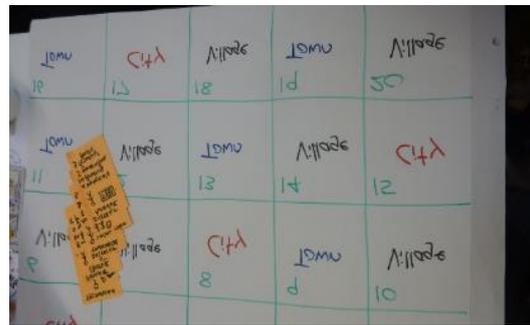


# Managing a 'rapid games designing' workshop

## Constructing a dynamic metaphor to explore complex systems

Bruce Lankford and Joanne Craven

18 April 2020



### Preface

This report explains the structure and delivery of a workshop that generates group discussions about a complex environmental and human system via rapid game designing. Photographs of games designed at recent workshops are found at the end of the report.

**How to cite this report:** Lankford, B.A. and Craven J. 2020. Managing a 'rapid games designing' workshop; constructing a dynamic metaphor to explore complex systems.



## Contents

Introduction.....	3
Logistics for the workshop.....	5
Pre-workshop preparation.....	5
Room arrangements, group and table numbers.....	5
Overall scheduling of the workshop.....	5
Support by the facilitators.....	6
The games materials used.....	6
Introductory technical presentations (10-12 mins).....	7
Presentation – ‘why games?’ (10-12 mins).....	7
Presentation – ‘what to be gamed?’ (10-12 mins).....	7
Presentation – ‘how to design a game?’ (45-50 mins).....	7
Part 1: Acquiring a games mindset – on ‘winning’ (and losing).....	7
Part 2: Real-world vs game-world.....	8
Part 3: The six ‘baby steps’ of designing a game.....	8
The games designing exercise (60-80 mins).....	9
Presentations about the games by each table (40-60 mins).....	10
Plenary discussion by workshop participants (60-90 mins).....	10
Two reflections on the workshop logistics.....	10
Group size.....	10
Materials and prompts.....	10
Photos of designed games from recent workshops.....	11
Photos of water and catchment resilience games (South Africa).....	11
Photos of water and sanitation (WASH) and water security games (WaterAid London).....	13
Photos of food systems games (Oxford).....	15
Conclusion: expressing the complex system as a game metaphor.....	16
Acknowledgements.....	17
References.....	17



## Introduction

The use of different types of games for exploring social-ecological systems and related concepts has seen an increase in the last 20 years (Aubert et al., 2018; Harteveld, 2011; Wesselow and Stoll-Kleemann, 2018). This is perhaps no surprise as games generate a number of benefits for those involved in their design, use and review. These include: an ability to qualitatively and quantitatively research how resource/system users and other stakeholders perceive and interact with their associated systems; increased participation levels; new more coherent and collective understandings of system behaviors and dynamics; and increased engagement and trust from resource managers and regulators. While these benefits do not always apply equally to all types of games, as an enriching participatory, deliberative and often empowering tool, games have wide-ranging benefits and utility (Rieber et al., 1998; Wartenweiler, 2018).

The stimuli and background to this paper and its ‘rapid’ approach to games design comes from the lessons learned from games experiences in the careers of the two authors. These lessons can be distilled into one question: what is a highly effective format for quickly engaging actors in effective deliberations to understand the systems they are associated with? In answering this question we found ourselves gravitating towards the design of games rather than the playing of games (Kafai, 2006). Over five workshops covering different topics we honed our approach, now described in this paper and its appendix. We term this ‘rapid short-format games designing’ or, to use an abridged term, ‘rapid games designing’ (RGD).

In brief, the RGD format uses a 4 to 6-hour workshop for 15-50 people whereby three to eight groups of 4-6 participants are led through the process of designing a prototype tabletop game representing a dynamic and complex socio-ecological system. The workshop begins with guided exercises (or “baby steps”) to bring participants to a point where they are comfortable building game prototypes using the game materials provided. They then have 60-90 minutes to create the outline of a game which they feel recreates the complex system – or an aspect of it. This results in a number of games representing different group perspectives on the system, the comparison of which provides incredibly rich material for discussion in the last part of the workshop where participants consider similarities and differences between the games to create a whole-workshop vision of the system.

