TEN LESSONS IN DESIGN AND FAILURE

John Sharp and Colleen Macklin

illustrated by Steven Davis with Yu Jen Chen

diagrams by Tuba Ozkan and Carla Molins Pitarch

9 Methodological Processes: Nathalie Pozzi, Architect, and Eric Zimmerman, Game Designer

The players frantically tossed large cardboard boxes in an attempt to block their opponents, who in turn were trying to get two balls linked with rope across the field. They were playing *BlockBall*, a fast-paced strategic sport created by game designer Eric Zimmerman. He invited architect Nathalie Pozzi to this early playtest of the game so he could ask her advice on the play space and the design of objects in the game. As Nathalie would relay later, "it was looking pretty bad."[1] The rules of the game were fine, but the way the play interacted with those cardboard boxes and the linked balls was disastrous. Yes, it was a prototype, so the materials weren't the focus. But even so, Nathalie was responding to the scale, the shapes, the length of the rope connecting the balls, and most importantly, how the physical

Nathalie Pozzi and Eric Zimmerman. Photo by Shuangshuang Huo.

elements related to the human bodies that interacted with them. They were all *off*—they just didn't communicate the drama of the game to the players. Nathalie's input turned a somewhat clumsy prototype into a much more spatially aware *BlockBall* in its debut at the 2009 Come Out and Play Festival, a street game festival in New York City. And so a collaboration between the architect and the game designer began.

Since Nathalie's invaluable consultation on *BlockBall*, Nathalie and Eric have created six installations—the term they use to encapsulate the shared disciplinary concerns of games and architecture about space, material, and social interactions. Their projects have been installed at venues like New York City's Museum of Modern Art, the Smithsonian American Art Museum in Washington D.C., La Gaîté Lyrique in Paris, and the Museum of Science in Boston. The installations include *Cross My Heart and Hope to Die*, a labyrinth with no right angles where individual team members form walls to protect or hunt creatures from Greek mythology; *Flatlands*, where participants debate the aesthetics of 200 vintage board games contained within a sleek, modular archive; and *Starry Heavens*, a competitive fable involving large steel plates and giant floating weather balloons. The installations often have a subversive element to their play, enabled through the architectural design of the playspace. In *Interference*, players meddle with other players' adjacent games, stealing pieces from each other as they mischievously look at each other through a perforated screen. The installation *Sixteen Tons* is a circular gambling pit where contestants bribe one another with the cash they have in their pockets in order to move large steel play pieces. *Waiting Rooms* is a theatrical meditation on bureaucracy and all its trappings, starting with, of course, a waiting room. The architectural elements of Nathalie and Eric's installations often eschew straight lines and right angles for a sculptural impact that is as playful as the activities that take place within and among them.

Game design and architectural design merge to create a complete experience, often shown in an art context. These dynamic installations bring play and interaction, laughter and exclamation into museum and gallery spaces typically reserved for quiet contemplation. However, while Nathalie and Eric's installations might encourage unhindered playfulness, there is a consistent, methodological process that went into the development of each of them—a methodology that merges the best practices of architecture and game design.

Nathalie's architectural practice was influenced through her studies in Venice and her upbringing in a small mountain town in the Italian Alps. In the Alps, traditional architecture followed the needs of the family and the dictates of harsh winters, integrating the barn into the living space to take advantage of the warmth of the animals. As she describes it, "the house was a machine for a specific type of living." Nathalie's grandmother's home was designed in this way—and it helped Nathalie form an appreciation for functional designs with a monastic simplicity of form. She brought these influences into her architectural studies at the Università Iuav di Venezia, where functional design based on tradition and history was coupled with a contemporary use of material and form. In her time at the university, she was introduced to a wide array of practices, including those of artists and sculptors using architectural language to explore abstract concepts.

Nathalie was particularly influenced by the work of Ilya and Emilia Kabakov and their installation *The Man Who Flew into Space from His Apartment*. In it, one walks into a messy studio, where there is a chairlike catapult in the center of the room, above which a hole bursts through the ceiling. Nathalie's collaborative work with Eric would be influenced by the implied story of this installation, expressed solely through the space: a cot, a workbench, a hole in the ceiling, and debris on the floor from the catapulting. Her interests—the utilitarian and vernacular design of her grandmother's home and the conceptual explorations of installation art—found their way into her practice, fusing both architecture and the arts, coupled with a precise eye for material and craft. She moved to the United States where her practice has spanned residential architecture for clients and sculptural projects with artists, consulting on installations for the Yokohama Triennale of Art, the Florence Biennale, and the Royal Academy of London, to name a few.

