Aalborg Universitet

Game feedback techniques

Eliciting big surprises in Business Model Design

Gudiksen, Sune Klok

Published in:
Proceedings of DRS 2014: Design's Big Debates

Publication date:
2014

Document Version
Publisher's PDF, also known as Version of record

Link to publication from Aalborg University

Citation for published version (APA):
Gudiksen, S. K. (2014). Game feedback techniques: Eliciting big surprises in Business Model Design. In Y.-K. Lin, K. Niedderer, J. Redström, E. Stolterman, & A. Valtonen (Eds.), Proceedings of DRS 2014: Design's Big Debates: Design Research Society Biennial International Conference 16-19 June 2014, Umeå, Sweden (pp. 204-219). Umeå University. http://www.drs2014.org/en/publications/

General rights
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

Take down policy
If you believe that this document breaches copyright please contact us at vbn@aub.aau.dk providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from vbn.aau.dk on: August 23, 2025

Game feedback techniques: Eliciting big surprises in business model design

Sune Gudiksen, Department of communication and psychology, Aalborg University, Denmark, sunekg@hum.aau.dk

Abstract

One major design debate is how design thinking can be applied in non-traditional design contexts. A particular hot new area is business model design. When entering new design grounds, codesign and the direction of design games have proven beneficial in the past, especially when it comes to engaging a cross-disciplinary circle of stakeholders and reframing and proposing new scenarios. In early business model design workshops in which I experimented with design games, observations revealed two concerns. First, to create big surprises that could lead discussions to novel directions, there was a need for techniques supporting the game purpose during play. Second, participants who are not predisposed to a constructionism agenda and who do not have an immediately playful attitude find it harder to relate to the game, and the rules and procedures governing it. This paper investigates through three design games how game feedback techniques during play can be used to elicit big surprises and how to sustain the subsequent action in which novel business model configurations tend to occur. The findings suggest game feedback techniques as a major addition to design games and the role of the facilitator as that of a co-enabler of the feedback.

Keywords

Design games; Feedback techniques; Codesign; Business models; Design thinking

One of the big design debates is whether design is a profession and a specialisation only for the design schools and design consultancies, or if it is a field with a set of practices and ways of doing things that could be fruitful in other contexts and disciplines as well. The former is concerned with keeping design as a highly specialised discipline. The latter is concerned with the understanding of these new contexts and how to transfer design thinking practises into non-traditional disciplines. This transfer brings about the major dilemma of describing the design field, as designers have been holding back because of 'the risk of oversimplifying its object of study' (Dorst, 2011, p.521). If more people choose to engage with these new contexts, then the field of business model practice and research are in search for business model design skills (Govindarajan & Trimble, 2011; Kaplan, 2012; Martin, 2009; Osterwalder & Pigneur, 2010). I see this new interest in design from the business field as an opportunity to explore new grounds.

A hot topic in management and innovation research and practice is business models or, more precisely, the activity of designing business models. In short, a business model encapsulates *value creation* (products/services for a specific customer group), *value capturing* (profit formula for the company) and *value delivery* (the activities needed for successful value creation and value capturing; this includes organisational processes and value chains). The business model is a description of the core business logic and is also, in some literature, described as the story that explains how enterprises work (Magretta, 2002; Osterwalder & Pigneur, 2010; Teece, 2010). New for design is to view value delivery and especially value capturing as a designerly issue. In situations where different professional expertise is brought together and new ideas, scenarios and eventually

solutions are in focus, codesign and especially the specific direction of design games have a successful past. Design games can create a structure that supports a mutual understanding between participants and downplays power relations (Ehn & Sjögren, 1991). The games can also provide a platform for challenging assumptions, reframing problems and enabling future scenario exploration (Buur & Gudiksen, 2012; Brandt, 2006; Brandt & Messeter, 2004). Furthermore design games can provide a constructionist learning agenda as an alternative to prediction and causal reasoning found in traditional management (Gudiksen, Poulsen & Buur, 2014; Roos, Victor, & Statler, 2004).