Typically, when discussing game formats used for increasing understanding of systems, the literature refers to the playing of a game (Aubert et al., 2018; Aubert et al., 2019). Although not exclusively, these games tend to be designed by people with an observational role in the system (such as researchers or trainers) rather than the players themselves who are ‘system actors’ such as resource users, employees, managers and decision-makers. Input from system actors can be incorporated, but the design and playing process tends to be mediated by the person or team designing the game. Furthermore, even games that are ‘co-designed’ will have considerable input from the facilitators (Perrotton et al., 2017). Thus, in our view stakeholders closely connected to a given system are given either a pre-designed game or a structure that



results in one type of game being formulated. By contrast we are interested in a much more open-ended structure.

In our view, game designing is a mental and physical exercise that creates a dynamic metaphor or model of a complex system that itself can be interpreted an abstraction or metaphor of 'reality' (Carpenter et al., 2001; Norgaard, 2010). Moreover, and especially important, this exercise is group-based. We therefore believe that by 'games designing', groups are able to construct a dynamic metaphor together integrating various perspectives, and therefore just as by 'game playing' they can experience metaphors of complex system. The exercise involves discussion and selective choices over how to render a system's objectives, elements, processes and boundaries into a game. Therefore, the designed game, with its roles, components, interactions and rules, is 'dynamic' because; 1) is built from different perspectives held within the group(s); 2) although materially created (see photos in Appendix 1), it lives in the participant-designers' imaginations as a tension between possible winners and losers, and; 3) it brings to the foreground reflections on why the complex system creates winners and losers. We therefore believe 'games designing' constructs a dynamic metaphor just as 'game playing' act as metaphors of complex systems (James and Brookfield, 2013; Lankford and Watson, 2007) and help us unpack abstractions (Herrera, 2017).

Furthermore, RGD comes from the idea that it is more useful for system actors (as game participants) to go through this process than it is for the game designers, because the former are the 'target audience' and the people able to affect change. In short, actors are not shackled to an understanding of the system chosen by the designer. We argue designing is an equally or more valuable activity for participants than playing a pre-designed game.

Additionally, 'rapid games designing' stems from the authors' concerns that when arranging and devising games workshops, logistical and pedagogic constraints commonly arise. These include; 1) how to fit a games session within contemporary workshop schedules, usually running for at least a few hours and not going over more than a day; 2) how to run a workshop that can accommodate approximately 15 to 50 people; 3) how to accommodate different personalities and expertise levels to maximize inclusion, learning and discussion while minimizing dead time or frustrations that hamper learning; 4) how to travel lightly to distant locations with games materials that are portable.

In this paper we start by placing RGD within the literature followed by a discussion on observed outcomes. At the end of the paper we reflect on RGD via three topics; rapid trust, system vs actor identities, and playfully designing games. Via these discussions we conclude that our approach is novel and highly effective in getting participants to think about complex, perspectival, spatially distributed and often abstract problems. In Appendix 1, we describe how the RGD is delivered in a workshop setting and include photographs of some of the workshops already held.



## Logistics for the workshop

### Pre-workshop preparation

For information, the initial assumptions are:

- Although the workshop assumes one day is available, the schedule here runs for about five hours with a lunch break in the middle.
- We do not cover the arrangements for setting up and hosting the workshop – e.g. details about email correspondence etc. are not included.
- We use the word ‘dice’ for singular and plural.

Prior to the workshop, communications with participants allude to a games style format, but do not provide excessive detail that they would be designing games. We feel it important that all participants come to the workshop with no or few assumptions about what it entails for them as individuals so that they start from the same place, and so that they will not be anxious about whether they are capable of designing a game. Instead, pre-workshop guidance on key questions and readings are provided. Examples of the key questions include; “What does water security mean for water, sanitation and health (WASH)?” or “What does a resilient catchment look like?”.

