

Improvisation Principles and Techniques for Design

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ABSTRACT

Existing research addresses how designers create tools to support improvisation, yet little research explores how improvisation offers tools to support design work. This paper explores the potential relationship between improvisation and design, examining how design can benefit from improvisation. The paper argues that improvisation can build perspectives and skills that are critical for designers, such as creative collaboration, fostering innovation, supporting spontaneity, learning through error, and presenting ideas. The paper reviews the use of improvisation activities by designers in a multi-case study. The applications are analyzed to demonstrate individual and group level outcomes in design work.

Author Keywords

Improvisation, Design, Collaboration

ACM Classification Keywords

H.5.3 Group and Organizational Interfaces

INTRODUCTION

Improvisation is defined as a creative act composed without prior thought. Designers have a history of creating tools to support improvisation [2,7], yet we understand little about how improvisation supports design work. The limited research focuses on the performance aspect of improvisation, which is just one part of the practice. This research considers the use of improvisational performance in participatory design, a process of designing artifacts interactively with users [5]. Users are given props as substitutes for future tools and are asked to progress through their day imagining various uses for the props they are given [1]. Role-playing, or acting as if a certain condition exists, has also been used to prototype experiences [3]. Designers simulate various experiences,

such as traveling on a train, and ask users to spontaneously navigate the experience. While this research offers ways of using improvisation to support design, it is limited to the performance aspects of improvisation.

The emphasis on performance is expected as improvisation has been historically rooted in drama, dance, and music. British director and drama instructor, Keith Johnstone, initially popularized the techniques for drama. His aim was to use improvisation as a way of making actors behave more spontaneously, yet as he developed his ideas around improvisation, he developed broader principles to support a creative orientation on stage. Recognizing that actors are often paralyzed with fear while on stage, he designed exercises to relieve the fear and leave the actor open to creativity and collaboration. The thrusts of these exercises are captured in his directives, “Be Obvious,” “Accept Offers,” and “Fail Cheerfully” [4]. While improvisation is popularly known as a performance technique, and one especially linked to comedy, Johnstone’s principles of improvisation can be fruitfully extended beyond the stage to aid design work.

Improvisation Techniques and Principles

In this paper, I explore how Johnstone’s techniques and principles of improvisation can support design work. To do so, I describe five key areas of application. For each area, I illustrate the use of improvisation techniques through example. I conclude the paper with a discussion of the implications for design at the individual and group level.

The ideas and examples presented were developed and drawn from a multi-case study of designers using improvisation to support their work. The cases are based on improvisation workshops delivered to undergraduate and graduate design students in the Mechanical Engineering Product Design Program and the Hasso Plattner Institute of Design at Stanford University and to practicing designers in the Software and Internet industries.

The following section describes five areas in which improvisation applies to design work: (1) Creative Collaboration; (2) Fostering Innovation (3) Supporting Spontaneity (4) Learning through Error; and (5) Developing Presentation Skills. Although the areas overlap, for clarity, I will discuss each individually.

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Creative Collaboration

Like design work, researchers agree that improvisation may be a social activity [2,7]. Improvisers work with fellow actors and designers. Designers work with colleagues in marketing, sales, engineering, and research. Consequently, both improvisation and design work rely on highly interdependent structures and practices. When an individual takes action, his or her colleagues may either accept the action and build on his or her action or reject the action, ignoring the individual's contribution to the collective work. With improvisation, the belief is that by building on each other's contribution, more progress is achieved [4]. In design, although the stated belief is that the quality and quantity of creative work are improved when coworkers withhold judgment and accept each other's contributions, implicit rejection or "blocking" remains the norm.

A desire to increase social status can serve as an obstacle to creative collaboration. In human interactions, individuals constantly re-negotiate status with each other. Such status negotiations are apparent in brainstorming sessions and design reviews, where designers try to achieve higher status by publicly critiquing others' work [6]. Creative collaboration is achieved by focal attention on the group goal, rather than individual needs and aspirations.

