Humanizing Design through Narrative Inquiry

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ABSTRACT

An increasing number of practice-based disciplines are embracing narrative inquiry as a powerful means of teaching the more intangible, human-centered issues of professional practice. While the field of design has a long history of using narrative metaphorically—that is, creating designs that tell a story—less emphasis has been placed on examining the potential of narrative as design method—as a tool for exploring ideas and guiding decisions throughout the various stages of the design process. This article examines the potential benefits of a narrative inquiry in a studio setting on design process and product.

The authors present findings from an exploratory study in which twenty-eight senior level interior design students formally integrated narrative (storytelling) into three different phases of their creative design process: Programming, Conceptualization, and Presentation. The studio setting became a laboratory for exploring the unique qualities of narrative method in relation to more traditional 2-D and 3-D design methods. Personal insights and self-reported changes in thinking were collected, indicating how the students perceived the impact of the narrative intervention upon their design inquiry, design decisions, and quality of work. A content analysis of the written reflections of the students revealed that designing with stories resulted in a transformative learning experience that encouraged a deeply humanized design process by nurturing empathy, enhancing multi-sensory conceptualization and visualization, and facilitating holistic designing.

Introduction

Designed environments do not exist in isolation from culture and society; rather, design forms an interrelated system of people, processes, and the material world. Over the past century, design has transitioned from the product-based focus of the industrial age to the more process-based concerns of the postindustrial and information era. With this transition came a greater focus on the dynamic processes of user experience and a greater concern for how design responds to the cultural, social, and personal needs of users (Mitchell, 1993). Today, the act of designing goes well beyond the creation of mere artifact to embody individual and collective values, engage senses and emotions, support processes, and shape our world view. According to Dubos (1981), "In our times, the most important contribution to the philosophy of design has been the recognition that the external forms we give to our environments reflect some aspects of our inner psychological states" (p. 61). This expanding role of design, its evolution from material artifact to emotive process, heralds a call for more human-centered methods that thoughtfully assimilate people, processes, products, and environments into a broader, contextualized system of meaning. The authors propose that narrative inquiry is just such a method.

We begin this paper by reviewing literature which 1) defines narrative inquiry as a constructivist learning activity—one focused on human experience and how we derive meaning from it—and 2) links the inherent structure of narrative to a human-centered, systems-based view of designing. We then highlight the increasing number of practice-based professions that are embracing narrative inquiry as a means of teaching the more intangible, subjective, and interpersonal issues of professional practice, and we present the emerging focus on this method in design education while maintaining a focus on environment-behavior principles. Lastly, we describe an exploratory study that utilized narrative (storytelling) as a design method in a studio setting and share evidence of how students perceived the impact of narratives upon their design process. We conclude with discussion of the potential benefits and limitations of using narrative in a studio setting.

Narrative thinking involves the process of developing connections between one's past experiences and those of others.

Review of Literature

Knowledge Construction through Narrative Inquiry

Narratives, or stories, are more than mere child's play; they are a way of making sense of the world around us and our role in it (Bruner, 1990; Erasmus, 1989). A fundamental activity encountered throughout the life-course by people of all cultures, storytelling structures perceptions, organizes raw experiences into memories, and gives meaning to human experience (Lauritzen & Jaeger, 1997; Riessman, 1993; Sarbin, 1986). "Humans are storytelling organisms who individually and socially lead storied lives" (Lauritzen & Jaeger, 1997, p. 35). The act of constructing one's own stories, as well as interpreting the stories of others in relation to one's past experiences, enables individuals to render meaning from human experience.

Narrative inquiry then, refers to the interactions and insights that occur when we read, write, listen to, and tell stories. Each of these levels of interaction, story reading, story writing, and story sharing (listening and telling), provides unique opportunities for the deep, transformative learning experience characterized by constructivist learning—where learners play an active role in constructing knowledge while they acquire new concepts, skills, and procedures (Piaget, 1954). Reading stories engages people in active exploration of causal links to personal experience providing a mechanism for exploring opposing views and promoting an under-standing of how others form meaning in their own unique ways (O'Flahavan & Tierney, 1991). Writing stories helps learners reexamine, rediscover, or reinvent their own realities from a particular frame or reference, thereby deepening their understanding of the event and themselves (Lauritzen & Jaeger, 1997). Writing stories can also serve as a mode through which the learner might resolve disputes or allow ideas to come to fruition (O'Flahavan & Tierney, 1991). Sharing stories forces a type of reflection that is critical to expanding one's mindsets and perceptions. Stories also embody a temporal, iterative process in much the same manner as design:

Stories are about characters whose actions are sequentially organized and causally related. Characters have roles and the roles are motivated. Who people are, what they do, why they do it, and what difference it makes –these things are explained by stories. Stories are, thus, explanatory devices that help us make sense of the random and inex-plicable happenings of everyday life. People aren't characters until stories make them so. Events aren't grouped in logical chains until a storyteller groups and imposes logic on them (Temple & Gillet, 1989, p.136).

Knowledge, or the creation of meaning, does not spring out of narrative structure but rather is co-created by the narrator (story teller or writer) and the listener (through reading or hearing). This exchange results in the construction of shared meaning through either a dialectic with others or a dialogic with self (O'Flahavan & Tierney, 1991). Meaning and knowledge, then, change with differing narrators and listeners. As a result, multiple points of entry exist into narrative learning. Reissman (1993) notes: "Meaning is fluid and contextual, not fixed and universal. All we have is talk and texts that represent reality partially, selectively, and imperfectly" (p. 15). Active participation in this type of constructive discourse uses the experience of others to assess reasoning, justify assumptions, and develop insights which lead to action. This active engagement is a hallmark of transformative learning (Mezirow, 2000).

Narrative thinking involves the process of developing connections between one's past experiences and those of others. It is a fundamentally different mode of thinking than logical scientific thought, which seeks objective, context-independent truth (Boyatzis, 1994; Bruner, 1986). Narrative thought embraces context-dependent, subjective perception, and is concerned with the particulars of time and place, what Clinchy (1990) refers to as "connected-knowing," understanding by empathizing rather than judging. In contrast, scientific thought is analogous to "separate knowing"—thinking based on detachment. The characteristic elements of separate knowing are argument, criticism, and objec-

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tive evaluation (Belenky, Clinchy, Goldberger, & Tarule, 1986). In contrast, connected-knowing involves thinking based on relationships and emotions. The voice of connected-knowing is a storied voice, characterized by questioning, empathy, and a subjective perspective (Boyatzis, 1994; Clinchy, 1990). For disciplines like design that are rooted in the arts as much as the sciences, both voices must be heard to generate a complete knowledge.

