

Ready!

Lessons in the design of humanitarian games



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1. Introduction

Everyone lines up. They are told to wait for the count of three. As the countdown starts, they get set, one foot behind the other, arms in a frozen runner's position. "One...two...two and a half." They all stumble to catch themselves, laughing at the tease. Everyone composes themselves again and freezes. "One...two...THREE!" They race in small groups towards the papers scattered on the ground on which they find varying numbers of dice. They crouch and roll them, one at a time. After a few seconds, players stand up, taking the sheets of paper and dice with them as they seek out more sheets with dice, some cleverly hidden. After a while, a voice calls out: "Ten seconds left." The scene becomes frantic. "Nine." Hands shake dice more quickly. "Eight." Some players are spinning in circles trying to figure out their next move. "Time's up!" The countdown ends and everyone's shoulders slacken as they laugh and return to their seats under the tree.



**A Google map of Katima Mulilo and the Caprivi Strip.
The Zambezi river is shown in the zoomed image.**

This is a scene from a game called *Ready!* played in Katima Mulilo, Namibia, a town in the Caprivi Strip, part of whose northern border is the Zambezi river. Communities in the region have been subjected to annual floods that are expected to become increasingly severe due to climate change. In the summer of 2012, I travelled there with two of my students and several members of the American Red Cross (ARC) to test the effectiveness of games we had designed to create awareness and trigger conversation about flood preparedness. The games are part of a broader ARC effort in disaster risk reduction (DRR) – an initiative to reduce vulnerabilities and increase

community readiness in the face of natural disasters. The American Red Cross has teamed up with the Red Cross Red Crescent Climate Centre and PETLab, a research lab at Parsons The New School for Design, to develop games to help communities prepare for natural disasters of increasing severity. What started as a small experiment in promoting games for facilitating humanitarian efforts to raise awareness and promote learning about DRR amongst communities has now become a valued methodology in American Red Cross DRR work.

Why are games being taken seriously in the humanitarian sector and how are they being used? What evidence do we have that games are effective, and what exactly are they effective for? The goal of this new Climate Centre working paper is to identify best practices for using games in DRR and to document what has been learned for the benefit of international humanitarian organizations, designers, and practitioners interested in the potential of games. It proposes using games as a shared language between organizations and local communities – one that enables responsiveness to dynamic and complex local and global challenges.

2. The context for humanitarian games

Ready! is the product of Games for a New Climate, an initiative between PETLab and partners within the Red Cross Red Crescent Movement that are designing “serious games” or “games for change”. The goal of Games for a New Climate is to provide playful and engaging experiences designed to assist in assessing local vulnerability and DRR activities, and to facilitate a general awareness of the increasing risks posed by climate change.

Since PETLab’s founding in 2005, my students and I have been developing games and game-based curricula with a variety of partners on issues as diverse as the US federal deficit with the game *Budgetball* (2009) and urban activism with the location-based game *Re: Activism* (2008). The experiences we have had developing these games led to an understanding of some of the unique challenges inherent in what I call “games for x”, i.e. games for change and learning of a reality-based purpose or outcome. Many of these insights are described further in this paper. The lessons learned making “games for x” and the collective knowledge in the games for change community made the Games for a New Climate initiative possible. With the games for change community of practice that has coalesced in recent years, a deeper understanding of games as a powerful tool for learning and community engagement has emerged. *Ready!* is one example of many games that provide object lessons in how, and in what contexts, games work.

Ready! is one of a set of non-digital games that PETLab has worked on with the American Red Cross and the Climate Centre beginning in late 2009 in St. Louis, Senegal. Since then, villagers, Red Cross Red Crescent staff and volunteers, senior policy-makers and dignitaries have played games designed with Parsons students in over 30 countries. Since 2009, the games have been featured at UN climate talks (COP meetings) in Cancun, Copenhagen, Durban, Doha and Warsaw in November 2013. The popularity of these games as participatory tools for learning and dialogue has begun to spread beyond the Red Cross Red Crescent to organizations such as CARE International, the World Bank, Oxfam and USAID. In the humanitarian sector, it seems that games are catching on as a tool for engagement with communities around the world.