### Room arrangements, group and table numbers

The room should already have tables laid out so that on arrival participants immediately sit within groups of 5-6 people around tables. With 30 or so people attending the workshop there would be about 5-6 groups. It is worth thinking about arranging the groups in advance so that each group is as diverse as possible. In this way different world-views come into contact from the beginning. In this case a list of names can be placed on each table.

### Overall scheduling of the workshop

The first 10 minutes of the workshop is taken up with initial statements and welcomes. After this, four introductory activities in total lasting another 60-90 minutes take people to the point at which they start to design their own games. These are explained in four subsections below.

Generally, people start to design games about an hour before lunch, with completion either before or soon after lunch. The early part of the afternoon is devoted to the presentations of the games and then a final plenary discussion taking place about mid-afternoon.

Table 1: Outline of the workshop schedule

Welcome and introductions	10 – 12 mins
Introductory technical presentations	10 – 12 mins
Presentation – “why games?”	10 – 12 mins
Presentation – “what to be gamed?”	10 – 12 mins
Presentation – “how to design a game?”	45 – 50 mins
Games designing exercise	60 – 80 mins



Lunch or break	30 – 60 mins
Presentations of games	40 – 60 mins
Plenary discussion	60 – 90 mins
	Total: 4.5 – 6.5 hours

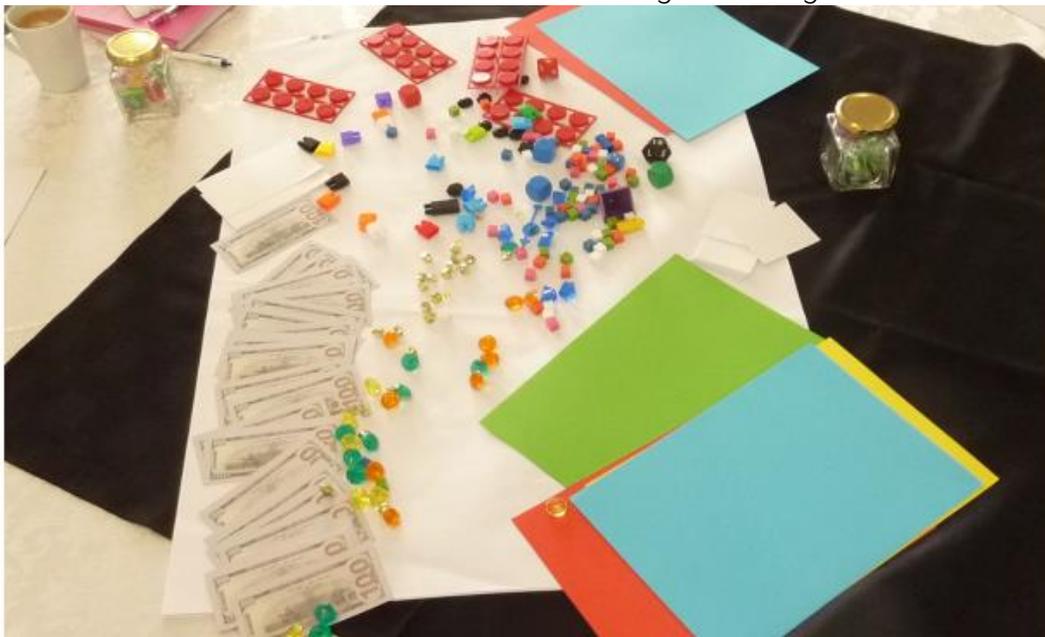
**Support by the facilitators**

One to four workshop facilitators are on hand to assist with questions and note-keeping. This support records what happened during the day, assists creativity, encourages quieter people to get involved, and promotes the use of more of the games materials.

**The games materials used**

Each table is provided with A0 or A1 poster paper and coloured pens, to draw their game board (although a card game without a board would be equally valid) and a collection of games materials such as six-sided, 12-sided and 20-sided dice, blank dice for adding icons and marks, sand timers, counters of different designs, ‘fake/play money’, probability spinners, blank cards and playing cards. See Photo 1. Games materials can be found on-line, and to see what is available see this link: <http://dice.co.uk/products.htm>

Photo 1: Games materials in readiness to be arranged into a game



## **Introductory technical presentations (10-12 mins)**

The first of the four introductory presentations starts with a quick initial technical presentation. This mini-talk ensure that everyone understands; a) the reason for the workshop (e.g. for research purposes; promote stakeholder knowledge and participation, or to consider a new organisational strategy); b) the general topic area pertaining to the workshop theme (e.g. resilience or linking water security to water and sanitation), and c) the general rules of discussion and ‘contribution’; that everyone should offer their views, listen to others, and/or ask questions to clarify proceedings.

