

NECESSITY IS THE MOTHER OF INNOVATION: CONSTRAINTS AND COMMUNITY ENGAGEMENT

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Abstract: Within the field of design practice, we are consistently confronted with constraints, imposed by clients, our limited resources and outside circumstances. Usually, these constraints are viewed as necessary, but not enhancing elements of the design process. This paper seeks to identify and investigate how designers might capitalize on constraints (even devising constraints for themselves) and the connection that these constraints have with fostering creativity and innovation. The authors argue that constraints can and should be used as a device and tool for creativity, especially in relation to community engagement and co-creation.

Keywords: *Constraints, co-creation, co-authoring, participation, community, creative thinking*

1. Introduction

"It is easier to enhance creativity by changing conditions in the environment than by trying to make people think more creativity." - Mihaly Csikszentmihalyi

Increasing creative production for ourselves as designers, or with clients, users and participants is linked to a desire to open possibilities and increase options. But exactly how we generate those options is often a struggle, particularly as *what* is possible, *who* we are connected to, and *how* we can produce grows infinitely. In *The Paradox of Choice*, Barry Schwartz puts this question into a larger, cultural context, "As a culture, we are enamored of freedom, self-determination, and variety, and we are reluctant to give up any of our choices. But clinging tenaciously to all of the choices available to us contributes to bad choices, to anxiety, stress and dissatisfaction..." (Schwartz, 3) Obviously the design process forces this confrontation on a regular basis, most often in the generative stage where we often privilege a 'more is better' approach to avoid the feeling that we might miss something profoundly innovative. This tendency is also apparent when we engage in research with clients and communities, often favoring the open generation of ideas without the necessary selectivity that is ultimately needed to move forward or to have a firm grasp on the path to take. Devising and implementing constraints in the generative phase of projects can move us from brainstorming to new modes of problem-solving; from possibility to necessity.

As a means to challenge ourselves, to create exercises to free our minds, is possibly and for the most part how designers have used self-imposed constraints. But, as the field of design is shifting to increased participation and co-authoring, how we encourage collaborators and co-creators to successfully identify a problem or opportunity begs for new methods and processes. There is provocative work by designers such as Elizabeth Sanders, Johnathan Harris, architect Walter Segal,

IDEO's Human-Centered Design Toolkit that incorporate constraints in collaborative projects to enhance creativity.

This paper seeks to investigate how designers can actively use constraints in co-creative processes as a means to encourage creativity and innovation with clients and communities. By deliberately selecting these constraints we seek to encourage "adjacent possibilities." As defined by Stuart Kaufman and adapted by Steven Johnson in his book, *Where Good Ideas Come From: The Natural History of Innovation*, the adjacent possible explains the evolutionary goals organisms seek that lie just outside the current context of behavior. Each organism strives toward a higher level of complexity, seeking the untapped potential of what could be, yet relying on a whole series of subsequent innovations that wouldn't evolve without first meeting what Kaufman calls, *leveled change*. In Johnson's adaptation, the adjacent possible refers to a creative and innovative focus on the periphery of current thinking and possibility, rather than an entirely new paradigm or structure. This is especially critical as a method for community engagement, where individuals are not immersed in the issues in which we are asking them to participate, have a limited perspective on the topic, or are not as invested in the solution as we might want them to be. Thinking about how we address these issues as a series of adjacencies might begin to minimize the scale of the issue in the minds of community members and encourage the agency that is vital to participatory work. It is also in these adjacent spaces where true innovation occurs, because it stretches us beyond our current thinking, providing the necessary bridge to revolutionary thinking and lasting change.

In today's world, networked culture, innovation and good ideas are emergent. Moving from the bottom up rather than top down. The role of the designer has shifted drastically from telling our audience what to think to asking our audience what they think. But, without clear constraints for participation and co-creation, new ideas stray into unknown and confusing territory. Adjacent possibilities turn into tangents and contradictions (not always bad, but often times muddled.) According to Clay Shirky, author of *Cognitive Surplus* "When the general public began using digital networks, the idea that everyone would contribute something to the public sphere was assumed to be contradictory to human nature. And yet our desire to communicate with one another has turned out to be one of the most stable features of the current environment. The use of tools that support public expression has gone from narrow to broad in the space of a decade. (Shirky, 190) So, our role as designers is not as much about inspiring participation as it is about creating environments for co-creation—environments that rely on constraints to illuminate creative possibilities. Our users become collaborators and our clients become partners. And throughout this process, the network of participation, co-creation and partnership becomes stronger. It builds a stronger internal community, which as an outcome has the potential to build a stronger external community.