Eric Zimmerman always made games. As a child, he would create elaborate games with army men for his friends to play. He went on to study painting in college, but by the time he was graduating, he says, "I was doing things that really looked like games."[2] After graduating with an MFA in art and technology from Ohio State University, Eric found work at R/GA Interactive in New York City where he collaborated with game designer Frank Lantz on the videogame *Gearheads*—a sort of chess played with windup toys—reminiscent of those games with army figures Eric had invented in his childhood basement. This was the first in a set of game

titles that innovated either through new styles of play or unusual content. *Sissyfight 2000*, for example, was one of the first online social games to be played on the web, and perhaps the only game of its era (or any era, for that matter) to explore the politics of young girls in a playground. He went on to cofound his own company, GameLab, best known for the time management game *Diner Dash*. Eric forged the path for independent game design—exploring games more deeply as culture—and also came up with new kinds of gameplay. He coauthored the influential *Rules of Play: Game Design Fundamentals* which established a philosophy of games as systems with rich meaning emerging from their play.[3] The book cemented a design methodology focused on the player, and a prototype-playtest iterative design cycle. After GameLab closed, Eric helped found the NYU Game Center at New York University, where he is currently a professor. Eric continues to pursue a variety of independent game projects (including an ongoing collaboration with the authors of this book through the company Local No. 12).

All of which catches us up to Nathalie and Eric's collaboration.

Possibility Spaces

Nathalie: No more grids.

Eric: As a game designer that's where I start from, the grid.

Something you quickly realize when talking to Nathalie and Eric is that these are two people who truly respect what each brings to the table, but they are also not afraid to disagree with one another to advocate for something that they strongly believe in. In fact, when asked how they resolve creative conflicts, Nathalie's answer was, "We fight a lot." (As Nathalie said this, Eric laughed and agreed.) The fighting, however, is of the productive kind. They push each other to question their field-specific assumptions. Often this takes the form of a challenge, like the ultimatum "no more grids"—Nathalie's challenge to Eric came from her sensibility as an architect, pushing against traditional forms. But for Eric, the grid is a go-to in game design, the ur-form upon which most games are built (think of chessboards, football fields, even pixels on a screen).

When Nathalie challenged Eric to stop using the grid, she provided what is known in game design—and design in general—as a constraint[4]—a rule

Interference screen. Photo by Maxime Dufour Photographies.

that would force a playful solution. Interestingly enough, the emphasis on rules in their methodology mirrors the rules one finds in their installations. The paradoxical relationship between rules and play[5]—that strict rules lead to playful creativity—is found throughout their collaborative practice. In other words, they have derived an ordered methodology to generate playful installations—rules to generate play. For Nathalie and Eric, constraints take the form of rules presented as a challenge or a goal. Not using a grid proved to be a fruitful constraint (as design constraints tend to be), radically influencing the look and feel of the microthin screens for their installation *Interference*, in which participants interfere with the games of other players by stealing their play pieces. Suspended, microthin steel screens act as vertical game boards with organically arranged holes resembling biological cells. Competing players paired on either side of the screen face each other and insert cylindrical wooden pieces into the cells on the screen. By eschewing

the grid, Nathalie and Eric created a striking set of cellular-like spaces—as they call them, "cell colonies"—to play within.

One of the primary constraints Nathalie and Eric work with is the context of each installation—where it is located, when it will take place, and who will play it. Because their work is installed in various locations, the space each installation will exist in is a key consideration in its design. In architecture, context (or "site") provides a defining constraint to work with. Returning to the example of *Interference*, the location was a transitional space between a staircase and a bar in Paris's digital arts center, La Gaîté Lyrique. Observing how individuals flowed through the room gave them the idea of creating a passageway—a space you would move through. The context of the space provided the form for their installation—one that would work with and direct the flow of human traffic. Nathalie came up with the idea of gossamer-light steel screens bisecting the space, and dividing players from their opponents, as they interacted through the cells in the screen. The passageway context, then, informed how players would interact with the piece.

A performer calls numbers in *Waiting Rooms*. Photo by Ida C. Benedetto for Nathalie Pozzi and Eric Zimmerman.

