressive play via embodied creativity and the similar tools and materials: trays, sand, and small figurines. What makes the two different? Lowenfeld never analyzed her clients’ work, she believed that the value of the World Technique was realized through experiencing it (Boik and Goodwin, 2000). On the other hand, Kalff did analyze clients’ Sandplay creations according to Jungian psychology. “Kalff's Sandplay was based on Jung's belief that the psyche can be activated to move toward wholeness and healing” (Boik and Goodwin, 2000).

Sandplay makes its mark as one of many play therapies useful for psychiatric clients who are experiencing difficulty with the level of verbal expression necessary for more traditional psychotherapies, i.e., various cognitive or gestalt therapies. The act of building an experience in the sand tray, with the sand and tools of Sandplay, can help facilitate creative expression when the sharing of psychological trauma is too difficult to put into words. “Portraying the incident in the tray and focusing on the building process often distance the trauma and allow the client to reveal the details of the story in the tray with less intimidation” (Boik and Goodwin, 2000).

Chapter 2 sets the stage for this research study. This next chapter explores the relationship between imaginative psychological expressions and the big picture of design’s evolving role to help harness the creativity of transdisciplinary teams which can address wicked problems. Making, telling and enacting alternative visions of the future establish expectations of future scenarios of use, and these fictional expectations sometimes drive what is designed.
Chapter 2: Background: State of design today and tomorrow

2.1 Introduction

Deeply rooted in psychology, this thesis takes a closer look at creative, unconscious processes.

It has been known for centuries that human beings have images and experiences that seem to come not from the outside but from the inside world. These have often been associated with creativity, but also with madness. Dreams, daydreams, fantasies, free associations, and the like...seem likely candidates to have originated in unconscious processes (Feldman, Csikszentmihalyi and Gardner, 1994).

Researching what people dream, hope and fear, in the wrong hands, can be used against us, or used to manipulate people. John Watson, a foundational experimental psychologist defined psychology in 1913 as “a purely objective experimental branch of natural science. Its theoretical goal is the prediction and control of behavior”. Research about unconscious expressions requires a purpose. And it is the purpose of this study that its results may lead to making the world a better place, not to better control people. Although it's important to set the stage with psychology, how psychology has been used to influence people in negative ways will be revisited. This thesis revolves around opening up channels of expressivity via interaction. People's expressed dreams, hopes and fears about the future are elicited via four design research methods that are compared in this study.
Design has evolved and continues to change rapidly simply because it must. Best encapsulated by recent economic recessions and in turn, a change people's rampant consumerism, design has been forced into a more responsible role. Designers are learning to make things that are both relevant and sustainable, or to not make anything at all. Designed products solely based on people's wants have been slowed down because more than ever before “the needs of the many outweigh the needs of the few” (Spock, 1982). In the midst of change, the creative sector and creative industries boom while adapting to this increased level of responsibility and awareness.

2.2 Design is being used to address wicked problems

'Wicked problems' refer to big, bad, potentially unforeseen consequences of solving problems – often from projects with good intentions. Coined by Rittel and Weber in 1973, “wicked problems are difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognize. Moreover, because of complex interdependencies, the effort to solve one aspect of a wicked problem may reveal or create other problems” (Rittel and Weber, 1973).

Design and innovation can inadvertently act as a catalyst for creating more problems. An example of a wicked problem: Killed for their ability to spread life-threatening disease, mosquitoes have been the target of crop-dusting pesticides since the 1950s. The chemicals have saved many lives by controlling malaria but have also caused major and lasting side effects for people and animals. “The science community did not understand the interconnectedness of ecologies and had little experience with the new kinds of chemicals they were producing” (Berkun, 2007). Because potential consequences of even well-intentioned research and developments are often unpredictable, there is need for an appropriate approach to identify and tackle both existing and future wicked problems.

In his 2011 thesis, J. Resnick voices similar concerns. “Humanity is facing unprecedented global challenges that threaten the survival of the entire species, and that
cannot likely be resolved through the continued application of science and technology.”

The innumerable factors and consequences to 'solving' problems reveal complexities that are too big and too serious for one person, or even one discipline to handle alone. Sawyer, in his 2012 book, *Explaining Creativity as the Science of Human Innovation*, reiterates the importance of collective creativity for tackling wicked problems. “Some of these problems can be solved simply by a single individual having a good idea, but most of them will require groups of people working together.”

2.3 **Transdisciplinary teams are needed to solve wicked problems**

Transdisciplinarity as a concept is essential to understand when discussing wicked problems.

Transdisciplinarity concerns that which is at once between the disciplines, across the different disciplines, and beyond all disciplines. Its goal is the understanding of the present world, of which one of the imperatives is the unity of knowledge. While not a new discipline or a new super discipline, transdisciplinarity is nourished by disciplinary research: in turn, disciplinary research is clarified by transdisciplinary knowledge in a new and fertile way (Nicolescu, 2002).

On a transdisciplinary team, no one discipline or perspective is in charge and all people on the team approach the task collectively from the start. What is collective creativity? Sanders (2012) describes that “collective creativity occurs when all the people in a group contribute simultaneously to a big picture or mental model that emerges from a shared mind and body space”.

Transdisciplinary approaches are being used around the world by businesses and governments to better address wicked problems.
There is an ever increasing call for transdisciplinary approaches to tackle fundamental societal challenges, especially those related to sustainability, both from society and the scientific community. In Germany, for instance, transdisciplinary research is considered to be key for the fundamental sustainable energy transition enacted by the Federal Parliament of Germany in Summer 2011 (Lang et al., 2012).

Using transdisciplinary approaches, teams can practice collective creativity to envision and design – both to solve for wicked problems and improve future ways of living.

2.4 Collective intelligence and creativity

It will require the creativity of many, i.e., collective creativity, to design for what Sanders and Stappers call “the future human condition.” In the past, creativity research “was focused on eminently creative people (i.e., sole creative geniuses)” (Sanders, 2012). However, a shift has occurred recently in creativity research. No longer only focused on studying creative prodigies, creativity researchers have cast a wider net that also includes everyday creativity and collective creativity. Design continues to evolve into a bigger, more-inclusive role. Because creative geniuses cannot possibly tackle all future wicked problems alone, “our understanding of creativity moves from the individual to the collective” (Sanders, 2012). Due to the complexities of wicked problems, researchers from the social sciences are beginning to explore collective creativity. Potentially, the quality of our collective futures hinges on “the potential to embrace the diversity of people who are needed to tackle the wicked problems that we face in the future” (Sanders, 2012).

We can see a similar shift in focus from the individual to the collective in design practice and academics. For decades, design has relied on the highly creative person, the design expert, who initiates and drives the design process. More recently, teams of expert designers have been leading the way. Sanders and Stappers also note design's
transition from accommodating individual needs and wants to a more collective
generation of solutions and possibilities: “Design is not just about visualization and the
application of individual creativity anymore” (Sanders & Stappers, 2012). People
collectively can innovate on both a small, personal level and at a giant, macro scale.
“Human beings are unique in the ability to realize that they have the power to make the
world into a different place than it is” (Feldman, Csikszentmihalyi and Gardner, 1994).

Envisioning the new and useful, more often than not, requires collective
creativity. Collective intelligence and imagination drive creativity. “To imagine
changes that might actually be brought into existence and placed into the crafted world
of human culture is what must occur for creativity to be possible” (Feldman,
Csikszentmihalyi and Gardner, 1994).

2.5 Creativity and innovation

When does creativity turn into innovation? “Most business scholars distinguish
between “creativity” as the ideas or products generated by individuals, and “innovation
as the successful execution of a new product or service by an entire organization”
(Sawyer and Bunderson, in press). Many innovations are creative, but not all creativity
is innovative. Innovation requires a careful balance of fact and fiction, intelligence and
creativity, to be both new and useful.

Inside our minds exists a non-stop duality which can stimulate creativity.

The Aristotelian tradition, which has seen its fullest
expression in Western rationalism, has to do with the part
of the mind that tries to keep things the same, that gives
us something to hang on to, that provides for continuity of
experience and a stable sense of reality. The other side of
mind aims to continuously change and transform, to show
that constructing a stable reality is a device for not going
insane, a way to keep the forces of transformation from
holding sway. Indeed, conscious versus unconscious thought may have been an evolutionary adaption for keeping these two functions – transformation and categorization – from destroying each other. This interplay becomes productive and central in the process of making something both new and useful (Feldman, 1994).

Together, the conscious and unconscious parts of ourselves build to transform the world. In design, props, prototypes and/or artifacts are often used to stimulate debate about scenarios of future living. To conceptualize situations of use for potential innovation, design futurists make and use artifacts that “represent speculative future worlds” (Resnick, 2011). These artifacts, or prototypes for the future, are “employed to evoke, explore, communicate about, or inquire into some aspect(s) of the speculative world in question” (Resnick, 2011). Through collective creativity, people can envision the future and make creative artifacts based in both reality and fantasy. Fiction can have a powerful effect on innovation.

### 2.6 Design fiction: Alternative visions of the future

Design fiction can be described as the “materialization of the speculative” (Resnick, 2011) in the cultural and academic space between and around both design and futures. Design fiction investigates the relationships between reality and fantasy and what we dream could be possible. The practice of design fiction uses props and expressive artifacts to visualize and provoke discussion of future scenarios of use.

These artifacts play several roles: they act as props, yielding insight into the techno-social aspects of the future worlds they represent; they inspire discussion and debate about these futures and the implications of technological and social change; and they act symbolically, disrupting comfortable and conventional
ideas about technological innovation and 'the future' with alternative visions (Resnick, 2011).

Alternative visions of the future are most widespread through the genre of science-fiction, including: novels, writing, movies, television shows, comic-books and more. According to Dourish and Bell (2009), “science fiction does not merely anticipate but actively shapes technological futures through its effect on the collective imagination.” For example, mobile phones we use everyday were inspired by the device called the “communicator” from television's Star Trek. “It is probably not a coincidence that the first clamshell cell phone, produced by Motorola in the mid 90’s, was called StarTac and resembles the communicators in the original Star Trek series from the sixties” (Schmitz, Endres, and Butz, 2008). More and more, imaging for healthcare resembles the fictional context of use for the medical devices depicted in science fiction. Again from Star Trek, “Dr. McCoy's vision – with his 23rd-century surgeries that gave complete insight into the body's function without using a scalpel – laid the foundation for modern medical imaging” (Baker, 2007). In our collective imagination exists expectations for innovations for future living, as evidenced by science fiction pop-culture. Science, technology and design have teamed up to make what was once fantasy, reality.

What we imagine, how we dream of living, and how and why we explore themes balanced in both reality and fantasy, are extremely relevant to the designs of today and tomorrow. Everyone has the ability to imagine the future creatively, and collectively we can design improved future ways of living. “Design is a serious force for shaping collective futures, and a corresponding growth in the desire and ability to participate in that process” (Resnick, 2011). This begs the question: what tools, techniques, methods and environments inspire collective creativity?

2.7 Reflections of the researcher

Personal interests and curiosities fed the direction of both this research and the two new methods that I developed for design research, Sandquery and Enactavision. I
learn best in a “hands-on” mode and these two new methods explore “hands-on” interactions that allow people to express themselves via open play in visual and kinesthetic modalities. Curious about unconscious expression, I am fascinated by my own creativity and the creative expressions of others. Having interest in unconscious expression connects directly to fields outside of design. To name a few: creative psychotherapies, various psychological theories, Buddhism, as well as other spiritual practices. The study of these other fields contributed to how this thesis research developed.

After conducting pilot studies with both individuals and groups, I decided to pursue research for collective creativity simply because more is known about individual creativity than collective creativity.

If we want to see whether the creative outputs of varying modes of interaction make a difference in what people choose to creatively express in a team, setting-up a comparative study is a logical place to start. My thesis advisors and I chose to compare design research methods that are different from each other. I then conducted an experiment and analyzed the data to determine both if and how the outputs of the selected methods are different from each other. The data include what and how people make, tell and/or enact with built artifacts as well as data obtained about the hands-on experiences from people’s post-activity questionnaires. Having people reflect on how they feel while participating in generative design research activities is useful data because how one feels often affects motivation. For instance, having “fun” often increases one’s intrinsic motivation to do well with a given task.

Coming from a background in the Arts rather than design led me to study design with a unique perspective. Learning about design was new to me and involved a careful study of the vocabulary unique to the evolving landscape of design research. This study, for me, continues to be an opportunity to simultaneously develop and research for design.
A glossary of selected terms specific to generative design research is outlined next in Chapter 3. This chapter introduces the Participatory Prototyping Cycle (Sanders and Stappers, 2012) which describes the creative process in the context of generative design research. According to this framework, participatory methods used early in the design development process evoke cycles of making, telling and enacting. Similar to the practitioners of design fiction, generative design researchers in the front end of the design development process provide people with tools to expressively co-create tangible and virtual artifacts all while envisioning the future. “Making activities are used as vehicles for collectively exploring, expressing and testing hypotheses about future ways of living” (Sanders, 2014, in press). By enacting future ways of living, movement and embodiment can help facilitate collective creativity. With improved methods for collective creativity, we can both prepare to solve wicked problems and pave the way for meaningful and useful innovations.
The following section briefly introduces some key words and simple definitions to
terminology specific to participatory design.

3.1 The fuzzy front end

In the past ten years, design research has moved to the front end of the design
process. Design research has evolved to investigate “what to make and why” in
addition to its traditional goal of “making the product better.” Because the earliest
stages of the design process are by nature very ambiguous, the pre-idea space often is
called the 'fuzzy front end' of the design and/or innovation development process. The
research conducted to explore what to make and why takes place in the fuzzy front end
of the design process before the future design has any form at all – this way the design
process is flexible to determine a reasoned and highly meaningful form later on in the
design process.

As illustrated in Figure 1, above, “There are three phases in the design
development process today: the pre-idea space shown in blue, the cross-over space
shown in the overlap and the traditional design process shown in lavender. The black dot is the idea” (Sanders, 2013, in press). The “pre-idea space” can also be called “the fuzzy front end” of the design development process.

3.2 Participatory design

“Participatory design is an approach to design that attempts to actively involve the people who are being served through design in the process to help ensure that the designed product/service meets their needs” (Sanders, 2008). People drive participatory design. Through participatory design, various stakeholders in the design process express themselves using provided tools within an environment to build meaningful artifacts that inform and inspire throughout the design process.

3.3 Generative design research

How can anyone gauge what people might want, what to make, what people might use and cherish or immediately throw away? Generative design research in the front end evokes creative expressions that go beyond people's wants and needs and delves deeper into people's dreams, hopes and/or fears. Generative design research conducted in the fuzzy front end of the design process aims to collect rich and meaningful data that addresses the “why” part, or the meaning behind the research goals and/or objectives.

3.4 Co-creation and co-design

Co-design indicates “collective creativity as it is applied across the whole span of a design development process” (Sanders and Stappers, 2012). Co-design and co-creation are often used interchangeably, perhaps mistakenly. However, definitions need not be unclear:

- “Co-creation refers to any act of collective creativity, e.g. creativity that is shared by two or more people” (Sanders and Stappers, 2012).
- “Co-design is a specific instance of co-creation” (Sanders and Stappers, 2012).
Both co-design and co-creation can occur throughout the design process, however, this thesis is focusing on instances of co-design and co-creation just in the front end of the design development process.

### 3.5 The Participatory Prototyping Cycle: Make, tell and enact

The Participatory Prototyping Cycle (i.e., make, tell and enact) is a framework for organizing the different tools and methods for participatory design, but it is also a guide for how to establish an effective plan for generative design research in the fuzzy front end of the design process. When the make, tell and enact guide is put into action, the resulting qualitative data includes creative artifacts carefully made, enacted and explained by the people who created them. This type of qualitative data provides glimpses into the desired future experiences of these people. Generative design researchers can then distill patterns from the results of people's making, telling, and enacting. These patterns lead to insights that give clear direction to what is to be made and why.

![Figure 2: The Participatory Prototyping Cycle](image)

As illustrated in Figure 2, above, “The Participatory Prototyping Cycle (PPC) is a framework for action and a model for co-creation in design” (Sanders, 2013, in press). It is through iterations of making, telling and enacting, that fictional characters with an
imagined voice sometimes emerge. In these fictions, characters may walk, talk and interact with other made objects, zones or characters within a scene. People “enact” these characters within the stories of a pretend world. As an example of enactment, a main character might “feel scared” of another character in a scene, say “Agggh!,” and move quickly to safety, away from the danger. The iterative cycle of “make, tell, and enact” is effective for high-level emotional, creative, and sometimes innovative expression. People are free to play openly, to explore and express via iteratively making, telling, and enacting with a built artifact that they create.

Telling by itself has the potential to be a vulnerable experience for a person. Exploring emotionally-loaded themes or ambiguous future scenarios individually or in a group may prove to be too complex, personal and/or delicate to solely verbalize to a stranger, a researcher, a close friend or even to one's self. So exposing is this kind of activity that many people refuse participation by not “telling” or by talking minimally as a means of self-preservation. People by nature are more comfortable when one's “self” is not on trial in a question/answer kind of setting. It is for these reasons that there is a market for teaching people how to become effective moderators of focus groups, the traditional form of research, solely reliant on “telling,” that have been used for many years to inform the design process.

On the other hand, when we ask people to “tell” about an artifact that they have “made,” they usually enjoy the experience because they are proud of what they have made. Generative design research tools and methods evoke storytelling. “Stories are very useful in generative design research because they are engaging and they invoke empathy and imagination” (Sanders and Stappers, 2102). And when we combine making and telling together with enactment, the stories that people can tell about their desired futures are even richer.

Moving away from background research and the glossary of selected terms for this thesis research, Chapter 4 outlines the specific methods chosen for comparison in this study: the traditional focus group method, image collaging, Sandquery and
Enactavision. Because Sandquery and Enactavision are new methods for design research, reasoning for various design choices are detailed.
Chapter 4: Methods background

The methods selected for comparison in this study are different from each other. Each method chosen does not use the same combination of modes for expression.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Make, tell, enact</th>
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<td>Focus Group</td>
<td>Tell</td>
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<tr>
<td>Image Collaging</td>
<td>Make and tell</td>
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<tr>
<td>Sandquery</td>
<td>Make, tell and enacting (using hands)</td>
</tr>
<tr>
<td>Enactavision</td>
<td>Make, tell and enacting (using the body)</td>
</tr>
</tbody>
</table>

Figure 3: Making, telling and enacting with the four methods

As seen in Figure 3, the focus group method invites telling as the main activity for expression. The image collaging method evokes people iteratively making and telling while building. The built image collage then can represents shared meanings of the group and people tell about it. With Sandquery, people are looking at a mini-world and making, telling and enacting within the world using their hands. People are “in” Enactavision, meaning people are making and enacting in full-body scale. One’s perspective is life-size, in both physical and virtual space. The world of Enactavision invites people to go through cycles of making, telling and enacting while using the body. This thesis explores many levels of interaction and expression. Next, the four methods compared in this study are outlined.
4.1 Focus group

The most traditional of the methods being compared in this study is the focus group. A focus group session entails people responding to questions asked by the moderator. “In broad terms, a focus group is a carefully planned discussion, designed to obtain the perceptions of the group members on a defined area of interest” (Langford and McDonagh, 2003). Everyone sits at a big table, preferably in a circle, facing each other and a moderated conversation takes place. The focus group conducted for this thesis was a variation of the more traditional question and answer kind of focus group. In this adaptation to the traditional focus group method, participants had access to pens and paper on which to make notes or even drawings. After a few warm-up questions from the moderator, participants engaged in a conversation about the main question at hand, “What’s next?”, brainstorming individually and/or collectively with minimal guidance from the moderator. The resulting presentations by each team in response to “What’s next?” abounded with opinions and ideas that were individual, collective, or both.

“Market researchers and social scientists have used focus groups for many years” (Langford and McDonagh, 2003). The results are easy to share; what people say and how people behave in a group can be very convincing data to both a director of the board and a stranger on the street. “Both the concept of focus groups and the outcomes from them are easy for non-experts to understand. The outputs are accessible because they can be presented in human terms” (Langford and McDonagh, 2003). People's responses in a focus group can be absorbed by reading parts of the transcript or by watching the video; it is readily sharable. “For example, the responses and comments of participants, whether written down as verbatim quotes, or presented in a video, are likely to be more easily understood than complex statistical analyses or tables of data” (Langford and McDonagh, 2003).

4.2 Participatory methods

Front end design research can take many different methodological approaches. Some are more focused than others. Focus groups, for example, utilize only the tell
activity within the “make,” “tell” and “enact” framework. More recent methods rely on the full range of activities within the framework.

A co-creative approach entails group activities that encourage participants to creatively play, explore, and learn together. The researcher provides various tools and may give brief direction to the group, depending on the specific nature of the project. “Making activities, such as the construction of props of future design artifacts, might then be used to inspire the creation of future scenarios” (Sanders, Brandt and Binder, 2010). People make artifacts but the stories they tell are the most valuable for understanding how we might design for future experiences. “It is fidelity of the experience, not the fidelity of the prototype, sketch, or technology that is important from the perspective of ideation and early design” (Buxton, 2007). Participatory design that is used in the front end of the design process can provide both information and inspiration to designers. Participatory design research that involves people in making, telling, and enacting activities “can be done either individually or collectively. In fact, it is often in the collaborative act of making, telling or enacting that innovation occurs” (Sanders, Brandt and Binder, 2010). Additionally, many people find that being a part of creative and/or discussion-based activities is stimulating and/or interesting.

4.3 Image Collaging

Image collaging has more recently been used as a design research method in participatory design and co-creation. For more about image collaging as a participatory design research method, please refer to Stappers and Sanders, 2003. An image collage toolkit consists of paper, scissors, glue and a collection of prepared images and/or words. During an image collaging activity there is usually a prompt followed by instructions to cut, rip and paste using any of the tools provided. Participants express themselves by meaningfully selecting and placing cut or torn paper, images and words on a larger piece of paper that acts as a canvas. They then give a presentation to describe what they intend for the collage to mean or show.
4.4 Sandquery

The Sandquery method evokes multisensory interactions by prompting or posing a question to one or a small group of people, who respond by engaging in scenarios and storytelling within the sand tray. In a Sanquery session, people “play” for about 20 minutes, then they are asked to present their creation built in the sand tray. Sandquery is a method created for front end design research (Strouse, 2011) and is adapted from “Sandplay,” a method of psychotherapy and personal development (Kalff, 2003). Sandplay is one of many creative therapies that use an expressive form of communication as a means for further exploration (Malchiodi, 2005).

Sandquery\textsuperscript{4} was developed by the researcher in spring 2010 in collaboration with both Liz Sanders and Maria Palazzi.

As seen in Figure 4, the general set-up for Sandquery includes a sand tray, filled partially with sand, and various tangible objects. A container filled with water is optional.

\textsuperscript{4} For more about the physical set-up or getting started with Sandquery, please see the Co-Designing Learning paper by Strouse, 2011.
What were the tools of Sandquery for this study? Detailing the set-up of Sandquery for this study, a wooden sand tray was used; the inside of the sand tray is painted blue, to the specifications of the sand trays used in Sandplay. Sand filled the sand tray about half-way. Sand was bought from the hardware store and was marked “play sand” and cost about three dollars for 50 pounds. For this research study, water was not included as a tool to help avoid mess and heavy clean up out of respect for the other people who use the room in which the Sandquery sessions were held.

Objects are the final tools provided for the Sandquery sessions in this study and the object library was chosen according to loose guidelines about object libraries for Sandplay therapy. From the hundreds of objects used in the initial Sandquery sessions in 2010, the object library was slimmed down to about 35 objects. Choosing the set of objects, which were kept consistent for all participatory methods in this study, began with choosing objects for Sandquery. Objects were chosen to make a balanced library of people and animals from both real and imaginary life, i.e., both dinosaurs and mystical “beasts” are included. These mystical or abstract objects are important to include because they can trigger our collective imagination or collective unconscious. Also in the selected object library are a balance of natural objects like wood, shells and rocks, and man-made objects like marbles, pieces of fabric, and metallic objects, Decisions made for the balance of the object library were based on suggestions for collecting objects for Sandplay therapy. The physical objects and miniatures selected for Sandquery were photographed and used as stimuli for the image collaging sessions. The physical objects were also modeled virtually so that there would be a set of matching virtual objects to be used as tools in a virtual interface. A library of matching objects in different forms allows the different methods in this study to be compared side-by-side in terms of what objects were used, and which were not in an effort to make this study as consistent as possible.

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5 There is much reading about Sandplay and the collective unconscious, as C.J. Jung used Sandplay regularly and wrote about it in the context of his psychological theories.

6 Boik and Goodwin, 2000, is a good source.
The size of this object library and the balance of kinds of objects were chosen for several reasons:

- A person interacting with Sandquery might be overwhelmed by too many objects, or under-stimulated by too few objects. This conclusion was based on findings from pilot studies with Sandquery.

- The number of objects (about 35), and the complexity of the objects could be translated to photos and 3D virtual models in a timeframe that met the goals of the project. Decisions were made about the object library so that there would be enough time to build 3D virtual models. For instance, building 100 3D virtual models would have taken longer than the timeframe goals of this project.

![Figure 5: Objects used in Sandquery](image)

As seen in Figure 5, Sandquery’s object library used in this study was kept to about 35 objects.

It would have been an interesting study to compare the traditional focus group method to image collaging and to Sandquery but the scope of this project was enlarged to include a virtual method. This method uses new gesture-tracking technologies which provided the opportunity for the researcher to learn new skills. Enactavision is a virtual
interface that is inspired from Sandquery, Sandplay, other play therapies and sand. The making of Enactavision will be discussed in detail shortly.

Sand and play are appropriate tools for generative design research. Based on the success of Sandplay as an expressive psychotherapy that evokes the unconscious expression of people, Sandquery emulates similar expressive capabilities, and it does so as a new method for design research. The history of making, telling and enacting with sand goes beyond our wildest imaginations.

4.4.1 Sand. Sand has been used as a tool for providing healing, group communication and creative expression for centuries and across cultures. Quick and changeable communications from drawing in sand are used for a variety of reasons, and independent of why people are communicating by drawing in sand, the shapes people make across cultures are similar. “The continuity of design from central Australia through southern Africa to India must reveal something of our collective imagination and natural instinct for patterns, and for expressing ourselves using the Earth, especially sand, as our medium” (Welland, 2009). Patterns in the sand across cultures often resemble woven patterns or circles, depict the past, present, future and tell stories. “The word mandala is Sanskrit in origin, roughly meaning 'circle’” (Welland, 2009).

The shapes and designs made in sand are similar across cultures, and so too is the purpose to communicate in sand. “In North America, the Navajo use sand paintings in much the same ways as the monks of Tibet, to provide healing and blessings, to restore order and harmony when nature seems out of balance” (Welland, 2009). Sand paintings and mandalas are collectively created. “Like the Navajo, while constructing the sand mandala, monks work as a team, discussing the symbolic and philosophic meaning of the details…all the while offering one another advice and support” (Bryant, 1992).

Using sand as a tool for “materialization of the speculative” (Resnick, 2011) seems appropriate because “in a wide variety of cultures, sand has been a medium for telling the future” (Welland, 2009). There is an unmistakable spiritual, unconscious appeal of sand as a medium for exploration.
4.4.2 **Sandplay.** Sandplay therapy is a creative form of psychotherapy that uses a sandbox and a large collection of miniatures to enable a client to explore the deeper layers of the psyche in a totally new format (Malchiodi, 2005). In the past century, Sandplay was developed by Dora M. Kalff and it combines the analytic psychology of C.G. Jung, the World Technique of Margaret Lowenfeld and Eastern thought and philosophy (Kalff, 2003). There are many benefits of Sandplay. For example, it frees creativity and inner feelings, functions as a natural language for children and a common language for use with people from diverse cultures and developmental stages (Boik and Goodwin, 2000).