Ready! players in Isize, Namibia. (Photo: Catalina Cortazar Valdes)



3. A game for Namibia

Ready! was first played in the field in Namibia in June 2012. To facilitate playing and testing the game, I travelled to Namibia with two graduate students, Catalina Cortazar Valdes and Ramiro Corbetta – one of the primary designers of *Ready!* We were joined by several ARC staff and hosted by the Namibian Red Cross. Our itinerary involved training a group of local Red Cross volunteers to observe and facilitate the game as well as two field tests of the game, one in Lisikili and the other in Isize, both rural subsistence farming communities. We also performed a special demonstration session of the game for a Red Cross project launch in Lisikili. To recruit players, a Namibian Red Cross project officer called a community meeting to invite them to play.

Of the two Caprivi communities of Lisikili and Isize, only Lisikili was part of the disaster risk reduction programme, Building Resilient African Communities (BRACES), which sought to “identify communities’ existing vulnerabilities and capacities...through a Vulnerability and Capacity Assessment (VCA), engaging them through a participatory process to ultimately develop and implement context-specific Community Action Plans” (Maenzanise and Braman, 2012).

Each village has a similar economy: the villagers are primarily subsistence farmers and fishermen greatly dependent on living near water sources. Every year during the rainy season the villagers experience floods. When the flooding comes, they temporarily migrate to higher ground and ultimately squat on the land of other communities. We were told by residents of both Lisikili and Isize that having to relocate created “social discomfort”, and they were never certain if they would be asked to leave. At the same time, while the families moved to higher ground, many of the men continued to stay near the water’s edge to take advantage of more plentiful fishing during the floods. This also had its dangers, though, from waterborne illness to attacks from dangerous hippopotamuses and crocodiles.

Each of our play sessions took place outside under the shade of trees. For both, some tables and chairs were set up to facilitate group discussions and brainstorming. The context for the game had always been very important to its design. Because the game needed to be playable in rural locations

Two Ready! teams brainstorm in Lisikili. (Photo: Ramiro Corbetta)



with multiple participants, we ruled out the use of any technology involving electricity or special furniture or equipment. Our technologies were all analogue: paper, pencil, dice, cards, timers.

Simpler, analogue technologies can offer several advantages. First, a non-digital game is faster to produce. The team can quickly iterate the design without needing to grapple with code, extensive art and sound assets, or debugging on multiple platforms. Second, designing digital games is a specialized craft, while designing analogue games is something with which we all have experience. Almost every child creates their own playground games or learns the dynamics of rules by changing them and trying them out. This allowed us to include students and advisors with varying technical expertise in the design team. Third, the fact that the game is analogue, and the rules maintained by a facilitator, means that the rules are also easily modified. This was particularly important to us because we were unsure of the exact context. Would there be tables? Indoors or outdoors?

We were also not well-versed in local game traditions and literacy, and unsure of the availability of materials for the game. Thus an analogue game permitted sufficient flexibility for a local facilitator to modify content to better suit the community's reality. In fact, given the flexibility built into the design of the game *Ready!* it can be equally appropriate for eliciting discussion about preparing for a fire risk as for flood risk. An analogue game can also accommodate a large number of players and encourages face-to-face social interaction. This is not unique to analogue games, but it is one of its main features.

4. Playing *Ready!*

This game mixes some of the qualities of physical sports (foot races, scavenger hunts) with games of chance (dice) and player content-creation (generating the material the game is based on). The game's ten steps are described below. The description has been simplified a bit; not every logistic step is described for sake of clarity and brevity, but it is an accurate rendition of how the game is played and experienced.

Actions from Lisikili: "Look for the vulnerable and ensure their safety" and "Cattle to higher places." (Photo: Catalina Cortazar Valdes)



Introduction and scenario. The facilitator splits the groups into teams of up to 20 players each, tells participants how long the game will take to play, and describes the game scenario. In the case of Namibia, the scenario was: “The river is rising and will reach your village within a week! What will you do to make sure your household is prepared?” The timeframe is an important consideration for the next step, envisioning the actions one would need to take to be better prepared and mitigate losses from the flood.

Community brainstorm and envisioning. During this phase players participate in a brainstorming activity to think of actions to reduce the community’s flood risk. One member of the group writes the ideas down on a sheet of paper.

Prioritizing actions. From the brainstorm, community members decide on eight priority actions. These are up to the groups to negotiate – this part of the activity often generates a great deal of debate and discussion. Once they have their eight, they list them each on separate sheets of paper. Teams have a limited amount of time to for discussion and prioritization.