Their most recent project, *Waiting Rooms*, on the other hand, didn't start with a location, but instead was designed to be played in a variety of contexts. However, there was still a constraint: no reading of rules. In fact, this constraint was the origin of the piece—Nathalie and Eric wanted to create an installation that would allow participants to simply begin playing. The constraint materialized from something they had learned from their previous projects: Deciphering rules is a barrier to participation. (If you've ever played a new board game, you would likely agree that reading game rules is not the most scintillating activity.) Without anything more to guide them than the fact that they wanted to avoid rules reading in their next project, they began conceptualizing. As they explored solutions to the challenge, they landed on the idea of a generic waiting room, inspired by Nathalie's experience with the U.S. visa and immigration process. Visitors (the term they use to describe participants) would be assigned a number and begin the game in the waiting room, awaiting the calling of their number. Once called, they explore different rooms, performing according to instructions provided by actors positioned throughout the building. Nathalie and Eric have shown *Waiting Rooms* at a variety of museums and in a variety of other buildings, each time customizing the activity to use spaces for various moments in the experience. The experience itself is disorienting in the way that bureaucracies can be—a maze of arbitrary rules and unclear outcomes. While participating, many ultimately seek to subvert its systems, seeking a way to "win," even though the goal is left ambiguous. And that's exactly the point.

Nathalie and Eric's work puts into relief the systems that underlie our everyday experiences. These systems might be bureaucracy (*Waiting Rooms*), labor (*Sixteen Tons*), or even games themselves (*Interference*). Their installations become a metaphor for the challenges of the contemporary human condition. On their surface, the installations look like minimalist, abstract structures, but once they are engaged with, the metaphor becomes clear. However, in these metaphoric experiences Nathalie and Eric insert a twist: the opportunity to playfully subvert the rules of the system. In *Waiting Rooms*, for example, this subversion is exemplified by how visitors either resist or follow the rules they are subjected to, or how they attempt to set their own goals in the absence of a clear goal defined by the experience. Often the experience of the installation calls into question the structure of games and rules themselves. As Nathalie describes:

Our games are austere, classical, they often feel like classical strategy board games, on a large scale. But we also like to break the rules of how games usually work, we like to play with what's proper, so in *Sixteen Tons*, you are taking real money out of your pocket, and bribing people, and at the end of the game the rules don't tell you what you're supposed to do with the money. With *Interference* you are actually stealing the pieces from other people's games (interfering with their games), so you are actually reaching and taking pieces from other people's boards on another part of the wall.

When we interact with Eric and Nathalie's installations, we activate them through our participation, in the process transforming them into something else—a performance, a happening, a dance party, a role-played meditation on life. Their installations "break the rules" in games, architecture, and the human experience to create something new.

Nathalie and Eric combine material built environments and immaterial rules to create a "possibility space."[6] While they use metaphors to guide our interpretations of their designs, it's up to each participant to create their own playful strategies within the space provided by the rules and the built environment. In games, a possibility space is an abstract decision space containing all the possible moves at any given time during play—all the moves a player could make in a game of chess, for instance. The possibility space of architecture is generated through the interplay of form and function, context, and the needs of the community or client occupying that space. In essence, humans play within the built environment,[7] and they play within the rules of games. To design buildings and games is to recognize the possibility spaces they create. And to be able to recognize and manage all of these possibilities involves … playtesting.

The Proof Is in the Playtest

Nathalie and Eric share a consistent methodology that stitches together their fields and helps them manage the complexity of the possibility spaces each project opens up. They use constraint (no grids) and context (a passageway) to establish their intentions and focus on a specific outcome. They begin with a concept from real life, or see one emerge metaphorically in play. But in order to "see" their design and the possibility spaces it opens up, they incorporate playtesting.

Playtesting is an all-important and well-known step in the iterative process of game design. We've looked closely at this in our book *Games, Design*

and Play: A Detailed Approach to Iterative Game Design, where we identify the four main steps in the iterative cycle: conceptualizing, prototyping, playtesting, and evaluating the results.[8] While it is at times painful to see players struggle, playtesting is a necessary, important, and often revelatory step in Nathalie and Eric's methodology. As Eric puts it, "Ideas are cheap, but playtesting is truth."