4.4.3 **Sand as a tool for design research.** What are the qualities of sand that make it a great medium for group expression? It is easy to share the result of sand-made expressions because it is visual. It unlocks creativity due to simple kinesthetic interaction with the sand and tools. An ideal canvas for building and communicating, sand is easy to use, maybe because it is a common play activity for many young children. Due to its ephemeral quality, sand is easy to manipulate and change. Sand and Sandplay inspired a new design research method, Sandquery, that capitalizes on the many positive attributes of thinking about the future while co-creating with sand.

Both Sandquery and Enactavision are created by the researcher to serve as generative design research methods. The process of researching, designing and developing these two new methods for generative design research is explained below. The process was well documented because it was a learning experience. While exploring and researching different kinds of physical interaction, expressive, kinesthetic-bodily experiences and play, it seemed like a natural step to do the same kind of exploration, research, design and development in the virtual space. Making Enactavision also served as an opportunity to design and develop with new technologies, i.e., the Microsoft Kinect.
4.5 Enactavision

As an experimental virtual design research method for the front end of the design process, Enactavision evokes exploration of possible futures. Enactavision uses computers and is static until people move and interact with the application. Triggered by gesture-tracking technology, Enactavision uses the Microsoft Kinect, a wall projector, a tabletop display and two computers. Enactavision invites people to embody a virtual object and record his or her motion of the selected object on a projected virtual wall space. Layers of animated objects, designed by people, set the stage to present an experience or tell a story. People using Enactavision move, enact with virtual props and generate ideas together. Enactavision uses virtually kinesthetic and embodied interactions as vehicles to create visual and spatial relationships that dynamically move, and in so doing, act as artifacts to tell stories.

Stretching some of the great qualities of sand as an expressive and ephemeral medium into a virtual environment was no simple task. Similar to Sandplay and Sandquery, Enactavision's strength lies in its visual, kinesthetic, and ephemeral quality. While designing Enactavision, it became apparent that this new virtual environment would, unfortunately, have a steeper learning curve than Sandquery. This is, perhaps, unavoidable because playing with sand is a common childhood experience.

Enactavision was designed to be as intuitive an interface as possible, but it is far from perfect, in part due to what gesture-tracking technology cannot yet detect, and the resulting limitations that technology places on programming for new virtual interactions. For instance, using a gesture-tracking device that could detect delicate finger movement would have made the development process for Enactavision different. However, such a device isn’t yet available for the masses, so Enactavision follows what the Kinect is capable of detecting: full-body movement. Because tiny hand movements are so expressive, the ability to detect these movements could be an interesting place for future research. As technology becomes more sophisticated, we can be confident that even the
smallest motions will be detectable in the future and the limitations that were experienced while developing Enactavision will no longer exist.

What about other virtual methods for design and beyond? Using virtual methods for co-creation is not new; virtual tools and methods for co-creation have been explored and experimented with throughout the design process. Because Enactavision uses computers to document creative group expressions and requires full, dynamic body movement to even “work,” Enactavision has an inherent connection to human-computer interaction (HCI) and embodied interaction. There are other tools being explored now in the study of embodied interaction in HCI. Similar virtual storytelling and expressive environments include PuzzleTale (Shen, 2010) and Supporting Sandplay on an Interactive Tabletop (Hancock, 2010). PuzzleTale is a tabletop interactive interface that uses physical objects on a virtual surface that allows users to control characters and tell a story. Supporting Sandplay on an Interactive Tabletop enables Sandplay therapy in a virtual form so that clients may express themselves under the supervision of a psychoanalyst for therapeutic purposes. The design and development of the virtual method in this study, Enactavision, is outlined next.

4.6 The design development of Enactavision

Enactavision, a virtual method for design research, evokes open play (discussed in 1.2). Having watched people play openly in sand for about a year inspired the researcher to take that same imaginative and spatial kind of play into a virtual world. In the process of creating Enactavision, different projects were done along the way that were both markers for learning and for exploring new modes of interaction. Each project that leads into Enactavision increases in complexity and veers in one way or another based on design choices that are firmly grounded in researching design methodologies, play, sand, and creative therapies. The work that the researcher did on Enactavision was an emergent process and very exploratory in nature. The next part of this sub-section outlines the different interactive experiments and the thinking behind some of the design choices made that influenced how Enactavision’s interaction works. The two early
virtual projects that grew into Enactavision are: “Interactive storytelling with Kinect Bunnies” and “Matching Tangible and Virtual Objects”.

4.6.1 Interactive storytelling with Kinect Bunnies. The initial concept behind the Kinect Bunnies project was to get people “in” a virtual world and have a person be able to interact with virtual objects. Users of the Kinect Bunnies experiment enact a giant pink bunny avatar and “teach” the smaller bunnies to hop via gestural triggers and open movement. This virtual environment uses motion capture via the Microsoft Kinect.

Programming for the first time in a class with Professor Alan Price in winter 2011, the researcher made a prototype application allowing people to project their thoughts, actions and feelings onto a real-time virtual character. The concept for this project centered on letting a person be “inside” the virtual world. A decision was made for this thesis to keep exploring with a full-body scale within a virtual space.

Design choices at this stage were experimental. As choices for interaction were made, it became more apparent that the Kinect Bunnies project explores relationships between the self and one’s virtual self, the relationships between the self, the virtual self and virtual objects, and lastly, possible ways to use the body to interact and communicate with the interface. In this virtual world, people can be bunnies and interact with other bunnies within the scene. The graphics are simple. The focus of this project was to explore new virtual perspectives by putting a person, life-size, within a virtual scene.
Figure 6: Bodies are full-scale in virtual scene

As seen in Figure 6, a person is looking at the world from a distance, but can enact virtually in real physical space at full-body scale. This approach, to use a full-body scale, was chosen based on observations of how people interact in the real world and in virtual spaces. It was like magic to see the virtual character, the bunny, mimic the user’s body movement.
The Kinect Bunnies project explores the use of gestures as triggers for actions within a virtual scene. Figure 7 shows different zones around the user’s body that can act as triggers for interaction within a scene. For instance, a person calibrated to the Kinect Bunnies virtual environment could trigger an object to mimic his/her motion by clapping over his/her head. This project was an exploration about gesture and virtual space, but the idea of a “gestural library” was dropped because it would take too much time to teach and learn in the context of this research study.

Building in a full-body scale sets up opportunities to see if and how interaction may change if a different scale is used. Experimenting with the scale of a virtual environment could go on indefinitely. A person could be in a virtual world where the scene or objects are ten times bigger virtually than in the real world, or ten times smaller than real life objects. Exploring natural gestural libraries would also be an interesting place for further exploration.
As seen in Figure 8, the tools used for Interactive Storytelling with Kinect Bunnies included Unity 3D, Javascript, Autodesk Maya, Microsoft Kinect, and OpenNI. The Kinect Bunnies project evolved into experimenting with real physical objects in a project called Matching Tangible and Virtual Objects.

4.6.2 Matching tangible and virtual objects. The initial concept for the next project along the path to Enactavision incorporated tangible interaction into the virtual world. This project, named “Matching tangible and virtual objects” experimented with the discovery of matching tangible and virtual objects in an interactive space. It was done in collaboration with Professors Alan Price, Liz Sanders, Maria Palazzi, David Staley, and students, J. Eisenmann and Benjamin Schroeder. Matching tangible and virtual objects was tested at ACCAD's Open House in Spring 2011. By seeing first-hand how people interact and want to interact with physical and virtual objects, informed design choices led to the final application, Enactavision.
As seen in Figure 9, people explore the relationship between a simple virtual wall scene and real, physical objects that are set on an interactive table top. A design choice at this stage was to make what was formerly the “bunny” or the full-scale avatar be less prominent. The avatar was made smaller so that more of the screen would be open to make a virtual scene. Instead of a full person being represented within the scene with a full-scale virtual character avatar, just a sphere attached to one’s right hand indicates one’s avatar, or virtual presence, within the virtual world. When a person uses Matching tangible and virtual objects and waves one’s right hand, on the wall screen they will see a floating red sphere that mimics the movement of their right hand.

People using the Matching tangible and virtual objects interface are able to select a physical object from an interactive table. Upon selection, the object appears virtually on a wall screen and the object instantly moves in virtual space, mimicking the motion of the user in physical space. When the tangible object is placed back on the table, the virtual object plays back in a loop according to the motion mimicked from the user. The application must be manually reset to clear the wall screen of virtual objects that are set to dynamic motion by the user.
Central to this project is the exploration of the relationship between tangible and virtual objects. And letting the virtual objects do what the physical objects cannot: move and float in space autonomously. The idea of being able to make layers upon layers of animated objects is a kind of expressive building technique that serves an important function in virtual space: to enable people to “stack” concepts virtually. This is accomplished by first making and recording layers in real-time, and then built into the programming, a function preserves what was previously meaningfully recorded and plays it back in a never-ending loop. It was found through testing this project that making and enacting in virtual space allows people to express complex ideas, feelings and experiences.

As seen in Figure 10, the tools used for Matching tangible and virtual objects included: Unity 3D, Javascript, Autodesk Maya, Microsoft Kinect, OpenNI, and Processing.

What’s the flow of interaction for Matching tangible and virtual objects? First, a person must calibrate with the interface by holding a specific pose. This was a standard
procedure developing for the Kinect using OpenNI. Once a person is detected from the calibration pose, a person inherits a red sphere that is virtually attached to one’s right hand. Next, a person picks up one of six physical objects on a table with a camera underneath it. The camera, via processing, detects whether the tangible object is there or not, and if the real object is picked up, or “not there” to the computer. Then, the object appears in virtual form on the wall screen. The virtual object on the wall screen follows the movement of the person's right hand. Upon picking up the physical object off the table, the journey of the virtual object within the wall scene is being recorded by the interface. When the physical object is placed back in its original position on the table, the virtual object no longer follows the motion of the user, but automatically goes into the animated playback loop of motion that was initiated by the user.

This project gave insight into potential future directions for researching with the Kinect. The relationship between matching tangible and virtual objects is ambiguous and could be explored more deeply. Using tangible objects for the next steps of this study was dropped due to complexity. For instance, it was observed that people expect that when they rotate a tangible object, the virtual object should reflect this rotation. This may be possible by placing sensors on the tangible objects or perhaps by more sophisticated gesture-tracking detection of intricate finger and hand movement. Adding sensors to tangible objects is a possible place of future research, but it was not pursued in this project.

4.7 Designing and developing Enactavision: Design choices for playful, collective interaction

The projects that led to Enactavision influenced choices made in the interaction design process. Enactavision’s design choices were also influenced by observing people at play, in collaboration or while sharing. I observed that people find playing enjoyable and that they use their bodies, hands, eyes, and words to communicate with the people around them. Enactavision emulates an open-style of play so that there is a minimal learning curve and opportunity for open expression. Ideally, any person can walk into Enactavision and intuitively figure out how to “do stuff.” From observing people at play,
it seems that people are attracted to brightly colored, dynamically-moving things. People also like to be and feel creative. Making something that is expressive evokes feelings of being proud, satisfied and happy with being a creator, not just a spectator.

Enactavision adds another layer of complexity to the first two projects by incorporating more people. This was an important design choice to meet the goals of the thesis study; the interface needed to support several people collaborating so that collective, not just individual, creativity could be investigated. It's easy to program for one person, but how do you get people to “share” an interactive space? The answer for this problem was found by watching people share pizza. A pizza is a whole thing, and people take off pieces, both sharing and having a piece of their own. So, too, can an interactive space have “pieces” that represent a part of the interaction belonging to a person. This way, people can both see the whole scene and one's individual role within the scene at the same time.

The final application, Enactavision, is a virtual interactive environment that enables co-creation by engaging people in futuristic problem-solving activities using enactment with a multi-touch table, large-scale wall projection, and Kinect gesture tracking. Enactavision was created collaboratively by the researcher, her advisors, and many talented people at ACCAD (The Advanced Computing Center for the Arts and Design).
As seen in Figure 11, the tools used for Enactavision include: Unity 3D, Javascript, Autodesk Maya, Microsoft Kinect, and Microsoft Software Developers Kit. Up to three people can use Enactavision at a time, but it can also be used with only one or two people.

How does Enactavision work? The Kinect for Enactavision is programmed to detect two people’s bodies and the two people know they are “in” the wall scene when they see a red or purple ball attached to each of their right hands. One person ideally is stationed at the “drawer screen.” The roles are interchangeable, meaning if someone wants to move in the wall scene they just switch physical locations with another player who is already calibrated to the wall screen. A person working the drawer screen drags objects into the red or purple bowls and this makes the selected objects active on the wall screen, and the selected objects attach to the red or purple hand avatars. The person working the drawer screen can press a record button that will record the motion of the active objects on the wall screen. When someone wants to stop recording, this can be done in one of two ways: by dragging the objects out of the drawer or by pressing the record button again. As soon as an object stops recording, it begins to move.
autonomously according to whatever user’s motions were happening while recording. The object(s) play back their recorded motion in a loop on the wall screen until erased.

The rest of this chapter takes a closer look at the design choices made for Enactavision. Including the design choices for the two screens. The wall screen and the drawer touch screen are outlined in detail. Also, the choices for interaction flow and functionality of buttons are explained in detail alongside initial sketches and storyboards that steered the programming goals of Enactavision.

![Figure 12: Enactavision wall screen](image)

The wall screen for Enactavision is simple, consisting of a blue sky and a sand-like bottom to mimic the set-up of Sandquery as seen in Figure 12. The sand-like bottom half of the wall screen does not behave like a floor, but more like a screen. Objects can be moved above and underneath it. Real world physics are not applied in Enactavision. Objects do not behave according to gravity, but rather to the motion of the person moving the object. These choices were made to stimulate the imagination – flying, making objects fly, and defying laws of gravity are impossible in the real world, but they are made possible in this virtual space.
As seen in Figure 13, the “drawer” scene, used with a touchscreen, is Enactavision's mode of object selection.

At one point in the Enactavision design process, it was unknown what the objects would be “in,” in terms of a container for virtual objects. Virtual shelves were considered, but the concept background for the “drawer” screen originated from Professor Maria Palazzi, who, after looking at a pile of real toys, suggested, “Why not put them all in a junk drawer?” So the researcher photographed a drawer, and then modeled it virtually with the help of Professor Alan Price. Soon after, in collaboration with Vita Berezina-Blackburn, Madeleine Varner and Susana del Rio Kuroiwa, of ACCAD, colorful objects began to fill up the drawer screen with exact virtual replicas of the real toys and objects of Sandquery. The more complicated models like the phoenix, dragons, and dinosaurs were modeled using a new software, now called 123D catch, by Adobe. With this software, photos taken of a physical object get sent to a server which then calculates the physical proportions of an object and translates that information into a virtual model, in the form of polygons. Making virtual models was collaborative and took months.

Enactavision's objects were created to match existing Sandquery objects. Vita, Madeleine and Susana helped to transform this tangible object library to virtual, 3D
models ready for selection in Enactavision's drawer touch screen. While modeling, the researcher and others in ACCAD were also busy programming Enactavision's interaction for supporting more than one person. It also came time to think about buttons and the recording and playback of trained objects' motions. With the help of Professor Alan Price, J. Eisenmann and Ben Schroeder, massive amounts of programming between two computers became a regular activity.

In terms of gaming, Enactavision has been applied in a serious context: envisioning “What's next?”, along with the other methods compared in this study. Enactavision supports open play, storytelling, and creative expression via full body enactments of dynamically moving virtual objects. With Enactavision people build a unique virtual world through making, telling and enacting. Making the world, contrasted with exploring an existing world, is a fundamental difference between Enactavision and other virtual games and environments.

4.8 **Storyboards to communicate interaction**

Sketching storyboards to communicate interaction is a key skill gained from designing and developing Enactavision. With meaningful colors, arrows and buttons, hand-drawn sketches first sequenced how people could interact within the virtual space that would become Enactavision. The following sketches outline the design concept for Enactavision and heavily influenced the direction of the interactive programming.

The design for Enactavision enables people to interact with the wall, touch screen and Kinect to select virtual objects and record layers of animations to communicate a story or idea.
Figure 14 shows a sketch of Enactavision’s physical set-up of a virtual scene on a wall and a touch screen, and it shows how different players are detected within the application via the Kinect. Enactavision’s design enables people to interact with the wall, touch screen and Kinect to select virtual objects and record layers of animations to communicate a story or idea.

Figure 15 shows a sketch of final design storyboard of how three people interact to select and record the motion of virtual objects. The drawings in the top-most boxes
represent the wall scene and the boxes on the bottom represent the drawer touch screen scene. This sketch shows a chain of events: “when a person uses the drawer scene and does X, then the wall scene does Y.” Layering animated objects opposed to not providing a recording option was chosen so that people could experience building, or making, virtually.

Figure 16: Enactavision capturing movement

Figure 16 shows what happens when an object has mimicked a person’s movement and plays back via the record button. The record button works only when an object is selected. An object is selected by dragging a virtual object to the red or purple
spaces on the touch table. Enactavision captures the person's movement via the Kinect and transposes the person's movement onto the virtual object. On first press, the record button begins recording the selected object's motion. The record button begins to blink, red to black, while actively recording. A second press of the record button, while active, stops recording the object's motion and automatically loops the object's recorded motion. The record button then becomes inactive again. Up to two virtual objects can be recorded by two people at a time. The middle button is the most experimental of all the interactions explored while developing Enactavision. This middle button erases dynamically-moving objects. If an object has moved beyond a set x,y range, the object is erased, while more stationary objects remain. The middle button was implemented after some user testing where the observation was made that people like to build the background of the virtual scene and then add dynamically-moving objects. This allows people to not have to remake the whole background. It can be used a bit like an “undo” button, erasing only dynamically moving objects and saving the static objects within the wall screen.
Shown in Figure 17 is the reset button. It is the right most button and resets both the touch screen table with all the virtual objects and clears the entire wall scene. It's basically a restart button.

Future research directions based from insights gained through designing and developing Enactavision are limitless and some are discussed further in Chapter 11.5, Next Steps.

4.9 Preview of the following chapters

With the foundation of this thesis study firmly rooted in the art of expressive play, we take a closer look at what happens to expression when making and enacting are both in and out of the mix. What conditions within an environment, and even within one's body, evoke creative expressions? Within a group, what conditions and/or tools promote
co-creation? Chapter 5 introduces the set-up of the study, and some of the possible answers to the questions above can be found in the following chapters: findings, analysis, results, conclusions, implications and future research. Developing interactive methods for design research in the fuzzy front end of the design process and how these embodied methods compare and contrast to the traditional verbal method of design research mark the start of this study about collective creativity through enacting.
Chapter 5: Purpose

5.1 Introduction

This study explores different methods of front end design research. The contributions of this thesis are to include: sharing the insights gained from studying, comparing and categorizing different methods for the front end of the design process and sharing the research design used for this study in case one wants to conduct his or her own generative design activity. The results of this study may be useful to design practitioners, especially those who conduct participatory design research in the front end.

Design practitioners experiment with new tools and methods. But in design practice, few people or firms have the time or means to comparatively study them. The findings from this study may help inform practitioners in the front end of design research as to which tools and methods are appropriate for the goals of the situation at hand.

5.2 Objective

This research compared four design research methods: focus group, image collaging, Sandquery and Enactavision. Each of the four methods was tested with three small groups of adult participants to explore the research question, “How does dynamically moving one's body, while problem-finding and problem-solving in a group, impact one's creative abilities and expression?” Also a reasonable question for this study, “What, if any, role do objects and movement play in regard to what a person chooses to express, and in terms of one’s expressed relationship with the self and to others?
5.3 Research design

The research design was a between-subjects experimental design with a control group (focus group) and three experimental groups: the participatory design research methods of image collaging, Sandquery and Enactavision. One within-subjects round followed the 12 sessions, meaning three people participated as one team with all four methods.

Figure 18: The four different research methods in this study

Figure 18 illustrates the research design and sample size of the study.

“What’s next?” is the main question/prompt of all of the sessions in both of the rounds. This question was concocted by Professor David Staley because of its ability to conjure both very present and very distant futures. “What’s next?” can be both generative or digressive, abstract or realistic, depending on the lens held by the people exploring the question.
5.4 Detailed study procedures

The stimulus materials used in the experimental conditions were consistent across the methods. For example, a photo of a house in the collage exercise, a tangible toy-sized house for the Sandquery method, and a virtually-modeled house for the Enactavision activity. Each method followed similar scripts and had the same post-session questionnaires. All sessions were conducted in two conference rooms at OSU-ACCAD.

Each session proceeded as follows. Participants arrived at OSU-ACCAD. Depending on the method/activity, they were led to one of two rooms used for this research study. All first and second-round sessions of focus group, image collaging, and Sandquery, took place in the conference room at OSU-ACCAD. All first and second-round Enactavision sessions took place in the Interface Lab at OSU-ACCAD because that’s where Enactavision's necessary computer hardware and software was set-up and installed.

Before the session, each of the participants was provided with a hard-copy consent form for their records and one hard copy for the study. At this time, participants were asked to review the consent form once more and sign if they wished to be a part of the study. They were free to leave at any time during the session. Each session followed similar scripts with identical questions (Appendix B and C). The first part of each session included an introduction to the activity by the moderator, Emily Strouse. The introduction was followed by a brief group discussion prompted by five questions asked to each group.

In each script of each session the moderator said, “For the main question, “What’s next?”, you'll have 20 minutes to brainstorm your possible answers as a group, and 10 minutes to present and/or perform your ideas, hopes, and fears as a team.” Thus, each team was loosely instructed to work together as a team using the provided materials. After thinking in their group about the prompt for 20 minutes, the team had about 10 minutes to present their ideas and possible solutions to the main question. Lastly, each participant in both rounds completed the post-activity questionnaire provided in
Appendices D and E. All people interested in being a part of the second-round session provided their email address on the questionnaire in Appendix D.

5.5 Participant sampling

A random sampling approach was used to identify and recruit willing participants. Basic demographic information such as gender, age range (18-35 vs. over 35), and field of work or study was collected from potential participants in order to balance the group composition.

5.6 Research process

This research includes four different research methods: a focus group, image collaging, Sandquery and Enactavision. Each of the four methods was tested with three different groups, each made up of three adult participants. The group of three second-round participants were selected on a first-come, first-serve basis after the first-round sessions were completed.

5.7 Pre-activities in the first and second-round

The same open-ended prompt, “What's next?” was used consistently to start each group session. Each method followed a similar script with the same activities and post-session questionnaire.

Each group consisted of three people. Each script began by stating to the three people that the session would take about an hour of their time. The release forms were reviewed and signed, then cameras began to roll. Next, five questions were asked of the group, always in this order:

- “What do you think of when you hear the word 'future’?”
- “How far out is the 'future’?”
- “What words or images come to mind?”
- “Do you daydream about the future? When and where?”

and finally,
• “What do you get excited about when you think about the future?”

Once the group finished its responses to the “Five Questions” part of the activity, each group was given the main question, “What's next?,” to ponder for about 20 minutes. Each group was told that after that amount of time, they would be asked to present their response to “What's next?.” The group was interrupted by the moderator who reminded them when they had 10 minutes left, five minutes left, and when it came time to present. After the presentation, the group was given a post-activity questionnaire. The questionnaire included open-ended responses, yes/no questions and a chart to fill in with experiential words describing how they felt during the different parts of the activity. Each session in the first-round took about 60 minutes, depending on how the session proceeded. All sessions were audio-and video-recorded. 36 people participated in the 12 first-round sessions.

5.8 A short description of each method

The focus group sessions followed the script shown in Appendix B.
As illustrated in Figure 19, people in the focus group sessions worked together and then presented their ideas and possible solutions to the main question by discussing it with their teammates. The materials included pens and paper.

The image collaging sessions followed the script shown in Appendix B.
As shown in Figure 20, the people engaged in image collaging sessions worked together and then presented their ideas and possible solutions to the main question by using materials (e.g., paper, scissors, glue and the provided images and printed words). They talked with their teammates throughout the activity.

The Sandquery sessions followed the Sandquery script shown in Appendix B. The participants of Sandquery worked together and then presented their ideas and possible solutions to the main question by using materials, such as sand, a wooden box, and the provided toys and objects.

![Figure 21: Three participants working with Sandquery](image)

As shown in Figure 21, people engaged in Sandquery sessions chatted with their teammates while moving objects with their hands.

The Enactavision sessions followed the Enactavision script shown in Appendix B. For the activity, there was a short, demonstrative video about how to use the application. Using Enactavision, people worked together and then presented their ideas and possible solutions to the main question by using the materials: the Kinect, a wall, a projector, two computers, a touch screen and the Enactavision application.
As shown in Figure 22, people playing in Enactavision sessions talked with their teammates while moving virtual objects with their hands and bodies.

5.9 Second-round sampling, process and study procedures

The first-round participants’ email addresses, prioritized by those who expressed interest in participating in the second-round session by providing his or her email address, were organized in a spreadsheet until all first-round sessions were complete. At this time, three people were recruited from this list for a second-round session.

The three second-round participants were contacted via email to arrange a time when everyone was available. Thus, the second-round session included a group of three people who had all participated in one first-round session. The second-round session took place on one day and included collaborating and sharing ideas and possible solutions to the main question, “What's next?”. The second-round session took about three hours and the team of three experienced all four of the methods: a focus group, image collaging, Sandquery and Enactavision. The second-round team individually filled out the consent form once before the start of the session. The team of three experienced the introduction to the study and the five questions only once before starting the first of four methods.
After the first method's presentation, the group took a short break and then moved on to the “getting into the activity” of each of the next of three methods until all methods had been experienced. Each session was documented via video/audio recordings and both people and the visualizations that they made were photographed. Following each session, each person filled-out a post-activity questionnaire.

In the second-round, all of the design research methods were utilized and compared in the final post-activity questionnaire. The post-activity questionnaire from the first-round session and the post-activity questionnaire for the first three methods in the second-round session were the same. After the final method of the second-round was complete, a different post-activity questionnaire was given to each person to complete. The second-round post-activity questionnaire included additional comparative and open-ended questions so that all four of the methods in this study could be compared by the same three people.

5.10 **Explanation of post-activity questionnaires in the first and second-round**

After all first-round sessions, each person individually completed the post-activity questionnaire. Participants were instructed to be honest. The post-activity questionnaire included multiple-choice questions, yes or no questions, open-ended questions and an experience reflection chart. (Please refer to Appendices D and E for post-questionnaires.)

Collecting data about people’s experiences throughout the different stages of each method brings to question: Should design researchers be concerned with how enjoyable each of the conditions are, according to the people engaged in the activities? Regardless of the answer to the question, the purpose of the first and second-round post-activity questionnaires was to both gather general information about how people feel and to gauge people’s reflections about experiencing each method in a way that’s not ambiguous when translating to findings and conclusions.

The post-activity questionnaire begins by the person circling the activity in which he or she participated: focus group, image collaging, Sandquery or Enactavision. Then
the post-activity questionnaire asks each person, “Did you learn anything today? Please elaborate...” These responses were mostly in sentence form.