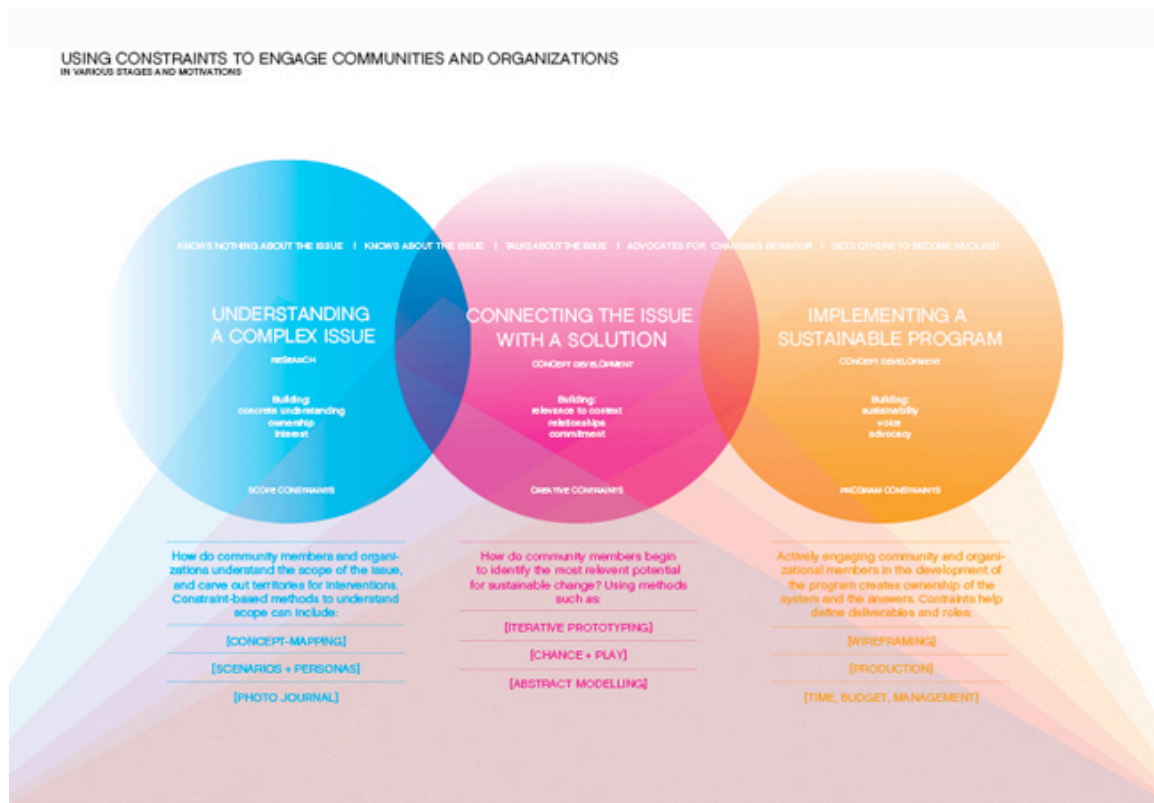


FIGURE
Figure 1. An overall framework for using constraints to build community engagement

2. Building constraints for community engagement and co-creation: Cases in action

2.1 Using Constraints to Build a Community Skate Bowl

Building constraints to engage a diverse body of individuals in the skate community, designer and skate community activist Tim Barse devised a series of projects that incorporated constraints of structure, tool development and community knowledge to facilitate imagination, speculation and innovation in how to co-develop a community skate bowl in Richmond, Virginia. By including a diverse body of co-creators in the process of designing this skate bowl, Barse incorporated constraints of knowledge, personality and ability into the design process.



FIGURE

Figure 2. Richmond Skate Collective | **Figure 3.** Richmond Skate Scene

Skateboarding developed in California in the late 50's as an extension of surfing practice and so is tied to the agenda of that culture. Urban environments, empty pools and later designed parks became spaces to ride and perform tricks perfecting the art of surfing on land. As skateboarding matured and spread across the United States to places unfamiliar with surfing, it developed into a subculture all its own.

Richmond, Virginia is home to a vibrant skate scene that has advanced from using existing urban spaces, such as railings, stairs, ledges, and small backyard structures to several well crafted skate sites. Two types of building projects prevail in the skate scene, the backyard, and the professionally built structure. The backyard constructions are unorganized, unplanned, and maintained only for a brief period. The professionally built skate bowls are usually funded, and are both designed and built by professionals. Complexity determines who can build the park, so as expected the backyard work tends to be fabricated in an ad hoc manner with found or inexpensive materials.