First, a bit of background on playtesting within the field of game design. Playtesting, as it sounds, is testing the way a game plays. In essence, a game is a dynamic system that only takes form when it is activated through play. When it's not being played, a game is little more than a set of written or coded rules, or perhaps some objects like dice, cards, balls, and markings on a field. To see the dynamics of the rules and objects come together, someone needs to pick them up and play with them—otherwise it's almost impossible to imagine how the gameplay will look and feel. This is because the rules in games often generate emergent outcomes that are difficult to anticipate—possibility spaces! Different people have different play styles and use different strategies—often ones that the game designer would have never anticipated.

Playtesting is something that should happen early on and quickly in order to, as designers call it, "find the fun." In game design, to get to a playtest, one first needs a prototype—a playable version of the game. It's ideal to prototype as quickly as possible to get to the playtest—and it's relatively simple to prototype a game to see if it's working. One can simply describe a rule—rock beats scissors, scissors beats paper, paper beats rock—and then immediately test it. Even technologically advanced 3D videogames are often prototyped simply and effectively on paper.

Within the field of architecture, "playtesting" is not an operable term, even though designing spaces also involves an understanding of systems dynamics and the complexities of human and social behavior. Architecture is materially difficult to prototype and playtest at human scale. To build at scale simply to test a design would be a Borgesian task—like creating a map that is the same size as the territory.[9] To prototype their ideas, architects create representations in the form of sketches, models, and renderings. In many cases, games and buildings share simple origins on paper. Architecture is also tested in that representations, in the form of renderings, are presented to clients and, in some cases, to other stakeholders impacted by the impending structure.

Other strategies architects use to mitigate failure and "playtest" are based on history and experience. Nathalie describes the closest thing to playtesting in architecture as the lessons that can be learned from already-completed buildings—picking up hints from materials, motifs, and scale from architectural history, the work of others, and their own previous projects. So while playtesting is a well-defined practice in the domain of game design, in architecture, testing designs encompasses a variety of activities, from studying built environments and their use to presenting plans and renderings to clients and stakeholders.

Despite these differences, playtesting is an integral part of Nathalie and Eric's collaborative methodology. As Nathalie puts it, "we have to make a project say something we want to say." But how does one use the abstract language of architecture and games to say something? The answer is to have a strong methodological process that hinges on iterating through successive prototypes and playtests to get closer to what Nathalie and Eric want to say. And it's through playtesting that failures in the design—large and small—become painfully evident. As a case in point, we'll look at the process in designing the "no grids"–inspired *Interference*.

The spatial and sensory effect of *Interference* is stunning, with thin vertical steel screens resembling a futuristic interface upon which the secret language of the game moves in an irregular, biological pattern. The early iterations, however, were completely different.

Through conversations with staff at La Gaîté Lyrique, where *Interference* was commissioned, Nathalie and Eric knew that they would be creating a piece for a particular context—a long passageway. They began thinking about an activity that took advantage of the length, and a form to sculpt the space. As soon as they had a vague idea—a wall or line to divide the space and the players—they developed a rough prototype to see if that could form the basis for a game. An early prototype of the activity started in a park with bamboo sticks laid on the ground to represent a wall, and a ball used in a fashion similar to a bocce ball. Participants were asked to pretend that the sticks were a wall that was separating them, so they all looked down to the ground and played along the walls. Nathalie describes the moment they started playtesting as a total disappointment. Witnessing how antisocial the gameplay was, with everyone looking down and not at each other, brought her to tears. Indeed, this kind of heartbreaking

Interference. Photo by Maxime Dufour Photographies.

moment occurs often in a playtest, when you actually "see" the game for the first time.