Next on the post-activity questionnaire is an experience reflection chart. It is a linear chart with vertical lines that break up the activity chronologically into four phases: “Emily's (Moderator's) intro”, “five questions,” “exploring the main topic,” and “presenting.” The one horizontal line running through the middle of the experience reflection chart represents a “neutral” emotional state about the session. Participants were requested to place words on the reflection chart according to these instructions: “Please use this map to describe how you felt about this activity’s experience. The + and - indicate a positive or negative experience. Please fill in words that describe your experience on the map. You may use the words below, or write in your own words that describe your feelings about the experience. Simply add one word per column.” (see the Reflection Chart / Experience Grid in Figure 23 and in Appendices D and E.)

![Figure 23: The experience reflection chart](image)

As seen in Figure 23, a word bank was provided to the left side of the experience reflection chart as a sample of words that could be used with which to fill out the chart:
fun, boring, engaging, collaborative, visual, stimulating, creative, shy, self-conscious, confident, and happy. People chose from the word bank and wrote in other words that were not in the word-bank to describe their experiences throughout each part of the activity.

The next page of the post-activity questionnaire contains open-ended and “yes” or “no” questions including:

- “Why did you want to be a participant today?”
- “Have you ever participated in an activity similar to this before?” “Yes” or “No”. “If Yes”, when?”
- “Today I felt like I expressed myself to my full creative potential.” “Yes” or “No”. “Please elaborate...”
- “Today, I feel that my participation and input were valuable to the study and to design research”. “Yes” or “No”. “Please elaborate...”

The next question asks, “If you had the chance to participate in this research again, which communication (method) would you want to use      (Please circle below) and why?”

To recruit for the second-round session, the final statement on the post-activity questionnaire invited them to participate in the study further: “Please write your email address on the back of this questionnaire if you are interested in participating more in this research study. This research study includes a second-round of activities which involve participating in all four activities. This additional participation will be held in two sessions. Each session will be an hour and a half in duration.” The post-activity questionnaire finishes by thanking the participants for their involvement in the study.

In the second-round, participants completed the first-round questionnaire for the first three of the four methods. The second-round post-activity questionnaire was given to them after they experienced the last of the four methods in the second-round. The
The second-round post-activity questionnaire is very similar to the first-round post-activity questionnaire. (Please refer to Appendix E, Second-round, post-activity questionnaire). It also includes a space for quickly comparing the four methods. They were asked to “Please include any reflections you have about your team during this activity.” This new question in the second-round, post-activity questionnaire was followed by another new question that probes for opinions about and comparisons between the methods. A small picture of each method labeled with each method's name below each picture was accompanied by a blank box with instructions to “Please rank your favorite activity, 1-4, “1” being your favorite and “4” being your least favorite.” No one in the second-round had questions about how to rank the methods, and they did so with ease. The second-round, post-activity questionnaire finished with the open-ended question, “What factors influenced your above rankings?” Lastly, the post-activity, second-round questionnaire indicates the end of post-activity questions and thanks the three people who were brave enough to endure all four methods with: “That’s all! Thank you for your input!”

5.11 The following chapter shares the predictions made about the data.

To keep the research as unbiased as possible, predicting what might happen helps keep the researchers honest when observing and analyzing the data. After the predictions, comes the analysis chapter which explains in detail how the data were organized to be able to find similarities and differences between each method.
Chapter 6: Predictions of data results

The researcher made predictions about how the participants would behave in the four methods based on her knowledge derived from the secondary research. It was predicted (see Figure 24) that the focus group method would not be fun or engaging or exhibit any enactment. In addition, image collaging was projected to show a medium to low level of enactment and a medium level of fun and engagement. It was expected that Sandquery and Enactavision would show a medium to high level of both enactment and fun/engagement.

The level of activity of the hands and body was predicted to increase during the “making” part of each activity across the set of methods, with the focus group having the lowest level of activity and activity increasing with image collaging and even more so with Sandquery. The most active method predicted was Enactavision. It was predicted that people's hands during the “making” part would be at a medium-low level of movement for the focus group method; medium-high for both the image collaging and Sandquery methods; and high for the Enactavision method.

Body movement predictions during the “making” part of each activity also went from low to high across the methods. It was predicted that body movement during the “making” in a focus group session would be at the lowest level, image collaging and Sandquery would be at a medium to low level and Enactavision would be at the highest level.

Additionally, during the “making” part of the each activity, group behavior was assessed according to how individually or collectively the group worked. It was predicted that the focus group would exhibit the highest level of individualistic behavior and then go up in a linear fashion according to the method toward collective behavior.
Image collaging was predicted to show a medium to low level of collective group behavior during the “making” part of the activity; Sandquery was predicted to be at a medium level and Enactavision was predicted to show the highest level of collective behavior during the “making” part of the activity.

Predictions were also made about differences between the methods according to hand and body movement and group behavior during the “telling” or presentation part of each of the four methods’ activities. Predictions about hand movement during the “telling” part of each activity increased across the methods. The focus group method was predicted to exhibit a medium to low level of hand movement during the “telling” part of the activity, and medium to high level of hand movement was predicted during image collaging and Sandquery. Enactavision was predicted to have the highest level of active hand movement during the “telling” part of the activity.

Active body movement was expected to be at the lowest level for the focus group method during the “telling” part of the activity and at a medium to low level for both image collaging and Sandquery. Enactavision was predicted to show the highest level of active body movement during the “telling” part of the activity.

The predictions about collective behavior during the “making” and “telling” parts of each activity were similar. During the “telling” part of each activity, group behavior was assessed according to how individually or collectively the group worked together. It was predicted that the focus group would exhibit the highest level of individualistic behavior during the “telling” part of the activity. Then the predictions went up toward collective behavior in a linear fashion according to the method. Image collaging was predicted to show a medium to low level of collective group behavior during the “telling” part of the activity. Sandquery was predicted at a medium level of collective behavior during the “telling” part of the activity, and Enactavision was predicted to show the highest level of collective behavior.
Figure 24 illustrates the predictions of data results across the four methods. These predictions will soon be compared to the actual data results. But first, the following chapter, Analysis, details how the data were documented and organized to support consistent analysis.
Chapter 7: Analysis

7.1 Introduction

Analysis of the data was challenging because of its wide variety and large quantity. For example, the data included behavior/body language, verbal protocol, emotional output, movement, choice of props, post-activity questionnaire, individual versus collective communication, etc.

<table>
<thead>
<tr>
<th>Observational</th>
<th>Examples included: Hand and body movements, engagement and enactment behavior, verbal contributions, how much space people are using within the room, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive</td>
<td>Examples included: activity duration, strategy made for sharing presentations, etc.</td>
</tr>
<tr>
<td>Interpretative</td>
<td>Examples included: Meaning of the presentations, how collaborative the people were as a group, etc.</td>
</tr>
</tbody>
</table>

Figure 25: The three primary data categories

The data was organized into three primary categories: observational, descriptive and interpretative as detailed in Figure 25, above.

The observational data were the easiest to analyze. Other data were strictly descriptive, meaning that something happened or didn't, with little room for interpretation. The interpretive data were particularly challenging to analyze, as they derived from watching the videos several times and reading/re-reading transcripts. Due to the ambiguity of interpreting meaning from qualitative data, this part of the data analysis was conducted in collaboration between the thesis’ primary advisor, Professor Liz Sanders. Both the investigator and advisor reviewed the data independently and
developed likely conclusions as to the nature of each content-based data field. Analysis was rigorous: videos were viewed many times and transcripts were carefully studied.

7.2 First-round analysis

The sample size in this study is too small to make absolute conclusions. The purpose of organizing all the data consistently is find where there appear to be threads of similarity and difference between the four methods.

Each session was both analyzed as a whole, as well as by the different parts of each session. For example, the “five questions,” and the activities of “making,” “telling,” etc., were analyzed separately. A large spreadsheet was set up to capture all the data in a way that methods could be directly compared across all the dimensions of interest. Each of the 12 first-round sessions used this same spreadsheet template so that the data being organized would be as consistent as possible.

<table>
<thead>
<tr>
<th>Session Name</th>
<th>Enactavision Session 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Session</td>
<td>6/29/2012</td>
</tr>
<tr>
<td>Relationships</td>
<td>Male1, Male2 and Female 1, all know one another</td>
</tr>
<tr>
<td>between people</td>
<td></td>
</tr>
<tr>
<td>Approximate ages</td>
<td>All are around 35 years old</td>
</tr>
<tr>
<td>Video file names</td>
<td>VID0001.MP4 and MVI_2255.Mov</td>
</tr>
</tbody>
</table>

Figure 26: Basic session information gathered

Figure 26 shows how the first part of the spreadsheet is organized. This basic session information includes: session name, the date of the session, the relationships between the three people participating in the activity (e.g., do they know each other?), their approximate ages, male or female, and the video file names from which the data is collected.
Figure 27: Time spent in session

<table>
<thead>
<tr>
<th>Activity</th>
<th>Start time:</th>
<th>End time:</th>
<th>Total time:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Five questions discussion</td>
<td>0 minutes, 10 secs</td>
<td>4 minutes, 47 secs</td>
<td>4 minutes, 37 secs</td>
</tr>
<tr>
<td>Getting into the activity</td>
<td>1 minute, 50 secs</td>
<td>7 minutes, 29 secs</td>
<td>5 minutes, 39 secs</td>
</tr>
<tr>
<td>Making</td>
<td>7 minutes, 30 secs</td>
<td>20 minutes, 58 secs</td>
<td>13 minutes, 28 secs</td>
</tr>
<tr>
<td>Telling</td>
<td>22 minutes, 20 secs</td>
<td>27 minutes, 14 secs</td>
<td>4 minutes, 54 secs</td>
</tr>
</tbody>
</table>

Shown above in Figure 27, the second part of the spreadsheet template includes how much time was spent in each part of the session: the “five questions,” “getting into the activity,” “making” and “telling.” The span of time between the start of the “five questions” and the end of “telling” is called “time total.” The first time each video was watched, duration notes were made by checking the video time at the beginning of each part. For instance, when the first of the five questions was asked, the time on the video was noted. When the three people were done answering the fifth question, that time on the video was noted. The start time and the end time for each part, when subtracted, gave a value for how much time was spent in each part of the activity. All of the times from the parts of the activity were added to equal the “total time.” The “five questions” and “telling” parts of the activity both have very recognizable start and end points, because these parts were directed by the moderator. When teams had spent about 20 minutes “making,” the moderator would let them know that soon they would be asked to answer “What's next?” in a 5 to 10 minute presentation.

While teasing out this duration data, the most difficult line to distinguish was where the “getting into the activity” ends and the “making” begins. In an effort to be as systematic as possible, this ambiguous line was drawn when the group of three people put the tools of the method to action and began to verbally focus the group on the main question, “What's next?” As examples, in a focus group session, when one person verbally rallied the group with the main question and put pen to paper, this is the line where “getting into the activity” ends and “making” begins. In the Enactavision session, the line was similarly crossed when participants put the virtual props into motion.
meaningfully to the main question. In the image collaging sessions, the line between “getting into the activity” and “making” was made when people began to place shapes of paper meaningfully to the larger piece of paper, or there was a verbal call for group focus. Times were noted accordingly. In Sandquery, when the group moved from open play to more focused play based on the question “What's next?,” the researcher drew the line between “getting into the activity” and “making”. The times on the video were then noted accordingly in the spreadsheet. Totals were tabulated and graphed in order to see if there were any patterns in time spent during each part of the activity based on the method. Then averages per method were tabulated across the different parts of the session: “five questions,” “getting into the activity,” “making,” “telling” and “time total.”

<table>
<thead>
<tr>
<th>Enactment?</th>
<th>X plus notes about the enactment/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotion?</td>
<td>X plus comments about emotional language, behavior, or themes</td>
</tr>
<tr>
<td>Fun?</td>
<td>X plus comments about the activity being fun or not</td>
</tr>
<tr>
<td>Engagement?</td>
<td>X Are people smiling/laughing, or are people avoiding eye-contact?</td>
</tr>
</tbody>
</table>

Figure 28: Session descriptive notes

The third part of the spreadsheet is a place to write descriptive notes about fun, engagement, emotion and enactment. For instance, in this part of the spreadsheet shown above in Figure 28, the researcher made a note of the video file and time if and when enactment occurred. Comments made about the activity being fun or not fun were noted. The researcher watched and listened to the videos for emotional interactions between teammates or the tools. In this part of the spreadsheet, comments about movement or wanting to move were noted. For example, in the first image collaging session during the “making” part of the activity, a participant made the comment/posed the question, “Do you guys want to move around?” The participant's suggestion was met by her team with continued sitting. Requesting teammates to move around the tools was not unique to this session or method; these subtle interactions are noted in the spreadsheet for each session.
Figure 29: Verbal, hand and full body movement

Illustrated in Figure 29, the fourth part of the spreadsheet takes note of each person's verbal contribution, hand movement and full body movement. These factors in the data were organized according to the different parts of the activity: the “five questions,” “getting into the activity,” “making,” and “telling.” For instance, during the “five questions” part of the activity, each person got a one, two or three (three being high), based on how much they talked in response to the questions. How much his or her hands moved was also scored a one, two or three, as was body movement. Depending on the method and participant, a shift can occur where one might be very verbal during the “five questions” part of the activity and nearly silent during the “making” part of the activity.

Individual scores were also coded with one’s, two’s and three’s by observing, then marking each team member's hand and full body movements. As the one’s, two’s, and three’s shifted according to the method, the part of the activity, and the individual, averages were calculated, then graphed. Seeing the qualitative data visually in simple bar graphs illuminates the discernible patterns from this study.
Movement is a significant focus of this study, so the fifth part of the spreadsheet was devoted to observing movement and is shown in Figure 30. Movement data was documented in the spreadsheet for the “making” and “telling” parts of the activity. Instead of “highs and lows” with “one’s, two’s, and three’s,” this data was marked with an “X” meaning “yes” or with an absence of any mark meaning “no.” During “making” and “telling,” each of the three people were observed and noted as to whether they were “sitting,” “standing” or a mixture of “both” sitting and standing. Also observed and noted on the spreadsheet were whether a participant’s hand movement was “minimal” or “regularly dynamic.” Similarly, whether each person's body was minimally moving or regularly dynamically moving was also noted.

<table>
<thead>
<tr>
<th>Hand behavior</th>
<th>Male 1</th>
<th>Male 2</th>
<th>Female 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standing</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Sitting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimal hand movement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regularly dynamic hand movement</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Full body behavior</th>
<th>Male 1</th>
<th>Male 2</th>
<th>Female 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standing</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Sitting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimal body movement</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Regularly dynamic full body movement</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Figure 30: Observations of movements during session

68
To further organize the data in terms of how much of the room people used during “making” and “telling,” a “how much space are they using?” field was defined so that this spatial data could later be visualized. Data about how much physical space was being used by each person is organized as shown in Figure 31, above. This field, also marked with an “X” to indicate “yes,” is separated into four zones: a two-foot radius to self, a five-foot radius to self, an eight-foot radius to self, and more than an eight-foot radius to self. Examples can help to visualize the meaning of this measurement. Imagine a bubble that surrounds each person and the person's spine is at the very center of the bubble. Give the bubble a two-foot radius weighted at the person's center. It should look like a sphere, a very personal-sized bubble that is not big enough for fully stretched arms. This is the first and smallest zone. People given an “X” for staying within this smallest, two-foot zone pretty much kept their hands to themselves, working and talking in their own personal bubble. To visualize the next zone, one can imagine expanding the bubble out five-feet. Hands are fully extended in this zone, maybe occasionally reaching into another's space. Now, make the bubble eight-feet around and the whole body is moving so much that it bursts from the five-foot bubble. In this zone, people often overlapped with others’ spheres. The final zone, “more than eight-foot radius to self,” implies that this person was so dynamically moving that their bubble knew bounds only from the walls of the room.

After reviewing the videos many times, speeding the videos up and slowing them down, it appears that whenever two or more people moved in this largest zone, their
movements together looked like full-body weaving – in, out and around each other’s bubbles and the whole room – like on a loom.

<table>
<thead>
<tr>
<th>Making</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>How dynamically moving are members of the group?</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>High X</td>
</tr>
</tbody>
</table>

Figure 32: Dynamic movement during session

Through observation, the researcher made a mark about each group’s movement for both the “making” and “telling” parts of each activity; the researcher called this category “how dynamically are members of the group moving?”. The movement data were tallied after the videos were watched many times, and each group was given “X”s to describe how dynamically moving people were as a group, as shown above in Figure 32. One “X” was given for other “low”, “medium” or “high” dynamic movement per session.

<table>
<thead>
<tr>
<th>Telling</th>
<th>Working independently</th>
</tr>
</thead>
<tbody>
<tr>
<td>How collaborative as a group?</td>
<td>Not very collaborative</td>
</tr>
<tr>
<td></td>
<td>A little collaborative</td>
</tr>
<tr>
<td></td>
<td>Very collaborative X</td>
</tr>
</tbody>
</table>

| Group level of excitement/engagement/energy | Low          |
|                                            | Medium       |
|                                            | High X       |

| How verbal is the group? | Low |
|                         | Medium |
|                         | High X |

Figure 33: Collaboration within the group
As illustrated above in Figure 33, the sixth part of the spreadsheet template examines group engagement from an observational point of view. Both the “making” and “telling” parts of each activity were evaluated: how collaboratively the group worked as a team, the group level of excitement, engagement and energy, and lastly, how verbal the team was during these last two phases of each activity. One “X” was given to mark each condition of engagement. For more about how group collaboration, excitement, engagement, energy and verbal engagement were measured then determined, please see the below sub-sections.

7.2.1 Measuring collaboration. When assigning a value marking collaboration, the possibilities for the team included: “working independently,” “not very collaborative,” “a little collaborative” and “very collaborative.” How much did they listen to each other and build collaborative artifacts or ideas? Collaboration is not only about verbal interaction and listening to each other; it is also about finding and executing a plan that everyone in the team supports. Assessing this “collaboration” part of the data was not only observational – it was also interpretive. If all three members of the group looked like they didn't want to be there (i.e., checking to see if he or she got a text message, making minimal eye-contact with his or her teammates, and keeping to oneself both verbally and interactively), the researcher assigned the group as “not very collaborative” or even “working independently.”

7.2.2 Measuring excitement, engagement and energy. Gauging the “excitement, engagement and energy” of each group during the “making” and “telling” parts of each activity was easier than evaluating collaboration. Excitement, engagement and energy were observed in the forms of laughter, smiling, and the urgency with which the team worked together. On the spreadsheet, one “X” was given in terms of either a “low,” “medium” or “high” level of excitement, engagement and energy. If all three group members had very high energy during the “making and “telling” parts of the activity, an “X” was assigned to the group's behavior to signify a “high” level of excitement, engagement and energy. If the group was somewhat engaged and excited throughout the “making” and “telling” parts of the activity, a “medium” was assigned. If
the group as a whole never smiled, trudged through the activity with minimal interaction with teammates, and shrugged shoulders in reaction to another teammate’s verbal interaction, the group's behavior was interpreted as a “low” level of group excitement, engagement and energy.

7.2.3 Measuring verbal engagement. Doing a word count on the transcripts of each session provides a more quantitative lens to exactly how verbal each session was during the “telling” part of each activity. When the word counts of each session were averaged across the methods, this gives insight into how verbal people were during the “telling” part of each method. How verbal the group was during the “making” and “telling” parts of each activity was observed and likewise assigned a “high,” “medium” or “low” score with an “X.” Depending on the activity, people were highly verbal or not during “making.” The score was determined by watching and re-watching the videos for each session. If there was minimal verbal dialogue during the “making,” it was so marked with a “low” in the spreadsheet. If there were lots of verbal interactions between group members during the “making” part of the activity, it was marked with a “high.” The same observations and corresponding “low,” “medium” and “high” marks in the spreadsheet were made for the “telling” part of the activity.
The most interpretive part of the data included deciphering the meaning of the “telling” part of each session in the first-round, and is diagramed above in Figure 34. This part of the spreadsheet includes evaluating whether a session as a whole was more like a story, description or dialogue. And as a whole, did the content seem more optimistic, neutral, pessimistic, or neither? This part of the data interpretation also assessed how far out in the future were the responses to the main question of “What's

<table>
<thead>
<tr>
<th>Kind of telling:</th>
<th>Story</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dialogue</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Content of telling:</td>
<td>Optimistic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mix</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Telling is set in:</td>
<td>Reality</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fantasy</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Scope of time during telling:</td>
<td>Short-term time scope</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Long-term time scope</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very long-term time scope</td>
<td>X</td>
</tr>
<tr>
<td>Representations of:</td>
<td>Past</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Present</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Future</td>
<td>X</td>
</tr>
<tr>
<td>Scale of during telling:</td>
<td>Micro scale</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Macro scale</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Meta scale</td>
<td>X</td>
</tr>
</tbody>
</table>
next?” Were the responses set in reality (the real world) or fantasy (a fictional place fueled by the imagination)? Were there any representations of past, present, or future? And lastly, were people talking on a personal level (micro scale), a community and global level (macro scale), or a spiritual level (meta scale)? This part of the data is by far the most interesting, but it was also the most challenging to analyze. The advisor verified the decisions made by the researcher about this part of the data fields shown in Figure 35 because it is very ambiguous and could be interpreted in different ways.

<table>
<thead>
<tr>
<th>Whole session</th>
</tr>
</thead>
<tbody>
<tr>
<td>How collaborative as a group?</td>
</tr>
<tr>
<td>Working independently</td>
</tr>
<tr>
<td>Not very collaborative</td>
</tr>
<tr>
<td>A little collaborative</td>
</tr>
<tr>
<td>Very collaborative X</td>
</tr>
<tr>
<td>Strategy made by the group about how to present?</td>
</tr>
<tr>
<td>Yes X</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Group level of excitement/engagement/energy</td>
</tr>
<tr>
<td>Low</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>High X</td>
</tr>
<tr>
<td>How verbal is the group?</td>
</tr>
<tr>
<td>Low</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>High X</td>
</tr>
<tr>
<td>How dynamically moving is the group?</td>
</tr>
<tr>
<td>Low</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>High X</td>
</tr>
</tbody>
</table>

Figure 35: Sessions observationally assessed from start to finish

The last set of items on the spreadsheet template, shown in Figure 35, assessed each session observationally as a whole, from start to finish. Data evaluated for the
whole session included how collaborative the group was during the whole session. This was simple to figure after reviewing earlier parts of the spreadsheet and re-watching the videos from each session. Tallies of “low,” “medium” and “high” were assigned for the group level of excitement, engagement and energy, verbal contributions, and how dynamically moving the groups were throughout the whole session. Xs were assigned by looking at the whole spreadsheet and re-watching the videos for each session. Because all of these conditions were evaluated and marked for the “telling” and “making” parts of each activity, the marks made for the whole session data is a simple, observational average as well as factoring in the word count transcript data that revealed how verbal the group was as a whole.

<table>
<thead>
<tr>
<th>FG1</th>
<th>FG2</th>
<th>FG3</th>
<th>FG all</th>
<th>IC 1</th>
<th>IC 2</th>
<th>IC 3</th>
<th>IC all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past</td>
<td>X</td>
<td></td>
<td></td>
<td>1</td>
<td>X</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Present</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3</td>
<td>X</td>
<td>X</td>
<td>2</td>
</tr>
<tr>
<td>Future</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3</td>
<td>X</td>
<td>X</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SQ1</th>
<th>SQ2</th>
<th>SQ3</th>
<th>SQ all</th>
<th>EN 1</th>
<th>EN 2</th>
<th>EN 3</th>
<th>EN all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3</td>
<td>X</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3</td>
<td>X</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Future</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>3</td>
<td>X</td>
<td>X</td>
<td>3</td>
</tr>
</tbody>
</table>

Key: FG=Focus Group, IC=Image Collaging; SQ=Sandquery; EN=Enactavision; all= total Xs

Figure 36: All first round sessions and method tallies

After each session’s data were organized in the same big spreadsheet, X’s were counted and tallied as shown in Figure 36. Assigning numbers to the data was not an attempt to quantify the data. The tallied numbers were graphed so that the data could be
visualized and in these graphs it became easy to see where there are possible similarities and differences between the methods.

7.3 Second-round analysis

Three people in the second-round session explored “What's next?” via all four methods of this study. The data of the second-round session were not analyzed in the same way as the first-round sessions because of the carry-over effects of one method to the next. Analyzing behavior and content responses to “What's next?” in the same way for both rounds would confuse the results due to the second-round team being at an advantage from answering, “What's next?” four times. The data reported from the second-round session came from the comparisons and comments made by the three people in the second-round who participated in all four of the methods.

7.4 Next up

The above chapter on analysis exposes how the data were organized for all of the rounds and all of the sessions in the study. The next chapter, Findings, provides a summary of each session in the first-round, from Focus Group to Enactavision. Each session in the first-round is summarized in terms of evoking what kind of data and a little about people’s individual personal reflection about their experience during each method. The summaries of data, method by method, is intended to point at possible similarities and differences in the kind data evoked from the methods in this study. The following summaries in the results are not constructed to conclusively draw absolutes about this study, but rather, report on threads of insight that are clear when one compares the data of one method from the next.
Chapter 8: Findings

8.1 Introduction

This section will summarize all the sessions: three focus group sessions, three image collaging sessions, three Sandquery sessions, and three Enactavision sessions. This is a high-level summary based on full transcripts from the telling part of each session. The evaluative summaries are subjective, thus the raw transcripts are available in the Appendix A for alternative interpretation. Italics indicate direct quotes from session transcripts. The transcripts are coded to protect the identity of participants. “M” indicates male, and “F” indicates female. The number after “M” or “F” distinguish between males and females within the same session. At the end of each session summary is a combined “experience grid” that maps the three participants’ responses to each part of the activity as indicated on each person's post-activity questionnaire.

Each summary contains descriptions of the level of creativity and collective creativity that each group demonstrated. “Creativity” was determined not by quantity of ideas or possibilities, as it is sometimes measured in other studies about creativity. Creativity in this study was determined by the quality of expressed content in the first-round transcripts. To put it simply, creativity was defined as: Original and new to the people coming up with the ideas. Additionally to confirm if and how ideas and expressions evoked from the four methods were creative or not, the scale of time during the group’s presentation about “What’s next?”, was also taken into consideration. If the time scope within the transcript was beyond one’s lifetime, this impacted the evaluation of the session’s being creative or not very creative. Thinking outside one’s lifetime shows a kind of creativity that sparks things that might not have been thought of before by the group, or maybe even ever before.
Collective creativity entails collaborative quotes from the transcripts that exhibit shared creative meaning between two or more people. Quotes that illustrate collective behavior were pulled as examples for each of the 12 first-round session profiles. Sometimes the quotes were about the activity and sometimes the quotes were about “What’s next?”.

The session profiles that follow are the findings from the 12 first-round sessions in order from Focus Group, sessions one through three, to Image Collaging, sessions one through three, to Sandquery sessions, one through three, and lastly, Enactavision sessions, one through three. After all the first-round findings in the many pages to follow, the second-round findings can be found in 8.14, Second-round findings. After the findings are the data results in Chapter 9, Data Results.

8.2 Focus group: Session 1

Summary of telling content: This team of three talked about making peace with their personal pasts and present situations. This group has faith in heaven and this reflects their present goals. They try to be content with the present. It seems they want to be hopeful about the future, be content in different life stages, and bravely anticipate death.