"Group Drawing" is an improvisation activity designed to demonstrate the way in which creative collaboration clashes with an individual's need to be more creative or clever than others. In this activity, the software designers I observed faced a large piece of paper or whiteboard and were instructed to draw a picture together by making one line at a time. The leader started the activity by making one line on the piece of paper. Once the mark was made, the leader held the marker and waited until someone else wanted to add another line to the drawing. The marker was handed off and the next person made his line, again holding the marker waiting until another member of the group wanted to add a line. The drawing was finished when one person was left standing with the marker and no one approached him to take the marker away.

This activity illustrates the challenges of working collaboratively on a single design. This activity ran for 45 minutes until there was little space remaining to draw. Because everyone wanted to make an original mark on the drawing, the drawing became increasingly complicated and experienced "feature creep," like the tendency for product features to increase during the development process, beyond the initial scope of the project. Although often attributed to client's demands, designers may drive "feature creep" when they perceive opportunities for improving the product. In this activity, "feature creep" occurred when individuals jumped up to make a mark on the drawing before seeing what the previous person had contributed. The activity revealed the individual tendency to contribute unnecessarily because of a selfish need to show off rather than focusing on the group goal of making a coherent design. In this activity, individuals could have

contributed by not drawing another line. Contribution to creative collaboration may come through conscious non-action rather than selfish action. In the next iteration, the group discovered they wanted to create a satisfying drawing (or final product), and consequently approached the activity in a different way. The activity was more thoughtful and creative action was taken in coordination with others. The result was a more satisfying and focused drawing (or final product) in less time. Too often, designers work in conflict, rather than in concert. The principle of consciously reacting to and building on each other's ideas can be critical for effective creative collaboration.

Fostering Innovation

Improvisers regularly dare each other to be dull [4]. Too often, by expending energy trying to be original, one fails to notice what is most needed. By "being obvious," one is able to focus on present needs and provide satisfactory closure to an idea. Additionally, improvisers note that what is obvious to one person may not be obvious to another. Being obvious and being innovative are not mutually exclusively, and yet, this is a common tension in design.

Designers described the tension they feel between developing original ideas that are unexpected in the marketplace and improving upon existing successful ideas, or doing what is expected. Within a particular product, they wanted to create features that felt obvious and familiar, yet were also surprising and unexpected to the user.

Improvisers suggest that being obvious may actually support innovation [4]. By being obvious, one devotes less effort to being unique, allowing for more effort to observe what is needed based on the real-world context. This connection between obvious and innovative ideas is further supported when one's perception of what is obvious appears original to others.

An improvisation activity designed to highlight the power of the "obvious" is called "I'm a Tree." In this activity, design students stood in a circle, facing each other. To start the activity, one student stood in the center circle, holding her arms in the air and said "I'm a Tree." Others in the circle were challenged to join the "tree" as another object or person that would appear with a tree. After a few moments, a second student joined the "tree" as an "apple." The third student joined the "tree" and the "apple" as a "worm." The image was complete when the three people were in the center circle. At this point, two students (representing the "apple" and "tree") left the circle and the student representing the "worm" remained. He restated the object he represented and a new image began. A second student joined as a "fishing rod" and a third joined as a "fisherman." While this activity could have been used for idea generation, more importantly, the activity illustrated the satisfaction gained when "complete" images were generated when connecting obvious ideas. Students reported less satisfaction when three independent ideas

representing three independent individuals were forced together to make a complete idea.

Supporting Spontaneity

A key principle of improvisation is the spontaneity of action [4]. In theatrical improvisation, individuals react to the stimuli provided by their fellow actors and audience members. Similarly, designers spend large amounts of time reacting to requests proposed by constituents internal and external to their company. In a traditional product development cycle, designers simultaneously react to internal requests from their sales, engineering, and marketing cohort while simultaneously reacting to external design trends and users' needs. Designers may know the direction of their work, but cannot predict whether the direction will remain the same throughout the course of a project. Hence, having the ability to react spontaneously to one's internal and external environment is crucial.