Linking Narrative Structure to Designing

The inherent structure of narrative, with its emphasis on "connected-knowing," provides a potentially valuable method for exploring design as a social system. Narrative, like design, is context-dependent. Both are a creative outgrowth of the details and situational events that characterize a particular time and place. Narrative, like design, is socially entwined, focusing on potential points of tension related to various human activities while attempting to deepen our understanding of human nature. Storytelling, like designing, is a creative process of selecting and organizing chaotic events that enables us to discern how diverse elements come together to form meaningful experiences. Both play a central role in our communication with others.

It might be useful at this point to distinguish storytelling from user scenarios, which are a common tool in design practice. Stories differ from user scenarios in several important ways. Stories are concrete accounts of particular people and events, in particular situations; they are not abstract, scripted realities aggregated from several sources (Erickson, 1995). Stories are intended to be emotive (not objective) and are told through the voice of a protagonist that the reader often comes to care about (versus an anonymous narrator). Successful narratives include what is commonly referred to as "thick description"—that is, details of history, motivation, personality, and setting that enhance emotional connection and believability. Scenarios often leave out or abridge this type of description, merely recounting a sequence of activities or events. It is the emphasis on authentic detail embedded within a social context that distinguishes stories from user scenarios.

Narratives also have "common elements" of structure that further distinguish them from scenarios and other story-like mechanisms (such as anecdotes, dialogues, and personal journaling). Labov (1982; Labov & Waletzky, 1967) identified six structural components defining fully articulated narratives: 1) an abstract (summary of the substance of the narrative), 2) an orientation (situates the story in time and place, introduces the situation and characters), 3) a complicating action (defines dilemma using a sequence of events), 4) a voice of evaluation (narrator's underscoring of the significance and meaning of the action), 5) a resolution (outcome of the story, what happens in the end), and 6) a coda (returns the perspective to the present, underscores relevance for today). To simplify, the six common elements of narrative outlined above can be distilled into four key elements: voices, setting, action, and resolution.

Story structure parallels a systems-oriented view of creative process. Since the 1960s, scholars have described creativity using a four-part framework: person, process, product, and press (Portillo & Dohr, 2000; Sternberg, 1988). This holistic framework recognizes creativity as the result of these four interdependent elements: people (who create and engage creative ideas), process (the series of actions and decisions that evolve ideas from abstract concepts to realities), product (the tangible embodiment of ideas), and press (the physical and psycho-social environments in which the creative behaviors take place). In the language of design, meaning is derived by the associations between the components of people, process, product, and place. Stories identify the interactions between these four interdependent elements and redefine them into the basic components of voice (people), setting (press), action (process), and resolution (product), thus imbuing them with meaning that has relevance for design.

Use of Narrative Inquiry in Professional Education

Increasingly practice-based disciplines, including medicine, law, engineering, and business, are turning to narratives to effectively teach the more intangible, human-centered issues of professional practice. At the College of Physicians and Surgeons at Columbia

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University, medical students have read literature and personal narratives and studied with professional authors in an effort to recognize hidden interpersonal themes in stories that relate to day-to-day clinical practice. Dr. Charon, Coordinator of this Writers-in-Residence program, explained: "Narrative competence is this deep, interpretive ability of one person to understand accurately the meaning and gravity of the story one person tells or the life one person lives" (interview by Taggart, 2001, p. 27). The goal at Columbia is to help students discern when to stop gathering objective facts and when to identify that a more empathic approach is needed.

Advocates for legal storytelling argue the value of narrative inquiry for both practice and education. Massaro (1989) examines how storytelling in the courtroom builds juror empathy while Delgado (1989) makes a plea for narrative in the classroom as a powerful tool for shifting mindsets and challenging the status quo. Through the use of stories and "counterstories"—narratives which give voice to society's outgroups and underrepresented minorities — he argues that narratives are one of the best means for building shared understandings and expanding perceptions beyond one's own personal experiences.

In the fields of engineering and business, stories have been harnessed as catalysts for communication. Erickson (1995), software designer, argues that stories are useful throughout the design process, first for exploring idea trajectories and building concrete, shared goals in early stages, particularly among multidisciplinary design team members. In the latter stages of design, stories can be a tool to communicate ideas to outsiders—to clients and corporate managers for whom the language of design and the design process can be a barrier. Shaw, Brown, and Bromiley (1998) also acknowledge the value of storytelling for communication, but use stories to teach people skills, and give them insight into interpersonal dynamics and the process of communicating effectively, particularly with respect to such intangible ideas as vision and values. Denning (2001) agrees, but argues that storytelling goes beyond communication to motivation. In his book, "The Springboard: How Storytelling Ignites Action in Knowledge-Era Organizations" he describes the unique ability of stories to connect people on a deeply emotional level, providing the intrinsic motivation needed to enhance performance and innovation.

Whether utilized in practice or education, the narrative applications described above share an overarching goal: to refocus day-to-day operations or curriculum on difficult-to-teach, human-centered issues of professional practice. Well-crafted stories, selected with deliberate intent, bolster skills in listening, enhance interpretive abilities, and motivate people to action.

Narrative Inquiry in Design Education and Practice

While the field of design has a long history of using narrative *metaphorically*—or, creating designs that tell a story—only recently has emphasis been placed on examining the potential of narrative *as a design method* –a tool for exploring ideas and guiding decisions throughout the various stages of the design process. Ganoe (1999) eloquently argues the latent potential of narrative inquiry for design: "The characteristics of the narrative that help to organize the complex world of people, entities, and events through the language of stories provides a flexible framework for understanding and expanding the meanings of design" (p. 2). In 2000, The *Journal of Interior Design* devoted an entire issue (vol. 26:2) to the subject of narrative inquiry, pointedly asking the question "…what meaning does it hold for interior design?" (Portillo, 2000, p. iv.). In that issue, a range of potentials was explored, from design research to education to practice. Portillo and Dohr (2000) explored narrative as a research method to better understand issues of creativity in design practice. Danko (2000) demonstrated how stories could be used to evidence design's strategic role in recruitment and retention. Through the storied voice of an executive recruit, we came to better understand how corporate vision and values can be communicated through interior design process and product. Budd (2000) focused on the usefulness of narrative inquiry as a programming tool that allows practitioners to capture interview data and mental models of work concepts and environments. Black (2000) rounded out the range by focusing on design education, demonstrating how narrative inquiry

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can be incorporated into the classroom experience, enabling design students to process their co-op experiences reflectively and holistically.

Understanding of the usefulness of narrative in design education continues to expand. Danko (2003) presents a case for using narrative as a means of nurturing whole-person development in design students (cognitive *and* affective development) in order to build critical leadership competencies. Most recently, McDonnell, Lloyd & Valkenburg (2004) introduced a dynamic form of "video-story making" into their industrial design studio in an effort to support critical reflection about design process. They argued that deeper levels of reflection are necessary to develop high levels of professional expertise. These levels can be facilitated through the use of storytelling. What all of the above examples have in common is a belief in the potential of narrative to enhance design education and practice. More work needs to be done to fully understand the unique benefits of narrative as a design method, and how best we might integrate it into traditional education and practice.