## **Presentation – ‘why games?’ (10-12 mins)**

This second presentation covers the increasing use of games and what they try to achieve such as bringing people together for learning and discussions. Examples of games relevant to the topic can be used here, although it is useful not to go into the rules in detail to avoid “tramlining” the groups into producing similar games. This session is also the appropriate moment to introduce two key ideas – the real-world and the game-world (see main paper).

## **Presentation – ‘what to be gamed?’ (10-12 mins)**

The third presentation gives a range of technical information ensuring that participants know what system is to be ‘game-designed’. Examples include ‘how water security and WASH intersect’ or ‘how water and food resilience might be expressed in a catchment’. While this presentation might revisit some of the material given in the introductory presentations, it must be finely balanced to refer to factors and dynamics that feature in the system to be designed but not ‘tramline’ or prompt participants to think narrowly about their system and game.

## **Presentation – ‘how to design a game?’ (45-50 mins)**

This fourth introductory talk is a critical part of the workshop. It takes participants from zero experience in designing games to attaining sufficient confidence and knowledge on how to create a game. We found that 45-50 minutes of staged learning in three parts achieves this. First, we ask participants to think about what players in a game are trying to achieve through the objective ‘to win’ (see Part 1 below). Second, in Part 2, we reinforce the ideas presented about the distinctions between the ‘real-world’ and ‘game-world’ and how the former is represented in or by the latter. In the third Part, we take participants through six exercises to practically understand the real and game-worlds and then to manifest parts of games or design a simple game. We use the term ‘baby steps’ to describe the six mini-exercises (see below). Through this process players arrive at the beginning of the game design part having already designed several game components, to give them the confidence they need to proceed with games design.

## **Part 1: Acquiring a games mindset – on ‘winning’ (and losing)**

Winning or losing a stage or winning/losing the whole game is central to creating games that engage participants. In this brief presentation, it may be useful to ask for some feedback using games that participants are already familiar with such as



Monopoly, although again avoiding heavily focusing on one game and “tramlining” the groups. Questions to promote discussion include:

- What do we mean by winning? What is the win objective?
- Defined by total win or relative win? First to arrive?
- By forms of accumulation? (Of money, marbles, score, a step forward on the game)
- Enabled by speed, strength, position, luck, information, turn, role, bluster, acting and mimicry
- To win, are negotiations mediated by a) the players, b) the game physicality & interfaces c) the game stages, roles and rules, and d) the game mediator/observer?
- What are the consequences of not winning?
- Intermediate sequences and stages or trade-off positions?

## Part 2. Real-world vs game-world

A brief discussion between participants of actions and events to help distinguish the real-world (e.g. a drought) and a game-world representation of the real-world (e.g. for a drought “lose 10 counters”, for a severe drought, “lose all counters”).

## Part 3: The six ‘baby steps’ of designing a game

These are the six elementary steps in getting participants to consider how the component parts of a game are put together. It is always worth reminding participants that they do not need to give physical and technical answers (e.g. droughts and boreholes) but also consider other concepts and abstractions (e.g. the role of informal and customary practices and law).