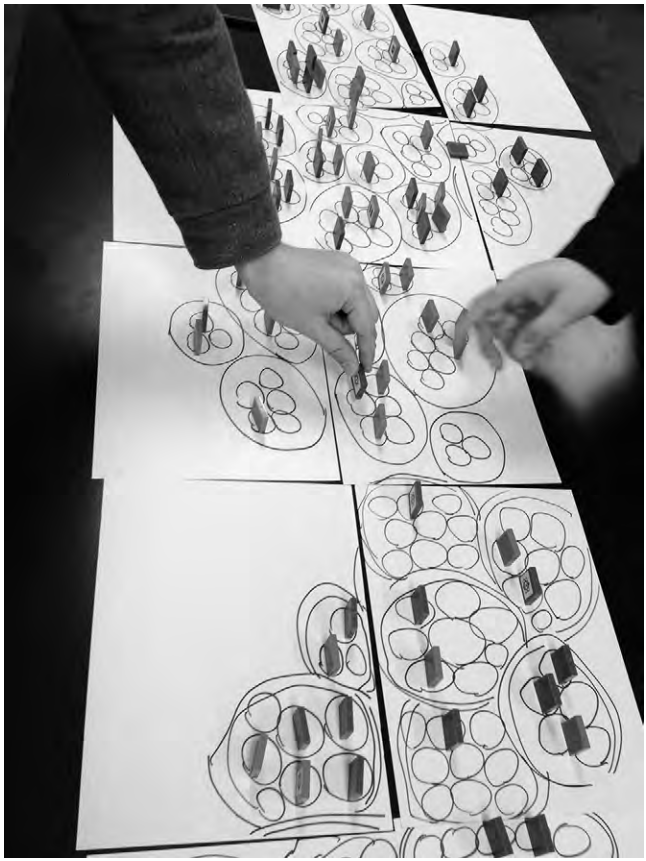
Pain is an integral part of Eric and Nathalie's process. It's difficult to observe players struggle to make sense of rules that to you, the designer, seem perfectly clear. As Nathalie describes it, playtesting is "cruelly revealing," largely because it puts into plain view the things that aren't working. Eric explains,

> While playtesting is cruel, it's healthy that it's cruel; it forces you to confront the truth of your design. Ideas are cheap, but playtesting is truth. So you might have what you think are brilliant ideas, but when you get someone actually interacting with it, it's just shit that breaks on the rocks of reality.

Playtesting can surface a variety of ugly realities in a design: The goal is unclear, the rules are easily exploited, it simply is not a fun or engaging experience. It's painful for the designer, and it's not always a pleasant experience for the player, either. It takes time and experience to cultivate a taste for playtesting. Eric likens it to developing a taste for spicy foods; you begin to look forward to the pain. Remaining open to players' comments and, beyond that, listening and observing intently for clues to improvements in the design are part of the art of playtesting. Learning to evaluate playtests is similar to a doctor observing symptoms and homing in on their underlying cause. Playtesting is like a pathology for prototypes; when something in the design fails, it provides the designer with the data they need to evaluate the cause and find a solution, a path toward their next prototype.

So, rather than give up, Nathalie and Eric responded to the devastating playtest for *Interference*, when players looked at their feet and not each other. They established a new constraint: to make a game where people *are looking at each other*, in a social event context. To try to model this, Eric went to the hardware store and bought some pegboard walls, the kind used to hang tools. They began prototyping games involving pushing wires through the holes. The perforations in the pegboard enabled players to be on either side and see what the other player was doing as they pushed their wire through the hole. But, as Eric puts it, "Nathalie hated the grid the pegboard came with." This was the impetus behind the "no grids" constraint. And it was then that *Interference* really began to take form.

They started prototyping games that had more organic layouts. To start, instead of trying to create an organic pegboard (this would take too long—game prototypes need to be quick and dirty to get to the all-important playtesting), the installation was rotated to lie flat on a table with an organic layout drawn on paper. They used tiles from a preexisting board game as the play pieces. They were also busy researching cellular structure and behavior, and Nathalie was thinking about using thin perforated screens as a way to create the board, so that players could be on opposite sides but still see each other, encouraging more social interaction to answer their first design constraint. She found a fabricator in Italy that creates one-millimeter-thick steel screens, and began the process of prototyping with small samples of



Early prototype of *Interference*. Photo by Eric Zimmerman.

the screen material. The design question at this point was, "What can we do with cells?"

The idea of a territory-based game about collecting spaces inside a cell led them to board games like *El Grande*, where players fight for control of regions in Spain. Much of the prototyping process involves looking at precedents—at times, other games that explore a similar question—similar to the way that architects use history to guide their designs. Precedents for architecture might also come from material research, such as new technologies in steel screen fabrication. And finally, precedents might be found in a completely different context from architecture or games—like cellular structures, or the nature of bureaucracy.

One could stop here, to make a perfectly playable game that answers these questions. But the primary underlying motive behind everything Nathalie and Eric do is to enable playful subversion of the experience. A breakthrough came in a playtest, as players ran out of pieces and began stealing pieces from other games going on around them. This created a subversive hook for the piece, a metaphor, and the installation's title, *Interference*. The idea of messing with other games in progress, and of some outside event messing with your game is commonly referred to as "interference"—especially in sports, when something unexpected or not allowed gets in the way. The lesson learned, and one learned in playtests over and over again, is that some of the best ideas can come from players. The trick is to remain open to the possibility spaces each playtest explores.