Methodology: The Narrative Intervention

In an effort to explore the unique potential of storytelling as a design method in a studio setting, narrative inquiry was introduced at three distinct points in the design process of a semester-long project. Each intervention focused on a different level of inquiry, that is, stories *read*, stories *written*, or stories *shared* (heard and told). At the conclusion of the semester, each student completed a self-report evaluation that revealed personal insights on 1) the effectiveness of using narratives to guide the design process, and 2) the student's related perceptions of how narrative inquiry impacted their design products. This exploration involved twenty-eight interior design students over two successive years of a senior-level design studio course in a FIDER-accredited degree program. All students were taught by the same instructor and developed similar corporate office or retail projects that emphasized communicating corporate vision and values. Senior-level design students

were ideal candidates for the study, having developed a working understanding of the design process and an awareness of how they think as designers. This provided them with a strong, comparative framework from which to assess the impact of this new method on their design thinking (whereas freshman would not yet have possessed a deep enough understanding of process issues or their own work styles to offer comparisons). It is important to note that up to this point in their education, the sample had not been introduced to the use of storytelling in studio design.

Working in teams of two, students developed schematic interior space designs for either a new corporate headquarters or a new flagship corporate retail space. Students were responsible for choosing a company; profiling the mission, vision, and values of the organization; identifying strategic business issues; programming; and developing a schematic design to meet those project needs and goals. The semester-long project was staged in four phases: 1) Programming, involving problem-finding and needs assessment; 2) Concept Development, involving idea generation and evaluation; 3) Schematic Design, involving the development and detailing of design ideas; and 4) Presentation, involving the communication of schematic design solutions to clients and studio critics. Specific narrative interventions (exercises and required outputs) were integrated into the Programming, Concept Development, and Client Presentation stages. Students were given the option of using narrative method during Schematic Design. The following outlines the rationale behind the specific narrative interventions.

Intervention 1: Programming Phase
The first narrative intervention occurred before the students were formally assigned any details of the project. The goal was to have the students read a true story about design that would help sensitize them to user needs, and thus ultimately inform the programming process to follow. At this point, students knew that they were going to focus on the design of a corporate/retail facility of some kind, but they had not been given any project parameters (e.g., site, square footage, programming

This introduction to narrative through reading and sharing laid the foundation for the second narrative intervention to follow.

goals, or final design requirements). Instead of researching specific needs, each participant was first asked to read "Beneath the Surface" (Danko, 2000), a 3000-word, non-fictional narrative of an executive level recruit's interview process and her perceptions of the workplace's design in relation to its vision and organizational values. As its major theme, "Beneath the Surface" illustrated the power of design to communi-

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Figure 1

Summary of the Narrative: "Beneath the Surface"

This story is a non-fictional narrative constructed from multiple on-site interviews. It was generated as part of the research study "Strategic Stories Shaping 21st Century Interior Design," funded by FIDER.

"Beneath the Surface" is a story about Jill, a young executive level recruit who, during her interview process, comes to understand the vision and values of the organization through their newly designed corporate headquarters. During her tour of the facility and subsequent interviews, Jill starts to delve into the rationale for the design. She asks all types of questions. "Who made the design decisions?" "What level of people were involved?" In her questioning, Jill comes to discover that the physical environment holds many clues about the people and the corporate culture. From the answers she receives, Jill finds tangible evidence of the company's social mission, leadership style, decision-making processes, and personal interactions across different levels of the organization. In so doing, she gains insight into the broader purpose and mission within the organization. The vision and values she uncovers through her questioning of both the design process and product play a primary role in her decision to ultimately accept the position.

Full Text Available:
Danko, S. (2000). Beneath the surface: A story of leadership, recruitment, and the hidden dimensions of strategic workplace design. *Journal of Interior Design, 26*(2), 1-24.

Figure from Danko (2003, p. 83)

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cate the often intangible qualities of organizational culture and explored the resulting impact on recruitment and retention (see Figure 1).

After reading "Beneath the Surface," each participating student was asked to reflect independently on the narrative and to summarize his or her reflections in writing for the next studio session. Two days later, the students reconvened in studio to share their insights on the narra-

tive in roundtable fashion. After these individual and group activities, the students moved into the programming phase of the project, where they were assigned the project parameters and final design requirements. Working in teams of two, they had three weeks (two — four-hour studio sessions/week) to profile the corporate mission, vision, and values, and to assess the strategic business planning needs and requirements for their chosen projects.

The purpose of assigning the "Beneath the Surface" narrative before beginning the project was twofold. First, the narrative provided a method for encouraging reflective thinking about design, conceivably expanding the realm of issues one might normally consider when engaging in programming and problem-finding. For example, insights gleaned from "Beneath the Surface" might inform a student's early programming strategies by enabling him or her to more fully understand how intangible qualities like vision, values, and mission can be communicated through design. Second, the exercise supplied the students with an introductory example of a *design narrative* — a first person narrative account of an individual's experience with and perceptions of interior design. This introduction to narrative through reading and sharing laid the foundation for the second narrative intervention to follow.

Intervention 2: Conceptualization Phase

The second narrative intervention focused on "stories written" and occurred at the very beginning of concept development. After completing the programming phase, each student was asked to create his or her own design narrative, written from the perspective of a potential visitor to the space he or she was designing. The students were allowed to chose and define the visitor. In contrast to "Beneath the Surface", which was constructed from real world events, the narratives created by the students were conceptions of a hypothetical reality. The goal of this narrative intervention was to challenge each student to "walk in someone else's shoes," to describe the encounter that visitor might have with the space they were designing and through storytelling, and to share that person's experience of the space. Figure 2 presents a listing of the range of user

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vantage points the students selected, while Figure 3 presents one example of a conceptual design narrative generated during this phase of the study.

The conceptualization phase of the narrative intervention was intentionally planned to occur *before* the students were permitted to design using the traditional graphic techniques to which they had grown accustomed during four years of coursework. Starting with the conceptual narrative was critical to exploring the potential of narrative as a design method because doing so forced the students to conceptualize through text, thus reducing their temptation to revert to the familiarity of graphic methods. Fully immersing the students in this way ensured that both positive and negative feedback could surface in their evaluations of the exercise. After each participant wrote a fully developed conceptual narrative, traditional design methods were permitted for the remainder of the semester

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Figure 2

Range of User Vantage Points
(Chosen by the students for their protagonists in their stories)

Corporate Office Project *(with an emphasis on vision and values)*
• Employee
• New recruit
• Transfer employee
• Job interviewee
• Outside consultant
• 15-year old son of executive mom
• VP of neighboring office
• Employee from branch office

Corporate Retail Project *(with an emphasis on vision and values)*
• Mom with 3 children
• Grandmother and Granddaughter
• Member of the retail club
• Couple celebrating their 25th wedding anniversary
• Young professional
• Young couple

Figure 3

Conceptual Design Narrative (An example developed by a participant in this study)

A Pleasant Surprise

This story is about James, a 15 year-old boy whose mom works at Net-Assets, a server and network management company. James' mom has asked James to meet her at the office after school; he reluctantly agrees because he has no interest, or so he thinks, until he sets foot into Net-Assets...