The motivation to create a bowl for the Richmond skate community arose from several key individuals with the desire to blend the existing vibrancy of the street scene with the vertical maneuvers found in bowl parks, and improve upon the pool skating experience. Skate parks are designed to provide unique challenges to their users and typically can fall into three categories: a bowl, street plaza and a flow park. Tim Bearse, an avid skater, was a significant catalyst for both phases of the project, leading both the design and construction steps. A native to Rhode Island, Tim relocated to the city for graduate studies at Virginia Commonwealth University. His varied background in sculpture, construction and carpentry afforded him the skills necessary to pursue this complex undertaking. After some discussion about the limits and goals of the Richmond skaters, Bearse began to fabricate Phase One of what would become a two-part project in June 2009. Though the group didn't have a clear idea of where the bowl might eventually be housed, the project built momentum and helped to reform a loosely knit group into a tight community with a common goal. Phase One was placed in a permanent, enclosed environment and the stakeholders became a unique group of 26 members who each pay an initial buy-in cost, a monthly rent for building expenses, repair, etc. in order to become key holders of the facility.

It is important to note the particular constraints of the skateboarding culture and this project. Such as the subcultures independent attitude, availability of labor time, insufficient funding, design and construction skills of participants all were constraints Bearse and the group had to surmount. Rather than see these constraints as limitations Bearse saw them as opportunities and developed tools and methods to use them.

As an extension of surf culture skateboarding is also viewed as an outsider's sport. The outsider persona, the preoccupation with style, the living in the moment attitude with few goals or aspirations, all of these were embraced and developed to become community building tools. As a group skaters are viewed as reckless and rebellious and distance themselves from organized leadership. Bearse identified and defined this constraint as an opportunity to generate a non-hierarchical atmosphere as an open, co-design process, inviting all the stakeholders into the undertaking, and relying on their direct involvement. In an interview he stated, "This community operates on a casual set of relationships and so setting the conditions for individual participation in the process was difficult. The designer must know the individuals he or she is working with, identifying their strengths and weaknesses. And to move the project forward there must be an established curiosity amongst the group in order to ask the right questions."

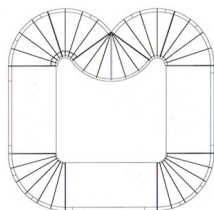
The strength of this group's rebellious nature lies in their audacity to realize the project independent of any institutional negotiations. Stakeholders in the collective are small business owners, bike

mechanics, fine artists, construction managers, college faculty, waiters, factory employees, commercial photographers and real estate agents. In this case the designer took a non-authoritative stance, and developed a flat hierarchy in an open design process.

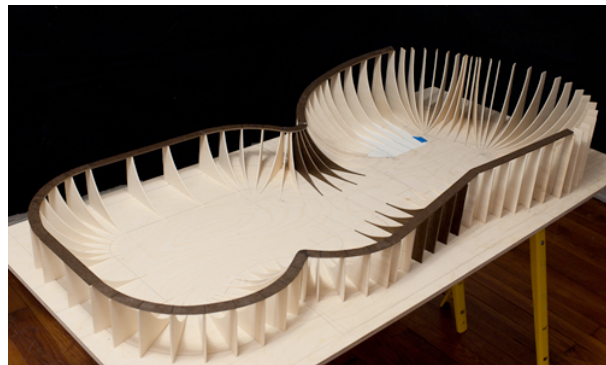
Phase Two, focusing on space expansion and began with the stakeholders, each were asked to give creative input through various methods. One of the main goals of Phase Two was to create a structure for furthering the member's skating virtuosity, creating an addition complex enough to push the current skill sets of the individuals who regularly skate there. This goal intentionally strengthened the community because of the difficulties outsiders have using the bowl.

First a template with a line drawing of the existing structure and the blank space designated for the addition gave a strict, constrained foundation on which to build. Second, they were asked to draw a sketch of their ideal addition. This combination of openness and constraints produced results that ran the gamut of imagination. Bearse then interviewed each stakeholder individually to discuss their drawings in an effort to understand what the co-designer was thinking through the design and sketch phase. He also collected information through observation of individual skating styles and skill sets of the group attempting to correlate that knowledge into the structure's formal properties.