The proposition is that design games can play a vital role in enabling surprises in non-traditional design fields such as business model practice. Schön (1983, 1987) noted that surprises occur when our already established knowledge (knowledge-in-action) is challenged as part of a constructionist endeavour. Surprises are the first hint towards novel configurations. Nachmanovitch (1990, p.46) noted in his description of the improvisational nature that 'creativity must be sustained in time' to embrace surprises. Hence, the action one takes when these surprises occur is vital to the outcome. Either the surprises can be pushed aside and ignored or they can be embraced and sustained. In this paper, I explore through three business model design games how game feedback techniques can enable big surprises and sustain the subsequent action, and as a result, how this might be seen as a first step towards innovative business model configurations.

Characteristics of design games

The purpose of applying design games has evolved throughout the last 25 years. An early example of a design game stems from the field of architecture, in which Habraken and Gross (1988) developed nine concept design games. They explained that 'as designers we share certain concepts that cause us to act in certain ways; through these same concepts we also understand each other's actions' (Habraken & Gross, 1988, p.15). One example is 'the silent game', whose purpose is to create awareness of the way architects and designers pick up thematic aspects of the forms one sees. Habraken and Gross considered the games a research tool to help one understand design better, not a design tool. Within engineering, Bucciarelli (1991) developed the Delta design game to teach engineering design students about social processes in engineering work practices. The underlying principle of the game is to demonstrate to students the importance of communication, negotiation and entering compromises.

Around the same time, participatory design researchers experimented with how to involve and empower users through games. To differ from Habraken and Gross (1988) and Bucciarelli (1991), the early participatory design games had the intention of creating mutual understanding between system designers and users (employees). One example is the organisational kit game, which is a game for people involved in newspaper production (Ehn & Sjögren, 1991). Buur and Soendergaard (2000) suggested video card games as a format for bringing in user study data. They discussed in a collaborative setting possible insights to bring along in ideation stages. Brandt and colleagues used the term 'exploratory' and suggested that design games can be both a way to reach mutual understanding and a mean for future scenario exploration (Brandt, 2006; Brandt & Messeter, 2004). As Brandt (2011, p. 215) noted, design games are 'a result of active experimentation with various as-if-worlds through engagement with the game materials and co-players'.

In strategy and management, the Lego serious play approach shares traits with these design games. Developed by Roos et al. (2004), this approach suggests an alternative to traditional management thinking in which building procedures, a playful attitude and a constructionist agenda are at the core. I see it as three waves that continue to coexist (see Fig. 1). The first wave concentrates on the competencies of the designer or design team. The second wave focuses on participation and bringing together designers and users, and later various stakeholders. This wave evolved from a starting point of mutual

learning; an exploratory agenda was later added. In the third wave, which is still in its infancy, design games are increasingly becoming a part of non-traditional disciplines and a part of a more broadly industrial accepted agenda (see Gray, Brown, & Macanufo, 2010). I see the design game experiments in business model settings as part of this new wave, and I use the findings from the first and second wave as inspiration.