1. Start the baby steps by asking someone in the group to select a **games world** counter or token and to place it in front of their group and then explain the role or actor this token or counter might represent in the **real-world** (e.g. “this blue counter represents a water law judge or ‘hydropower’”). After a few minutes the tables can shout out some roles they have imagined.
2. In the second ‘baby step’, using a photograph of a relevant theme (e.g. a dry landscape or some cattle around a borehole) as a prompt, ask participants to complete the sentence: ‘Interpreting actions as players winning **in the real-world** and thinking about the resource system (e.g. WASH in a rural or urban community or growing a crop in the Sahel) express to your group ‘how you/he/she/it ‘succeeded/won’ **in the real-world when...**’. Then we provided an example such as “I won during a drought because I had access to freshwater from a borehole.” (Participants are given 2-3 minutes working in their table groups to give another **real-world** example of how they ‘won’ or succeeded).
3. Ask the groups ‘Select a dice from in front of you’. (Remember the dice is in the **game-world**). Then ask them to decide ‘what does the dice represent **in real-world terms?**’ (For example, the dice represents the rainfall pattern for the year). Now decide what *the real-world outcome of rolling the dice* is. (Remember the number on the dice is **in the game-world**). E.g. the number ‘six’ represents a flood. If a table does not already suggest it, you could add a second dice to represent another feature and therefore the impact of the



outcome of the first dice. For example one dice represents rainfall pattern and a second dice represents the population density.

4. State or instruct: 'Select a blank card and write on it two related events': a **real-world** event and **game-world** event. An example is 'a drought' and 'deduct 10 points or lose 50% of your money'.
5. State: "A pile of counters on the table represents water in a shallow aquifer; taking only two minutes design a simple game to share this water to different players around your table." (An example might be that each person throws a dice and the person who throws the highest score has total control in deciding who gets the counters).
6. State: "Draw any diagram/squiggle/sketch on a poster paper". (An example is given by the facilitator). Allow the groups to create a diagram, then state again "Now explain how this might be the basis for a game." For example a large 'S-shaped line' becomes a path for players to move along from start to finish a bit like 'snakes and ladders'.

### **The games designing exercise (60-80 mins)**

Here the groups are instructed to now design a game that reflects the problem or system from any viewpoint or angle they see fit (or via a given angle if the workshop has this intention). Then the groups are left to their own discussion and time. From our experience this should last about 60-80 minutes and is unstructured. Group members usually start discussing, for about 30-40 minutes, a problem to be gamed and how the game should capture that problem, followed by the remainder of the time drawing the game and devising rules of use. Groups often re-draw a clearer version of the game in the last five minutes of the allotted time. By the end, participants will have drawn a game template on the poster paper and define the use of game components, players and so on. The designers are also guided by a set of guidelines which also are returned to when presenting their game to other groups – see Box 1.

#### Box 1. Guiding and presenting the games

These questions guide participants in both designing and then presenting their games. These are for guidance only – in reality the designing and presenting is more free-flowing.

- What is the game-world about? What 'real-world' is it rendering?
- What is the aim/purpose of your game?
- What are the materials & what do they do?
- Who are the players? Do they have roles?
- What can the players do/how move? (Rules to move next stages/rounds)
- What happens then to the players at the stage/round (stage obstacles and or stage successes)?
- How do they win the game overall?

It is important to create a sense that the group isn't required to produce a playable game, as this can lead to groups taking "safe" choices such as retheming a game they already know. This should be avoided as it leads to a more superficial discussion.



## **Presentations about the games by each table (40-60 mins)**

This group discussion involves each table/group presenting their game design to the other tables/groups followed by quick 'questions and answers' to clarify the purpose and rules of the games. At the end of about one hour, each group should have presented their game to the other groups. This stage has turned out to be highly productive way of allowing both the game designers and their audience embellish and add to each design. It can also be useful to ask groups to briefly explain how they got to the finished game, including ideas which were discarded along the way. Recall, the guide in Box 1 can be utilised to help with these presentations.

## **Plenary discussion by workshop participants (60-90 mins)**

A second more substantive group discussion takes place after all the tables had finished their presentations and aimed to get a 'whole group' set of thoughts on the whole process of game designing and how it revealed new aspects about the resource/complex system. A good jumping-off point is a comparison of the games, and how different each game is. Discussion might also try to reveal issues and dimensions that were not included in the game designs.

## **Two reflections on the workshop logistics**

### **Group size**

A notable difference between the two South African workshops was the size of the group which had implications for outcomes. In Tzaneen in 2018 workshop attendance was small enough (approx. 25) for the entire group to gather around a sub-group and their game. This meant that the entire group saw and shared in all the games developed on that day. By contrast, in Stellenbosch with 100+ people divided into 10 groups, the room was further divided into three for the presentation of the games. This meant that each participant saw only a third of the games developed making it difficult to generate "whole group" learning. The group size also had practical implications for the quality of facilitating and note-taking. Our experience suggests a maximum workshop size of around 20-40 participants with 3-5 facilitators works best.