James steps off the subway into the busy Boston Harbor area. The ride was short, he realizes, and quite pleasant too. James walks into the Global Business Center and takes the elevator up to the 14th floor. The elevator door opens and James steps into the elevator lobby. Looking past the clear glass wall, James sees the reception area and a group of funky chairs that he can't wait to try sitting on.

As he walks into the reception area, the sound of water flowing immediately attracts his attention. Wondering where it is coming from, James looks around and sees a huge wall with water flowing down behind the reception desk. "How interesting!" James thinks, and feels the rhythmic sound calming and soothing his thoughts right away. Next to the water wall is another large curved wall. Net-Assets' slogan, "We let you mind your own business," runs across it with a smiley face :-) at the end. He walks up to the reception desk.

"Hello, how may I help you?" the smiling receptionist asks.

"Hi, I am looking for Ms. Smith, please," James replies.

"Oh, you must be James! I am Tina. Your mother has mentioned that you would be stopping by. Hang on one moment please."

At this point James does not mind waiting at all; his attention is caught by the Technology Timeline on the floor. It runs from one end of the room all the way across. Starting from the compass, which was invented in China in 83 AD, there is the telephone and the typewriter at the earlier part of the Timeline, and computers and digital chips at the later part. James giggles as he sees that Net-Assets is on the very end of the Timeline, but a huge question mark follows, indicating that there is more to come.

"James, your mother is at her desk. Would you like me to take you to her?" Tina asks.

"I think I can figure out my way from that sign." He winks at Tina."

"Well, if you are not sure where you are, just ask any of the people you see and they will tell you where to go."

"Okay, no problem! Thanks Tina!"With that, James starts walking in.

"Wow! What's that?!" James runs to an intriguing glowing metal wall; it is placed right in front of the Data Center's large windows. The sheet metal is perforated into a pattern that echoes the Net-Assets logo. Through the holes, James observes numerous servers blinking and some

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Figure 3 (continued)

people hard at work. He feels an aura of energy inside the Data Center.

Walking along the perimeter of the Data Center, James turns the corner and sees a large lounge area. Some people have their laptops hooked up, working casually as they join in others' discussions occasionally. A mini putt-putt course with funny designs that one can only see in amusement parks is right next to the lounge. James smiles as he watches some people play. He keeps on walking and suddenly sees a huge wall with pictures on it. He can't help but notice his picture from soccer championship is on it and his own smiling face is grinning back at him. Blushing and scratching his head, James feels a burst of joy and pride.

"Hey James!" someone calls from behind. James turns around and sees a cheerful face. "Nice picture you got there! We were all admiring it when your mom put it up last week! I am Tom, by the way." Tom offers a friendly handshake. Later on Tom explains that people post things that they would like to share with everyone else up on these "community walls," as they call them, and people gather around there to chat and just catch up on other people's news during breaks.

"Well, you are probably looking for your mother right? Actually, she's just been called to an emergency meeting. If you want, I can take you to the Game Room and you can kill some time there before her meeting ends."

James looks around in anticipation. "A Game Room? You have a Game Room here?"

"Sure!"

Walking along the corridor, James observes some people hard at work at their desks, while others are in small groups having discussions. James realizes that all the people he has seen so far are cheerful, friendly, and seem to enjoy what they are doing. The open office offers a breathtaking view of the harbor; it is spacious, but at the same time a cozy and intimate atmosphere is created by the dropped metal grid ceiling panels. These organic shaped ceiling panels are hung at different heights, creating an interesting view as one walks down the corridor.

As they are walking, James notices humorous quotes painted on the large wall along the corridor. Tom explains that these quotes are added to over time; once in a while everyone in the office offers a fresh supply of funny quotes and jokes to put on the wall. James feels compelled to just stand there and read everything, but his attention is caught again by something else—the copy center. Located in front of the restrooms, the copy center has printers and copiers just like all the other copy rooms that James has seen before. What is different is that several frosted glass panels are hung from the ceiling, with scribbles all over them.

"We call these Idea Walls." Tom says. "People are welcome to write anything that comes to their mind on these panels: ideas, thoughts, or even messages that you want to leave for someone else. Basically when people walk around and a great idea pops into their head they can just grab a marker and scribble it on the Idea Walls, so everyone can see. When people come to the copy center, it is a nice break to just read what's on everyone else's mind."

"What a great idea!" James thinks to himself, as he continues walking with Tom.

As they turn the corner, James sees a speed limit sign of 3 miles per hour and immediately slows down. He looks to the right and sees a spacious corridor area. Along the curved wall on the left are funky-looking couches and on the right is the cafe.

"What is this space for?" James asks.

"It is used as a casual area to connect workers to a bigger Net-Assets group. See the webcasts of the other Net-Assets branches on monitors'? Some people like to sit in the cafe across from the monitors and observe, and all those mugs in the wall are from our mug collections. Oh, come inside the kitchen!"

There are a few people in the kitchen having snacks, and they are all very friendly and say hi to James. They all seem to recognize James and chat with him cheerfully. Each holding a mug of hot chocolate, James and Tom continue their journey to the Game Room. Immediately after the kitchen, several panels with what appears to be people's photographs grab James' eyes. He can't believe his eyes. All the photos are mixed and matched and look awfully funny. Seeing James' amazement, Tom explains that it's where the "honorary employees" get their blown-up pictures taken. Pictures are taken for the head, upper body, lower body, and legs, then they are all mixed and matched so someone could have someone else's legs and head to create wacky compositions. James laughed when he sees his mom's blown-up picture, but matched with someone else's legs and body.

Suddenly, Tom is called away for an errand, and James wonders off to another part of the office. He notices a room with a funny "Do Not Trespass" sign. He scratches his head and wonders what it could be. When Tom returns and notices what has caught James's eyes, he explains, "That's our quiet work room. Whenever someone's in there it means they are doing serious work and people should not interrupt them until they leave that room. There's also another one that's called 'Do Not Come Near' with a funny little electrocuted picture!"

Finally they reach the Game Room, and there are already some people in there shooting mini basketball. James plays a game with them and quickly goes on to try out the pinball machine. There are different kinds of fun things to do in the Game Room, James notices, and lots of small gizmos and toys lying around, but the people in the room still talk constantly with each other and write things down on the Idea Wall. James really likes the atmosphere: having fun while doing work. He plays in the room until his mom comes. James runs up to his mom, saying, "This is such a cool office! Why didn't you ask me to come earlier, Mom?" Laughing, they start heading out, and James writes "Thank you everyone, I had a good time! on the Idea Wall for all to see.

Note: the company name has been changed to protect its identity.