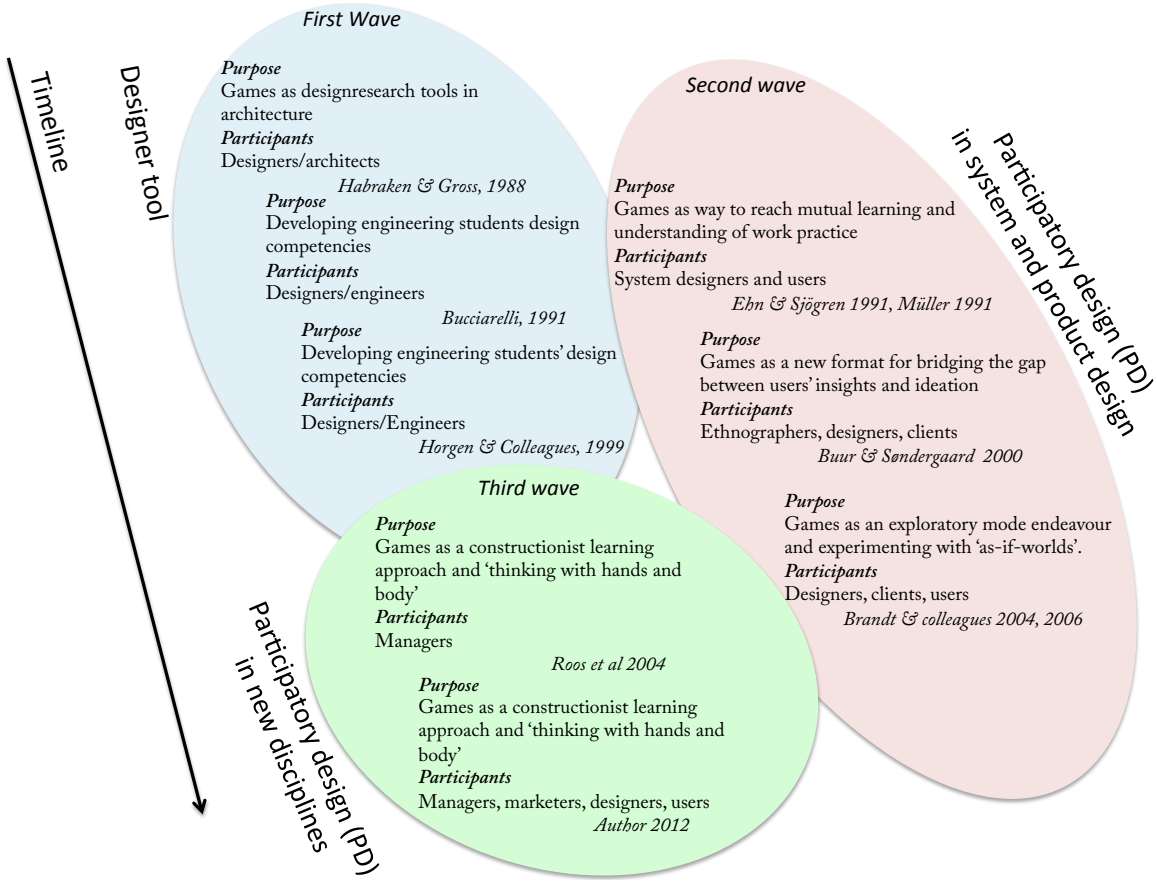

Figure 1. Overview of design game waves and selected literature examples

As design games begin to move beyond design profession circles, I see a growing interest in trying to define design games. In a recent PhD dissertation, Vaajakaalio (2012) suggested a play framework in which design games can be seen as a structure, tool and mindset. What stands out when one compares the play framework with codesign generative tools and techniques (Sanders & Stappers, 2008) is *structure*. I argue that, in the use of tools, one can have a playful attitude, although the structure increases the chances of having this attitude. A brief elaboration is needed to understand what is currently meant by structure. The following game structure elements reoccur in the literature: (1) *ludic learning space*, (2) *rules and procedures*, (3) and *materials*. I suggest adding a fourth element, namely *feedback techniques*.

Ludic learning space

In game studies in general, there is much debate about 'the magic circle'. As stated by pioneering play researcher Huizinga (1949), it is a playground in which special rules apply. He further argued that magic circles are 'temporary worlds within the ordinary world, dedicated to the performance of an act apart' (Huizinga, 1949 p.10). Zimmerman et al. (2007) argued that within the magic circle, specific meanings could emerge. Building upon the experiential learning model in which learning happens as a result of concrete

experiences, reflective observations, abstract conceptualisation and active experimentation (Kolb, 1984), Kolb and Kolb (2010) suggested that the ludic learning space is the highest form of experiential learning. The ludic learning space is characterised by principles such as freedom to play, chaos of uncertainty, welcoming foolishness and stepping out of real life. In this play space, I argue that the key is that uncertainty is allowed to exist and that embracing emergence is essential.

Rules and procedures

A game consists of a set of rules on what participants are allowed to do or not to do and a set of procedures to secure progress in the game (Brandt, 2006; Salen & Zimmerman, 2004; Schell, 2008). In video and computer game design, this is also called the game mechanics. For instance, a rule in Habraken and Gross' 'silent game' is that the designers are not allowed to talk, while the procedure in Lego serious play is that each participant builds individually before a shared object is created. Rules and procedures are what separate games from informal play or just play with materials. A playful attitude alone, therefore, does not create a game structure. However, the line is blurred as rules and procedures can quickly become part of a play situation.