### **Materials and prompts**

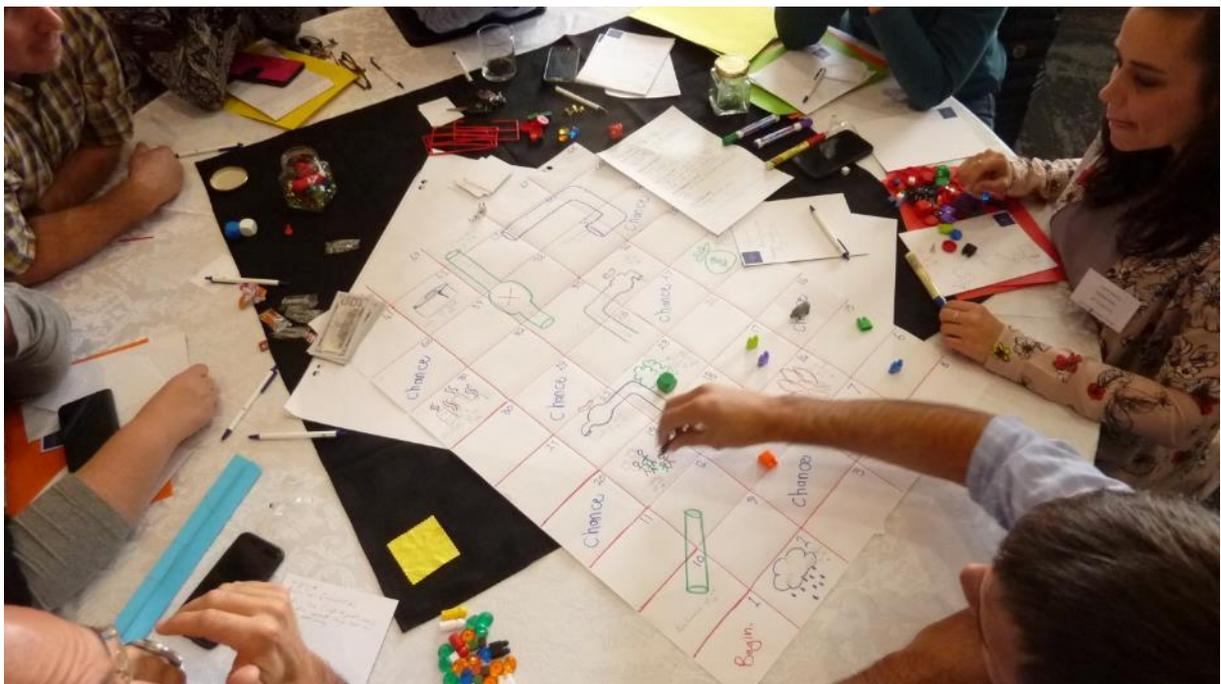
Facilitators must be aware of the stimuli they are planting in participants' minds either through the content of the introductory and technical presentations and the choice of materials provided. To illustrate the latter, providing play money may encourage players to include money. It may be preferable to exclusively use "abstract" materials to avoid leading participants inadvertently (they can always use a certain colour of block, say, to represent money). In the 2018 Tzaneen workshop, players were also provided with a sheet to fill to summarise their game, which was intended to serve as a record and a prompt if they were stuck. However, participants tried to use it as a starting point which appeared to dull their discussion. These worksheets were not used again in subsequent workshops.