Assigning difficulty for each action – the fourth stage in Ready! (Photo: Catalina Cortazar Valdes)



Assigning difficulty. The team then decides on a relative difficulty for each of the eight actions the community has prioritized by distributing 20 dice between the eight sheets of paper. For example, one dice would be an easy task; five indicates a very difficult task. This involves a level of abstraction and evaluation that usually emerges from plentiful discussion and debate among team members. Again, the facilitator applies time pressure for carrying out this task, adding to the anxiety and excitement amongst players.

Prioritizing, part 2 (optional). This involves players ordering their top priorities by numbering them from 1 to 8. This can be useful in the post-game discussion and as a way to assign a point value to each action. This is not a necessary step for play, however, and actions can each carry the same number of points for the game to have a clear outcome. In Namibia we tested several games with and without this step. We removed it in some cases for the sake of time.

Playing the game. All of the activities prior to this step involve creating the content for the game to be played. Now the actual gameplay, goals and rules are described. The goal of *Ready!* is to complete as many actions as the team can in a minute. To complete an action, one or more members of the team must locate an action sheet (which will be placed by facilitators somewhere in a field) with the dice on top of it, and roll each dice individually until they roll a 1. Once they roll a 1 they continue to roll the other dice (assuming that action is greater than one dice in difficulty). If two or more players work together to complete the task, they can each roll a dice at the same time, hence completing that task faster. When they complete an action they take the sheet and dice and go on to the next until time runs out.

Set-up and strategy. Facilitators and volunteers take each team's action papers and dice, and distribute them around the game space. In Namibia, this was usually a field about the size of a soccer field. It is also possible to play in an indoor space at least the size of a basketball court. In some instances of testing the game at Parsons, facilitators placed the action sheets near something they might reference, such as "use fire extinguisher" near the actual fire extinguisher. While it was not possible in Namibia, this can lend a great deal of realism and real learning to the experience. While the action sheets and dice are being scattered throughout the space, players are asked to come up with a strategy. Will they each act as individuals, or will they form small teams to complete actions?

Players roll dice. (Photo: Catalina Cortazar Valdes)



The race. This is often described as the most fun part of the game. Players line up and at the count of three, race to find and complete as many actions as they can within one minute. This phase is usually very chaotic, with players running in circles as they try to find actions to complete, yelling for help, and frantically trying to roll the number one. Many players comment on how this phase of the game replicates the chaos and confusion of its real-world equivalent.

The outcome. During this phase, the number and types of actions each team has completed are tallied and read out loud. This moment is usually amusing, as teams are congratulated on the actions that they did complete and teased about those left undone: “You saved your livestock, but forgot to evacuate yourselves!” for example. The result is announced based on the number of actions players completed. If a priority number was assigned to each action then that number is tallied for the final result.

This may seem like the point at which the game is over. One of the most important activities, however, is the last: how can we take what we learned in the game and connect it to real life? This is where the post-game discussion comes into play.

Post-game discussion in Isize. (Photo: Catalina Cortazar Valdes)



Post-game discussion. This is when what was learned in the game is compared to real life and a discussion follows about how the actions in the game might be accomplished during an actual a disaster. In Namibia, flooding is frequent, and the discussion of the actions communities prioritized during gameplay formed the basis of discussion for local planning activities.

Questions posed to players in Namibia after playing *Ready!* included:

- Did the other team complete the same actions as you and why?
- How did you choose your actions?
- What was your top priority?
- How did you prioritize your actions?
- How difficult would that action be to accomplish and why?
- Of all these actions what did you do the last time a flood came?
- What assets would you have lost by not completing certain actions?
- Now that you've identified what actions are important to take, are there some that you'd want to do sooner, such as during the month when the rains start upstream, or as soon as a rise in the water level is detected?

The first nine steps of *Ready!* emphasize team brainstorming (what can we do in the event of a disaster?), prioritization (which actions are most important to mitigate loss during the moments before or in the beginning of a disaster?), planning (who will perform which tasks?), and collaboration (how will we perform the tasks as a team?). It is during the post-game discussion, however, that the connection between the game and real life is made.

5. The importance of discussion after the game

As we have played the game in several contexts, it has become clear that playing *Ready!* has most learning impact when it's followed by discussion. We have found this to be equally important in other game activities we have developed. The essential learning moment in the game is the post-game discussion. This is when what was experienced in the game is compared to real life and how the gameplay models and frames the community's past experiences and future goals.