Students had both the responsibility and the freedom to explore the various ways narrative could be utilized as a design communication tool.

Upon completion of the conceptual narratives, the students once again verbally shared and discussed their stories as a group in studio. It is important to note that even though the students were working in groups of two, each student had to generate his or her own story independent of their teammate. Once the stories were generated independently, they were given the choice of redrafting the stories into one piece that represented the team project or finalizing both stories. This narrative intervention consumed three four-hour studio class periods: one to discuss the structure of narrative writing, one to review the draft narratives, and one to share the stories as a group. The students were given the remainder of the semester to evolve their conceptual design ideas into schematic designs using traditional graphic means, and to continue utilizing narrative method if they chose.

Intervention 3: Presentation Phase

The final narrative intervention focused on "stories told" and occurred at the end of the project after students had developed their ideas into fully comprehensible schematic designs that included floor plans, elevations, sections, and perspective sketches. Each team was required to present their final design solutions using both traditional graphic methods *and a* narrative method. The specific format for how the narrative was to become a part of the final design presentation was left to each team's own discretion. The goal behind this requirement was twofold: first to encourage a continuity of thinking and designing that had begun through the stories, and second to encourage students to experiment with non-traditional ways of communicating design ideas. Students had both the responsibility and the freedom to explore the various ways narrative could be utilized as a design communication tool.

The resulting presentations varied considerably in their use of narrative. Several teams began their presentations with a "verbal walkthrough" by reading a narrative account of the spatial experience they designed, then followed with a "visual walkthrough" using traditional two and three dimensional design drawing. Other teams wove the visual and narrative elements together, using dynamic computer presentations that allowed

them to intersperse excerpts from the stories with visual representations of the particular design elements being featured. A few teams not only narrated the stories, but embedded the sounds referred to by their stories into the computer presentations to create a rich, multimedia effect. For example, one story spoke of a signature piece of music used by the corporation. In the presentation, this music was in the background when the visitor stepped off the elevator into the lobby. Some teams completely redrafted their initial stories to match the final design ideas, while others used only the excerpts of their original stories that survived the design iterations. Figure 4 summarizes the narrative interventions in this study.

Analysis of Student Feedback

> **Figure 4**
>
> **Summary of the Narrative Intervention**
>
> **Programming** (3 weeks) *Stories read/Stories shared*
> - Each participant read the design narrative "Beneath the Surface."
> - In writing, each participant independently reflected on the lessons they learned from reading "Beneath the Surface."
> - Students regrouped as a class to verbally share the lessons learned.
> - Each team of two developed a corporate identity profile and assessed needs and requirements for the space.
>
> **Conceptualization** (3 weeks) *Stories written/Stories shared*
> - Each participant created their own conceptual design narrative, written from the perspective of a potential future visitor to the corporate space they were designing.
> - Students regrouped as a class to verbally share their conceptual narratives.
> - Students were given the remainder of the term to further develop their designs using both graphic and narrative methods as they saw fit.
>
> **Schematic Design** (5 weeks)
> - Each participant created their own conceptual design narrative, written from the perspective of a potential visitor.
>
> **Presentation** (3 weeks) *Stories integrated/Stories shared*
> - Students were asked to present their final design solutions using both graphic and narrative methods.

A majority of the student responses indicated that the use of narrative (storytelling) encouraged them to design more empathically, taking into account how a person thinks and feels within a space.

At the end of the semester, *after the grades had been reported*, students were asked (via e-mail) to independently evaluate how they perceived the impact of the narrative method upon their design thinking and resulting product. The evaluation was comprised of three open-ended questions: 1) "How did the use of stories impact your design *product?*," 2) "How did the use of stories impact your design *process?*," and 3) "Do you envision using narrative method again? Why or why not?" The students were given a little over a week to hand in their responses. Twenty-three of the twenty eight students responded (82%). Responses represented only the individual student's *perception* of how the narrative interventions impacted his or her design thinking and resulting product. No objective measures were obtained. The written responses varied considerably in length from approximately 125 words to 500 words. Responses were evaluated independently by three design educators using an inductive analysis to identify themes. The use of independent readers strengthened the level of interpretation by identifying repeating thematic elements in the student responses. A grounded theory approach was then used to collapse the multiple themes into more generalized categories (each saturated with multiple pieces of evidence) which could provide greater relevance to design education (Silverman, 2001). Three themes emerged as dominant (i.e., each theme appeared in over 50% of the total responses) and thus form the focus of the discussion. Those themes which received less than 50% were deemed outside the scope of this paper.

Findings: Learner Outcomes

The analysis revealed how the sample *perceived* the impact of narrative method upon their design decisions, design processes, and resulting design products. Because the students had not been formerly exposed to narrative as a design method, the responses represent self-reported changes relative to how they had *previously* approached the design process using more conventional methods. The following three themes emerged as dominant: 1) heightened user empathy (56%), 2) enhanced multi-sensory thinking and visualization (78%), and 3) evidence of holistic thinking (60%). Each of these findings is elaborated below.

Heightened User Empathy

A majority of the student responses indicated that the use of narrative (storytelling) encouraged them to design more empathically, taking into account how a person thinks and feels within a space. Many students expressed that they believed narrative method helped shift their thinking from purely aesthetic considerations to a concern for designing emotional connections. This helped them better anticipate diverse behaviors that might occur in the workplace experience they were designing:

> *By writing a story with particular attention with the way a person thinks and feels within a space, you are forced to make your space a place that elicits powerful emotions from people.*

> *The spaces became representations of something more meaningful and personal to the user. The design was about sparking a memory and relating to the user more psychologically rather than aesthetically.*

Students also suggested that the act of writing the narrative heightened their empathy for the user by helping them to consciously step outside their role as designers, to recognize their personal biases, and to question their assumptions about the spatial experience from a different vantage point:

> *I had to take the perspective of a newcomer to the space. It wasn't so much what I saw or felt as the designer, but what another person saw and felt as the visitor. As such I would often ask myself what impression a newcomer would get when they entered the space, what did I want them to feel like, and what aspects of the space, not just visual, really contributed to these feelings.*

> *Sometimes we forget that we are designing spaces for the user. The stories forced me to step back and imagine how someone else would experience the space.*

> *I believe that my story didn't concentrate so much on what people saw, in part because*

*Students commented that narrative method significantly expanded their
ability to visualize space beyond traditional methods...*

*people don't perceive the environment the same
way as designers. I chose to concentrate more
on what they felt and then to provide explana-
tions for these design ideas.*

It is important to note that the narrative method
encouraged empathy not only through writing, but also
through reading and listening to the stories of others.
Students reported an increased motivation to make
their design decisions more suitable to their client's
needs after sharing their stories with one another.
Students commented on how the very act of sharing
stories encouraged them to be more considerate of mul-
tiple human perspectives and embrace diverse points of
view while designing:

*Hearing others' stories increased my determina-
tion to make the design meet my user's needs...
When I heard the stories I naturally fell into the
role of user's advocate... I was driven to find a
better answer.*

*I was pleasantly surprised to learn that everyone
had developed their own character for the story
and as such each narrative was widely different
than the next. What this helped us do as
designers was to make us take the perspective of
all the different characters that we were exposed
to while analyzing and assessing the different
design features as the plot went on...*

*Listening to others' stories also made me think
about the design from different points of view
and broaden the possibilities.*

One group compared the act of sharing stories to tradi-
tional group design critiques and analyzed the impact
of each on their idea development. This illustrates an
example of connected-knowing, where personal knowl-
edge is connected to the knowledge of others:

*From a cognitive standpoint, this [sharing
stories] was a lot more complex than merely
critiquing design ideas and allowed us to
expand our thinking to new levels. The stories
became the predominant drivers for the subse-
quent designs.*

The sharing of stories was also perceived to have a pos-
itive impact on team dynamics, both within and
between the teams:

*The story allowed us to share a cohesive vision
as a team... we were able to get an
understanding of each other's views and discuss
details from the get go. We were able to get a
sense of the impact of the space on the user
before we even began to design.*

*The story aided our team in idea development
by giving us the opportunity to share our stories
with others. Although at first I thought this
would be a waste of time, I was pleasantly sur-
prised... I really believe that most of each team's
best ideas developed from this exchange.*

*Working in teams of two, the story was a
medium that we could work on together and
manipulate, add depth to and recognize areas
that needed work.*

*I think the stories were most helpful in bonding
our student group together, building respect and
compassion for our fellow designers, and
improv[ing]our collaboration throughout the
project.*

Enhanced Multi-Sensory Conceptualization and Visualization

A majority of the students expressed that the use of
narrative enabled them to envision the space as a
dynamic interplay of multiple senses and feelings.
Students commented that narrative method signifi-
cantly expanded their ability to visualize space beyond
traditional methods (which focus on what users might
see), causing them to consider *smells, sounds, touch,
taste, and psychological feelings* in their designs. The
stories helped them to envision spaces that felt alive
and real, facilitating a free flowing ideation process:

*The whole story came alive in my mind, it
had its own characteristics, a connection that
I didn't with the other design projects that I
have done.*

...a majority of students indicated that the act of writing the narrative enabled them to synthesize diverse design elements better...

The story allowed me to envision the space and feel the space. It caused me to understand how the space would function and flow. I was able to use my imagination without hindrance and capture the dreams and make them a reality.

I was able to take a step back, envision the space completed, and feel the intensity of its spatial qualities as it developed into a personal anecdote. It became real.

Creating a story helped me to visualize the space in three dimensions during the initial design process. It helped me to "be in the space" rather than simply doing bubble diagrams on trace.

The story forced me to think of an actual space with lots of tangible qualities. It also makes the envisioning process a lot easier. In most cases I draw something in plan and then try to envision what it would look like in the space. But this method does the exact opposite.

Students felt that this expanded ability to visualize through storytelling encouraged them to be more proactive in engaging the senses, and pushed them to a greater level of detail and materiality in their design decisions. Stories also enabled them to communicate an articulate sensory experience of their proposed space:

The ability to ask myself multiple questions that concerned all five senses produced a much more detailed design idea than had I merely thought about it in aesthetic terms.

By reading the story it helped people picture the whole space. People "experience" the space as you walk them through it, complete with details in all the senses. When you present designs by walking people through floor plans and perspectives, it is often difficult to convey what you want people to feel in the space (not just in the visual sense, but all five senses; and also how people feel in the space psychologically). By presenting the story it completes the presentation.

The story allowed me to think in more dimensions (smell, sound, touch vs. just sight).

I believe that stories pushed our thinking to a greater level of detail... it pushed us to break out of designing in plan only and forced us to think of space in three dimensions. Materials were also considered earlier than usual.

Facilitated Holistic Thinking

Finally, a majority of students indicated that the act of writing the narrative enabled them to synthesize diverse design elements better, and allowed them to envision space as a holistic experience rather than a sum of discreet parts:

I think the story provided an excellent method for weaving dissimilar design components into one cohesive framework... Similarly, the story forced us to establish a theme early on in the narrative and to make the plot adapt to this theme from the beginning.

It gave a good way to envision space as a cohesive whole from the very beginning instead of trying to design the space one area at a time.

The story helped people picture the whole space... with details in all senses.

Some students indicated that creating a "cohesive whole" when designing had often been a challenge to them and that narrative method not only helped them to generate ideas, but also allowed them to connect their spaces together with greater continuity. The result, they felt, was a product that was a more well-considered whole, with greater depth of decision-making, and richer in detail:

Making a connection between all the spaces is something I struggle with, so I think that thinking about the entire space as a whole and "walking" through it helped me solve some of that.

The stories expanded the design possibilities; I was able to begin thinking more about the whole atmosphere of the space.

Students described narrative method as not just a useful tool but rather a driving force for both their thinking and decision-making processes.

As a designer, I sometimes find the hardest part of design is solidifying a good multifaceted concept, and the stories were almost like a more eloquent sort of brainstorming.

The use of stories gave a greater level of depth to the design product. It added another layer of thinking which enriched the overall design.

The stories helped the final product be a lot more complete than it would have been otherwise. I was urged to think of small details that immensely affected the overall product. I don't think I would have thought of such small details if I were just working on drawings.

Future Use of Narrative Method

When asked about future use of this method, almost all participating students envisioned using a narrative design approach again in their professional practice, particularly as a client communication tool. Many students commented that the method connected people to the space in a personal way that allowed them to relate to the design ideas on a deeper, more affective level:

The story allows the client to relate to the design on a more personal level because they can imagine they are the character in the story. It is easy to spout off a bunch of design elements, but this will never strike a chord with a client.

[Stories are] personal and descriptive and there is no escaping the psychological impact of a story. I envision using this method again to convey my design ideas more descriptively and poignantly.

Everyone likes to listen to stories—not just little kids, because that is when we are most imaginative, letting stories paint pictures in our minds.

...this approach also makes communication with the client a lot more fluid. Not everyone can read a floor plan, but everyone can understand a story.

[Stories] are powerful because they focus on the way the person feels and reacts to the space, down to the very last detail.

A minority of students indicated that they were unsure whether they would use the method again. Their concern was not so much the effectiveness of the method, but rather the acceptance the method might receive in professional practice. Many voiced concern about the need to conform to more traditional practice methods:

...it helped me, but as for how the real world will accept this method... I'm really not sure.

The use in presentation may be difficult, depending on the client. Some are more open-minded than others to new presentation techniques, however I think it's a great aid to explain design intent.

It's definitely not a typical method practiced by designers. I enjoyed combining written language with visual language to define the experience of the space. I would use this method again and would recommend it to others.

I don't think the process was helpful enough to spark any major design decisions. I feel that my design solutions would have still developed without the stories.