Spontaneity of action is achieved by breaking free from traditional frames of references and associations. By breaking free, it is believed that individuals can better accept and integrate spontaneous offers. By activating intuitive thinking through contradictory activity, these frames and associations can be broken. Improvisation techniques are designed to develop more intuitive thinking by focusing on free association. To demonstrate how clearly people rely on patterns of thoughts, user interface designers stood in a circle facing each other. The first individual was asked to say a word, and the second individual was asked to say a different word, and so on. Without prompting, a pattern of associated images emerged. Following this activity, the designers were asked to intentionally not associate as they each contributed a word. In this activity, the designers often prepared three or four words that they could possibly use when it was their turn to contribute a word. Although they had a high likelihood of not associating with the words said in the circle, they were not likely listening to what was being said in an effort to remember the words they wanted to contribute. To overcome this challenge, the designers were asked to individually continuously speak a string of words avoiding associations with any of the previous words. Most designers were able to say between five and ten words continuously before realizing that they were associating between words. These exercises demonstrated the difficulty of breaking out of set patterns. Even when individuals found a way to say a string of disassociated words, such as light, paper, floor, open, blue, for example, the words were items from the office environment in which the person was situated. Although it appeared as if there was no connection between the words, in fact, they were associated. These exercises can equally be applied to physical actions as well as spoken actions.

Breaking free from set patterns of behaviors and thought is a continuous challenge for designers at work. Individuals struggle to break out a familiar pattern of reacting to the

needs of the marketing and sales teams or interpreting results from end user testing. Consequently, individuals miss opportunities to consciously react to new information because they are unconsciously reacting as if all information is old. For designers to be fully stimulated and reactive to their environment, they must break free from set patterns of behavior and thought.

Learning through Error

Improvisers aim to "fail cheerfully" [4]. Similarly, designers aim to "fail early, fail often." The assumption in both improvisation and design is that comfort with failure leads people more readily to success. Failure is a necessary obstacle to learning and achieving interesting results. By celebrating failures, one celebrates the process of risk-taking and possibly achieving great results. If one feels shameful and embarrassed by his or her mistakes, he or she is less likely to take a risk the next time. Although this is a simple concept, it can be challenging to implement.

An improvisation exercise designed to encourage comfort with failing, in particular, comfort with failing publicly is called "What are you doing?" In this exercise, design students stood in a circle facing each other. One person entered the center of the circle and began to pantomime a simple activity, typing an email in this case. A second person entered the circle and asked, "What are you doing?" The first person was asked to respond by saying anything but what she was actually doing. She responded, "I'm brushing my teeth." As soon as the second person heard the answer, he pantomimed the mentioned activity. The two people switched back and forth asking each other "What are you doing?" and pantomimed the actions. Due to the strong connection between thought and action, this activity was extremely hard to do. It involved great focus and attention while at the same time maintaining flexibility of thought. Consequently, many students felt they had "failed". When asked "What are you doing?," they described what they are actually doing. If a mistake was made, the person who made the mistake was asked to celebrate by raising his or her arms and say "Ta Da," like a circus performer who has just executed a risky stunt. Others were encouraged to clap in support rather than ridicule. This practice of explicitly celebrating failures helped to normalize failures and realize the potential for learning that can occur. In design, while failure is often seen as a means for success, it is rarely discussed. It seems as if failure is supposed to happen privately and only revealed once success has been achieved. Improvisation offers a technique for celebrating failures as they occur and collectively supporting the effort to re-engage and begin anew, progressing towards success.

Developing Presentation Skills

Storytelling is a core feature of improvisation [4]. To tell an interesting story, improvisers try to understand what features of a story makes it particularly engaging, leaving the audience wanting more. Typically an interesting story involves characters with strong relationships to one another

that are changed because of something someone else does. The pacing of a story, enthusiasm with which it is told, and the extent to which the audience identifies with the characters are all examples of what can make a story interesting.

Designers similarly want to engage their peers and clients to learn more about their design work. While many rely on physical prototypes to show off their work, this often is not enough to capture another's attention. Stories capture the inspiration behind the design and the design principles created as a result. Despite the effort to create prototypes that fully capture the intention, rarely do their accompanying stories receive such attention.