Comparing how the game reflects reality is as important as discussing how the game differs from reality. After *Ready!*, facilitators lead a discussion with the players. By answering questions about their experience in the game, participants begin to see the gaps between the make-believe scenarios in the game and what they know or have experienced in previous disasters. The relationship between the rules of a game and how one experiences the world always involves such a gap. Game designer and scholar Ian Bogost (2004) said a "simulation is the gap between the rule-based representation of a source system and a user's subjectivity".

The most important function of the simulation gap is to provide an internal conflict for players as they attempt to negotiate the world of the game and their own experiences of reality. This leads to connections between actions taken in the game and actions that might be possible to take in real life, or in the words of Bogost: "The possibility space of the game exceeds the game and spills into the world."

Can the game generate new ideas for our everyday actions? In *Ready!*, one of the most fruitful post-game questions is: "How many of the actions you identified in the game did you actually do the last time a flood came?" In Namibia, participants looked at each other knowingly. Several of them said that while they came up with actions in the game, they didn't take many of these actions in real life. Local Red Cross staff well-versed in DRR were then able to have a more detailed discussion about each of the actions, which ones the community members would consider in the coming year, and what the challenges to action were. While there wasn't time for this during our visit, some of the Red Cross staff and volunteers said that they could see this discussion leading to a detailed DRR plan with different timeframes: actions to take a year in advance of the flooding season, six months away, one month away, etc.

6. After Namibia: a game with many uses

Since our first field-based play-tests of *Ready!* in Namibia, the game has been played in several other countries and settings by over 400 participants: from communities in Ecuador to Uganda to senior Red Cross staff at a meeting in the Netherlands and participants at the COP 18 UN climate talks in Doha, Qatar. One of the unique features of *Ready!* is that the content is always rewritten by players; the game can be about anything from community activism to disaster preparedness. The structure of the game remains the same, however. It involves discussion, debate, teamwork and the ability to quickly change tactics based on current conditions.

It is important to note that well-designed games are rooted in the content of the game – their rules, mechanics, dynamics and aesthetics. The challenge in designing “games for x” is in crafting an experience that links content and action, form and function. In 2003 semiotician and learning theorist James Paul Gee described a corollary between the relationship of content and action in any social practice:

An academic discipline, or any other semiotic domain, for that matter, is not primarily content, in the sense of facts and principles. It is rather primarily a lived and historically changing set of distinctive social practices. It is in these practices that ‘content’ is generated, debated, and transformed via certain distinctive ways of thinking, talking, valuing, acting, and, often, writing and reading.

In *Ready!* the action-based elements of the game involve team strategizing, racing and rolling dice. The scenario can be changed, which has led to the game’s use in so many contexts. It has been played with urban communities in Nairobi for fire safety and other disasters, as well as with women’s reproductive rights organizations in the US to identify priorities for the year and develop a tactical action plan. Despite the interchangeability of the scenario, the game is always about deciding what collective actions to take to address a challenge and prioritizing those actions. As Gee put it, the “social practices” modelled in *Ready!* include setting priorities for a community’s action plan, deciding who will take these actions, whether they are individual or collaborative, and how to work together to avoid confusion during the event. Players generate their own content through Gee’s examples of “thinking, talking, valuing, acting, and, often, writing and reading”.

7. Assessment and design recommendations

Ready! has been tested in the field in Indonesia, Kenya, Namibia, the Philippines and Uganda. Results from each site vary because of culture, differences in the activities and projects surrounding the games, and audience variances (gender, age, literacy, urban, rural). These differences provide us with a multifaceted understanding of the things that worked and the things that did not work in our implementation of the game. This has provided us with rich data from surveys and Red Cross Red Crescent assessments. As I write this, more sites are integrating *Ready!* and similar games into their programming, and more results will probably emerge. Consider this a snapshot from a changing field of knowledge about how to design effective games for humanitarian purposes.

8. Lessons learned and key insights about humanitarian games for collective learning

Localize, localize, localize. Perhaps the most important lesson is to learn how your games are received in different cultural contexts and how to localize them so that they can be run in areas with varying access to materials, technologies and spatial configurations. This involves addressing local perceptions of games, play-testing with local partners before the games are widely released and engaging local stakeholders in the game design process. It is important to know how community hierarchy, including gender, is perceived. While games allow us to explore social codes, it's important to be sensitive to them in a game's design. For example, is it appropriate for members of the opposite sex to touch? A game involving linked arms, for instance, needs to be modified or divided by gender if it isn't. That said, games can often provide a safe space for the exploration of gender and social taboos. We have seen games involving role-playing the opposite gender generate some revelations and empathy if the game provides the space for everyone to do so.