Group dynamic during the making and telling parts of the session: This team was not very collaborative, showed a medium amount of engagement and excitement, and was highly verbal. Because the team members were not actively moving their hands or body beyond occasional gesturing and although two of the people stood during the presentation, they were both very still and thus the team was assigned a low level of dynamic movement.
Who: Ages: Female 1: 35-50, Female 2: 50+, Female 3: 50+

Relationships: All three people know each other.

Time spent in each part of the session:
- 5 questions: 21 minutes, 58 seconds
- Getting into the activity: 2 minutes, 45 seconds
- Making: 16 minutes, 28 seconds
- Telling: 9 minutes, 29 seconds

Total time from “5 Questions” to end of the “Telling”: 50 minutes, 40 seconds

Style of telling:
- 3 people took turns talking
• What does the kind of telling sound like? Description

• Content is a mix of negative, neutral and positive telling

• Telling is set in reality

• The self, others and/or the world? This session's presentation is both personal/individualistic and spiritual/metaphysical in nature

Dimension of time during telling:

• Long-term time scope (within 2 years and one's lifetime)

• Representations of the past, present and future are all included

Problems discussed:

• You give yourself X amount of years [to live]

• [Sharing the gospel] ...is not always easy for me

• Friends have been ill

• Live in fear of things going wrong

• Bad things happen

• It's hard to accept the pain

• Nothing we plan really works out

Opportunities discussed:

• Each of us views the future differently in each generation

• Excited about the things I want to pursue

• Appreciate the now, Appreciate where I am

• Live in the present with an eye on heaven

• Anticipate the future
• *Live to serve others and share the gospel*

• When people face illness with a positive attitude

• *Focus positively on the future*

• Not wanting to *give up*

• To not *get comfortable because things change all the time*

• To live the way God wants you to live

• *Grateful for the past*

• *You can relax because it* [Christianity] *takes the pressure off*

• *Stop focusing on what I think I should be*

Creative? Not creative

Quotes / Collaborative quotes:

F3: I’m staying here [in my chair] because I have a phobia about getting up in front of people and talking;

F1: Hey, I have the same phobia but I got up in front and talked. I have a serious phobia;

F3: But you were an actress, an actress;

F1: That’s different, a totally different thing. I have a phobia about getting in front of people, not in front of strangers in a crowd that I don’t know playing a role. Very different-being your self as opposed to playing a character.
### Figure 38: Reflection Chart for Focus Group Session 1

<table>
<thead>
<tr>
<th>Time</th>
<th>emily's intro</th>
<th>5 questions</th>
<th>exploring the main topic</th>
<th>presenting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F1: Nice, Friendly, Confident</td>
<td>F1: Interesting</td>
<td>F1: Engaging</td>
<td>F1: A little self-conscious</td>
</tr>
<tr>
<td></td>
<td>F3: Clear, Comfortable</td>
<td>F2: Stimulating</td>
<td>F2: Collaborative</td>
<td>F2: Self-conscious</td>
</tr>
<tr>
<td></td>
<td>F3: Fun, Engaging, Stimulating</td>
<td>F3: Collaborative, Stimulating</td>
<td>F3: Made it through!</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F2: neutral</td>
<td>neutral</td>
<td>neutral</td>
<td>neutral</td>
</tr>
<tr>
<td></td>
<td>F3: Somewhat Self-conscious</td>
<td>F3: Uncomfortable</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F2: Fearful</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F3: Very Self-conscious, Uncomfortable</td>
<td></td>
</tr>
</tbody>
</table>
8.3 Focus group: Session 2

Summary of telling content: The brainstorm of this group included some science fiction fantasies about future living so that *we can spend more time with our families*. This group goes into many problems that they need to “fix” before they can get to an ideal future.

Group dynamic during the making and telling parts of the session: This team was a little collaborative, showed a medium amount of engagement and excitement, and had a medium level of verbal sharing. Because the team members were not actively moving their hands or body beyond occasional gesturing and because all three people sat throughout the whole session, the team was assigned a low level of dynamic movement.

Figure 39: First work product from Focus Group Session 2
Figure 40: Second work product from Focus Group Session 2

Who: 

Relationships: 
Female 1 and Female 2 know each Other; neither had never met Male 1 before

Time spent in each part of the session: 
5 questions: 7 minutes
Getting into the activity: 1 minutes, 28 seconds
Making: 20 minutes, 21 seconds
Telling: 7 minutes, 13 seconds

Total time from “5 Questions” to end of the “Telling”: 36 minutes, 2 seconds

Style of telling:

• 3 people collaboratively talked

• What does the kind of telling sound like? Something other than story or description

• Content is negative

• Telling is set in both fantasy and reality

• The self, others and/or the world? This session's presentation is both community/globally-based and personal/individualistic in nature
Dimension of time during telling:

- Very long-term time scope (beyond one's lifetime)
- Representations of the present and future were included

Problems discussed:

- The energy problem
- Technology is pushing people apart rather than bring them together
- Hunger
- Reduce the violence
- Reduce the babies
- We can't fix today's problems with the current political system
- Everyone's totally free to do what they want
- Inequality
- Not enough supply
- This is the country of individuals but really we should not be so...
- A coup

Opportunities discussed:

- Kitty litter waste could be used as fuel
- Spaceships / spacecraft
- Taxis flying
- Cats drive the space taxis
- Butlers [robot maids] do all the stuff that we don't feel like doing
• Trips to different planets

• Less time devoted to working, more time devoted to family or leisure

• Change habits / Change people's behaviors in their efforts towards teamwork

• Starve everyone who's fighting

• A kind of political system...to be able to fix all these problems

• Better teamwork

• Stop being selfish

• You don't want to limit the ability to achieve what they want

• We can all achieve what we each want individually but yet together

Creative? A little creative

Example: M1: Kitty litter waste could be used as fuel and that would solve some of the energy problem.

Example: F1: We would also have butlers which do all the stuff that we don’t feel like doing like bathing a cat; we would able to accompany the rest of our family on trips to different planets.

Quotes / Individual quotes:

M1: I mean it is kind of depressing to look at all the problems that we have to fix but I still want to think that it is possible – that it just takes a really long time to work out all the issues.

F1: Yeah, drawing the future was really fun then I had the bright idea of saying this is what’s next- we have to figure out how were going to get there and that’s where we got all depressed with the problems- it brought the mood down. We kind of went in circles ‘cause that’s why they have to be fixed because they’re pretty hard.
Figure 41: Reflection Chart for Focus Group Session 2

<table>
<thead>
<tr>
<th>positive + experience</th>
<th>emily’s intro</th>
<th>5 questions</th>
<th>exploring the main topic</th>
<th>presenting</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1: Happy</td>
<td>F1: Confident</td>
<td>F1: Engaging, Creative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>neutral</td>
<td>neutral</td>
<td>neutral</td>
<td>neutral</td>
<td>neutral</td>
</tr>
</tbody>
</table>
8.4 Focus group: Session 3

Summary of telling content: This group talks only about their own personal goals: working, making more money, getting married, having kids, moving, traveling, building a dream house, spending more time with mom, and starting businesses.

Group dynamic during the making and telling parts of the session: This team worked independently, showed a low amount of engagement and excitement, and had a low-level of verbal sharing. Because the team members were not actively moving their hands or body and because all three people sat throughout the whole session, the team was assigned a low level of dynamic movement.

Figure 42: First work product from Focus Group Session 3

Relationships: All three people know each other.

Time spent in each part of the session:
- 5 questions: 4 minutes, 3 seconds
- Getting into the activity: 5 minutes, 39 seconds
- Making: 13 minutes, 28 seconds
- Telling: 4 minutes, 54 seconds

Total time from “5 Questions” to end of the “Telling”: 28 minutes, 38 seconds

Style of telling:

- 3 people took turns talking during the presentation
- What does the kind of telling sound like? Dialogue
- Content is neutral telling
- Telling is set in reality
- The self, others and/or the world? This session's presentation was personal/individualistic in nature

Dimension of time during telling:

- Long-term time scope (within 2 years and one's lifetime)
• Representations of the present and future were included

Problems discussed:

• *She’s [M2's mother] not going to be around forever*

Opportunities discussed:

• *I would probably move [city, house, etc.]*

• *Making more money*

• *Get married*

• *Having some kids*

• *Owning a house*

• *Having grand babies*

• *Traveling / Travel / Traveling for both work and pleasure*

• *And then die*

• *Have my own business*

• *Design and build my own house*

• *Retirement*

• *Being involved in other activities*

• *I would like to spend more time with my family and my mother / Focus on the family*

• *Stop working for corporation*

• *Open up a shop*

Creative? Not creative
Quotes / Individual quotes:

F1: *Well I think we all kind of thought about it more on a personal level than a big picture.*

M2: *Yeah, like a logistical thing, I think more like I need to remind myself that life is a journey not a destination because I think about like where I want to be instead of like focusing on how I’m going to accomplish it.*

Figure 44: Reflection Chart for Focus Group Session 3
8.5 Image Collaging: Session 1

Summary of telling content: This group, out of paper, made representations of heaven, earth, and a serpent mound as the *transcendental point between the two*. The future is uncertain, but it also hints to hopes and opportunities.

Group dynamic during the making and telling parts of the session: This team was highly collaborative, were very engaged and excited, highly verbal, and their hands moved regularly according the team a medium level of dynamic movement. During the presentation one person sat, one person stood, and one person went from sitting to standing, and back to sitting, several times.

Figure 45: First work product from Image Collaging Session 1
Figure 46: Second work product from Image Collaging Session 1


Relationships: Female 1 and Female 2 know each other; neither had never met Female 3 before.

Time spent in each part of the session: 5 questions: 9 minutes, 5 seconds
Getting into the activity: 5 minutes
Making: 21 minutes, 44 seconds
Telling: 6 minutes, 44 seconds

Total time from “5 Questions” to end of the “Telling”: 42 minutes, 33 seconds

Style of telling:

• 3 people took turns talking during the presentation

• What does the kind of telling sound like? Dialogue

• Content is neutral telling

• Telling is set in both fantasy and reality

• The self, others and/or the world? This session's presentation is personal/individualistic, community/globally-based and spiritual/metaphysical in nature
Dimension of time during telling:

- Very long-term time scope (beyond one's lifetime)
- Representations of the past, present and future were included

Problems discussed:

- There’s a lot of uncertainty [in the future]
- Everything living; it's plagued with envy and guilt

Opportunities discussed:

- Embracing where we come from
- A celebration of dinosaurs
- Joy
- There is the possibility of offset or going somewhere off the anticipated progression of things
- Self-reflection...and my hope is that we do it with empathy to others and ourselves
- I think she is looking out [of the window], it’s like an opportunity
- It’s a possibility of their rebirth and it’s cyclical in nature and it represents everything past, present and future, it’s sort of a cycle
- People have more wisdom
- Hopefully self-reflection with empathy he’s [the snake] going to transcend
- In nature there is always something [treasure] to find
- A treasure for the individual
Creative?  
Examples:  F2: [The girl with the window]...It’s kind of like when you open a window just open another world.

F2: I think she is looking out, it’s like an opportunity, I feel that way.

Quotes / Collaborative Quotes:

F3: This is something you like; you always find something you are comfortable with that makes it a treasure.

F1: It’s whatever you can find...to you, it becomes a treasure.

Figure 47: Reflection Chart for Image Collaging Session 1
8.6 Image Collaging: Session 2

Summary of telling content: From paper this team made a planetary themed trajectory for “What's next? There is a rocket ship, a person and cat both in space helmets and toting a compass, a hybrid of a dog and dinosaur, and an explosion on earth.

Group dynamic during the making and telling parts of the session: This team was not very collaborative, showed a low level of engagement and excitement, and seldom spoke. Because the team members were actively moving their hands but not throughout the activity, and although two of the people stood during the presentation, they were both very still and thus the team was assigned a low level of dynamic movement.

Figure 48: First work product from Image Collaging Session 2
Relationships: Female 1 and Male 1 know each other; neither had never met Male 2 before
Time spent in each part of the session: 5 questions: 3 minutes
Getting into the activity: 5 minutes, 52 seconds
Making: 19 minutes, 10 seconds
Telling: 2 minutes, 35 seconds
Total time from “5 Questions” to end of the “Telling”: 30 minutes, 37 seconds

Style of telling:

• 2 people did most of the talking during the presentation
• What does the kind of telling sound like? Story
• Content is a mix of negative, neutral and positive telling
• Telling is set in fantasy
• The self, others and/or the world? This session's presentation is both
community/globally-based and spiritual/metaphysical in nature

Dimension of time during telling:

- Very long-term time scope (beyond one's lifetime)
- Representations of the future were included

Problems discussed:

- *Things go south on earth; it just isn’t the same*
- *Human nature happened*
- *The Sun's coming...*
- *Bad things*
- *War*

Opportunities discussed:

- *All of the new possibilities are on the other planet*
- *...We get cast into space*
- *Always new possibilities for anything*
- *Good things*

Creative? A little creative

Example: M1: Cyber folks

Example: F1: New possibilities in the future; Innovation

Quotes: None
Figure 50: Reflection Chart for Image Collaging Session 2
8.7 Image Collaging: Session 3

Summary of telling content: This image collage creation proposes a future relationship with aliens, advanced technologies like cloning, and makes mention of a broad-range of futuristic concerns: advancing technologies, water, animals, clothing, war and catastrophes.

Group dynamic during the making and telling parts of the session: This team was not very collaborative, showed a low level of engagement and excitement, and had a medium level of verbal sharing. Because the team members were actively moving their hands but not throughout the activity, and because everyone sat during the whole session, the team was assigned a low level of dynamic movement.

Figure 51: First work product from Image Collaging Session 3
Who: 

Ages: Female 1: 18-35, Male 1: 35-50, Male 2: 35-50

Relationships: 

Female 1 and Male 2 know each other; neither had ever met Male 1 before.

Time spent in each part of the session: 

5 questions: 3 minutes, 55 seconds

Getting into the activity: 

2 minutes
Making: 19 minutes, 29 seconds
Telling: 9 minutes, 3 seconds

Total time from “5 Questions” to end of the “Telling”: 34 minutes, 27 seconds

Style of telling:

• 2 people did most of the talking during the presentation

• What does the kind of telling sound like? Description

• Content is a mix of negative, neutral and positive telling

• Telling is set in both reality and fantasy

• The self, others and/or the world? This session's presentation is community/globally-based in nature

Dimension of time during telling:

• Very long-term time scope (beyond one's lifetime)

• Representations of the present and future were included

Problems discussed:

• Fuel crisis

• Fresh water will inevitably run out

• We feed things too much and overeat

• The fast food society

• Embryo kind of debate / Ethical debate when you start cloning dinosaurs

• Future wars and future catastrophes

• Asteroid hitting the Earth

• We kind of see within our shells most of the time...
Opportunities discussed:

• Alien landing zone parking lot

• Alternative power source

• Alien technology!

• Alien vessels

• Alien language

• When we start cloning dinosaurs and wear shiny clothes they [aliens] are going to want to be a part of it

• The future, it can go on for infinity in a number of infinite directions so like your future is full of choices that are up to you and they can branch in any way as long as you plan for them or whatever

• Desalination

• Develop new materials that may or may not be shiny

• More efficient...transportation systems or trams

• Clone a dinosaur

• Solar powered airplanes

• Cats and dogs learn to get along

• You could consider the past...this has all happened before

• Maybe everything we know as reality is a dream

• We're hooked up to machines just like the Matrix!

• Animals as slaves to humans

• Humans as slaves to cats and dogs

• The cat can teach the dog to use a litter box...or how to land on their feet
Creative? Very creative

Example: M2: *This is the alien landing zone parking lot. And this is how they refuel their alien planes - it’s the alternative power source for them. There is a big magnetic field created by each of these posts that causes this big thing to spin very fast and inside of it does fusion reactions.*

Example: M1: *In the future we are going to have airplanes and they are going to be solar powered, I mean, why wouldn’t you?*

Quote / Individual quote:

M2: *I think it is hard to kind of interpret a myopic view of the future since we kind of see within our shells most of the time, I don’t know, maybe that’s just me. My idea of the future is probably more immediate than anybody else’s at this moment.*

Figure 54: Reflection Chart for Image Collaging Session 3
8.8 Sandquery: Session 1

Summary of telling content: The three females created their concept of 'What's next?' using the tools of Sandquery. In the corners of the sand tray lay dangers, tragedies, death, and heaven. In the center is their ideal beach vacation.

Group dynamic during the making and telling parts of the session: This team was highly collaborative, very engaged and excited and highly verbal. Their hands, not their bodies, moved regularly according the team a medium level of dynamic movement. The three people sat the entire session.

Figure 55: Sandquery Session 1 overview
Who: Ages: Female 1: 50+, Female 2: 35-50, Female 3: 50+
Relationships: All three people knew one other
Time spent in each part of the session: 5 questions: 9 minutes, 5 seconds
Getting into the activity: 30 seconds
Making: 17 minutes, 7 seconds
Telling: 14 minutes, 9 seconds
Total time from “5 Questions” to end of the “Telling”: 40 minutes, 51 seconds

Style of telling:

- 2 people did most of the talking during the presentation
- What does the kind of telling sound like? Something other than story or description
- Content is a mix of negative, neutral and positive telling
- Telling is set in reality
- The self, others and/or the world? This session's presentation is both personal/individualistic and spiritual/metaphysical in nature

Dimension of time during telling:

- Long-term time scope (within 2 years and one's lifetime)
- Representations of the past, present and future were included

Problems discussed:

- 9/11 happened
- Past tragedy
- Current, potential dangers
- Tragedies can rock your sense of the future
- I couldn’t stand the thought of having a razor blade cut me
- I can’t stand the thought of being in a box and being buried
- You never really know truly what’s going to be next
- We could be hit by a bus tomorrow
Opportunities discussed:

- The phoenix is coming out there because she is going to heaven
- Future hope
- *We will enjoy this* [fantasy beach vacation in the middle of the sand tray] part
- I think I feel secure in the present
- I don't have to be worried about the future because...the future is like the phoenix...like the heaven piece
- A bigger picture which is not subject to the ups and downs of the current world
- We’re not looking at the mirror anymore, were not going to dwell on that [physical beauty]
- I am going to go to heaven
- They’re [children] getting old enough now that they can have a little bit more independence and kind of stick together and look out for each other
- We can have our fantasies and we can have our dreams, we can have our hopes...
- If I choose to believe that God is in control, it will all work out and that I'll have what I need
- Remembering the tragedies stuff, helps me to stay focused to enjoy these moments
- I love this idea of saying 'yes' as often as possible
- Thinking about how to stay positive and enjoy the moment rather get dragged down into the 'no’ you’ve been bad so I’m taking away all your privileges
- Ability to enjoy what we have in the moment
Creative? A little creative

Example: F1: This is F3 dead, but the Phoenix is coming out there because she is going to go to heaven.

Quotes / Collaborative quotes:

F2: You never really know truly what’s going to be next. So we can have our fantasies and we can have our dreams, we can have our hopes but we could be hit by a bus tomorrow so I think that I like the balance that we created.

F1: Yeah, this stuff [tragedies] over here makes this stuff [the middle beach area] so sweet; this is like because you know all these other things are out of control, out of your control so that the 'What’s next?' question is right in the moment...

Figure 58: Reflection Chart for Sandquery Session 1
8.9 Sandquery: Session 2

**Summary of telling content:** This team collaboratively told a long story with defined zones in the sand tray that represent the past, present and the future. There is a female protagonist who is being chased by dangerous creatures. The team explores uncertainties of the future and analyze mistakes of the past.

**Group dynamic during the making and telling parts of the session:** This team was highly collaborative, showed a medium amount of engagement and excitement, were highly verbal, and their hands, not their bodies, moved regularly according the team a medium level of dynamic movement. The three people sat the entire session.

Figure 59: Sandquery Session 2 overview
Figure 60: Sandquery Session 2 view of the corner

Figure 61: Sandquery Session 2 the dog and the snake

Who; 

Relationships: 
All three people had never met

Time spent in each part of the session: 
5 questions: 5 minutes, 30 seconds
Getting into the activity: 
51 seconds
Making: 
16 minutes, 18 seconds
Telling: 
15 minutes, 50 seconds
Total time from “5 Questions” to end of the “Telling”: 38 minutes, 29 seconds

Style of telling:

- 3 people collaboratively talked during the presentation
- What does the kind of telling sound like? Story
- Content is a mix of negative, neutral and positive telling
- Telling is set in both fantasy and reality
- The self, others and/or the world? This session's presentation is both community/globally-based and personal/individualistic in nature

Dimension of time during telling:

- Long-term time scope (within 2 years and one's lifetime)
- Representations of the past, present and future

Problems discussed:

- Being chased by a snake in the grass and a shark and being in danger
- Anxiety about the future
- A meteorite coming in the hitting [the Earth] and causing the dinosaurs to head off...
- Symbolizes some of the very unstable, sort of precarious future
- You've obtained some and you desire another because it's different
- You always want what you can't have
- We can't know what lies in the future
- We are tortured by fears of oblivion
- We don't understand the future, the question is what's the solution and it could be planning it, over planning it, and that would make it really boring
if there's not much change in the future

• It's not about having certainty about what’s coming because you can’t because too much planning gives you sometimes really atrocious systems like Nazi Germany because you’re trying to make everything so structured it becomes this horrible nightmare experiment in which you can’t possibly achieve

• One person has a view and imposes that on everyone else and it doesn’t work

• We have a fear of uncertainty and it forces us to sort of lock onto people who seem like they have a good plan or something

Opportunities discussed:

• Something safe to sit on

• So he doesn't have to relate to his past so his future is...safety

• To look at himself as he's trying to figure out where he needs to go

• Reinventing who we are and how we see the future

• We can make it [the future] better

• Rebuild it and start over

• Each generation takes what they like and keeps it and that becomes a value and convention

• Every generation just has their own path

• Let's involve random processes

Creative? Creative
Example: M3: If you think of it as a design issue it gets back to concepts like the Dao, like the virgin block, it can be anything, so that’s that thought about blue sky, you know, and so you automatically diverge to every possibility by that symbol...it’s always a
difficult thing that if you impose the target and say, 'we're going to design something for this purpose', then automatically, you start to classify and start to think of things...and say...well it didn't work for this situation so let's back up the car and drive in a different direction.

Quotes / Individual quotes:

M3: It's a fair topic that damage has been done by a lot of governments and societies that has been driven from top-down problems and that becomes a difficult thing because it doesn't acknowledge the unique perspective of each individual.

M2: The big struggle is for companies to embrace the idea that all the experts that they think they can hire can't maybe solve certain problems unless they are willing to embrace certain chaos strategies – to say that we don't know and so let's involve random processes. That to me seems like a similar kind of problem in our society to say our politicians don't have to go into office saying they knew the solutions to all the problems and can fix every single little thing...
Figure 62: Reflection Chart for Sandquery Session 2

<table>
<thead>
<tr>
<th></th>
<th>emily's intro</th>
<th>5 questions</th>
<th>exploring the main topic</th>
<th>presenting</th>
</tr>
</thead>
<tbody>
<tr>
<td>neutral</td>
<td>M2: Standard</td>
<td>neutral</td>
<td>neutral</td>
<td>neutral</td>
</tr>
<tr>
<td>negative experience</td>
<td>M1: Shy</td>
<td>M2: Collaborative</td>
<td>M1: Self-conscious</td>
<td></td>
</tr>
</tbody>
</table>
8.10 Sandquery: Session 3

**Summary of telling content:** This team shared a story where the doll figure simply stood for “we”, the three members of the group. The doll walked through different areas of the sand tray: the “fleeting, worrisome present”, through the “dangerous and scary past” and the “mysterious and interesting past”, and finally arrived at a happy future.

**Group dynamic during the making and telling parts of the session:** This team was highly collaborative, were very engaged and excited, highly verbal, and their hands, not their bodies, moved regularly according the team a medium level of dynamic movement. The three people sat the entire session.

![Figure 63: Sandquery Session 3 full display](image)
Figure 64: Sandquery Session 3 the “little girl”

Figure 65: Sandquery Session 3 the "window"


Relationships: All three people had never met before.

Time spent in each part of the session:
5 questions: 6 minutes, 42 seconds
Getting into the activity: 2 minutes, 44 seconds
Making: 11 minutes, 9 seconds
Telling: 12 minutes, 19 seconds
Total time from “5 Questions” to end of the “Telling”: 32 minutes, 54 seconds

Style of telling:

• 1 person did most of the talking

• What does the kind of telling sound like? Story

• Content of telling is not specifically negative, neutral, positive or a mix

• Telling is set in both fantasy and reality

• The self, others and/or the world? This session's presentation is both personal/individualistic and spiritual/metaphysical in nature

Dimension of time during telling:

• Very long-term time scope (beyond one's lifetime)

• Representations of the past, present and future

Problems discussed:

• We're worried about the future

• Run into a danger

• The past looks dangerous and scary

• We run into more dangers and the things we should be frightened of...

• Our snake egg is a potential future danger...Monsters in the sea and the oceans rising

Opportunities discussed:

• To deal with that danger we compartmentalize our life. Say, okay it's in its box; it can't hurt us

• We use our compass...and plane to get into the future...time starts flying
• The mysterious past where we really don't understand it but it looks very interesting

• We get our Sun, so things are happier and we're less worried about the future now

• Knowing ourselves

• The sun is here on the corner – the future's bright

• It will be a bright future

Creative? Very creative

Example: F1: “The feather? That was for the fleeting nature of the present ’cause it’s, you’re in the present and then it’s the past right away; constantly moving to the future.”

Quotes / Collaborative quotes:

M1: It could also represent knowing ourselves, we think we’ll know ourselves in the future but we may not ever arrive, it’s a constant process, a cycle as signified by the Phoenix.

M2: That’s actually seeing the future I guess

F1: And you’ve got the crystal ball;

M2: Now you’re getting feedback; that’s why the sun is here on the corner- the future’s bright.

F1: The future’s bright!
Figure 66: Reflection Chart for Sandquery Session 3
8.11 Enactavision: Session 1

Summary of telling content: The team enacted a story on the wall screen about a little girl on a roller-coaster. On her futuristic journey she explored molecular regeneration, nanoparticles, space and time travel, and the soul.

Group dynamic during the making and telling parts of the session: This team was highly collaborative, were very engaged and excited, highly verbal, and dynamically moving throughout the activity.

Figure 67: Enactavision Session 1 overview

Relationships: All three people know each other.

Time spent in each part of the session:
- 5 questions: 10 minutes, 50 seconds
- Getting into the activity: 11 minutes, 57 seconds
- Making: 17 minutes, 47 seconds
- Telling: 2 minutes, 44 seconds

Total time from “5 Questions” to end of the “Telling”: 43 minutes, 18 seconds
Style of telling:

• 1 person did most of the talking
• What does the kind of telling sound like? Story
• Neutral content, not specifically negative, neutral or positive telling
• Fantasy, telling is not set in reality
• The self, others and/or the world? This session's presentation is both community/globally-based and spiritual/metaphysical in nature

Dimension of time during telling:

• Very long-term time scope (beyond one's lifetime)
• Representations of the present and the future

Problems discussed:

• Global warming

Opportunities discussed:

• Space and time travel
• A person being disintegrated and then reassembled
• Do we maintain our original soul after nanoparticle reassembly?

Creative? Very creative

Example: M1: And on the roller coaster with us is a great big octopus-monster with a hundred different tentacles, each holding a different possibility.