Only one student of the twenty-three students that responded felt that storytelling had a negative impact on their process, and that traditional methods were more effective:

I'm not the most creative writer. My visual skills are obviously much stronger... Writing the story was one more step between envisioning the space and producing the drawings... I felt that I was bogged down by it.

It is important to note the overall impact narrative method played in shaping student thinking. Student feedback emphasized the developmental use of storytelling. Students described narrative method as not just a useful tool but rather a *driving force* for both their thinking and decision-making processes. Student com-

Narratives build shared goals and a community of respect...
Narratives shift focus from product to person...Narratives embrace
multiple viewpoints and extend perception.

Figure 5

Participant Response Excerpts Describing Active Shifts in Thinking and Approach

- "The story **forced us to focus** our thoughts and clarify concepts..."

- "I believe that stories **pushed our thinking** to a greater level..."

- "The story definitely **had a large impact** on my design process..."

- "By writing a story you are **forced** to make your space a place..."

- "The use of stories **expanded the possibilities** of design..."

- "Writing the story **forced me to clarify** my ideas..."

- "The use of stories in studio **had a big impact** on my choices..."

- "The stories were moving, emotional, and **stimulating**..."

- "Stories also **made me think** about ..."

- "The stories **inspired** me..."

---

ments such as "pushed our thinking," "forced us to...," "made me think," "inspired me to...," and other similar phrases were used to describe the role of storytelling in their process (see figure 5). All of these phrases describe an active shift in thinking that students directly attributed to the stories. Inspired by the stories many students moved outside their current comfort zone and traditional ways of thinking. One student reflected:

> The story method pulls the designer outside themselves and causes them to think differently. That's the point. When we think differently, we work differently and our final product bears the mark of that ideation evolution.

Discussion: Humanizing Design through Narrative Intervention

The findings, while not conclusive, indicate the potential of narrative method to humanize design thinking in three distinct ways: heightening user empathy,

enhancing multi-sensory conceptualization and visualization skills, and facilitating holistic thinking. The following discussion elaborates how these qualities of narrative method humanize the design process.

Heightening User Empathy

Heightened user empathy is the cornerstone of a deeply humanized design process. By heightening user empathy, narratives nurture responsiveness and accountability on the part of the designer, encouraging them to: 1) shift their focus from the product to the person, 2) embrace multiple viewpoints outside their own, and 3) develop respect for one another's work through the common language of stories. Stories may also help students move beyond personal preconceptions and stereotypes.

Narratives shift focus from product to person. Narrative method shifts a designer's focus from the abstract goal of aesthetic intervention to the affective goal of optimizing human experience and needs fulfillment. Many students noted this shift in their thinking and designing. The narrative literature suggests why this change occurs. Narratives promote a mental shift by helping designers relate on a personal level to the needs and wants of the people they are designing for (Erickson, 1995). In addition, empathy is facilitated because the reader (or listener) vicariously experiences events from the storyteller's (or main character's) social, cultural, and world view. A visceral bond forms between the character and the listener, and the listener becomes immersed within the character's perception of time, place, action, events, and consequences (Lauritzen & Jaeger, 1997). The designer's relationship to the user evolves beyond a cognitive, intellectual awareness of "user needs" to include an affective, emotional understanding of "whole person designing" (Danko, 2003). One student recounted, "When I heard the stories I naturally fell into the role of user's advocate... I was driven to find a better answer."

Narratives embrace multiple viewpoints and extend perception. Stories allow us to step outside our role as designers and explore our designs through someone else's eyes; furthermore, they raise our awareness of the need to do so. Narratives extend a designer's perception

Narratives are dynamic, active representations...Narratives enable designers to design for intangibles.

beyond him or herself through an exposure to multiple perspectives of a design experience, thereby deepening the understanding of the impact of his or her work. "[Storytelling] becomes the means whereby we enter into a shared world, which is continually broadened and enriched by the exchange of stories with others" (Wells, 1986, p.196). As stories are told, people, actions, and events are reconstructed by the storyteller to form a parallel reality—one with which the designer is not necessarily familiar. The students recognized that "people don't perceive the environment the same way as designers." Delgado (1989) argues that "counter-storytelling" (telling stories that present a minority voice or opinion) challenges conventional wisdom and is essential in a pluralist society as a means for breaking down stereotypes, presuppositions, and destroying entrenched mindsets:

> Stories humanize us. They emphasize our differences in ways that ultimately bring us closer together. They allow us to see how the world looks from behind someone else's spectacles. They challenge us to wipe off our own lenses and ask, "Could I have been overlooking something all along?"
> (Delgado, 1989, p. 2440).

Narratives build shared goals and a community of respect. The sharing of stories from diverse viewpoints can be a powerful tool for building mutual respect and eliding differences. Students commented that they developed a more cohesive vision and greater respect for one another's ideas through the sharing of stories. People are natural storytellers, and well-crafted stories universally share a basic, universal, and trans-cultural structure (Labov & Waletzky, 1967) which is easily learned. The result is improved collaboration, as students readily assimilate story ideas from their colleagues and clarify shared goals with their teammates through the development of character emotions and events. The implications of using narrative for multi-disciplinary practice, or for engaging non-designers in the design process, seem promising from the perspective of students participating in the narrative interventions. "The stories were most helpful in

bonding our student group together and building respect and compassion for our fellow designers and improved our collaboration throughout the project." Another student noted that he or she "really believe[d] that most of each team's best ideas developed from this exchange and that the story became the predominant driver for the subsequent designs."

Enhancing Multi-Sensory Conceptualization and Visualization

By enhancing multi-sensory conceptualization and visualization skills, narratives empower designers with a dynamic means to explore detail and materiality. Stories allow designers to set goals that reach well beyond aesthetic intervention to include the intangible, emotive design attributes that are often difficult to represent through more traditional methods. This emphasis on sensory experience is critical to holistic designing (McKim, 1980).

Narratives are dynamic, active representations. Narrative method captures the dynamic, multi-sensory way in which designs are experienced and used in real time. Story structure contains a beginning, middle, and end, a form similar to moving through a space kinetically. The human experience is represented as a fluid progression. In contrast, traditional 2-D and 3-D graphic communication is static and often favors the visual, aesthetic facet of design, sometimes at the expense of the full sensory experience. While the advent of technology has enabled designers to visualize space as a seamless continuum (as opposed to the traditional approach of designing in perspective "snapshots"), technology does not yet enhance the designer's ability to conceptualize space as an emotional, contextual user experience. Using narrative as a design tool may help create a balanced, fully-dimensional conceptualization of space from the earliest phases of design and client communication.