Address local perceptions. Another fundamental lesson – and challenge – in designing games for these contexts is to take into account cultural relationships with games and play. We learned that in Namibia gameplay is considered primarily the realm of children. Adults typically did not pass the time with games. In a report on the games in Namibia, it was noted that:

Participants who showed up for the game were primarily young adult females and their children, revealing that new strategies may be necessary to obtain more balanced participation from men and community elders. Within the communities where games were implemented, [the Namibian Red Cross] indicated that the local staff may have to re-package the games as “role-playing activities” or “simulations” in order to attract the interest of adults and community decision-makers, to overcome the stigma that they are primarily a youth-oriented pastime. (Maenzanise and Braman, 2012)

Considering what the activity is called will change based on local perceptions. Check and see how the terms “game”, “simulation” and “activity” are received by potential participants and use terminology that won't alienate your target audience.

Design and test locally. Instead of a linear process of research, design and deployment, we've found the best process for designing games that are culturally suitable and well integrated into Red Cross Red Crescent goals is an “iterative” process of trial and error. This is not unusual; most games undergo a cycle of research, design, testing and modification. However, in the case of game design for a global context, this involves several cycles of research, prototyping and testing, both within the design group and in the locations where the games will be used.

It is key to test on-site in order to localize the games and ensure that the documentation is clear. Even if we cannot travel to the location for which we are designing the game, we sometimes can find people in the field to facilitate and test the games on-site. In this case video documentation is essential. Videotape or photographs can answer many questions such as “what did the game play-space look like?” and “how were players arranged?” An image is worth a thousand words and is also more honest – while players may say they were engaged, video footage might show otherwise!

In addition, understanding the symbolism and local cultural perceptions of materials in the game is equally important. Dice, familiar as a non-controversial game element in the US, was either not familiar to our play-testers in Namibia or considered symbolic of gambling and vice, and therefore carrying negative connotations. When *Ready!* was played in Indonesia, the use of dice was even

more controversial due to these connotations. Learning how game elements and activities are perceived is critical to the success of the game. Participants might play them out of politeness once, but a game's longevity is compromised if its elements aren't culturally integrated, understood or accepted.

Engage participants. In the words of designer John Thackera (2006), "Design with, not for." To develop games for use in a variety of contexts demands an understanding of the complexities and nuances of local problems. Sitting in the US trying to understand these problems is incredibly difficult if not impossible. However, if we can develop a practice of designing *with* communities, we can better address their concerns and aspirations. Designing games with communities is one way of encouraging local sustainability and knowledge. Because games are at their heart dynamic systems, learning to design them facilitates a deeper understanding of how systems work. In addition to the systems thinking that underlines any gameplay or design, designing games also emphasizes an understanding of each other. To design a game that others can play and enjoy involves an open and iterative mindset, and most importantly, empathy. Observing and learning from players to improve the experience and design of a game helps cultivate an empathetic perspective. Pablo Suarez, the Climate Centre's Associate Director for Research and Innovation, shared with me some recent techniques he is implementing in co-design:

When time allows in the debriefing, we invite participants to form small groups and recommend ways to modify the game design, materials and facilitation so that gameplay better captures the real-world system and/or the issues that matter to participants. This has proven to be a remarkably rich exercise, with people becoming quasi-game-designers, and really diving into the depths of system complexity, learning and dialogue objectives and priorities, etc. Really rich conversations emerge (as well as cool tweaks to game design).

PETLab is currently developing and testing co-design workshops for participatory game design to assess whether this provides a deeper understanding and dialogue about local issues.

Play local games. In the context of the Games for a New Climate initiative, power dynamics are further complicated by the nature of the project: they often involve foreigners representing a powerful organization visiting a local community that perceives the organization as more powerful than it actually is at solving real local problems. One way to shift the balance of power in the very beginning of a field visit is to start off by asking participants to teach the team some of their games. This was something we did to break the ice and set a playful context for the week in Namibia, as well as help us understand the kinds of play mechanics we might build our games upon. Playing local games with the participants – often games the visiting team is not very good at – can help provide some levity as well and set a playful tone. Playing games together is a powerful leveller.