Example: M1: And this little girl, floating up and down in this cloud of nanoparticles, realizes that this is the hope for the salvation of the human species!
Quotes / Individual quote:

M1: So she’s now been completely reassembled in exactly the same shape, to the very last detail that she was when she was on the planet earth, but now she’s somewhere past the great star Sirius. But her replicated self asks herself, do I still have my own soul?

Figure 70: Reflection Chart for Enactavision Session 1
8.12 Enactavision: Session 2

Summary of telling content: Mostly told by the narrator using the touch table, a story was about a little girl who is all powerful. At the story's start, she re-enacts prehistoric creatures back to life as her magic purple crystal gives her special powers. This session explored space, time travel and the attributes of the girl.

Group dynamic during the making and telling parts of the session: This team was a little collaborative, two members were very engaged and excited and one was not. This group was minimally verbal, and only one person was dynamically moving both her hands and body throughout the activity.

Figure 71: Enactavision Session 2 starting the display
Figure 72: Enactavision Session 2 manipulating the table

Figure 73: Enactavision Session 2 displaying the "person"
Who: Ages: Female 1: 50+, Female 2: 50+, Male 1: 50+
Relationships: All three people know each other.
Time spent in each part of the session: 5 questions: 6 minutes, 30 seconds
Getting into the activity: 11 minutes, 1 second
Making: 13 minutes, 36 seconds
Telling: 4 minutes, 26 seconds
Total time from “5 Questions” to end of the “Telling”: 35 minutes, 33 seconds

Style of telling:

• 1 person did most of the talking

• What does the kind of telling sound like? Story.

• Neutral content, not specifically negative, neutral or positive telling

• Fantasy, telling is not set in reality

• The self, others and/or the world? This session's presentation is spiritual/metaphysical in nature

Dimension of time during telling:

• Very long-term time scope (beyond one's lifetime)
• Representations of the past and the future

Problems discussed:

• Stupidity

• Violence

Opportunities discussed:

• Time traveling

• Secret of life

• Secret of time-space continuum

• An ability to go into any dimension

• An ability to control everything

• An ability to re-enact the extinct

Creative? Very creative

Example: F1: ...All the dinosaurs and prehistoric creatures represent her ability to move in and out of the past and the future.

Example: F1: All the prehistoric animals have been reenacted by, guess what, a little girl...she has discovered the secret of life or the secret of time-space continuum.

Quotes / Collaborative quotes:

F1: And the compass represents...

M1: She can go anywhere...

F1: ...The fact that space and time have been collapsed into one thing.
<table>
<thead>
<tr>
<th>Time</th>
<th>Emily's Intro</th>
<th>5 Questions</th>
<th>Exploring the Main Topic</th>
<th>Presenting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F2: Engaging, Confident</td>
<td>F2: Interacting, Thought provoking</td>
<td>M1: Fun</td>
<td>M1: Engaging</td>
</tr>
<tr>
<td></td>
<td>M1: Confident</td>
<td>M1: Interesting</td>
<td>F1: Fun</td>
<td>F1: Confident</td>
</tr>
<tr>
<td></td>
<td>F2: Fun</td>
<td>F2: Fun, Visual, Stimulating, Collaborative</td>
<td>F2: I learned about the workings of F1's mind</td>
<td></td>
</tr>
</tbody>
</table>

Figure 75: Reflection Chart for Enactavision Session 2
8.13 Enactavision: Session 3

**Summary of telling content:** Built on the wall screen, the story layers different relationships together to paint a picture of the future. This team explored a girl's journey through both real and fantasy dueling forces. There are two dragons fighting, a little girl and her cat walking, a knowledge/chaos blob, the center to the universe and a window into this dimension.

**Group dynamic during the making and telling parts of the session:** This team was highly collaborative, were very engaged and excited, highly verbal, and moved dynamically, but not during the telling part of the activity where the team collaboratively told their story while standing. This accords the team a medium level of dynamic movement.

![Figure 76: Enactavision Session 3 objects in motion!](image)

Relationships: Female 1 and Male 1 know each other, neither had never met Female 2 before

Time spent in each part of the session: 5 questions: 9 minutes, 3 seconds
Getting into the activity: 7 minutes, 14 seconds
Making: 17 minutes, 48 seconds
Telling: 5 minutes, 57 seconds
Total time from “5 Questions” to end of the “Telling”: 40 minutes, 2 seconds

Style of telling:

- 3 people collaboratively talked during the presentation
- What does the kind of telling sound like? Story
- Neutral content, not specifically negative or positive telling
- Telling is set in both fantasy and reality
- The self, others and/or the world? This session's presentation is both personal/individualistic and spiritual/metaphysical in nature

Dimension of time during telling:

- Very long-term time scope (beyond one's lifetime)
- Representations of the future

Problems discussed:

- In the end it's all hopeless
- In the end we all perish
- Greenhouse gases and polar ice-caps
- Positive and the negative
- George Bush versus Obama
- Being sucked into chaos
- Snake tempts people into the darkness

Opportunities discussed:

- In the future everything's going to happen in the sky
• The center of gravity as all-knowing

Creative? Very creative

Example: M1: ...*The window is sort of like the door, it’s the doorway to this dimension.*

Example: M1: *We are moving more towards an intellectual sort of less physical way of living...I imagine one million years from now we will all be just floating brains, communicate telepathically or maybe we’ll be CGI.*

Quotes / Collaborative quotes:

F2: “And there’s this little tiny knowledge blob.”

F1: “Yeah, I think that’s the center of the universe.”

F2: “That everyone is ignoring.”

F1: “The God particle maybe or something, it’s important.”
<table>
<thead>
<tr>
<th>positive + experience</th>
<th>emily’s intro</th>
<th>5 questions</th>
<th>exploring the main topic</th>
<th>presenting</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1: Confident</td>
<td>F1: Fun</td>
<td>F1: Collaborative</td>
<td>F1: Engaging</td>
<td></td>
</tr>
<tr>
<td>M1: Confident, Engaging</td>
<td>M1: Creative, Fun, Stimulating, Engaging</td>
<td>M1: Fun, Stimulating, Creative</td>
<td>M1: Collaborative, Creative</td>
<td></td>
</tr>
</tbody>
</table>

Figure 79: Reflection Chart for Enactavision Session 3
8.14 Second-round findings

The results from the second-round sessions gave insight into the participants’ personal preferences for the methods because each participant took part in all four methods.

<table>
<thead>
<tr>
<th>Activity</th>
<th>F1</th>
<th>M1</th>
<th>M2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus group</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Image Collaging</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Sandquery</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Enactavision</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 80: Participants' preferences among the four design research methods

Figure 80 indicate the rankings given by the second-round participants for each method. A “1” indicates his/her most favorite method and a “4” indicates his/her least favorite method. There is no clear winner or loser when it comes to the four methods compared in this study. No one preferred the focus group method as a first choice, whereas each of the participatory methods was favored by one of the participants.

The following chapter goes into the detail about what the above findings possibly “mean” by first comparing the data predictions to the data results.
Chapter 9: Data results

9.1 Results compared to predictions

Before the data were analyzed, predictions were made comparing the three participatory methods to the traditional focus group method. The predictions about the data results are below in Figure 81 and are the same predictions that were discussed in Chapter 6.

<table>
<thead>
<tr>
<th>Observational data</th>
<th>Focus Group</th>
<th>Image Collage</th>
<th>Sandquery</th>
<th>Enactavision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole session</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enactment</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Fun and engagement</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Behavioral data</th>
<th>Focus Group</th>
<th>Image Collage</th>
<th>Sandquery</th>
<th>Enactavision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are hands active?</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Is the body active?</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Behavior as a group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual:</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Collective:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Telling</th>
<th>Focus Group</th>
<th>Image Collage</th>
<th>Sandquery</th>
<th>Enactavision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are hands active?</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Is the body active?</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Behavior as a group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual:</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Collective:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Key:
1 Low /not very
2 Medium
3 High/very/yes

Figure 81: Predictions of Data results, also found as Figure 24 in Chapter 6
Below in Figure 82, the actual data results are shown in a similar table to the predictions. A discussion follows as to why the predictions were accurate or not accurate.

<table>
<thead>
<tr>
<th>Observational data</th>
<th>Whole session</th>
<th>Focus Group</th>
<th>Image Collage</th>
<th>Sandquery</th>
<th>Enactavision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enactment:</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Fun and engagement:</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Behavioral data</th>
<th>Making</th>
<th>Focus Group</th>
<th>Image Collage</th>
<th>Sandquery</th>
<th>Enactavision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are hands active?</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Is the body active?</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

| Behavior as a group| Individual:   | 4           | 1             | 1         | 1            |
|                    | Collective:   | 2           | 2             | 4         | 5            |

| Telling            | Focus Group   | 2           | 3             | 5         | 4            |
|                    | Image Collage | 2           | 2             | 2         | 3            |

| Behavior as a group| Individual:   | 2           | 1             | 1         | 1            |
|                    | Collective:   | 2           | 3             | 5         | 4            |

Key:
1. Low / not very
2. Medium
3. High / very / yes

Figure 82: Data results

It was expected that only Sandquery and Enactavision would evoke enactment, and this prediction was confirmed. It was predicted that the focus group method would not be fun or engaging, but this prediction was not confirmed. The focus group method was more fun and engaging than expected. The estimate of fun was determined via two measures: from the coding of the transcripts and from analyzing the post-activity questionnaires of the people who participated in the various activities.
Figure 83: First round experience reflection chart summaries

Figure 83, above, shows all of the experience reflection chart summaries from each of the 12 sessions in the first-round. The first row shows the focus group results, the second row the image collaging results, the third row the Sandquery results and the last row the Enactavision results. It is clear from this figure that the focus group method stimulated the highest amount of reported negative experience in this small study.

Descriptive words used for the "exploring the main topic" and "presenting" includes: “uncomfortable”, “fearful”, “self-conscious”, “shy”, and “differences in opinion quickly
surfaced”. For all three focus group sessions which included nine people, the word "creative" was used in the experience reflection charts three times, and only in focus group session two, which was indeed more creative than focus group sessions one and three. The word "fun" was not a word used to describe "exploring the main topic" and "presenting" parts of the focus group method in the first-round.

Of the nine people engaging with the image collaging method, only one negative experience was reported from the main presenter of image collaging session one. This is perhaps because being responsible as the main presenter can make one self-conscious; as sharing verbally can feel exposing. Positive experiences described for image collaging during the "exploring the main topic" and "presenting" parts of the method include: “collaborative”, “meditative”, “engaging”, “creative”, “visual”, “stimulating”, “fun”, and “confident”. The words "fun" and "creative", both used five times, describe the "exploring the main topic" and "presenting" parts of first-round image collaging sessions.

People's experience during the "exploring the main topic" and "presenting" stages of the three Sandquery sessions were mostly positive. One of the people in Sandquery session two reported that he felt "self-conscious" during the "presenting" part of the session. Words used to describe Sandquery during the “exploring the main topic” and "presenting" parts of the first-round Sandquery session include: “visual”, “creative”, “interesting”, “stimulating”, “collaborative”, “fun”, “exploratory”, “finding-language”, “happy”, and “engaging”. During the "exploring the main topic" and "presenting", the word "fun" was used five times to describe these parts of the activity. "Creative” was used six times to describe the latter two stages of the first-round Sandquery sessions.

People reported that the Enactavision method evokes a positive experience, as there are no negative descriptions from any of the nine people in the three, first-round sessions. Words used to describe the "exploring the main topic" and "presenting" parts of the Enactavision method include: “collaborative”, “stimulating”, “complex in an exciting way”, “fun”, “creative”, “freeing”, “confident”, “engaging”, “expressive”, and “proud”. During the "exploring the main topic" and "presenting" parts of the three Enactavision
sessions the word "fun" was used six times and twice with an exclamation point after the word, "fun!". "Creative" was used five times to describe the "exploring the main topic" and "presenting" parts of the three Enactavision sessions in the first-round.

Collecting, analyzing and reporting on people's experience while engaged with the four methods compared in this study only verify the findings. The focus group method seems to be the odd one out, evoking a less positive experience than the participatory methods. This confirms a theory that perhaps the combination of enough space to meaningfully move one's hands and body as well as access to objects and various materials impacts one's creativity in a group. Interaction with objects may increase collective creativity due to a group of people collaboratively making, telling, and enacting with objects of shared meaning. It is also clear from the experience reflection charts that the participatory methods are more fun than the focus group method. Fun may affect one's openness to sharing new and original feelings and ideas. Fun may also impact one's intrinsic motivation to think outside the box.

Predictions made about the “making” part of the activities were somewhat accurate. It was expected and shown that people's movement during the “making” part of each activity would be most active in the participatory methods: image collaging, Sandquery and Enactavision. The focus group method resulted in the lowest amount of physical interaction. By contrast, active hand movement was equally at the highest level for image collaging, Sandquery and Enactavision during the “making” part of each activity. Active body movement was at the highest level for Enactavision during the “making” part of the activity and at a medium to low level for the other three methods while “making”.

In terms of a particular method promoting individual or collective behavior as a group, it was predicted, and then confirmed, that the focus group method would evoke individualistic behavior; however, the focus group method was more behaviorally-collective than predicted during the “making” part of each activity. In terms of collective or individualistic group behavior during the “making” part of each activity, image collaging and the focus group method shared a medium to low result. Sandquery was
slightly more collective than image collaging, resulting in a medium to high level of collective group behavior during the “making” part of each activity. Finally, Enactavision was predicted, then confirmed, as the method that promotes the highest level of collective group behavior during the “making” part of the activity.

Predictions about the “telling” part of each activity were less accurate than the predictions made about the “making” part of each activity. Please refer to Figure 82, above. Hand movement activity during the “telling” part of each activity by method was a bit of a surprise to the researcher: focus group results landed at a medium to low level, image collaging at a medium level and Sandquery at the highest level. Enactavision yielded the surprise, resulting in only a medium to high level of active hand movement during the “telling” part of the activity when it was predicted to be at a higher level.

It turns out that Enactavision evoked a level of movement during the “telling” part of the activity that was also lower than expected, resulting in only a medium level of active body movement. As predicted, the focus group, image collaging, and Sandquery all ranked at a medium to low level of active body movement during the “telling” part of each activity.

Lastly, in terms of group behavior during the “telling” part of each activity, the focus group method exhibited more collective behavior than expected. In fact, all of the methods during the “telling” part of each activity resulted in more collective than individualistic behavior, with Sandquery ranking at the highest level of collective group behavior. Although higher than expected, the focus group method still resulted in the lowest level of collective group behavior during the “telling” part of the activity.

---

7 It was a surprise to the researcher that two of the three Enactavision teams were not dynamically moving during the “telling” part of the activity. Although unexpected, this result can be seen as a reflection of the different ways in which Enactavision can be used as a vehicle for expression. Enactavision can be used in real-time expression, where people simultaneously make and tell about the given prompt, or people can make, then tell about what was built during the “making” part of the activity. Even the touch table, containing all the virtual objects of Enactavision, was used in an expressive way during the “telling” part of the activity. These different ways of using the tools led to Enactavision’s exhibiting a lower amount of active body movement during the “telling” part of the activity than predicted because people were first actively making and then more static than expected during the presentation.
collaging resulted in a medium level of collective behavior and Enactavision resulted in a medium to high level of collective behavior during the “telling” part of the activity. Sandquery resulted in the highest level of collective behavior during the “telling” part of any of the four methods’ activities.

### 9.2 First round results by method

#### 9.2.1 Focus Group.

<table>
<thead>
<tr>
<th>Telling</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making</td>
<td></td>
</tr>
<tr>
<td>Enacting (using hands)</td>
<td></td>
</tr>
<tr>
<td>Enacting (using the body)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 8: Focus group results

The focus group method evoked:

- A personal/individualistic kind of telling
- Mostly telling about personal futures
- Present to long-term futures
- Mostly realistic telling
- Occasional creativity
- A medium level of fun and engagement

Assessment of movement and behavior during the focus group method:

- Minimal hand and body movement
- Individualistic behavior
9.2.2 Image Collaging.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Telling</td>
<td>X</td>
</tr>
<tr>
<td>Making</td>
<td>X</td>
</tr>
<tr>
<td>Enacting (using hands)</td>
<td></td>
</tr>
<tr>
<td>Enacting (using the body)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 85: Image collaging results

The image collaging method evoked:

- A strong focus on community and spirituality
- Present to very long-term futures
- Mostly collective community, global and spiritual futures
- Telling set in both fantasy and reality
- Creative insights
- A medium level of fun and engagement

Assessment of movement and behavior during the image collaging method:

- Regular hand movement during the “making” part of the activity
- Minimal body movement
- Collective behavior
### 9.2.3 Sandquery.

<table>
<thead>
<tr>
<th>Telling</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making</td>
<td>X</td>
</tr>
<tr>
<td>Enacting (using hands)</td>
<td>X</td>
</tr>
<tr>
<td>Enacting (using the body)</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 86: Sandquery results*

The Sandquery method evoked:

- A strong focus on the personal and the spiritual
- Representations of past, present and future
- Present to long-term futures
- Collaboration during both the making and telling parts of the activity
- Telling set in both fantasy and reality
- Creative insights
- Story as the main style of telling
- A high level of fun and engagement

**Assessment of movement and behavior during the Sandquery method:**

- Regular hand movement during the “making” part of the activity
- Minimal body movement
- Collective behavior
9.2.4 **Enactavision.**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Telling</td>
<td>X</td>
</tr>
<tr>
<td>Making</td>
<td>X</td>
</tr>
<tr>
<td>Enacting (using hands)</td>
<td>X</td>
</tr>
<tr>
<td>Enacting (using the body)</td>
<td>X</td>
</tr>
</tbody>
</table>

Figure 87: Enactavision results

The Enactavision method evoked:

- A strong focus on the personal and the spiritual
- Representations of past and future
- Expressions of very long-term futures
- Collaboration during both the making and telling parts of the activity
- Telling set in fantasy
- Creative insights
- Story as the main style of telling
- A high level of fun and engagement

Assessment of movement and behavior during the Enactavision method:

- Active hand and body movement during the “making” part of the activity
- Less active hands and body during the “telling” part of the activity
- Collective behavior
9.3 Comparing the results of the methods

Results from this study point to many insights, but because the sample size of the study was small, only the strongest findings are reported. These findings relate to where the outputs of the four methods compared in this study appear to be similar and different. These findings include:

- How fun is each method?
- How much moving does each method invite?
- How creative is the telling about the artifacts evoked from each method?
- How collective is each method?
- Which methods may or may not open up channels of creative expression?

How much fun is each method? People reported having more fun in the three participatory activities: image collaging, Sandquery and Enactavision. This finding was also evident from observation. People were also immensely proud of what they had created in Sandquery and Enactavision sessions, and made comments about hoping that it might be in some way preserved.

How much moving does each method invite? Of the four methods, people showed the most dynamic hand movement while engaged with Sandquery. People had the most dynamic hand and body movement when using Enactavision.

How creative is the telling about the artifacts? The three participatory methods: image collaging, Sandquery and Enactavision evoked the most collectively creative telling about the made artifacts. In the third Sandquery session, for example, objects in the sand tray triggered collective conversation and enactments to creatively envision the future:
M1: It could also represent knowing ourselves, we think we’ll know ourselves in the future but we may not ever arrive, it’s a constant process, a cycle as signified by the Phoenix.

M2: That’s actually seeing the future I guess

F1: And you’ve got the crystal ball;

M2: Now you’re getting feedback; that’s why the sun is here on the corner- the future’s bright.

F1: The future’s bright!

How collective was each method? The focus group evoked both individualistic behavior and fewer collective artifacts in comparison to the other three participatory design methods. Image collaging, Sandquery and Enactavision all promoted collective behavior by sharing tools and materials and, in turn, the artifacts resulted in high levels of collective creativity.

Figure 88: Levels of creative and collective behavior across the four methods
The methods are compared visually in Figure 86. Of the four methods compared in this study, the focus group method evokes the lowest amount of collective creativity. The image collaging method evoked more creative results than the focus group, but was about the same as the focus group in terms of collectivity. The Sandquery method evoked more creative kinds of telling than the focus group and image collaging methods. The creative telling of Sandquery sessions were often generated collectively, as evidenced by team members finding shared meaning and expressing the meaning through collaborative quotes. The Enactavision method ranked as the most creative and most collective of all the methods compared in the study. This is due to the creative telling of the Enactavision sessions most always having been generated first through collaborative making, which established shared meanings within the virtual scene. According to this comparative study, dynamically moving one's body while problem-finding and problem-solving in a group appears to enhance both creative abilities and collective behavior within a group.

Which methods may or may not open up channels of creative expression? It seems there is a relationship between having access to objects, space in which to move one’s body, and creative expression. The ability to manipulate objects with the body via movement also seems to impact collective creativity. A guess as to why objects and interaction impact a group’s ability to be collectively creative rests in finding and assigning shared meaning in space and for objects that everyone in the group can understand. When people have the opportunity to make and enact, relationships between different concepts can develop visually, spatially and kinesthetically. Through the interaction of shared meanings, a group is more able to make new and original connections and are more able to be collectively creative together.
9.4 Second-round results

There is no clear winner or loser when it comes to the four methods compared in this study as illustrated in Figure 87, below.

<table>
<thead>
<tr>
<th>Activity</th>
<th>F1</th>
<th>M1</th>
<th>M2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus group</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Image Collaging</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Sandquery</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Enactavision</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 89: Participants' preferences among the four design research methods

Person one in the second round preferred the Sandquery method above all the other methods. Person two preferred the image collaging method most. And person three preferred Enactavision when compared to the other methods. No one preferred the focus group method as a first choice, whereas each of the participatory methods was favored by one of the three participants in the second-round activities.
Chapter 10: Conclusions

10.1 Introduction

The sample size for this study was small. There were only 12 people engaged in each of the four methods (with three of them coming back to participate in the second-round). The data were qualitative, although quantitative tools were used to help the researcher be able to see the patterns in the data. The analysis was very thorough but it would be risky to make definitive conclusions. However, the study is well suited to provide insights and threads for next steps.

This study was carefully designed so that the four design research methods could be compared on as equal a basis as possible. All four of the methods used the same research protocol, including the same five questions at the start and the same main question: “What's next?”, the same stimulus material content, the same amount of time available to work and to present the results of the work, and the same post-activity questionnaire. Some limitations include the small sample size as noted above and the mixed dynamics of the groups with variants in personality which may have had an effect the results. Efforts were made to ensure each of the three groups per method was mixed adequately to avoid potential bias in this study. For example, for each method an effort was made to ensure that one group of three people all knew each other, one group had someone whom the other two people had never met before, and one group had at least one person over the age of 50. The twelve first-round sessions were conducted in a random order.
10.2 This study in context of design practice

What is a designer to do with the findings of this study? If you are a designer or design researcher, you might be interested in applying one of the methods used in this research. The following information gives some insight into the strengths and weaknesses of each of the four methods explored. Topics covered include: how familiar is each method when first introduced? how long does it take to get into each activity?; preparation for each method, and transporting each method.

10.3 Getting into the activity

10.3.1 How familiar is each method when first introduced? A focus group method is the most familiar of the methods. Some people have participated in focus groups before and it may remind others of a class discussion or a group interview. People who excel at verbal expression tend to be comfortable throughout a focus group session, whereas people who are not as verbal may find the experience to be increasingly awkward or uncomfortable.

Image collaging sessions are not familiar to most people. Even extroverts can seem introverted and quiet at the beginning of an image collaging session, perhaps due to the wide array of colorful paper, shapes, images, and meaningful words all begging to be selected, cut-out, arranged and then glued on the large piece of paper.

There's a child-like stigma that comes with playing in the Sandquery space, and it has been observed in some groups that there was a brief moment of hesitancy ranging from about 30 seconds to two minutes before people got started. However, once a person put his or her fingers in the sand, design and building quickly followed. This is perhaps because playing in sand is a familiar experience from one's past, as many people have had positive experiences playing with sand as children.

At the start of the activity, Enactavision was unfamiliar, especially for the group with participants who were all over 50 years old. But similar to the sand, once a person saw that when they moved, a virtual object followed their movement, it appeared to be
very exciting – almost thrilling to all of the people. It appeared to be such a magical and new experience for the people engaged with Enactavision that the start of each Enactavision session was filled clamorous sound effects as people moved, and in turn their virtual objects followed their movements.

10.3.2 How long does it take for people to get into each activity? There were large differences between the methods in how long it took for people to get involved in the activity. People in a focus group activity can find great ease in getting started with the main prompt of a session, or people may struggle to get started due to feelings of being negatively self-conscious. People in the image collaging sessions tended to have a slower start in comparison to a focus group, when tackling the main prompt. At the start of an image collaging activity there often seems to be a lull in activity. This is, again, perhaps due to the large variety of tools, materials, images and words with which to work in an image collaging session. People in the Sandquery sessions got into the activity very quickly in comparison to all of the other methods being compared. This is likely due to the natural materials of Sandquery and the ease with which people can express ideas and themselves both visually and kinesthetically. People took a long time to get into the activity while using Enactavision because they had to learn how to use it. At times a group would be exploring and mastering the interface together for more than ten minutes, and in doing so discovering its capabilities and limitations, but with no or minimal attention on the main prompt. It seemed that learning how to use a new virtual tool and at the same time exploring a really complex topic was overwhelming for the Enactavision group composed of people all over the age of 50. On the other hand, the extra challenge of learning and meaningfully using a new virtual tool was seemingly invigorating to the other two Enactavision groups.

10.3.3 Preparation for each method. The four design research methods vary in terms of the amount of preparation needed to set up and conduct them. The focus group method requires minimal preparation in comparison to the other participatory methods in this study. A focus group requires no tools at all, or perhaps pen and paper for people to work with and possibly an easel pad for the moderator to
make notes on. It is not surprising that the focus group is the de facto standard for market research.

Image collaging requires more preparation than a focus group, as the researcher must provide a variety of paper, die-cut paper shapes, colorful and relevant images and adhesive words that are chosen meaningfully according to the goals of the research. Providing pens, poster board, scissors and glue are also necessary preparations for image collaging sessions.

Initial Sandquery preparation is much more involved than image collaging or a focus group method. Sandquery entails buying or making a sand tray at the appropriate size. Collecting objects for Sanquery on one hand is easy and cheap; it's easy to find or buy sand, rocks and marbles. However, it takes quite a long time to find a collection of figurines that relatively match in scale and also represent a variety of people, places and things from both real and fantasy worlds. Once all the components are secured, Sandquery preparation is minimal.

Enactavision requires the most initial preparation of the four methods. It took lots of time to conceptualize multi-person interactions, design and program the interface, and make virtual objects for Enactavision. However, now that Enactavision is built, the preparation before a session is minimal. However, Enactavision is only feasible if there is adequate hardware (two computers and a Kinect) on which appropriate software is installed. It also requires a somewhat larger room than do the other methods for people to move around.

10.3.4 Transporting each method. The four methods vary in mobility which can be a factor when the design research process is taking place in a number of different locations. The focus group method is very mobile, as it requires minimal tools that are lightweight and easy to transport. Paper collage is, likewise, easy to transport due to paper being relatively lightweight. Sandquery is not easy to transport due to sand being heavy. Also the size of a sand tray is bulky enough to make traveling with Sandquery cumbersome or expensive if a decision has been made to ship the components to the
place of research. Enactavision is very mobile; what's more lightweight than two computer files? But the ease of Enactavision's mobility hinges off of the hardware and software being available at the intended place of set-up.
Chapter 11: Implications

11.1 What the initial implications could mean for designers

Traditional focus groups have been used and will continue to be used for design research because they're an efficient and cost-effective way of including various stakeholders throughout the design process. The focus group method provides a stage for the expression of an individual's personal opinions, goals, hopes and fears. However, as a researcher in the front end of the design process, if one intends to host a focus group to brainstorm new, creative and innovative ideas that will delight and surprise a client, the results of this study suggest that what people choose to creatively express via the focus group method is limited.