## Photos of designed games from recent workshops

### Photos of water and catchment resilience games (South Africa)



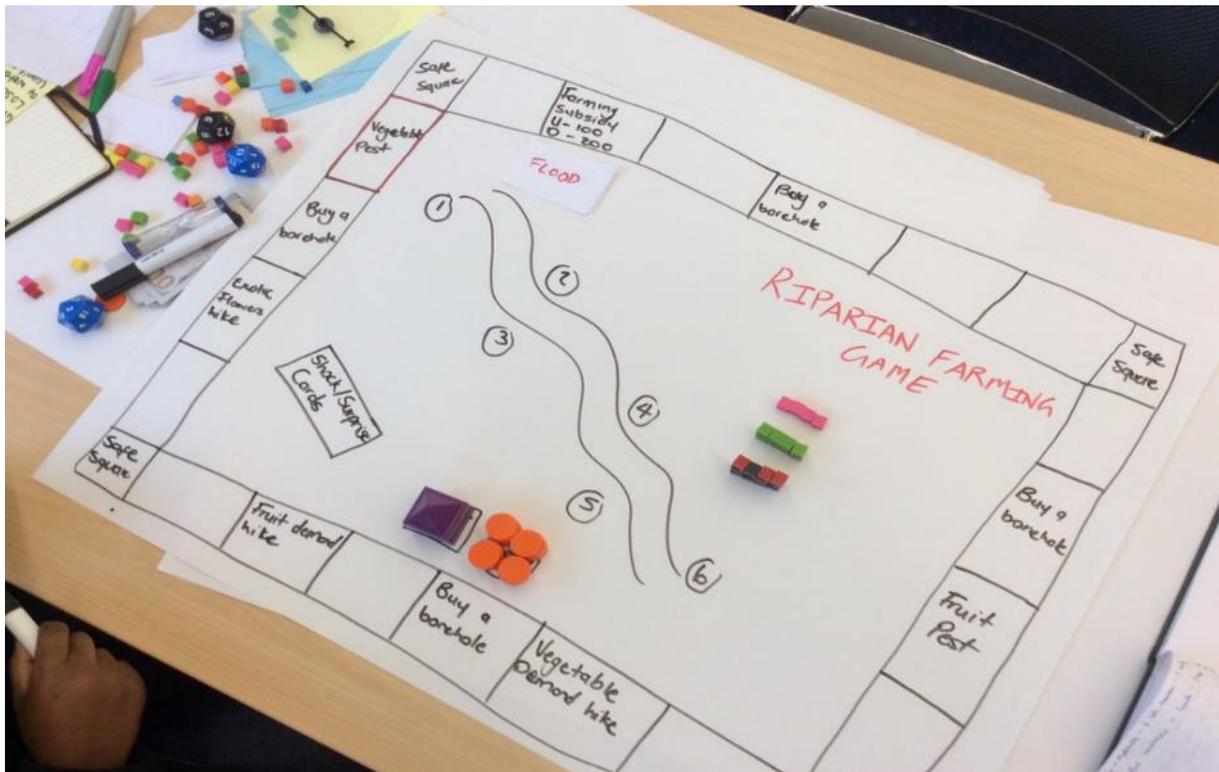


Photos of water and sanitation (WASH) and water security games (WaterAid London)





Photos of food systems games (Oxford)



## **Conclusion: expressing the complex system as a game metaphor**

We believe that dynamically expressing the system as a game metaphor happens in six ways; 1) the drawn design of the game on the poster paper; 2) the choice of games materials which in turn define elements of types and numbers of players, chance and risk; 3) the discussions about roles, rules and objectives; 4) how players imagine they might experience the game and respond to game events and go on to win or lose; 5) the explanation of the game dynamics when the game is presented to other workshop groups; and critically; 6) a plenary comparison between the different games witnessing how a complex system can be designed in different ways. It is these six parts that work in combination to create a very rich, social and dynamic process.

Looking back on our workshops, groups rarely designed the drawn board, the materials and the game events in order, but instead iteratively went back and forth between them. During this process, the game-world was repeatedly compared against participants' multiple perceptions of the real-world and discrepancies are resolved. Herein lies much of the value of the process: as the group interrogated the game-world in front of them, different perspectives on the real-world were made explicit. When inconsistencies were discovered, the group changed the game; however, this also brought changes to their perceptions of the real-world. For example, a group might realize that in the game there is no incentive for a player to undertake a certain action, and this can help build understanding of why certain apparently desirable actions are not undertaken in the real-world.