Finally, after multiple prototypes and playtests, the installation was saying what Nathalie and Eric wanted it to say. It had a subversive and playful element that asked players to reflect on their own expectations. The combination of the game's rules, the sculpting of the space, and the materials led players to look at each other, socialize, and otherwise interact on the organic playing field. The design came together as a result of trying to respond to constraints and context through prototyping, playtesting, and evaluating. All this was guided by their individual training, the practices of their creative disciplines, and their personal and shared interests. Many of the constraints and the overarching metaphor weren't articulated before the project, but instead came up as part of a dynamic iterative methodology that continues to guide their process.

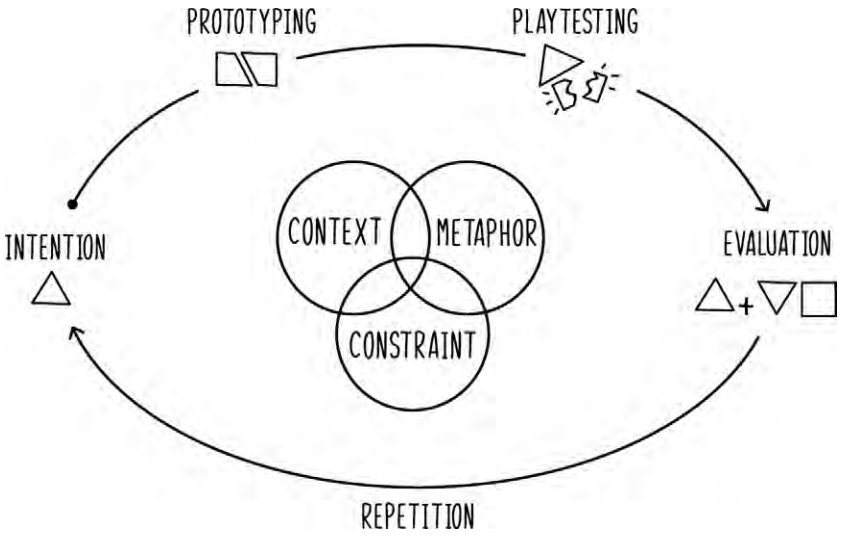
Nathalie and Eric's strong methodology embraces the cruel truth of playtesting in order to find the truth in their design. Their methodological embrace of iterative prototyping and playtesting also helps them connect their diverse practices, finding a new language to merge the material and immaterial aspects of their crafts. Nathalie and Eric fuel their process by challenging each other with constraints ("no grids"), designing for context (a passageway, for instance), and finding life metaphors (bureaucracy) to guide their subversive play goals and the participants' experiences. And finally, they use research—both in terms of materials and other game-based precedents—to inform their process.

Connecting the Dots

To guide their collaboration, Nathalie and Eric employ a methodological process that stitches together their respective fields of architecture and game design. Their methodology includes a series of repeated steps that get them from intention to outcome. Nathalie and Eric's intentions are often formed by challenging each other with constraints, designing for **context** and exploring metaphor to guide their subversive play goals and the participants' experiences. The context, constraint, and metaphor can start a project, emerge at some point midway, or even come about at the end as they cycle through prototyping and playtesting.

They give form to their ideas through prototyping, creating scale models, materials tests, or rules tests with stand-in materials (the pegboard used for *Interference*, for instance). They then playtest the prototype with a variety of people so that they can **evaluate** whether their intentions are coming across, and identify emergent **outcomes** they might not have foreseen. **Actors** participate in the installation to bring it to life—whether in playtests or in the final version.

Successive cycles through prototypes and playtests help them hone the experience for participants. Within and around these cycles, they conduct research into materials, architectural and game precedents, and ideas and



concepts that can form the metaphors underlying the installation. Each time a project is installed leads to improvements or new ideas and constraints leading into other projects. For instance, *Waiting Rooms* was born from the challenges participants had learning the rules before participating. As Nathalie observes, "Architecture, once it is done, it's done, but with the reinstall, it gets better." Iterating within projects and from install to install, their methodology helps them fully explore the possibility spaces in their designs. You might say that because their methodology remains consistent, they can embrace the inconsistent and at times chaotic results of their playtests, finding their way through faith in the process to creating unique and meaningful experiences. Without the use of grids.