Plan for facilitation. A plan for training game facilitators needs to be integrated into the process of designing your games. Like most non-digital games, all of the games we have developed depend on someone to facilitate each game (prepare materials, explain rules, referee, and chair discussions). While it is true that players can read and learn the rules to games on their own, we have found that in most situations, a leader will facilitate the translation of rules so that play can start faster. Imagine your own experiences with card and board games. Often someone who has played before teaches new players the rules.

We have now started developing materials and learning exercises for game facilitators to be able to successfully run games and improvise if needed. One of our techniques has been to test facilitation by having players run the games with the help of a written guide. This shows us how effective we are at explaining how the game should be run in writing. This is similar to a "rules test" in game play-

testing, when the designer observes players interpret (and often struggle) through the rules. We do this first with others in the design team, second with play-testers we bring in, and finally remotely in the field after we have prepared a local play-tester by playing the game several times. As much as the game needs play-testing to refine and balance, the facilitation plan for the game and written materials that go along with it need testing and balance too.

Consider power dynamics. One of the biggest challenges creating these kinds of games is the balance between the power of the player to make their own choices in the game and the power of the designer to guide the game's aesthetics. For example, a game about the US federal deficit that rewards budget cuts is rhetorically very different from one that rewards the use of taxes. Of course, the most balanced game would allow players to choose more than one strategy to pay down the debt, and let them play the system to see the pros and cons of each strategy. The designer makes choices about how to simplify a real-world model and what goals, rewards and feedback loops to include. As one can imagine from the prior example, these choices are largely born from a designer's worldview and politics. When a game provides only one pathway to a goal (budget cuts, for instance) it is not balancing the power of the designer with the powers of the player. The game provides what is called in game-design parlance a "dominant strategy". To avoid this, the primary question to periodically ask in the design process is: "What choices can the player make and are they truly meaningful?"

Learn institutional culture. Understanding the Red Cross Red Crescent's mandate and having a sense of the kind of work the Movement does is critical to designing games to support their work (and even in deciding which aspects of their work are suitable for games). This is where insights from the field, for example from shadowing local volunteers, and even going through training and becoming a volunteer, is an informative framing step in the process of co-designing games. This insight can be transposed to other partners as well. Spending time learning the institutional culture can help game designers get a better sense of what's at stake and what the organization's priorities are.

Use Creative Commons. A Creative Commons license can ensure that creators are credited (and traceable), but that works may also be copied, changed and distributed, with terms that are tailored to the game. This seems like a detail, but it is particularly important with games. Games should be a community good, freely shared and modified. This is a natural perspective, since most games are considered a form of folk culture. However, as games are used for more serious goals and design itself is professionalized, it is important to recognize and understand who made the game and for what reason. Games should include author attribution, but this doesn't mean they should be locked down and privatized.

9. Conclusion

With more assessment in the field and open dissemination and training, games for humanitarian use can become a powerful tool to address the systemic issues at play in all kinds of places and contexts. As an experience that sits outside our everyday activities, games can reflect current realities and project possible futures. This is their power. They allow us to engage in action without serious consequences; they enable learning by trial and error. Understanding how games express ideas through action can ultimately help us understand the systemic nature of the many problems we face today. However, "games for x" are not a self-contained solution. They become useful for real-world problem solving when we reflect on the continuities and breaks they make with our lived experience.

Designing games involves responsiveness to how our experiences and knowledge differ, and how we can open the design process up to designing games with communities and practitioners from different fields. The work between the Red Cross Red Crescent partners and PETLab has become a four-year case study for how different fields can come together to facilitate learning and real-world action. While we each have our expertise, some in design, some in logistics, some in climate science, some in fishing, and more, we can bring these into the game design process.

A game is not designed – and can't exist – in a vacuum, it is a community of designers and players who make it meaningful. Each time we play, we may not know in the beginning what the outcome will be. This is one reason why we have played games for millennia and why we often use games to explain aspects of life. This paper is an attempt to capture some of the work applying games to problems such as climate change, and to share what has been learned so that we can be more resilient, knowledgeable and engaged in the face of an uncertain future.

ACKNOWLEDGEMENTS

I would like to thank my graduate students Ramiro Corbetta, Arshaan Sarang and Catalina Cortazar Valdes for their work on *Ready!* and their involvement in this project. Thanks to the Climate Centre for their support and helpful advice on this project, including Maarten van Aalst, Pablo Suarez and Carina Bachofen. Thanks to the American Red Cross for their support for the on-site play-testing and project development, and to Parsons The New School for Design for sustained support of this work.

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