After many drawings and conversations a model was constructed, and discussions were held concerning the final design. Once the group was satisfied with the plan, construction began. Stakeholders were drawn into the building process using tools and construction methods for those with little to no building experience. For example, a large trammel arm saw was built to layout an elliptical transition for the new deep end of the structure. The circular saw was mounted on the arm with adjustable lengths in order to cut 2 x 6's at a radius for horizontal supports. Several demonstrations were held to teach others how to operate the saw.



phase II



FIGURE

Figure 4. Information Gathering, credit, Tim Bearse | **Figure 5.** Model Building: image credit, Dave Weaver

Primary builders were recognized because of their particular knowledge to guide construction, teach others through demonstrations, and use specialized tools. For example Adrian, a key holder and a painter with a fascination for geometry, was particularly good at fitting skate light, a material that lines the surface of the bowl. Because the material is reused it often comes in irregular shapes making it difficult to fit into the curvilinear space. Christopher did the coping, which meant procuring the steel pipe, having it rolled to a specific radius at a machine shop, fitting and welding it together, and finally grinding and shaping all the welded sections to a smooth, uniform surface. Christopher noted, "People are very particular about how far the coping protrudes from the ramp and deck. The coping's character affects the way you skate, so I feel a big responsibility to the rest of the group. I try to get input from a few people before I weld it into place."

Bearse identified the existing constraints of the group and project astutely. But, he did more than that. Throughout the conceptualization and production phases of this project Bearse took what were loosely-defined constraints and managed them into strict constructs that co-designers could capitalize on. From building tools to accommodate low skill-sets to devising generative conceptualization processes that responded directly to the outsider-nature of the skate community, Bearse effectively developed constraints that ultimately created a community-based environment that everyone who was a part of the process felt a sense of ownership. The use of these constraints in this community based environment has also provided a structure for new members to join the community through the further development and management of the skate bowl.

2.2. Using Constraints to Build Community Engagement in Response to Domestic Violence.

In this second case the purpose of constraints focused on devising programs and initiatives that directly attempted to build community engagement. In this case study, constraints were a critical tool in helping a non-profit organization identify provocative and sustainable programs that would help community members make meaning of the utterly complex and overwhelming issue of domestic violence.

In Dorchester, Massachusetts resides an organization whose mission is to “build strong communities to prevent domestic violence.” Through creative communication, grassroots campaigns and consistent and frequent events in the community, their goal is to build self-sustaining networks where friends and neighbors turn to each other in times of crisis and ultimately prevent domestic violence. The dominant issues in this mission are twofold: (1) to reform the issue of domestic violence from an individual one to a community-based issue in need of community-based solutions and (2) to build stronger, self-sustaining community networks and collaboration that are actively working to prevent domestic violence.

At a certain point the organization faced a critical issue. The programs that they were implementing were not embodying the critical aspect of building self-sustaining networks. They kept finding themselves at the center of the community engagement rather than neighborhood members provoking and initiating the engagement independently. As the executive director of the organization put it, “Our core mission rests on creating excitement and engagement within the community, something that will last far beyond our existence here. In fact, it cannot work unless it is independent of this organization. The only way to foster lasting community engagement is to make it fun, and real, and genuine and to help people realize their own creative potential as a catalyst for something bigger than themselves.” They were seeking the element that was at the core of their engagement efforts with the potential to be formed and reformed to encourage creative capacity.

In this situation, devising constraints for the organization’s staff to understand, empathize, and identify important moments and strategies for engagement was key to their workshop and training sessions. These constraints also fed into the ultimate strategies that the organization would use in their engagement with residents in the neighborhood. They were using constraints in a workshop to understand the core issues of their strategy, but also as a model for how they might engage neighborhood residents in the campaign that they were devising. They used constraints to identify the problem, but also to provoke a continued engagement.

As a technique for understanding the issues, a specific situation was presented to the organization’s staff. Through a method of defining personas and scenarios, which is inherently constrained, staff members visualized and imagined specific situations and how specific residents (both fictional and real) would react in those situations. What would make residents stay at the door talking about domestic violence in the community? What would encourage residents to re-engage, come to an event, and ultimately advocate for stronger community interventions? How could community members and residents move from an abstract understanding of domestic violence as something that didn’t impact them, to a concrete one where they could see the affects of it in a variety of situations that both

directly and indirectly impacted their neighborhood and larger community? A variety of motivations, needs and desires were identified. But most importantly, staff members got into the heads of the people whom they were attempting to engage. The constraints of utilizing specific scenarios provoked a necessary insight into how they might more effectively engage people by visualizing a specific instance or situation that the staff members could play out in in a specific and concrete manner.