This study reveals that the hands-on, participatory methods for generative design research better suit the needs and goals of companies who desire creative solutions and strive to be innovative leaders in any given market. Depending on the project, an array of participatory methods may be appropriate to enhance the depth and breadth of generative exploration.

Image collaging is a great way to get people to be creative both independently and together. The image collaging sessions in this study evoked some collective creativity even though much of the behavior throughout the session appeared to be more individual than collective. People shared big dreams via the image collaging method; and with colorful images, paper and words set in place after the “making” part of an image collaging session, the team collaboratively described each part of the collage very passionately but sometimes minimally and cryptically. Sandquery is a great way to get people to tell stories about the past, present and future. If little is known from the
people side of a design issue or problem, Sandquery, or other visual-kinesthetic methods may be a good choice, as Sandquery was the most verbal of all of the methods explored in this study. For whatever reason, people were most comfortable telling, iterating and elaborating again and again collectively using the Sandquery method. This is evidenced by the very long transcripts from each Sandquery session. Sandquery gets people thinking and talking collectively.

Enactavision, as the most experimental of the methods compared, renders some interesting implications that may be of use to other exploratory design researchers who experiment with virtual tools and methods. People involved with the Enactavision sessions listed few problems and opportunities, and the transcripts are extremely short. However, Enactavision is highly collective and evokes more clear examples of creativity than the other methods compared in this study. More testing is needed to validate this result, as the participant pool was small. Interestingly, Enactavision led people to tell stories that were set in the very, very distant future. All the stories were more fantasy-based than reality-based. Very-long term future scenarios could be valuable because as Sanders and Stappers suggest in their new book, “Design involves imagining and creating new life situations for people in circumstances that have never been experienced before” (Sanders & Stappers, 2012). Enactavision gets one's mind and body working on the same task and evokes pretending and enacting. In so doing, the Enactavision method can host physical interaction combined with collective behavior and in turn inspire collective creativity.

11.2 External implications for each method

People have and will continue to use the focus group method because it's a cost-effective and easy way to get feedback from people, and it is especially good for including people who are not on the design team. Image collaging is also relatively inexpensive, easy and portable, but it provides people with more of an opportunity for visual expression, co-creation, creativity and even potentially innovative insights than
the focus group. Image collage is a terrific choice for researchers who want to facilitate participatory design and need to travel with minimal material.

It seems impractical to lug around Sandquery on an international design project, and this method may be best suited to be set up in a location and have people come to it, rather than bringing it to people. Similarly, Enactavision would be best to set-up somewhere with the adequate software and hardware and then bring people to it. It is feasible to take Enactavision anywhere but not having one element of hardware causes the whole application to not work – and it'd be pricy to get Enactavision running if a piece of hardware was not available at the place of research.

11.3 Internal implications for co-creation

Although this research was focused on comparing the four design research methods for use in design research applications, the results of the study provide implications for their use within an organization, particularly an organization that needs to innovate. Image collaging as an internal activity would be a good way for designers, engineers, business people and others in the company to co-create together visually. Again, image collaging is relatively inexpensive and easy to do. However, the artifacts from image-collaging can be ambiguous and difficult for other people outside of the session to understand, so it's important to make sure the session is well-documented so that other audiences can benefit from the results of the image collage sessions.

Getting a design team to imagine together visually and kinesthetically over time has its advantages; using the Sandquery or Enactavision methods can build bridges of communication that go beyond verbal and visual language. For instance, designers, engineers, architects and doctors don't share common vocabularies and this can lead to confusion about a project and cause setbacks. But if a transdisciplinary team has access to a method that eliminates the intricacies of relying on language for communication, this team is at an advantage.
One challenge of using Sandquery is the time it takes to get all the stuff you need, the sand tray, the sand, the objects, the figurines, etc. But once Sandquery is established, it doesn't require any additional set-up time and effort. Using Sandquery in-house in a company that strives to be collaborative, creative and innovative could have a positive effect on that company's ability to be collectively creative. The major disadvantage to Enactavision is the equipment and software it takes to work, and the time it takes to learn before a group can use it meaningfully. But if Enactavision, or a virtual method similar to Enactavision, is in-house, the set-up constraint and the learning curve are not issues. If Enactavision is being used with transdisciplinary teams who are generating new, creative and innovative solutions for clients or otherwise, playing with Enactavision could be a more worthwhile use of time than a traditional team brainstorming session. This is especially true if the client's needs are open-ended and/or ambiguous.

Relevant research methods for the front-end can be strategically chosen according to the ambiguous goals and needs of a project. Using participatory methods for generative design research acknowledges that the design is still open to take any form; the meaning behind the design is most central. Participatory methods like image collaging, Sandquery and Enactavision inform the earliest stages of the design process and contribute to how and why a design may evolve.

11.4 The Participatory Prototyping Cycle, enactment, and the design process

To conclude, the results of this study suggest enactment as the appropriate lead activity in the very earliest stages of the design process. By researching in the pre-idea space how people move and want to move and interact with future products and services, the resulting design has the flexibility to evolve into a satisfying form.
The methods that evoke cycles of making, telling and enacting all have value along the design process. The diagrams and descriptions in Figure 88, above, suggest that different combinations of making, telling and/or enacting are most appropriate at different stages of the design process. Referencing Sanders, 2013, methods that evoke “telling” are most appropriate in the traditional portion of the design process. Methods that use “making” as the lead activity are most appropriate in the “cross-over area between research and design” (Sanders, 2013, in press). Methods that use “enactment” as the lead activity are most appropriate in the front end of the design process, or pre-idea space. During the earliest stages in the design process, using enactment as the lead activity is ideal because “the focus is on exploring and understanding experience” (Sanders, 2013).

11.5 The evolving state of design

The state of design today and tomorrow is transitioning from old ways to new ways of doing. How we view our role on earth as people has begun to shift to a place of decreased self-importance. Identified by Catton and Dunlap in 1978, shown in Figure
89, below, the assumptions made in the New Ecological Paradigm (NEP) directly contrast the assumptions made in the Dominant Western Worldview (DWW).

<table>
<thead>
<tr>
<th>Dominant Western Worldview</th>
<th>New Ecological Paradigm</th>
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<tbody>
<tr>
<td>“Human beings are fundamentally different from all other species on earth, over which they have dominion” (Catton and Dunlap, 1978).</td>
<td>“While humans are indeed different from other species, they remain one among many that are interdependent parts of the global ecosystem” (Catton and Dunlap, 1978).</td>
</tr>
<tr>
<td>“People are masters of their own destiny, who can choose their own goals and learn to do whatever is necessary to achieve them” (Catton and Dunlap, 1978).</td>
<td>“Human affairs are influenced no only by social and cultural variables, but also by the linkages of cause-effect-feedback in the natural system” (Catton and Dunlap, 1978).</td>
</tr>
<tr>
<td>“Since every problem has a solution that is simply waiting to be found, the story of humanity is one of continual progress” (Catton and Dunlap, 1978).</td>
<td>“While technological advances can extend environmental carrying capacity, they cannot rescind the laws of nature” (Catton and Dunlap, 1978).</td>
</tr>
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Figure 91: Principal assumptions of the DWW and the NEP

Both worldviews and paradigms “have to do with the nature of human beings, social causation, human society, and societal constraints” (Catton and Dunlap, 1978). There are four principal assumptions for both the DWW and the NEP and each assumption contrasts the opposing assumption. As we begin to understand and appreciate the interconnectedness of all things, we recognize the fragility of all life, and the immense complexity of designing for the future.

In the same tone of change, as we learn more about psychology and its application to design, we will hopefully begin to veer away from using psychological information for the sake of selling more products. Psychology has a dark side, and a darker past. To put it simply, “Psychology was used by business to ensure that consumption kept pace with production” (Cushman, 1992). Advertising and psychological expertise joined forces to “encourage women to smoke” (Cushman,
1992) for the sake of production and sales. No matter the cost, intense psychological expressions have been entwined with advertising and often, in so doing, put people in harm’s way.

Having access to people's expressed dreams, hopes and fears proves to be powerful and with this power entails a respect for people's best interests. Some of the methods used in this study evoked loaded psychological expressions. For example, the following quote is from the transcript of the first Enactavision session, “So she’s now been completely reassembled in exactly the same shape, to the very last detail that she was when she was on the planet earth, but now she’s somewhere past the great star Sirius. But her replicated self asks herself, do I still have my own soul? So what is a designer to do with this information that blossoms from generative design research? How might it influence designers? When people expose high-level creative questions and possibilities about life and the soul it is paramount that the fruits of the research be used for good.

11.6 Next steps

Exploring how Sandquery and Enactavision can be used in the front end of the design process was a rewarding experience. Seeing people expressing themselves collectively and creatively and being proud of the worlds they made has been a gratifying experience. The artifacts that resulted from these new methods for generative design research point in interesting directions for “What's next?” in terms of innovation and for future research opportunities within design.

The most obvious next step in this area of research could include a similar study with a bigger pool of people, as this would hopefully confirm findings, leading to more specific results, conclusions and implications.

Of the four methods in the study, the findings and results of Enactavision elicited very unique responses from people: the brief telling activities were set in the very distant future, the content was highly spiritual/metaphysical, all while being very
collective both in terms of behavior and creativity. Why Enactavision evoked such different kinds of expression in comparison to the other participatory methods in this study is unknown. Both the full-body immersion within a space and using a virtual environment are unique characteristics of Enactavision relative to the other design research methods that were investigated. So a conclusion cannot be made as to which characteristic (i.e., virtuality or full-bodied motion) was most influential on the unique type of expression.

To look into this question more deeply, further studies could be conducted to find out what inspired the unique expressions of people who used Enactavision. The following two experiments together could help to answer that question:

- A study could be conducted to compare people in a full-body, virtual space similar to Enactavision to people using their full-bodies in a real, physical 3D space with life-size props.

- A second study could be conducted to compare people using a physical method (such as Sandplay) that requires the hands to move miniature objects in a real, physical space, to a virtual method where they use their hands to manipulate virtual objects in a method similar to virtual Sandplay.

By continuing this research with the above experiments, more would be understood about interaction in terms of expression, body movement, collective creativity, with both physical and virtual tools and environments. The use of physical tools has been explored, but research about virtual tools and environments are wide open. Another possibility to consider for continuing this research could explore people making their own virtual objects and then enacting with and telling about the virtual objects.

Further research about the interesting cross-space between tangible and virtual objects could be further explored by virtually mapping images onto tangible objects or
within physical space, as was suggested by an audience member after the researcher’s thesis defense.

This research study points to opportunities for more comparison between Sandquery, Enactavision and other expressive methods both in and outside design research. Considering other movement based disciplines and weaving in their knowledge base would enrich our understanding of why it seems that Sandquery and Enactavision were more collectively creative than the other methods in this study. Finding out more about what others say and are doing in regard to tangible/virtual props and also looking at the type of movement being examined in other studies, i.e., free versus prescribed movement, would enhance the next steps of future research. Also researching more deeply different studies that explore moving individually versus moving collectively, would be appropriate.

Another study could investigate what method, or lead activity: making, telling and enactment, might be most appropriate according to the type of problem or to meet the needs or goals of a project. This kind of study would be able to provide a kind of “recipe” for other researchers and begin to share why and when to use methods both hypothetically and in practice.

The next steps for this research might also involve the exploration of how to use the results and insights from all forms of generative design research method activities responsibly. Evoking, then encouraging, the expression of people's innermost hopes, dreams and fears can be taken in two directions – one is good, and one is evil. We can use the insights gained from people's dreams, hopes and fears to better anticipate, plan and prepare for the challenges of wicked problems and to explore ideal ways for future living. Or people's insights from the unconscious can be used to control and manipulate behavior to benefit consumerism, or other darker aims. By envisioning the future emotionally, honestly, and expressively we can begin to weigh the pros and cons of so many advances in technology, science and spirituality that are on the verge of being
reality. By speculating about the future before we actually “get there” we can first be confident that the benefits outweigh the risks.
References


Appendix A: Session Transcripts

1. Focus Group Session 1

To view the video please follow this link: [http://www.youtube.com/watch?v=KdK4xreUQqI](http://www.youtube.com/watch?v=KdK4xreUQqI)

There are three females seated at a table.

**Moderator:** Okay, so you can get up if you want to or if you don’t want to, that’s fine, you can set. Tell me; give me a synopsis in five-ish minutes.

**Female1:** Okay, class. This is why I never became a teacher the kids would fall asleep halfway through the whole lecture. I’ll just talk about what I got out of our conversation, our discussion when we were talking about the future I felt I learned a lot about how each of us views the future differently in each generation. I saw that my parents’ generation viewed it in a different way than I do in my children will grow up viewing differently than I do. It also made me appreciate where I am right now in my life and want to appreciate the things I can do now because with a health issue sometimes you tend to look at what you can’t do instead of what you can do and I know in the future those things are just going to get harder and harder. It kind of got me a little excited about the things I want to pursue that I had kind of forgot about, I did not write that down but it’s true, I might revisit that a little more often now that my girls are getting older and maybe start making some real plans. That’s about it, any questions?

**Female2:** When will we be calling you a tourist as you visit Zürich?

**Female1:** Would you like to join me?

**Female2:** Sure.

**Female2:** I’ll just ditto Jennifer because we all are in different age groups and we all think of the future in different ways but one of the things that I’ve said is “What’s next” and I said to appreciate the now, the present, to appreciate everything that is in front of me right at the moment, my grandchildren, my kids where they are, um, my marriage, my life with my friends and where I am with my friends and all that. And then next thing I said was that I was grateful for all the things I have experienced in life because you draw on a lot of your past experiences as to how you view the future. And to live in the present with an eye on heaven, that’s the thing that I think about more and more like when you only have, when you have, this if you give yourself X amount of years okay what are you going to do for these last amount of years and I would like to have my goals as to live to serve others and share the gospel as much as I can and that’s not always easy for me; it’s easier to serve others and to share the gospel but, actually, when you are serving others that’s part of sharing God’s good news. It is an interesting concept to think about the future and that’s all I have to say. **Female1:** That was very well said, it could be a song with that phrase “eye on heaven”, and I think you should make a song with that. Very well said!

**Female3:** That’s beautiful.
Female3: I’m staying here because I have a phobia about getting up in front of people and talking.

Female1: Hey, I have the same phobia but I got up in front and talked. I have a serious phobia.

Female3: But you were an actress, an actress.

Female1: That’s different, a totally different thing. I have a phobia about getting in front of people, not in front of strangers in a crowd that I don’t know playing a role. Very different—being yourself as opposed to playing a character.

Female3: Noticing what the two of you have said, I had sort of forgotten the grateful part of what I had said but I want to learn from the past because I’ve got a lot of it and I am grateful for the place I am at now. What I’ve learned is that I want to be to be grateful for all the things I have, as opposed to things that I thought I wanted early on in life. So that it’s been a good thing for me because I am happy and satisfied with what I have now and I think that but I still want to anticipate and look forward to what’s going to be I do not want to stop anticipating joy in the future. And being in our home church has helped me focus a little bit on heaven and God to which was kind of lost in my life for a long time. And then seeing the people in our group that have been ill and had a period of time where they knew they were not going to be with us anymore and seeing the positive way in which they faced that was a very, it was a wonderful thing to see and it made a big impact on my life. So, I want to try to focus positively on the future. I don’t want to give up and stop anticipating the future and I don’t want to live in fear of things going wrong and all that but I do want to be aware of that sometimes things will change and to live with that change and be positive about it or to make a positive even if it’s not. To move on to the next stages of life, that’s one thing my mom always taught me too she always said you have all these different stages in life that are not all alike, you have these different stages, that’s what life is moving on to the different stages. Don’t get comfortable because it changes all the time.

Female1: I wish I could feel that way though.

Female2: Don’t get comfortable.

Female3: Yes, don’t get comfortable because it changes all the time. And if you get, you know if a lot of bad things happen there still positive in those bad things but it is awfully hard concept to accept—the pain like Paul being tortured and dying like that and still having a positive attitude.

Female2: That’s why he was such a good example.

Female3: And to live your life the way God wants you living. That’s what I see more now, there was a long period of time when I thought if you want to be a good person, live it but it wasn’t necessarily because it was God’s way. And now it’s more focused and you can relax a little bit too because it takes the pressure off.

Female1: What my “what now?” needs to be, is to stop focusing on where I think I should be and like I said I appreciate where I am instead of worrying about what I need to accomplish and just appreciate where I am and be grateful for the past. I like what you said about the thoughts when you were younger, the thoughts of your plans for the future if they didn’t turn out; you know, even though they did not work out that’s because obviously nothing we planned really works out because that’s life. I thought that was interesting that you are still satisfied and content with the life you had.

Female3: I think, I think that comes with life experience too and then to be in a Christian situation because there were a lot years, and I’m sorry in a lot of ways that we were not able to pass that on to you.
at a younger age because we did not go to church faithfully. It wasn’t the focus of our life the way it is now.

**Moderator:** Good job; finally, is there anything connected with “What’s next?” that you feel strongly about and would like to bring up now?
2. Focus Group Session 2

To view the video please follow this link: http://www.youtube.com/watch?v=S6UI0gNNqRc

There are two females and one male seated at a table.

**Moderator:** What’s going on.. What’s next?

**Male:** A lot of problems that we have to fix before we can get to too far along with the ideal imagining the future. And we are trying to solve them, Kitty litter waste could be used as fuel and that would solve some of the energy problem.

**Female2:** The taxi drivers they can just potty right in the car and then, you know, you don’t have to think about it. It’s great.

**Moderator:** Wait, taxi drivers, what?

**Female2:** The cats are taxi drivers. Kitty drivers.

**Male:** Spaceship drivers.

**Female2:** Spaceships and taxis. They all fly. Kitty cabs.

**Female1:** We would also have butlers which do all the stuff that we don’t feel like doing like bathing a cat; we would able to accompany the rest of our family on trips to different planets.

**Female2:** So because of the butler will be out of spend more time with our families so he will be up to do the things the others don’t want to do- he’s the boss.

**Female1:** In the end we want to go back to less time devoted to working more time devoted to family or leisure.

**Female2:** Technology is pushing people apart rather than bring them together

**Female1:** In order to get there we have problems we need to fix. Like we were mentioning renewable energy, hunger, we were thinking we might either change habits or starve everyone who’s fighting-we haven’t decided yet. We’re nearing these days where there is less hunger so don’t have to kill so many people who are fighting or starve, I mean starve. But we need to reduce the violence by starving everybody who’s fighting.

**Female2:** And the babies, we need to reduce the babies.

**Female1:** We were thinking about putting in a quota but that didn’t go over very well.

**Female2:** We haven’t quite worked that out yet.

**Female1:** And we were talking about what kind of political system would be living in to be able to fix all these problems, communism-not necessarily, a form of socialism something like that. Because we obviously can’t reduce the number of babies because everyone is totally free to do what they want. We can’t fix all today’s problems with the current political system that we live in, at least not the, you guys won’t say this but I’ll say it, American system.

**Moderator:** Cool.
Male: So far I would just say that so far we have not been able to fix the problems.

Moderator: Haven’t been able to fix what?

Male: The problems of inequality, not enough supply, too many babies and not enough energy.

Female2: We just need better teamwork…get it together…stop being selfish.

Female1: Well, you know, this this is like the country of individuals but really we should not be so…

Female2: You don’t want to limit the ability to achieve what they want…

Female1: Yeah, because then there will be a coup.

Female2: …so if we change people’s behaviors in their efforts towards teamwork, we all can achieve what we each want individually but yet together.

Moderator: Cool. I see that you’ve drawn pictures so what’s, can you tell me more about your pictures?

Female1: So I started with we needed a robot maid and you know not put, you know, gender roles where they normally are- we made him a butler and I happen to have it him like washing the baby, before he goes to bed. And then we went into, you know, well when the Butler is doing all this stuff, we can go on trips together and we have the ability to have spacecraft by now were going to go up to different planets and then the cat was there and I ended up drawing a cat upfront and that’s where we got the cat drivers and then you know all cats can drive us around like the picture on the bottom right which is the driving around the city.

Moderator: Great, good job guys. Is there anything else connected with “What’s next” that has not been expressed that you would like to express now?

Male: I mean it is kind of depressing to look at all the problems that we have to fix but I still want to think that it is possible- that it just takes a really long time to work out all the issues.

Female1: Yeah, drawing the future was really fun than I had the bright idea of saying this what’s next- we have to figure out how were going to get there and that’s where we got all depressed with the problems- it brought the mood down. We kind of went in circles ‘cause that’s why they have to be fixed because they’re pretty hard.

Moderator: Yeah, hard stuff. I think you guys did a great job. Good job!
3. **Focus Group Session 3**

To view the video please follow this link: [http://www.youtube.com/watch?v=FG7EG5sWLCY](http://www.youtube.com/watch?v=FG7EG5sWLCY)

There are two males and one female seated at a table.

**Moderator:** all right, so “What’s next” guys? Oh, in the next five to ten minutes.

**Female:** Well I think we all kind of thought about it more on a personal level than a big picture. Mine is basically in five years I would probably move, hope to be making more money at some point, hopefully get married someplace, having some kids, owning a house, making more money, having grandbabies and traveling, and then die. Making my kids and grandbabies life hell being their old grandmother.

**Male1:** Well for me...?... greater independence and greater creative control that most likely will have to be in another city such as New York or San Francisco, I want to live in London but that’s rather difficult. And after that I eventually like to have my own business a firm of some kind, some design firm probably, and I’d like to of course continue travelling for both work and pleasure. Then I’d like to design and build my own house in the country or on a lake. Then retirement and in being involved in other activities.

**Male2:** I’d say what’s next is spending more time thinking about the future for I just realized how little I do because it’s difficult to envision. But some of the things you know I think about like with some expanding possibilities I know I would spend more time with my family and my mother because I know that she’s not going to be around forever but I also want to travel and don’t want to move back to my hometown and so I feel like you know the more that I live my life the way I want the less I tend to do, things I feel I’m kind of not so much obligated to do but...I don’t know… But yeah, yeah, I would like to, and here I sound like a hippie, stop working for Corporation and like maybe open up shop, thinking of calling it the Whirlfish Shop…. sauces

**Female:** That sounds awesome.

**Male2:** It would be super fresh you come in during your lunch get a small little pasta plate-no dine in

**Female:** Only take out;

**Male2:** Not dealing with that.

**Male2:** Any way, yeah, focus on the family I guess and myself too.

**Moderator:** Cool, okay is there anything connected with what’s next that hasn’t been brought up that you guys want to bring up now?

**Male1:** I don’t know.

**Female:** (laughs.)

**Male2:** Yeah, like a logistical things, I think more like I need to remind myself that life is a journey not a destination because I think about like where I want to be instead of like focusing on how I’m going to accomplish it.

**Moderator:** great, good job guys; okay, here’s a little final questionnaire and this was really great
4. **Image Collaging: Session 1**

To view the video please follow this link: [http://www.youtube.com/watch?v=YzXJAowLjCI](http://www.youtube.com/watch?v=YzXJAowLjCI)

Scene opens with a wall picture being discussed by three female participants.

**Female1:** Well, we have, I do love the golden foundation, where we come from it’s not like we’re coming from the dark ages, we are actually embracing where we come from and therefore it’s a celebration of dinosaurs, so then it’s joy.

**Female3:** He’s happy, look at his arms raised.

**Female1:** He’s happy; yeah, things were accomplished so you know it looks sort of too biblical.

**Female3:** It sort of looks like we put together a part of that spiritual thing, we’ve got heaven and we’ve got the earth and we’ve got the river mound in between that kind of becomes the transcendental point between the two.

**Female1:** Yes, that’s what I mean also the thing that I intended was just to say that there is the possibility of offset or going somewhere off the anticipated progression of things but, to me, future or even the present and every time we talk about this is a moment of self-reflection in the mirror and my hope is that we do it with empathy to others and ourselves.

**Female3:** And I like the girl with the window which is kind of like a future there’s a lot of uncertainty. It’s kind of like when you open a window just open another world.

**Female1:** Do you think do you think the girl came out of the window or is looking into that window?

**Female3:** I think she is looking out, it’s like an opportunity, I feel that way.

**Moderator:** Cool.

**Female1:** Who’s that pheonix, Why did you cut them out?

**Female3:** Because he looks sweet! I don’t really, like, I tend not to think too deeply about a lot of stuff.

**Female3:** They were born….

**Female1:** Well, yes, it’s a possibility of their rebirth and it’s cyclical in nature and it represents everything past present and future, it’s sort of a cycle.

**Moderator:** You guys want to all go up there together and share what you’ve done? (Pointing to the collage) some of them are hidden, what’s this guy doing here, that vessel?

**Female2:** Oh that one, it’s kind of like, I don’t know, it’s kind of like, I saw this like people have more wisdom.

**Female1:** Well, yeah, to me things that we have come from the past and when we consider the past consider nature, the natural resources, the artifacts civilization prior to the architectural things there is the shark which one with the natural elements of this is like the existence of because we don’t create our animal world around us we kind of take it as something that is either present or past. I should let you other guys talk.
Female3: No, you’re doing good.

Moderator: Can you tell me more about the mirror? And is there a relationship between the snake and the mirror they seem very close next to each other?

Female1: I really don’t, you know, I want them to show the transcend the definition, one is coming from the prehistoric where he was not necessarily associated with the bad, the evil so but yet, you know, as everything living it’s plagued with envy and guilt and hopefully self-reflection with empathy he’s going to transcend.

Moderator: Great, that’s very beautiful. Okay, one last question—what’s up with the little blue thing in the heart?

Female2: This is something treasure, I feel like in nature there is always something to find, and even it can be treasure by the standard of a general thing but maybe a treasure for the individual. This is something you like; you always find something you are comfortable with that makes it a treasure.

Female1: That’s very cool, I know I mean I really like I thought it was a gem before, like a tiny mineral, but what you’re saying is even more beautiful, it’s whatever you can find a rock but does it have a special meaning to you it becomes a treasure. This is something that comes from nature.

Moderator: Cool. Great, this is beautiful work. Is there anything you know she would like to add about what’s next that hasn’t been mentioned, that you’d like to mention now? All good? Then, thank you—I really like what you guys have done.
5. **Image Collaging Session 2**

To view the video please follow this link: [http://www.youtube.com/watch?v=w24ZjDd2vX0](http://www.youtube.com/watch?v=w24ZjDd2vX0)

Scene opens with a wall picture being discussed by a female and two male participants.

**Moderator:** looks cool, yeah, you guys want to tell me about “What’s next” according to you guys?

**Female:** All of the new possibilities are on the other planet.

**Male1:** They are migrating towards Saturn

**Moderator:** Cool, what is that? (pointing to a mark on the paper collage).

**Female:** A star.

**Moderator:** Cool, looks good.

**Male1:** Things go south on earth; it just isn’t the same.

**Moderator:** What happened?

**Male1:** Nothing.

**Male2:** Human nature happened.

**Male1:** It’s all okay because the Sun’s coming and we get cast into space.

**Moderator:** Cool, I like the artistic direction you guys took.

**Female:** It’s very symbolic.

**Moderator:** It’s very nice; what are the symbols? tell me more, please

**Female:** Both bad things and good things in the future bad things can happen when there’s always new possibilities for anything

**Moderator:** So what’s a bad thing? Or a good thing?

**Male1:** War.

**Moderator:** So, what’s up with the dino-dog? It’s awesome!

**Female:** We thought, why not?

**Male1:** It one of the cyber folks.

**Female:** New possibilities in the future. Innovation.

**Moderator:** Yeah, excellent, great, good work—it’s beautiful. Is there anything connected with “What’s next” that you guys haven’t talked about that you would like to express now? If not, that’s okay?
6. Image Collaging Session 3

To view the video please follow this link: http://www.youtube.com/watch?v=_j7zrlNdTwQ

Scene opens with a female and two male participants seated at a table reviewing a paper collage creation.