Improvisers use a technique for actively editing stories to create more captivating stories. I observed this activity being used by design students in preparation for a client presentation. The activity began with one student presenting the group's design work. After thirty seconds, another student, acting as a moderator, asked the others if they would like to hear "more or less" of the presentation. If the students agreed that they would like to hear more, the presentation continued. If the students agreed that they would like to hear less, the presenter stopped talking and another student began a new version of the presentation. These breaks to ask for "more or less" of the presentation occurred approximately every thirty seconds. Many presentations didn't last for more than thirty seconds. Using this audience feedback technique, the students could imagine what features of the presentations would be most interesting to the client.

There are many ways to communicate the same concept, however some ways are more interesting than others. Many potentially successful designs die before reaching the market because they did not pass the internal obstacles to market such as being approved by the sales and marketing team. Real-time editing of presentations teaches designers to more easily persuade others of their ideas.

IMPLICATIONS FOR DESIGN

In writing this paper, I had two goals. The first goal was to describe the variety of ways improvisation supports design work. In addition to role-playing with props and experience prototypes [1,3], improvisation can be used to support collaboration, spontaneity, learning through failure, and storytelling. Integrating the principles of improvisation with the practice of design is difficult, and involves the joint expertise of improvisers and designers who are able to interpret the experiences in a design context [3,5].

The second goal was to open a debate about the relevance of improvisation for design work at the individual and group level. Beginning with the individual level, improvisation suggests that designers need a base level of skills for generating a high quality and quantity of ideas. Improvisation supports a practice of learning through error, which although often discussed in design, is difficult to

achieve [4]. A popular design mantra encourages designers to "fail early, fail often," which is easier said than done. Improvisation teaches designers to fail cheerfully, easing the disappointment of failing, saving more attention for learning from failures, and readying designers to move on with confidence and energy. Improvisation also encourages spontaneity and breaks familiar patterns of thought and behavior. Improvisation teaches that creativity comes, paradoxically, not from trying harder to be clever and unique, but by "being obvious" with a fellow designer. When attentively reacting to their environment, rather than relying on set patterns or their own expectations of how the environment "should" be, designers are able to see the "obvious" solutions and more easily develop innovative solutions [3].

At the group level, individuals use improvisation techniques to support creative collaboration and develop presentation skills. As design becomes an increasingly interdependent set of work tasks, the ability to work effectively with others and communicate ideas in a way that excites others about a team's design work is critical. Improvisation offers techniques to support this contemporary formulation of design work.

The value of improvisation is in the potential it holds to unleash creative action for individual designers and design teams. Beyond using improvisation as performance for need finding [3,5], improvisation supports favorable attitudes for achieving great design. Although there is much work to be done to blend the rich traditions of improvisation and design, this paper attempts to introduce a powerful collaboration between improvisation and design.

REFERENCES

1. Brandt, E. & Grunnet, C. Evoking the future: Drama and props in user centered design. In *Proc. Participatory Design Conference*, (2000), 11-20.
2. Bryan-Kinns, N. Daisyphone: The Design and Impact of a Novel Environment for Remote Group Music Improvisation. In *Proc. CHI 2004*, ACM Press (2004), 135-144.
3. Buchenau, M., Fulton Suri, J. Experience Prototyping. In *Proc. DIS 2000*, ACM Press (2000), 424-433.
4. Johnstone, K. *Impro: Improviation and the Theatre*. Methuen Publishing, London, 1989.
5. Kuutti, K., Iacucci, G., Iacucci, C. Acting to Know: Improving Creativity in the Design of Mobile Services by Using Performances. In *Proc. C&C 2002*, ACM Press (2002), 95-102.
6. Sutton, R., Hargadon. Brainstorming Groups in Context: Effectiveness in a Product Design Firm. *Administrative Science Quarterly*, 41, 4 (1996), 685-718.
7. Walker, W. A Computer Participant in Musical Improvisation. In *Proc. CHI 1997*, ACM Press (1997), 123-131.