Narratives enable designers to design for intangibles. Perhaps the most unique aspect of narrative is the way the method empowers designers to consider the intangible aspects of design. Through the act of writing stories, the students were challenged to find ways to materialize

By facilitating holistic thinking, narratives nurture an integrative, systems-oriented view of designing focused on the connections between people, process, and place.

the sounds their users "heard," to engage the tactile senses as their users moved through the space, to stimulate the sense of smell, and to design ways of eliciting the emotions their characters felt in the their storied designs. When utilized at the beginning of the conceptual design phase, narrative helped the students clarify design goals that went well beyond aesthetic aspirations to include emotional connections to design elements. The words of one student support a broadening in thinking: "The stories expanded the design possibilities; I was able to begin thinking more about the whole atmosphere of the space."

Facilitates Holistic Thinking

By facilitating holistic thinking, narratives nurture an integrative, systems-oriented view of designing focused on the connections between people, process, and place. For example, in the classic taxonomy proposed by Bloom (1956), synthesis is defined as a higher-order cognitive process that involves putting together pieces or elements to form a whole. Narratives merge specific thinking with global thinking, and cognitive (intellectual) thinking with affective (emotional) thinking. Holistic thinking is a critical ability for designers who are charged with synthesizing complex, fragmented criteria into a cohesive and meaningful whole. "Designers are seen as synthesizers whose craft is to respond to the various design requirements in an integrative and holistic way. The capacity for synthesis is, by wide agreement, a quality of the creative designer" (Goldschmidt, 1999, p. 526). Narrative methods support this synthesis because stories are inherently relational, demanding that characters and context be established before actions and outcomes can be presented.

Stories are portable social systems. Narratives offer the designer an integrated view of designing that weaves people, process, product, and place together naturally and fluidly. Stories easily incorporate social and physical criteria into design ideas to yield a broader view of design in daily life—that is, how design decisions affect people's emotional well-being, goals and aspirations, decisions and life-course trajectories, and even sense of self. As a result, narratives help designers reflect on our role in

the world as well as on our day-to-day decisions in professional practice (Danko, 2000). Johnson (2001) refers to this encompassing view as "systems thinking" and uses Senge's words to caution designers against the seductiveness of myopia:

Systems thinking implies integration, putting together the whole picture. "From an early age," Senge cautions, "we are taught to break apart problems, to fragment the world. This apparently makes complex tasks more manageable, but we pay a hidden, enormous price. We can no longer see the consequences of our actions; we lose our intrinsic sense of connection to a larger whole." We lose the ability to address and balance all the elements of a given situation, and instead find ourselves optimizing one part in the process, while failing to optimize the whole (p. 1).

Narrative Method in a Studio Setting: Some Important Considerations

Narrative favors verbal thinkers and good writers. Not all of the responses from the students participating in this intervention were positive. Some encountered difficulty in self expression through writing, "Writing the story was not the most productive use of time for me. I'm not a very strong creative writer. My visual skills are obviously much stronger… I became very impatient during the schematic phase because I already see the space and know what it is supposed to look like." This finding suggests a potential learning style conflict between a visual learner and a verbal methodology such as narrative. However, narrative has the potential to make design more approachable to people who are not visual learners and, therefore, may be a good partner to visual methods.

Tendency to narrate rather than design. Another drawback to narrative method in a studio setting was the tendency of the class to embrace designing in narrative at the expense of designing in two and three dimensions. Some students became seduced by the ease with which they could take risks and the greater depth with which they could imagine their design ideas using narrative. Several formed some resistance to developing their ideas in traditional two and three dimensional draw-

An interesting contradiction was revealed in this study.
Design students, commonly thought to be predominantly
visual learners, embraced this verbal method.

ings, wanting instead to continue elaborating their ideas in narrative. It was almost as if traditional methods became too cumbersome when compared to storytelling, yet, clearly, students recognized that the words alone did not translate into interior solutions.

Limitations of the Study and Implications for Future Research

The findings in this study were based on self-reported changes, and therefore only represent the *perceived* potential of narrative inquiry in the studio. Also, student comments tended to emphasize impacts on *process* rather than *product* (although many students did discuss the perceived impacts of storytelling on design product). While this study did not objectively assess narrative impact on process and product, there nonetheless existed some outcomes-based evidence that narrative did indeed affect output. For example, several groups chose to continue to develop their stories in tandem with their three-dimensional methods, ultimately weaving verbal excerpts from the story line into their final visual presentations. These often appeared side by side with the visual sketches that illustrated the ideas being discussed in the story. Other students made a point of including "sound" in their final presentations because the music or background noises were an important part of the designed concept. Future research on narrative that utilizes outcomes-based assessments of both student process and product would be particularly helpful in determining narrative's effectiveness in a studio setting, especially if the assessment uses third party evaluators. Extending the scope of future studies to include practitioner insights on narrative method might address the concerns students voiced in applying this unconventional method in professional practice settings. Several telltale findings from this study indicate it would be interesting to further explore differences in learning styles, skill sets, and product outcomes between those students who readily embrace the narrative approach and those who do not.

An interesting contradiction was revealed in this study. Design students, commonly thought to be predominantly visual learners, embraced this verbal method. Why? Was this small sample particularly skilled in writing, or was it because the act of writing stories is an inherently creative process to which designers can relate? In addition to a focusing on learning style, future studies would do well to not only examine preferences, but also, again, relate them to actual performance related measures.

Summary

The purpose of this investigation was to explore narrative inquiry as a design method in the studio classroom. Based on self-reported changes in design process and product, findings suggested that narrative method was a driving force in promoting a heightened sense of user empathy, enhanced multi-sensory conceptualization and visualization, and a greater tendency towards holistic thinking. This was true for each of the phases of the design process in which narrative method was applied: Programming, Concept Development, and Presentation. In addition, each of the three modes of narrative — reading, writing, and sharing stories — appeared to be an effective complement to traditional 2-D and 3-D methods, providing students with a mechanism to explore not only aesthetic design considerations, but also emotional connections to the user experience.

The study revealed several unique qualities that arose when utilizing narrative as design method, most importantly the ability of narrative to help students shift their focus from an aesthetic consideration of the design and a focus on *product* to an emotional connection *with* the design and a focus on the *person*. Constructing stories helped students reposition themselves as user advocates, embrace multiple perspectives of user experience, and build a community of respect in the studio. How that evolution of student perspective translates into design performance is not yet understood.

The social call of contemporary design places designers in a position that demands a greater focus on the human-centered issues of designing. Ideally, design serves society and is embedded within it. This realization continues to push design paradigms and methods beyond those traditionally centered around material artifacts. As design moves toward an evolving, systems-based view, that encompasses not only artifacts, but also social values, the individual,

and the collective processes that lie at the heart of the creation, new methods are necessary to enable designers to heighten their understanding of different human experiences of space. Because narratives possess a unique ability to give meaning to human experience, they provide the designer with a promising tool to explore and communicate a totality of design experience as a fluid sequence of time and space. By building our narrative competence as designers, we will be building the deep, interpretive abilities needed to humanize our design process, enhance our interpersonal communication, and develop a greater understanding of the human-centered issues of professional practice.

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