Male1: I am proud of what we have accomplished today.

Female: It’s a lot of stuff. So, David, explain your diagram.

Moderator: Okay, yeah, okay, so tell me about “What’s next?”

Male2: Me first? Alright, okay, so this is the alien landing zone parking lot. And this is how they refuel their alien planes - it’s the alternative power source for them.

Moderator: What is?

Male2: That part, the spiral thing.

Moderator: Awesome- so how might it work?

Male2: Uh, I don’t know, there is a big magnetic field created by each of these posts that causes this big thing to spin very fast and inside of it does fusion reactions. Got all that? Alright.

Male1: Alien technology!

Moderator: Yeah.

Male2: These are two parked alien vessels and this is alien language.

Female: Is this taking place on earth?

Male2: Well, it could be I guess– it’s the future-I don’t know

Male1: Well, clearly once all these things happen, the aliens do not really want to associate with us now but when we start cloning dinosaurs and wear shiny clothes they are going to want to be a part of it.

Moderator: Awesome! Yeah, rad!

Female: And so, I kind of did what I did before in the pilot, I created a diagram like an astro-diagram that I think is the future, it can go on for infinity in a number of infinite directions so like your future is full of choices that are up to you and they can branch in any way as long as you plan for them or whatever. And then I was thinking about the future for society and what technologies we going to have to do to like equip for the future maybe cause I am a designer maybe and I am thinking more about that. And so, green earth we are going to have to think of ways to figure out the fuel crisis that may or may not have that being predicted to happen in like forty years; so, like I said I put a little green leaf for greener technologies on field solutions and that kind of goes in with the oceans we have like a shell and maybe desalination will have to be like our plan for water maybe because fresh water will inevitably run out that way that we are consuming it now. And then we’re going to have futuristic clothing, it going to be like we are going to develop new materials that may or may not be shiny like this. And futuristic cites will have to be equipped for like huge populations and they are going to look different maybe-that’s why
it made of cool material like this over here—it might be more efficient in the way they carry people maybe like with transportation systems or trams. Do you want to talk about what you’ve done?

Male1: So, I don’t know, clothing always big in the news, people are always trying to figure that out when they are cloning sheep, dogs and all sorts of things, the most exciting thing to clone would be a dinosaur because everyone wants to see a dinosaur, especially a green one. I did not intend the clone to be fatter than the original one; it’s just my limited artistic skills.

Moderator: Oh no, I’m impressed—that’s good.

Male1: I think it represents that when you clone him, he lives in our society where we feed things too much and we overeat.

Male1: The fast food society.

Female: And also, like when you talk about that kind of technology, like the embryo kind of debate and stuff, that kind of thing that whole issues go on in the future.

Male1: This will certainly cause an ethical debate when you start cloning dinosaurs. This, of course, in the future we are going to have purple airplanes and they are going to be solar powered, I mean, why wouldn’t you? And then you could interpret this as world peace, the end to the age old feud between cats and dogs who finally learn to put their differences aside and realize that they are meant for each other. That’s all I got.

Female: Could it be an allegory for humans?

Male1: It could be, if you want to take it that far you could. Um, I just saw a picture of a cat and a dog and we had to put them together somehow.

Moderator: Excellent, really good.

Female: I like that alien thing ‘cause I wouldn’t have thought of it and how do we know that isn’t going on currently? But, we could also like I said put stuff in here from the past because we don’t know if it is going to repeat.

Male1: You could consider the past like this has all happened before.

Female: Maybe everything we know as reality is a dream. Just kidding!

Male1: Maybe, we actually live in this world …?...

Female: We’re hooked up to machines just like in the Matrix!

Moderator: Gosh, I just really love everything and I want these life-size so I can play.

Female: Wasn’t that in a movie?

Male2: Somewhat like that, the, ah, First Contact or whatever.

Female: I was like that was in a movie.

Moderator: Good work, guys; yeah, I couldn’t draw this so well if my life depended on it.

Male1: I think you could.
Moderator: I’m not sure I could. So how do the dog and cat get along eventually?

Male1: I don’t know they realize they have a lot more in common than they initially did—there a little ferry and have tails.

Female: And they are like slaves to humans. I thought it was that humans were supposed to be slaves to cats and dogs!

Male2: There you go!

Female: They are the ones pulling you on a leash, right?

Male1: They both eat canned food you know; I don’t know, they can show each other things like the cat can teach the dog to use a litter box.

Female: Or how to land on their feet.

Male1: Yeah, there you go. That’s what that’s all about.

Female: I really like the cat it is more introverted and the dog is more extroverted.

Male1: In general or this cat?

Female: This cat

Male1: This cat doesn’t look introverted.

Moderator: Great! Good job, guys. Is there anything connected with “What’s next?” that has not been brought up that you would like to bring up now?

Male2: I don’t know; during the time she brought up the good point about history repeating itself and there are probably future wars and future catastrophes.

Female: Maybe we were too positive in our projections. Like we didn’t think about how an asteroid hitting the earth or whatever that’s going to happen in a couple years or something.

Male2: I think it is hard to kind of interpret a myopic view of the future since we kind of see within our shells most of the time I don’t know maybe that’s just me. My idea of the future is probably more immediate than anybody else’s at this moment.

Female: He just has no regard beyond the moment.

Male2: Sometimes, you should have seen me 20 years ago.

Female: Just spending all your money in Vegas.

Male1: that’s what we should have made here I got putting all his money in Vegas; would’ve been done.
7. Sandquery Session 1

To view the video please follow this link: http://www.youtube.com/watch?v=N7wUBla4LdM

There are three females positioned around a sandbox full of items placed in various configurations.

Female1: One more detail…. Well, it’s the beach.

Female2: And there’s sand.

Female1: And there is sand; and these are the clouds, okay there’s kind of a plane crash that kind of ties with the beach, cause like this was 9/11 and we were at the beach when 9/11 happened and then this is Diana dead but the Phoenix is coming out there because she is going to go to heaven. So the Phoenix is coming out of the cremains, this is a leftover part, the part that will be in heaven….

Female2: Why are you taking everything out of the sandbox?

Female1: The mirror is upside down in the sand because we don’t care what we look like at this point but because of the past tragedy and the future hope were going to stay right here in the present and Diana can come in the cremains bucket….

Female2: And the shark can represent the current, potential dangers that if you stay focused on the you don’t enjoy the whole gist of that.

Female1: And we’re going to enjoy this part.

Female2: And we will enjoy this part.

Female1: Like the house the children sleep.

Female2: Or climbing the walls, whichever.

Female1: But the beach, the boardwalk is coming to the water, to the sand, to the play—there’s no golf.

Female3: Darn!

Female2: Wait, there’s golf.

Female3: But I like the beach too, after golf or before golf.

Female1: She likes to walk on the beach.

Female2: Not during golf.

Female3: No, not during golf.

Female1: This is the stack of stones to remind us of what God has done for us process away we roll and so when somebody say what’s that’s stack of stones for? You say this is to remind us of what God has done for us this is an ice cream cone at the beach otherwise known as a gazing ball this is me at the beach happy not to go play golf, just leave me alone and what’s that green thing on my head?

Female2: The children were just being silly.
Female1: And this is the shell because it is the beach and this is the water at the beach.

Female2: And this is her glass of wine at the beach.

Female1: (when touching the stack of rocks, the stack falls down).

Female2: See, now it’s all going to hell.

Female2: I think you’ve done a lovely job; with the water, and the clouds, lots of people in relationships, sometimes messy

Female1: but we send them to their rooms when they get messy

Female2: but that doesn’t always work with the grown-ups

Female1: oh, and the compasses to show us true north and the feather, the feather is because it is a feather in Chris’s cap.

Female2: I’m not sure we have a 10 minute dialogue left.

Moderator: I’m curious, you tell me more about what true north in the compass mean?

Female1: I could, because I think I feel secure in the present because I think I’ve got, when I think I’ve got and eye, the future’s covered so like true north as long as I know the orientation of the place that feels like I’m good to go right now and I don’t have to be worried about the future ’cause the future piece is like the Phoenix piece—it’s the heaven piece. So, this is all good, whatever is happening in the sandbox is fine as long is that piece is, you’ve got that figured out.

Female2: And like you said, tragedies can rock your sense of the future and what’s coming and you lose your sense of true north unless you have either you find something else to replace what you’ve lost or you have a bigger picture which is not subject to the ups and downs of the current world. And what were the other stones?

Female1: And I think that’s part, the heart of this feels like any kind of like a contained, controlled environment, it feels like real fantasy, I know this is fantasy and I know these are all fantasy pieces in a way but as long as I know it’s a fantasy I’m okay as long as I know there is something outside of this, then I can truly enjoy this part.

Female2: What do you mean it’s a fantasy?

Female1: Well, I mean everyone is away from their work, everyone is away from their pipes that are breaking or their toilet doesn’t work or if something goes wrong here we just call the landlord and we don’t have to fix it.

Female2: It’s like a step outside reality

Female1: Yes it’s a step outside of reality, you go to the beach, it’s a vacation, it’s a fantasy because you really don’t live there, we just don’t live like that all the time.

Moderator: Can you tell me more about the mirror?
**Female3**: Well, before we came here we were talking about facelifts and jowls and all this kind of stuff and we decided we didn’t care and we were just not going to look in the mirror anymore and look at that anymore

**Female1**: She’s not getting cut

**Female3**: I’m not getting cut I couldn’t stand the thought of having a razor blade cut me

**Female1**: Yeah, so we’re not looking at the mirror anymore, were not going to dwell on that so it is far off in the corner of the sandbox

**Moderator**: Cool, I love it. You guys have done a really good job. So, there are some dangerous parts and there in the corners, the plane crash, the shark

**Female1**: The mirror is a dangerous part!

**Female2**: The house can be a dangerous part

**Female1**: The house can be a dangerous part, this is the part we’re concentrating on, the middle right here.

**Moderator**: Can you tell me a little bit more about the urn and the phoenix, I know you have already talked a lot about it.

**Female3**: I just, it just popped in my mind because it reminded me of an urn and I want to be cremated, my husband doesn’t agree with me because he thinks the Bible contradicts that; I can’t stand the thought of being in a box and being buried. So that’s just the first thing I thought of and then the fact that I am going to go to heaven that’s why that’s there.

**Female1**: And we’ll sit at the beach and look at the clouds and think of you.

**Female3**: And I’ll probably pass before they do since I am a few years older.

**Female1**: But you never know about that.

**Female3**: That’s true.

**Female2**: (points to the corner where the plane crash is located)

**Female1**: As in that corner illustrates.

**Moderator**: Great, can you show me what the kids do? What are the kids doing on the boardwalk, sleeping in the house and that stuff?

**Female2**: Um, I think right at this moment we just moved them because we like the idea of the house and they’re running a little bit wild and climbing the walls, running out to the beach and earlier we had them buried in the sand and laying on their backs looking at the clouds and I think it’s a lot like herding cats although they’re getting old enough now that they can have a little bit more independence and kind of stick together and look out for each other.

**Female1**: There are six of us, so, there were six dinosaurs, at one point we had six dinosaurs
Female2: Five dinosaurs and a snake and then a huge friend we picked up. But they are obviously a big part of all of our lives, our kids and grandkids and I think that it’s part of the future in that we are investing in them and concerned about them but also making sure that they get to have a lot of fun and do kid oriented things because they just don’t want to just sit on the beach.

Female1: Excuse me, Lauren and Abby love to sit at the beach.

Female2: What I meant was that energy level wise all of us consider the beach the whole entire day and just get up to use the bathroom but the kids, you know, want to run around they want to play there when I climb things and you know to me it’s important to value what they need.

Female1: And that’s why I think taking turns in the morning to let them do that is really good and then some of the adults can still sleep and your children who want to play article to play.

Moderator: Good, great, finally is there anything connected with “What’s next” that we haven’t mentioned that’s like you guys would like to bring up now?

Female2: I think I just always and in part of it is just the events of the past years is that you never really know truly what’s going to be next. So we can have our fantasies and we can have our dreams, we can have our hopes but we could be hit by a bus tomorrow so I think that I like the balance that we created. We know what our ultimate next is with heaven we know what our goals are, we all have goals and plans we also have a category for, you know, without being morbid I try to remember that I have no control over what I may be doing next week but that if I choose to believe that God is in control it will all work out and that I’ll have what I need; and in remembering the tragedies stuff, helps me to stay focused to enjoy these moments.

Female1: Yeah, this stuff (tragedies) over here makes this stuff (the middle beach area) so sweet; this is like because you know all these other things are out of control, out of your control so that the “What’s next?” question is right in the moment- do we get ice cream next or we get to go back and have dinner next-it is so much tighter, it is so much smaller- what’s next.

Female2: Because that’s what makes me think just as a parent of young children I love this idea of saying “yes” as often as possible so there are times when you have to say “no” in this situation. Can we go get ice cream? Yes let’s go get ice cream. Did you finish your lunch? Then, let’s go get ice cream. Can we do more in thinking about how to stay positive and enjoy the moment rather get dragged down into the “no” you’ve been bad so I’m taking away all your privileges. Well, that’s no fun for anybody, not for the adults or for the kids but just the idea of enjoying the moment and not being so focused on the past or the future that we lose that the ability to enjoy what we have in the moment even if it’s a five-year-old that whines all the time.

Moderator: Great.

Female2: We’re not melancholy though; I should say I’m not melancholy.

Moderator: Any other final thoughts?

Female1: This has been fun! We should do this again, call us.

Female2: Give us different props though because we’d probably create the same thing again.

Moderator: Each of you have done a really fine job today.
8. Sandquery Session 2

To view the video please follow this link: http://www.youtube.com/watch?v=43ZdhcelInvw

There are three males positioned around a sandbox full of items placed in various configurations.

**Moderator:** that’s it…

**Male1:** The protagonist in my story is me, this woman, me who is being chased by a snake in the grass and a shark and is in danger looking for a chair or something safe to sit on, like a cloud chair-like a future chair you know. Unrelated to this in my story is this monster guy who is being chased by the green fuzzball and wants to be more like the red fuzzball, so I feel like in my mind if he touches the red one, he’s going to turn red, you know, so he doesn’t have to relate to his past so his future is being red- her future is safety.

**Male2:** ?

**Male1:** And this mountaintop, this is the future. I’m not sure this relates to my story to either of these two people but I’m a really big fan of that one with the dog looking for his way, looking out the window and seeing the reflection of himself- so, he already, he already has all the answers-kind of like the end of Kung Foo Panda-hopefully, you guys have seen that. But it is all within you to know. And this is the past, just different ways of showing the past especially I have a lot of movie references in mind so this is Anaconda and Jaws and this is Jurassic Park with the amber.

**Male2:** To me this is the dog, he’s looking taking a compass obviously looking for his way out the window when you were building the ruins and he’s sort of looking at the ruins like through the window like looking at something like choosing where to go in the world or you’re going to travel so he’s looking through the window to see the ruins and he’s actually looking at himself through the mirror to look at the past and also to look at himself as he’s trying to figure out where he needs to go. And in yours, I like that you are talking about the anxiety about the future, you were talking about the future and that this chair, trying to get something you can sit on to give you a safe place to sit.

**Male3:** Yes, definitely not facing the future

**Male2:** Yes, trying to find something like the plane is like the future and all of this is really like travel stuff apparently.

**Male3:** Well, travel is a good metaphor for the future.

**Male1:** And the cat’s just a joke that keeps running.

**Male3:** So, I started off with this kind of like a little stupid stonehenge thing and then the idea of building the future and then also having to rebuild over and over again and it doesn’t withstand the sands of time and the rock symbolize somewhat impermanence you know but they have sand on top of them as well. Then we kind of worked on this evolution theme together with a meteorite coming in and hitting and causing the dinosaurs to head off in different directions and we put in a dragon over here and we decided to put in some kind of window they could see itself as a possible future but still be separated. This is the bishop I took literally as an icon for like religion, Bishop so I upended him immediately to put the amber ball on top to turn them into something more appropriate I think. This represents the, this little gem here reminds one of fires, so following the dinosaurs is of course fires I see those as a preclusion to the dinosaurs cleansing the bacterial and viral worlds. And then of course sitting on top of this would a
spinoff of that is an object, I think it is more appropriate is almost like phoenix - rebuilding from the ashes. We thought this, that upending this also symbolizes some of the very unstable, sort of precarious future. The uncertainty of it all. I love the plane and I didn’t interact much with the things at that end but definitely the uncertainty of flying causes a lot of anxiety in individuals. It is also another reputed travel metaphor. I think we glommed on more about your word “future”, your first question and sort of “What’s next” - it worked, I think it worked.

Moderator: It’s really good; you’re doing great; very cool.

(Extended Crosstalk between the three participants and the moderator)

Moderator: Can you tell me more about this space? I did not really follow that. (scene in the lower left corner)

Male1: We saw that character as more of an outsider; he’s not a real dinosaur kind of imaginary and he looks like he’s misunderstood and wants to be part of all this but this red ball is in his way.

Male2: Tom had the metaphor of putting tribbles in- he had to green balls but there was the unobtainable red on the other side and that was frustrating.

Moderator: What are you calling the miniballs?

Male2: Tribbles, from the Star Trek episode- there was a lot of them and they were just lying there.

Moderator: Cool, so do the tribbles represent anything?

Male2: No, it’s the equivalent of a rabbit that multiplies like crazy and overloads everything as a multiplies like these cute little fuzzy balls you just have too many of them,

Male3: Also the metaphor can be twisted to the idea that you’ve obtained some and you desire another because it is different,

Male1: You always want what you can’t have.

Moderator: Cool, this is great. Is there anything about the topic ”What’s next” that hasn’t been talked about that you feel strongly about that you talk to bring up now? I love what you guys have done it’s very cool.

Male2: The only thing I can think of isn’t just specifics of something I know that is heading in a certain direction, you know, everything I think of seems like you really don’t know the natural progression and generally speaking we can’t know what lies in the future.

Male3: I think that to take up the metaphors and take the conventions to the end of time I think the idea that the past history and think of the future, future history, the sum of what we know we may not be here so what’s the point so- you get into the Woody Allen’s character as a child then, what’s the purpose - what should we do- which I think is a really tough question for everyone to say- what’s the point like - how do we get beyond that. It’s like Sappho once said we are tortured by fears of oblivion. Well how do we come to grips with that how do we make that okay and I think part of that is by reinventing who we are and how we see the future you know if you say we fear the future we don’t understand the future the question’s what’s the solution and it could be planning it, over planning it and that would make it really boring if there’s not much change in the future but I think that’s the general premise that we can make it better- what does that mean, how do we sell better to the oncoming generations generation after generation we know what is best and I think there’s many things that happen in life like we can think of
the economic situation today and say we really passing something better on to our children and also in a way our children like in the 60s, and here I’m thinking of my kids, are saying I don’t buy your view and yet we in our generation sometimes have to expect that you do. And then if they do, I think that should really be an option and I think that’s what reinvention, bring it down and rebuild it and start over, then each generation takes what they like and keeps it and that becomes a value and convention but that’s fine that’s their option to do that but then they can also throw away a lot of things since they were not going to do that anymore.

Male2: it’s not about having certainty about what’s coming because you can’t because too much planning gives you sometimes really atrocious systems like Nazi Germany because you’re trying to make everything so structured it becomes this horrible nightmare experiment in which you can’t possibly achieve. And in the only thing that could possibly go in here and maybe somebody surfing tumbling in this wave of society changing some things going down and some things coming up- right now the economics are going down while other things might be going up but it’s not like all in one direction up so every generation just has their own path.

Male3: that’s a very interesting analogy because it’s a fair topic that damage has been done by a lot of governments and societies that has been driven from top-down problems and that becomes a difficult thing because it doesn’t acknowledge the unique perspective of each individual. Which is something that I see and really feel strongly about if I consider myself a patriotic person it’s things like E pluribus Unum- from many, one and not from many to some gobbled-on group that then determines what the many will do, like Nazism or communism- the idea that Stalin, one person has view and imposes that everyone else. And it doesn’t work we know that so not doing that again would be wise.

Male2: we could be better servants, because sometimes I feel like we have a fear of uncertainty and forces us to sort of lock onto people who seem like they have a good plan or something. The whole thing is like I’m studying now about using it evolutionary techniques using adaptive techniques to do serious kinds of engineering problems like developing weird nozzle heads and having to embrace the big struggle is for companies to embrace the idea that all the experts that they think that can hire can’t maybe solve certain problems unless they are willing to embrace certain chaos strategies-to say that we don’t know and so let’s involve random processes. That to me seems like a similar kind of problem in our society to say our politicians don’t have to go into office saying they knew the solutions to all the problems and can fix every single little thing, we expect them to say that instead of them going into office saying I don’t really know but I’m going to try turning some knobs and they were going to watch things and tell you really realistically what’s happening and I will decide; nobody’s going in for that.

Male3: so it’s interesting when you think of it when you think of it if you think of it as a design issue it gets back to concepts like the Dao, like the virgin block, it can be anything, so that’s that thought about blue sky, you know, and so you automatically diverge to every possibility by that symbol. And then the other Daoist analogy is the, you know, it’s the clay jar it’s the jar itself that gives it its advantage but the purpose is the space inside so it’s the emptiness inside of it where the emptiness of the hull where the spokes converge- it’s not determined and that’s really an important kind of thing to do, so not coming in with, as you start to select, you start to narrow and then in the arts it’s always a difficult thing that if you impose the target and say we are going to design something for this purpose then you automatically you start to classify and start to think of things and I think that gets back to into the world, and say can we going backwards though at times and look at that and say well it didn’t work for this situation so let’s back up the car and drive in a different direction.

Moderator: Cool, good work guys, do you have any final comments?
Male1: No, I'm good.

Male3: This was fun.
9. Sandquery Session 3

To view the video please follow this link: http://www.youtube.com/watch?v=om3rvWELIYo

There are one female and two males positioned around a sandbox full of items placed in various configurations.

Moderator: Okay, go for it.

Female: All right, let’s get started. So we start in the fleeting present which is under a cloud so we’re worried about the future, here we continue forward and we’re playing the game of life, trying to figure out our next move, we run into a danger and to deal with that danger we compartmentalize our life. Say okay it’s in its box, it can’t hurt us. So then we’re trying to find our way, we use our compass and we use the plane to get into the future so time starts flying. We come into a window into the past and as we uncover the past it looks dangerous and scary, then it helps to turn around and then and then we see the mysterious past where we really don’t understand it but it looks very interesting and mysterious and we continue on forward in our quest to understand the future we run into more dangers and things we should be frightened of - our snake egg is a potential future danger again and again we run into more dangers that might happen the monsters in the sea and the oceans rising, then we continue forward we can’t quite see the future really but we can kind of guess that it’s kind of the mysterious reflection of almost the past and then we get our sun, so things things are happier and were less worried about the future now

Moderator: Great. Can you guys elaborate for me about the mirror, what’s the mirror mean?

Female: So, I think the mirror was supposed to be how the future is kind of a reflection of the past so we can kind of, it’s not actually not actually there, like there’s nothing actually behind the mirror but you can still see it if that in some sense makes it any clearer.

Moderator: Talk to me more……

Male1: It could also represent knowing ourselves, we think we’ll know ourselves in the future but we may not ever arrive, it’s a constant process, a cycle as signified by the Phoenix. And what does the pot represent?

Male2: That’s actually seeing the future I guess

Female: And you’ve got the crystal ball;

Male2: Now you’re getting feedback; that’s why the sun is here on the corner- the future’s bright.

Female: The future’s bright!

Male1: It started out on a cloudy day.

Male2: Right, otherwise you’d have a cloud on the corner where the sun is; but since this is the way we’re making this story up it will be a bright future. And (pointing to the crystal ball) she sees that right in there.

Moderator: cool, what’s that feather about?

Female: The feather? That was for the fleeting nature of the present ’cause it’s, you’re in the present and then it’s the past right away; constantly moving to the future.
Moderator: Good work, guys- I love it, this is really great.

Male1: And we used all the toys!

Female: And we used all the toys and the box.

Moderator: Good job.

Male2: You’re not going to tear this part are you?

Moderator: Please out like to photograph it before you do that.

Male2: You’re going to have to get some clear spray glue and spray it so you can save it.

Moderator: It’s beautiful.

Male1: Just cover it in epoxy.

Female: Just build something like walls, you know, for the resin, clear resin.

Moderator: Amber, make it last a thousand years.
10. Enactavision Session 1

To view the video please follow this link: [http://www.youtube.com/watch?v=PntG6o_pmq4](http://www.youtube.com/watch?v=PntG6o_pmq4)

Moderator: “Tell me about ‘What’s next?!’, ‘What’s next, guys?’”

**Female1:** “First, the solar system, we’re going to have huge issues with that sucker. Global warming; making a huge impact on humans.”

**Male1:** “Because we happen to be on a rollercoaster with the lights turned off or with our eyes closed and don’t know when the next loop-de-loop is coming up. And we’re acting as though it’s all in a straight line…”

**Female1:** “But it’s not.”

**Male1:** “And on the rollercoaster with us is a great big octopus-monster with a hundred different tentacles, each holding a different possibility.

**Female1:** “Waaa!”

**Male1:** “And at each turn, one possibility gobbles up all of the others like this shark! Trying to gobble this dinosaur!”

**Female1:** “Oh-no!”

**Male1:** ‘The little girl said ‘ah!’… And on one of his tentacles is… moon dust!!”

**Male2** Says, “Nice”. “Taking the cues”.

**Male1:** ”And it sprays moon dust all over space mountain! And they all hang in the air, floating, because they’re built of nano-particles.”

**Female1:** says, “Nano-particles…”

**Male1:** “And this little girl, floating up and down in this cloud of nano-particles, realizes that this is the hope for the salvation of the human species! And she says, ‘Let me off this rollercoaster! I have to… and save the world… ahhh! Before she goes on another loop-de-loop and all the moon dust dissipates.”

**Female1:** “Swshhh”

**Male1:** “What is she doing now? Are you red? Who’s red?”

**Male2:** “I’ve lost track…”

**Female1:** Says M1’s name ______.

**Male1:** “I’ve lost track…. I am red.”

**Male2:** “What’s happening to her now?”

**Male1:** “Well it seems that she’s just been disintegrated… and reassembled! [M2 nods head and laughs.] Using a device… Wow! …Made possible through her…use of nano-particles! [M2 laughing.] So she’s now been completely reassembled in exactly the same shape, to the very last detail that she was when she was on the planet earth, but now she’s somewhere past the great star Sirius. But her replicated self asks herself, do I still have my own soul?”

**Male2:** “The end.”
11. Enactavision Session 2

To view the video please follow this link: http://www.youtube.com/watch?v=x2uSwmtOPuQ

There are two females and one male positioned standing in front of the Enactavision table and they are discussing the setup of the figures on the table.