With respect to knowledge-building, our conclusion, echoing Valente and Marchetti (2015) is that rapid designing of board games is a highly dynamic, effective and flexible method to unpack and discuss complex systems and components and their abstract (or 'academic' to some people) conceptualization and 'meaning' (Harteveld, 2011). In essence, RGD does this by asking participants to construct a metaphor of a metaphor. Examples of complex systems were seen in the workshops played to date and included the sustainability of food or food chains, the resilience of catchments facing environmental change and rising water demand, and the management of water and sanitation services. Examples of 'meaning' were seen in workshop discussions, (for example in South Africa) on how resilience outcomes are distributed between actors within a built environment and, with WaterAid, on the meaning of water security. We believe the format is highly adaptable and generalizable; it can be applied to different types of systems and system problematics/meanings as well as accommodating a diverse range of participant stakeholders.

Regarding outcomes, these echo the benefits seen by other scholars in this field (Aubert et al., 2018). Notably the format: a) was successful in terms of time management as well as being engaging, creative and thought-provoking; b) led invariably to diverse game designs some of which were very sophisticated; c) inspired deep discussions about the conceptual nature of systems and resources; d) showed how a room of tables/groups generated creative insights that can be further guided by facilitators, and; e) provided a memorable event as a stepping stone for further communication and meetings. Like pre-designed games, RGD can be utilized to be



part of a longer deliberative process and can be picked up again. As a part of this, some games could be further developed and played as fully-fledged games.

## Acknowledgements

We acknowledge the funding from BBSRC/NERC via the Global Food Security Programme. We are very thankful to other members of the FF&V research team whose insights and comments over the last few years assisted with this work; Tim Hess, Jerry Knox, Kate Pringle, Jon McCosh and Mlungisi Shabalala. We are very grateful to the anonymous reviewers for their very helpful comments.

## References

- Aubert, A.H., Bauer, R., Lienert, J. (2018) A review of water-related serious games to specify use in environmental Multi-Criteria Decision Analysis. *Environmental Modelling & Software* 105, 64-78.
- Aubert, A.H., Medema, W., Wals, A.E. (2019) Towards a framework for designing and assessing game-based approaches for sustainable water governance. *Water* 11, 869.
- Carpenter, S., Walker, B., Anderies, J.M., Abel, N. (2001) From metaphor to measurement: resilience of what to what? *Ecosystems* 4, 765-781.
- Harteveld, C. (2011) *Triadic Game Design: Balancing Reality, Meaning and Play*. Springer-Verlag, London.
- Herrera, H. (2017) From Metaphor to Practice: Operationalizing the Analysis of Resilience Using System Dynamics Modelling. *Systems Research and Behavioral Science* 34, 444-462.
- James, A., Brookfield, S. (2013) The Serious Use of Play and Metaphor: Legos and Labyrinths. *International Journal of Adult Vocational Education and Technology* 4, 1-12.
- Kafai, Y.B. (2006) Playing and Making Games for Learning. *Games and Culture* 1, 36-40.
- Lankford, B., Watson, D. (2007) Metaphor in natural resource gaming: Insights from the RIVER BASIN GAME. *Simulation & Gaming* 38, 421-442.
- Norgaard, R.B. (2010) Ecosystem services: From eye-opening metaphor to complexity blinder. *Ecological Economics* 69, 1219-1227.
- Perrotton, A., de Garine-Wichatitsky, M., Valls-Fox, H., Page, C.L. (2017) My cattle and your park: codesigning a role-playing game with rural communities to promote multistakeholder dialogue at the edge of protected areas. *Ecology and Society* 22, 35.
- Rieber, L.P., Smith, L., Noah, D. (1998) The Value of Serious Play. *Educational Technology* 38, 29-37.
- Valente, A., Marchetti, E., (2015) Make and play: card games as tangible and playable knowledge representation boundary objects, 2015 IEEE 15th International Conference on Advanced Learning Technologies. IEEE, pp. 137-141.
- Wartenweiler, T. (2018) Serious Play in Education for Social Justice - A Mixed-Methods Evaluation. *Journal of New Approaches in Educational Research* 7, 61-69.
- Wesselow, M., Stoll-Kleemann, S. (2018) Role-playing games in natural resource management and research: Lessons learned from theory and practice. *The Geographical Journal* 184, 298-309.