A second strategy implementing constraints asked staff members to imagine a single item that they might give to a community member that would necessitate a retrieval or feedback loop. What they gave out had to come back to them. A metaphor given to them was that of a boomerang or a self-addressed postcard. This, coupled with the motivation outlined in the first strategy, helped the group quickly focus in on growth, food and sustenance. That became their core element. They were asked to map out this feedback loop. This was another way to move from the abstract to the concrete, making decisions that elevated certain components over others as a method for selective focus.

The team ultimately devised a plan that included giving community members a plant or a recipe notecard and asking them to bring it back as ‘payment’ for a large community dinner. In a low-income neighborhood such as this one was, having food at the core of the methods provided a very real service. The plan will also serve the overarching goal of building healthy community through the breaking of bread.

Throughout the process, staff members worked in pairs, and with some difficulty through both the generative and selective phases of the design process. Ultimately the difficulty they had with the project contributed to an intense feeling of success when the breakthrough—the focus on food and breaking bread as a core element to their program—finally happened. These breakthroughs don’t always materialize at once or in complete form. The constraints imposed upon the group, however, served to generate mini-breakthroughs at points throughout the process so that a general feeling that success was on the horizon prevailed. As a tight knit group, it was unclear how this process contributed to longer-term community among the staff and participants in the workshop, but it was evident at the end of the workshop that there was an enhanced camaraderie among them. That was especially evident at the point of their breakthrough.

3. Conclusion

Responding to constraints is not a new idea in design, but what these case studies reveal is that we, designers might find new benefits in how we use them for engaging communities and even clients in a co-design and participatory processes. The real benefit of the constraints in both of these case studies was the reframing of seemingly abstract issues into concrete, operational ones. Constraints we implemented not just in the generation of ideas, but also in the problem-solving and critical thinking necessary to think through the implementation and production of solutions. Imposing restrictions required a group to look beyond the design problem to find solutions. The lack of construction skills and the Richmond skate communities individualistic attitude could have been insurmountable impediments. However, Tim Bearse used his knowledge of the group, identified individual’s capabilities and directed those into specific roles mobilizing the group into action. The end result of the project was a community-based environment in which many have ownership in.

Just as a grid in design serves as an armature on which a designer can generate formal variations, constraints become a means to produce interventions that the community might not reach otherwise. In the case study on domestic violence, the organizers lacked definitive direction dealing with the complexity and abstraction of their initiative. The constraints became a critical tool for helping staff members make meaning of the many options and ideas that they had. In breaking apart the problem, looking at it in pieces, and through constrained lenses, the organizers could focus their creative energies in isolated areas as a means by which to understand the core of their larger strategy. Members of the staff who were residents of the neighborhood had an added benefit of not only learning the extent of the issue but also were able to devise self sustaining strategies to encourage facilitated

networked collaboration. Many of the strategies that were used with the staff of the organization, also worked their way into campaign strategies for how the staff members would talk with residents—asking them to map out the impact of domestic violence on their own home and community, and using scenarios as a specific, concrete method to begin a conversation about how community members might respond.

What this research hopes to ascertain is the lasting effects of this work. How do community initiatives continue to develop after the designer has left? Will additional work be initiated with the use of constraints? In what ways will the connections among individuals grow? Often the abstract nature of problems lack of resources, or contextual can be discouraging and overwhelming for a group that many projects fail before they have even begun. It is evident, however, that everyday individuals are eager to change their communities through design interventions. The designer, in the role of a guide, can equip collaborators with techniques for solving these seemingly insuperable issues. In both case studies the designer provided techniques, tools, demonstrations, and methods through a series of constrained exercises or programs that the community responded to. Over the project's length these methods allowed collaborators to first, understand the issue, then form a response, devising clear trajectories of what needed to be done, and finally taking part in producing a solution for that issue. Community members were able to make critical judgments surrounding the problems because the project was divided into manageable segments and it became possible for a very abstract idea to become a more concrete one.

Defining constraints has been an important component of the design process and their use has had positive effects in a community-based participatory design process. It is apparent this type of creative production encourages, facilitates and drives personal growth, individual and collective agency and critical thinking. What is core to this research moving forward is the lasting effects that constrained methods have in building enduring social capital. Does this have a lasting effect on the local community? What will be the sustained ownership over the projects life cycle and beyond? Will people be able to efficiently acquire the skill of using constraints so that they may use them in other aspects of their lives?

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