**Female1**: We put all the prehistoric animals on the table together because we because we have been time traveling….

**Moderator**: Okay do you two want to pop up here while you tell your story.

**Male**: Okay,

**Female1**: All the prehistoric animals have been reenacted by, guess what, a little girl with red hair and the little girl with red hair, she has discovered the secret of life or the secret of time-space continuum and because she has that little secret she can find all these animals and put them where she wants them. And, she also has all these favorite little fuzzy animals, her cat and her dog….

**Male**: The magic purple crystal is what enables her to do this.

**Female1**: Fun, Fun! So, the plane represents the time-space continuum and the little girl represents the power behind everything; and she is controlling all the symbols of life along the time-space continuum. She has a chair that represents power, the chair represents power and here’s the crown; the cat and the dog represent her benevolence, all the dinosaurs and prehistoric creatures represent her ability to move in and out of the past and the future and the window represents the future and the board represents violence and the rock represents stupidity and the mersa cell represents the only power that can stop her and all these other tokens the Bishop, the urn and the shell represent her wealth; the feather represents wealth and I’m not sure what this is, I think that’s a pool of water, - water, the most important element in all life-water. Okay, have we got it there? The cat and the dog and the snake represent- the little girl is all powerful and she controls everything while the cat and the dog and the snake represent her benevolence, the rock stupidity, the plane represents her ability to go into any dimension and the prehistoric creatures represent her ability to control everything. Does anybody else have a different story?

**Female2**: I just have one correction; the quill represents knowledge.

**Female1**: Ah, that’s very good-the quill represents knowledge and the spaceship-is there a spaceship, ah…

**Male**: I created a flying saucer with my ball!

**Female1**: And the compass represents

**Male**: She can go anywhere.

**Female1**: …the fact that space and time have been collapsed into one thing.
12. **Enactavision Session 3**

To see the video please follow this link: [http://www.youtube.com/watch?v=z3KjiwnHhao](http://www.youtube.com/watch?v=z3KjiwnHhao)

There are two females and one male positioned standing in front of the Enactavision screen.

**Male:** See the little girl; she’s just trying to catch her kitty. And the Kitty is just being caught up in this crazy battle.

**Moderator:** Yeah, yeah hold on, let me ask about it. Tell me about it guys what’s going on?

**Female2:** Okay, so we first started with the two dragons fighting in the air, an epic battle in the sky. In the future everything’s going to happen in the sky.

**Male:** Yeah, it represents the ongoing chaos of life.

**Female2:** And then there’s this little kitten and the girl introduced and their kind of little innocent... happening below, you know, getting rained on by fire and ice.

**Female1:** The more innocent side of things...

**Male:** ...of life

**Female2:** And there’s this little tiny knowledge blob.

**Female1:** Yeah, I think that’s the center of the universe.

**Female2:** That everyone is ignoring.

**Female1:** The God particle maybe or something, it’s important.

**Female1:** And this little snake down by the arrow, then eventually everyone falls down into the quicksand, in the end it’s all hopeless.

**Male:** the all-knowing warp absorbs everything eventually. Gravity wins! Oh, and the window, the window sort of like the door, it’s the doorway to this dimension

**Moderator:** Yeah, cool! (Crosstalk) is this a happy ending? Tell me about the creatures flying around

**Male:** They can represent a lot of things.

**Moderator:** Can they be good and evil?

**Female2:** Fire vs. Ice, greenhouse gases and polar ice-caps.

**Female1:** ?

**Male:** Positive and the negative, George Bush versus Obama.

**Female1:** It can be taken in a lot of ways and in the end it doesn’t matter though, it’s kind of my point is. In the end we all perish.

**Moderator:** What’s that blue thing in the middle?
Male: It’s the center of gravity. It’s all knowing.

Female1: What’s the blob called?

Female2: The blob is just chaos.

Moderator: The blob represents chaos this one.

Male: The blob just wants to hang out.

Moderator: Great, is there anything connected with “What’s next?” that hasn’t been talked about that you would like to mention?

Male: Well, I think this is kind of like representative of how we are moving more towards a like an intellectual sort of less physical way of living like we are all representations of things like I imagine one million years from now we will all be just floating brains you know that listen to like tangerine dream, communicate telepathically or maybe we’ll be CGI.

Moderator: What’s the person doing?

Female1: She's playing with the kitty. That's her cat. They're together. They were going for a walk and playing then they came across...

Female2: ...They couldn't be help but be sucked into the chaos, they were just trying to go on an innocent little walk and look at what happened to them. It’s a very cynical story.

Male: It’s pretty deep; we’re probably going to have to patent this.

Female2: I really like the snake at the bottom, it's kind of like a little ankle-biter, tempting everyone into the darkness.
Appendix B: First Round Scripts

1. **First Round Activity Script: Focus Group**

   “Thank you all for taking the time for this activity. Your input is a critical part of this study. With this activity, I am trying to learn more about group dynamics.

   You have been selected to be a part of one of four activities. All four activities have consistent questions and prompts. An opportunity for further participation is available if you are interested and will be addressed at the end of this session.

   The activity will take about 60 minutes and I will start by asking some questions that will prepare you for the main prompt. Today's session will be video and audio recorded and pictures may be taken. Please note that your participation is voluntary and you may leave at any time.

   My role today is to act as this activity's moderator and to document the session. You are in a safe place with no wrong answers. So feel free to speak up.

   Does anyone have any questions before we start? *(Address any questions.)* Okay, let's get started and I will do my best to answer any questions you may have at the end of the activity.

   *(Opening, introduction and transition questions – 15 minutes – no tools yet, this is a pre-activity brainstorm for the group as a whole)*

   - *What do you think of when you hear the word “future”?*
   - *How far out is the future?*
   - *What words or images come to mind?*
   - *Do you daydream about the future? When and where?*
   - *What do you get excited about when you think about the future?*

   Today you will be a part of a traditional focus group; talking is your tool. You can talk and discuss with your teammates at anytime throughout the activity.

   For the main question, “What’s next?”, you'll have 20 minutes to brainstorm your possible answers as a group, and 10 minutes to present and/or perform your ideas, hopes, and fears as a team. I will let you know when you have 10 minutes of brainstorming left, 5 minutes and one minute by using these signs *(point to poster board marked with “10 minutes”, “5 minutes”, “1 minute”). I will also let you know when you have 5 minutes and one minute left for your group's presentation/performance. After our 30 minutes doing this activity, I have a short questionnaire for each of you to fill out if you choose to do so
Are you all ready? *(Verify that each member of the group is ready to start.)*

The main question for you to explore today is, “What's next?”

*Note: Moderator is not allowed to answer participant questions about the prompt, and the moderator is not ever allowed to ask leading questions to participants. Moderator is allowed to ask only clarifying questions, such as, “what does ________ mean? And, could you please elaborate on ________?” Moderator is allowed to encourage participants by saying, “Good.”*

*(After presentations/performances say:)*

Finally, is there anything connected with “What's next” which has not been discussed that you feel strongly about and would like to bring up now?

Each of you has done a really great job today! One small note: if you retell your experiences today to anyone outside this group, please do your best to be discreet by not linking each other's names to the information that he or she might have shared. This way we can respect one another's privacy.

Thank you all for taking time to participate today. The questionnaire is short and takes no more than 5 minutes to complete. If you are interested in participating in this study further, please refer to the questionnaire. Thanks! Great job!”
2. First Round Activity Script: Image Collaging

“Thank you all for taking the time for this activity. Your input is a critical part of this study. With this activity, I am trying to learn more about group dynamics.

You have been selected to be a part of one of four activities. All four activities have consistent questions and prompts. An opportunity for further participation is available if you are interested and will be addressed at the end of this session.

The activity will take about 60 minutes and I will start by asking some questions that will prepare you for the main prompt. Today's session will be video and audio recorded and pictures may be taken. Please note that your participation is voluntary and you may leave at any time.

My role today is to act as this activity's moderator and to document the session. You are in a safe place with no wrong answers. So feel free to speak up.

Does anyone have any questions before we start? (Address any questions.) Okay, let's get started and I will do my best to answer any questions you may have at the end of the activity.

(Opening, introduction and transition questions – 15 minutes – no tools yet, this is a pre-activity brainstorm for the group as a whole)

What do you think of when you hear the word “future”? How far out is the future? What words or images come to mind? Do you daydream about the future? When and where? What do you get excited about when you think about the future?

Today you will be a part of a paper collage activity. In this activity, paper, scissors, glue and the provided photos, illustrations and printed words are your tools; you can also talk and discuss with your teammates at anytime throughout the activity. (I will show the group the paper collage tools at this time.)

For the main question, “What’s next?”, you'll have 20 minutes to brainstorm your possible answers as a group, and 10 minutes to present and/or perform your ideas, hopes, and fears as a team. I will let you know when you have 10 minutes of brainstorming left, 5 minutes and one minute by using these signs (point to poster board marked with “10 minutes”, “5 minutes”, “1 minute”). I will also let you know when you have 5 minutes and one minute left for your group's presentation/performance. After our 30 minutes doing this activity, I have a short questionnaire for each of you to fill out if you choose to do so.

Are you all ready? (Verify that each member of the group is ready to start.)

The main question for you to explore today is, “What's next?”

Note: Moderator is not allowed to answer participant questions about the prompt, and the moderator is not ever allowed to ask leading questions to participants. Moderator is allowed to ask only clarifying questions, such as, “what does ________ mean? And, could you please elaborate on ________?” Moderator is allowed to encourage participants by saying, “Good.”
Finally, is there anything connected with “What's next” which has not been discussed that you feel strongly about and would like to bring up now?

Each of you has done a really great job today! One small note: if you retell your experiences today to anyone outside this group, please do your best to be discreet by not linking each other's names to the information that he or she might have shared. This way we can respect one another's privacy.

Thank you all for taking time to participate today. The questionnaire is short and takes no more than 5 minutes to complete. If you are interested in participating in this study further, please refer to the questionnaire. Thanks! Great job!
3. **First Round Activity Script: Sandquery**

“Thank you all for taking the time for this activity. Your input is a critical part of this study.

With this activity, I am trying to learn more about group dynamics.

You have been selected to be a part of one of four activities. All four activities have consistent questions and prompts. An opportunity for further participation is available if you are interested and will be addressed at the end of this session.

The activity will take about 60 minutes and I will start by asking some questions that will prepare you for the main prompt. Today's session will be video and audio recorded and pictures may be taken. Please note that your participation is voluntary and you may leave at any time.

My role today is to act as this activity's moderator and to document the session. You are in a safe place with no wrong answers. So feel free to speak up.

Does anyone have any questions before we start? (Address any questions.) Okay, let's get started and I will do my best to answer any questions you may have at the end of the activity.

(Opening, introduction and transition questions – 15 minutes – no tools yet, this is a pre-activity brainstorm for the group as a whole)

- *What do you think of when you hear the word “future”?*
- *How far out is the future?*
- *What words or images come to mind?*
- *Do you daydream about the future? When and where?*
- *What do you get excited about when you think about the future?*

Today you will be a part of a Sandquery activity. In this activity, sand, a wooden box, and the provided toys and objects are your tools; you can also talk and discuss with your teammates at anytime throughout the activity. (I will show the group Sandquery tools at this time.)

For the main question, “What’s next?”, you'll have 20 minutes to brainstorm your possible answers as a group, and 10 minutes to present and/or perform your ideas, hopes, and fears as a team. I will let you know when you have 10 minutes of brainstorming left, 5 minutes and one minute by using these signs (point to poster board marked with “10 minutes”, “5 minutes”, “1 minute”). I will also let you know when you have 5 minutes and one minute left for your group's presentation/performance. After our 30 minutes doing this activity, I have a short questionnaire for each of you to fill out if you choose to do so.

Are you all ready? (Verify that each member of the group is ready to start.)

The main question for you to explore today is, “What's next?”

*Note: Moderator is not allowed to answer participant questions about the prompt, and the moderator is not ever allowed to ask leading questions to participants. Moderator is allowed to ask only clarifying questions, such as, “what does ______ mean? And, could you please elaborate on _______?” Moderator is allowed to encourage participants by saying, “Good.”*

(After presentations/performances say:)
Finally, is there anything connected with “What's next” which has not been discussed that you feel strongly about and would like to bring up now?

Each of you has done a really great job today! One small note: if you retell your experiences today to anyone outside this group, please do your best to be discreet by not linking each other's names to the information that he or she might have shared. This way we can respect one another's privacy.

Thank you all for taking time to participate today. The questionnaire is short and takes no more than 5 minutes to complete. If you are interested in participating in this study further, please refer to the questionnaire. Thanks! Great job!”
4. **First Round Activity Script: Enactavision**

“Thank you all for taking the time for this activity. Your input is a critical part of this study.

With this activity, I am trying to learn more about group dynamics.

You have been selected to be a part of one of four activities. All four activities have consistent questions and prompts. An opportunity for further participation is available if you are interested and will be addressed at the end of this session.

The activity will take about 60 minutes and I will start by asking some questions that will prepare you for the main prompt. Today's session will be video and audio recorded and pictures may be taken. Please note that your participation is voluntary and you may leave at any time.

My role today is to act as this activity's moderator and to document the session. You are in a safe place with no wrong answers. So feel free to speak up.

Does anyone have any questions before we start? *(Address any questions.)* Okay, let's get started and I will do my best to answer any questions you may have at the end of the activity.

*(Opening, introduction and transition questions – 15 minutes – no tools yet, this is a pre-activity brainstorm for the group as a whole)*

- What do you think of when you hear the word “future”?
- How far out is the future?
- What words or images come to mind?
- Do you daydream about the future? When and where?
- What do you get excited about when you think about the future?

Today you will be a part of an Enactavision activity. In this activity, the Kinect, a wall and a projector, two computers, a touchscreen and the Enactavision application are your tools; you can also talk and discuss with your teammates at anytime throughout the activity. *(I will show the group Enactavision tools at this time.)*

*(Note: I will begin a short demonstration of how to use application.)* Please let me show you how Enactavision works. You'll notice that the Kinect recognizes two people at one time, as you explore walking in and out of the virtual space, you'll notice a red sphere and a purple sphere. The red sphere represents player one, and the sphere is mimicking the movement of your right hand. The purple sphere represents player two, and the sphere is mimicking the movement of the second player's right hand. If you'd like to take turns being the “purple player” or the “red player” simply walk outside the virtual wall projection and allow another teammate to walk into the virtual space. In doing so, you can “switch” players and take turns, if necessary.

Now let's take a look at the touchscreen. We can see a virtual drawer full of objects (just so you know, we also call these virtual objects, “Enactables”), we can also see red and purple bowls. These bowls and their colors are connected to the virtual wall space: the red bowl connects to “player one” and purple bowl connects to “player two”. Any object that you want to appear on the big wall can be selected by dragging the object with your finger on the touchscreen into the red or purple bowl. *(Please note that*
only one object can be in one bowl at a time.) Please know that none of the objects move independently, only you and your teammates can “teach” the Enactables how to move by using this application. You'll notice once an object is selected, the object's motion mimics the player's motion. As soon as an Enactable is placed into a bowl, a button will rise on the touchscreen surface and when pressed, all objects that are active will be recorded globally. What's an active object? You can tell if the objects are active: first by seeing if any objects are in the red or purple bowl, and second by seeing if the objects placed in the bowls appear on the big wall space. Being recorded “globally” means that all active objects’ motion (as trained by player one and two) will begin recording when the button is pressed. Once the desired motion of the object is captured, one stops the recording of the Enactable by dragging the selected object out of the bowl and back into the virtual drawer.

Now on the projection wall there is a recorded object looping the trained motion from the player(s). Multiple recordings of objects in motion can be endlessly layered to achieve any desired effect. Once there is a recorded object playing back, you'll notice another button will appear on the touchscreen. This button, when pressed, is a global reset button and all recorded object motions projected on the wall will be erased and all objects in the drawer will go back to their starting position. Would you all like to try it now? (Let the participants play with the interface.) Are there any questions about how to use Enactavision? (Verify that everyone in the group understands how to use the application.)

For the main question, “What's next?”, you'll have 20 minutes to brainstorm your possible answers as a group, and 10 minutes to present and/or perform your ideas, hopes, and fears as a team. I will let you know when you have 10 minutes of brainstorming left, 5 minutes and one minute by using these signs (point to poster board marked with “10 minutes”, “5 minutes”, “1 minute”). I will also let you know when you have 5 minutes and one minute left for your group's presentation/performance. After our 30 minutes doing this activity, I have a short questionnaire for each of you to fill out if you choose to do so.

Are you all ready? (Verify that each member of the group is ready to start.)

The main question for you to explore today is, “What's next?”

Note: Moderator is not allowed to answer participant questions about the prompt, and the moderator is not ever allowed to ask leading questions to participants. Moderator is allowed to ask only clarifying questions, such as, “what does ______ mean? And, could you please elaborate on ______?” Moderator is allowed to encourage participants by saying, “Good.”

(After presentations/performances say:)

Finally, is there anything connected with “What's next” which has not been discussed that you feel strongly about and would like to bring up now?

Each of you has done a really great job today! One small note: if you retell your experiences today to anyone outside this group, please do your best to be discreet by not linking each other's names to the information that he or she might have shared. This way we can respect one each other's privacy.

Thank you all for taking time to participate today. The questionnaire is short and takes no more than 5 minutes to complete. If you are interested in participating in this study further, please refer to the questionnaire. Thanks! Great job!”

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Appendix C: Second Round Script

Second Round Activity Script: Focus Group, Image Collaging, Sandquery and Enactavision

“Thank you all for coming back! Your input is a critical part of this study.

With these activities, I am trying to learn more about group dynamics.

You have been selected to be a part of the second-round portion of this research.

Today's sessions will be video and audio recorded and pictures may be taken. Please note that your participation is voluntary and you may leave at any time.

My role today is to act as this activity's moderator and to document the session. You are in a safe place with no wrong answers. So feel free to speak up.

Does anyone have any questions before we start? (Address any questions.) Okay, let's get started and I will do my best to answer any questions you may have at the end of the activity. (At this point the three participants decided in what order they would like to do the four activities, and the four activities were not in the same order as listed below. In the second-round the team chose to start with Sandquery, then Enactavision, then Focus Group, and lastly Image Collaging). The “5 questions” part of the activity was done only once before the second-round team had begun any of the activities.

Focus group:

“(Opening, introduction and transition questions – 15 minutes – no tools yet, this is a pre-activity brainstorm for the group as a whole)

What do you think of when you hear the word “future”?
How far out is the future?
What words or images come to mind?
Do you daydream about the future? When and where?
What do you get excited about when you think about the future?

Today you will be a part of a traditional focus group; talking is your tool. You can talk and discuss with your teammates at any time throughout the activity.

For the main question, “What’s next?”, you'll have 20 minutes to brainstorm your possible answers as a group, and 10 minutes to present and/or perform your ideas, hopes, and fears as a team. I will let you know when you have 10 minutes of brainstorming left, 5 minutes and one minute by using these signs (point to poster board marked with “10 minutes”, “5 minutes”, “1 minute”). I will also let you know
when you have 5 minutes and one minute left for your group's presentation/performance. After our 30 minutes doing this activity, I have a short questionnaire for each of you to fill out if you choose to do so.

Are you all ready? (Verify that each member of the group is ready to start.)

The main question for you to explore today is, “What's next?”

Note: Moderator is not allowed to answer participant questions about the prompt, and the moderator is not ever allowed to ask leading questions to participants. Moderator is allowed to ask only clarifying questions, such as, “what does ________ mean? And, could you please elaborate on ________?” Moderator is allowed to encourage participants by saying, “Good.”

(After presentations/performances say:)

Each of you has done a really great job!

The questionnaire is short and takes no more than 5 minutes to complete.”

Image collaging:

First up is paper collage and in this activity, paper, scissors, glue and the provided photos, illustrations and printed words are your tools; you can also talk and discuss with your teammates at anytime throughout the activity. (I will show the group the paper collage tools at this time.)

For the main question, “What’s next?”, you'll have 20 minutes to brainstorm your possible answers as a group, and 10 minutes to present and/or perform your ideas, hopes, and fears as a team. I will let you know when you have 10 minutes of brainstorming left, 5 minutes and one minute by using these signs (point to poster board marked with “10 minutes”, “5 minutes”, “1 minute”). I will also let you know when you have 5 minutes and one minute left for your group's presentation/performance. After our 30 minutes doing this activity, I have a short questionnaire for each of you to fill out if you choose to do so.

Are you all ready? (Verify that each member of the group is ready to start.)

The main question for you to explore today is, “What's next?”

Note: Moderator is not allowed to answer participant questions about the prompt, and the moderator is not ever allowed to ask leading questions to participants. Moderator is allowed to ask only clarifying questions, such as, “what does ________ mean? And, could you please elaborate on ________?” Moderator is allowed to encourage participants by saying, “Good.”

After presentations/performances say,

Finally, is there anything connected with “What's next” which has not been discussed that you feel strongly about and would like to bring up now?

Great job everyone! Here's a short questionnaire for you to complete.”

Sandquery:
“Great! Let's move on to Sandquery.

Now you will be a part of a Sandquery activity. In this activity, sand, a wooden box, and the provided toys and objects are your tools; you can also talk and discuss with your teammates at anytime throughout the activity. *(I will show the group Sandquery tools at this time.)*

For the main question, “What's next?”, you'll have 20 minutes to brainstorm your possible answers as a group, and 10 minutes to present and/or perform your ideas, hopes, and fears as a team. I will let you know when you have 10 minutes of brainstorming left, 5 minutes and one minute by using these signs *(point to poster board marked with “10 minutes”, “5 minutes”, “1 minute”). I will also let you know when you have 5 minutes and one minute left for your group's presentation/performance. After our 30 minutes doing this activity, I have a short questionnaire for each of you to fill out if you choose to do so.

Are you all ready? *(Verify that each member of the group is ready to start.)*

The main question for you to explore is, “What's next?”

*Enactavision:*

Next up is the Enactavision activity. We will explore the topic, “What's next?” using Enactavision, followed by a post-activity questionnaire. Then we will engage in a final discussion about your experiences using all four communication tools, focus group, paper collage Sandquery and Enactavision.

One or more of you has worked with Enactavision, but because not everyone in this team has used it before, let me explain more so that we can all be on the same page. Enactavision uses the Kinect, a wall and a projector, two computers, a touchscreen and the Enactavision application are your tools; you can also talk and discuss with your teammates at anytime throughout the activity. *(I will show the group Enactavision tools at this time.)*

*(Note: I will begin a short demonstration of how to use application.) Please let me show you how Enactavision works. You'll notice that the Kinect recognizes two people at one time, as you explore walking in and out of the virtual space, you'll notice a red sphere and a purple sphere. The red sphere represents player one, and the sphere is mimicking the movement of your right hand. The purple sphere represents player two, and the sphere is mimicking the movement of the second player's right hand. If you'd like to take turns being the “purple player” or the “red player” simply walk outside the virtual wall projection and allow another teammate to walk into the virtual space. In doing so, you can “switch” players and take turns, if necessary.

Now let's take a look at the touchscreen. We can see a virtual drawer full of objects (just so you know, we also call these virtual objects, “Enactables”), we can also see red and purple bowls. These bowls and their colors are connected to the virtual wall space: the red bowl connects to “player one” and purple bowl connects to “player two”. Any object that you want to appear on the big wall can be selected by dragging the object with your finger on the touchscreen into the red or purple bowl. *(Please note that only one object can be in one bowl at a time.)* Please know that none of the objects move independently, only you and your teammates can “teach” the Enactables how to move by using this application. You'll notice once an object is selected, the object’s motion mimics the player’s motion. As soon as an Enactable is placed into a bowl, a button will rise on the touchscreen surface and when pressed, all objects that are active will be recorded globally. *What's an active object? You can tell if the objects are active: first by
seeing if any objects are in the red or purple bowl, and second by seeing if the objects placed in the bowls appear on the big wall space. Being recorded “globally” means that all active object motions (as trained by player one and two) will begin recording when the button is pressed. Once the desired motion of the object is captured, one stops the recording of the Enactable by dragging the selected object out of the bowl and back into the virtual drawer.

Now on the projection wall there is a recorded object looping the trained motion from the player(s). Multiple recordings of objects in motion can be endlessly layered to achieve any desired effect. Once there is a recorded object playing back, you'll notice another button will appear on the touchscreen. This button, when pressed, is a global reset button and all recorded object motions projected on the wall will be erased and all objects in the drawer will go back to their starting position. Are there any questions about how to use Enactavision? (Verify that everyone in the group understands how to use the application.)

For the main question, “What's next?”, you'll have 20 minutes to brainstorm your possible answers as a group, and 10 minutes to present and/or perform your ideas, hopes, and fears as a team. I will let you know when you have 10 minutes of brainstorming left, 5 minutes and one minute by using these signs (point to poster board marked with “10 minutes”, “5 minutes”, “1 minute”). I will also let you know when you have 5 minutes and one minute left for your group’s presentation/performance. After our 30 minutes doing this activity, I have a short questionnaire for each of you to fill out if you choose to do so.

Are you all ready? (Verify that each member of the group is ready to start.)

The main question is, “What's next?”

Finally, is there anything connected with “What's next” which has not been discussed that you feel strongly about and would like to bring up now?

Great job everyone! Here's a short questionnaire for you to complete. (The three participants were given second-round post-activity questionnaires.)
Appendix D: First Round Post-Activity Questionnaire

Figure 92: First Round Post-Activity Questionnaire - Page 1
Why did you want to be a participant today? Please describe...

Have you ever participated in an activity similar to this before? Yes or No
If yes, when? Please describe...

Today I felt like I expressed myself to my full creative potential. Yes or No
Please elaborate...

Today, I feel that my participation and input were valuable to the study and to design research.
Yes or No
Please elaborate...

If you had the chance to participate in this research again, which communication would you want to use (Please circle one below) and why?

- focus group
- paper collage
- Sandquery
- Enactavision

How did you find out about this research? (Please circle any that apply.)
Fyer
Presentation: @ ACCAD @ Universitas
OSU eNewsletter
Word of mouth
A friend
Other

Please write your email address on the back of this questionnaire if you are interested in participating more in this research study. This research study includes a second round of activities which involves participating in all four activities. This additional participation will be held in two sessions. Each session will be an hour and a half in duration.

That's all! Thank you for your input!
Appendix E: Second-Round Post-Activity Questionnaire

An OSU research study about communication

Post-activity questionnaire

I just participated in a/n (please circle one below) activity.

- focus group
- paper collage
- Sandquery
- Enactavision

Did you learn anything due to the activity? Please elaborate...

Please use this map to describe how you felt about this activity’s experience. The + and - indicate a positive or negative experience. Please fill in words that describe your experience on the map. You may use the words below, or write in your own words that describe your feelings about the experience. SIMPLY ADD ONE WORD PER COLUMN.

- fun
- boring
- engaging
- collaborative
- visual
- stimulating
- creative
- shy
- self-conscious
- confident
- happy

Figure 94: Second Round Post-Activity Questionnaire – Page 1
Today I felt like I expressed myself to my full creative potential. Yes or No
Please elaborate...

Today, I feel that my participation and input were valuable to the study and to design research.
Yes or No
Please elaborate...

Please include any reflections you have about your team during this activity...

Please rank your favorite activity, 1-4, “1” being your favorite and “4” being your least favorite.

focus group  paper collage  Sandquary  Enactavisin

What factors influenced your above rankings?

That’s all! Thank you for your input!

Figure 95: Second Round Post-Activity Questionnaire – Page 2