Materials

Design games share traits with sketching, mock-up and prototyping. They are part of the reflective practicum proposed by Schön (1987), in which materials or constructs provide backtalk to the situation. They are also part of the notion of boundary objects proposed by Star (1989), in which plasticity is needed to evoke the boundary effect. Materials can include the game board and the game bricks, among others. A design game can be seen as a game structure of rules and procedures on top of this material use, which is added to enable specific conflicts, struggles and persistence in the design activity (Gudiksen, 2014; Gudiksen, Poulsen & Buur, 2014).

Feedback techniques

A design game structure therefore depends on the establishment of a ludic learning space, the application of rules and procedures and the use of various materials. I suggest adding another element: *feedback techniques*. In early business model design workshops, I observed two things. First, to create surprises that could lead the discussion to novel directions, there was a need for techniques supporting the game purpose during play. Second, non-designers and stakeholders who are not predisposed to a constructionism agenda and who do not have an immediately playful attitude find it harder to relate to the game and the rules and procedures. This initiated an exploration of ways to increase the chances of surprises; however, aside from a few notions on the role of the facilitator, I found little support in the design game literature. Therefore, I turned to alternative literature from disciplines such as video, computer and board game design, and even illusory techniques used in showmanship and magic circles. I borrowed the notion of *feedback* from the video game literature (LeBlanc, 2006; Salen & Zimmerman, 2004). For instance, LeBlanc (2006) proposed two kinds of feedback: (1) reinforcing uncertainty as a way to intensify dramatic tension and keep the game alive for a longer time and (2) inevitability, or ways to advance games towards closure.

In the following sections, I explore various game feedback techniques through three business model design games I applied during the last two years. I discuss the effects and relate them to the few existing notions in codesign and the application of this feedback in game studies in general.

Research method

This work is based on action research, i.e. experiments in design workshops in which I engage participants in trying out new collaborative methods. The results are based on an

experiential learning cycle based on four steps: designing tools, making design interventions in workshops, observing incidents and reflecting through the use of relevant theory (Kolb, 1984). As design researcher, I work with companies to propose a new course of action to help their community improve its work practices. Furthermore, the approach relates to the direction of research-through-design in which the knowledge gained lies not only in the resulting designs, but even more in the design actions, choices and reflections along the way (Frayling, 1993; Koskinen et al., 2011; Zimmerman et al., 2007).

I report the results of experiments with three different business model design games. The typical arrangement was a one- or two-day workshop where the business case owners, together with invited participants, went through several consecutive design activities I had prepared. Participants were a mix of these professions: business case representatives, entrepreneurs or employers from other firms, managers, marketers, designers, researchers and students. Towards the end of the day, I introduced evaluation sessions to get concrete feedback from participants on the activities and the overall format of the workshops. I based the empirical analyses on notes and observations of the day, as well as video recordings of the entire activity. Video is a vital addition to the direction of research-through-design as it helps document and communicate the results, thus preventing the results from being a gathering of reference materials (Frayling, 1993). The video recordings were transcribed and analysed through interaction analysis (Jordan & Henderson, 1995). By comparing incidents across the sessions, I am able to explain how the business model design games support the discussions of novel business model design initiatives.

In previous papers, I examined the various cases in depth and with other areas of focus such as the effect of the use of the materials and the rules and procedures. (Gudiksen, Poulsen & Buur 2014; Gudiksen 2014; Gudiksen, 2014). In this paper, I go directly to the moments where the surprises seem to arise in order to examine the effect of the feedback techniques and not the game as a whole. Therefore, I provide several examples in each design game but are less concerned with a complete overview of a single case.

Game one: Pinball customer flow

In the first game, I introduced the concept of a pinball game to explore business model issues such as customer flow, value offerings and revenue streams (Johnson, Christensen, & Kagermann, 2008; Osterwalder & Pigneur, 2010). In this way, it is a combination of value creation for the customers and value capturing for the firm.

The activity followed a start-up pattern in which the groups discussed ball receptacles. This was followed by the placement of various barriers, helpers and value offerings proposed by the participants along the way. The design material was consciously chosen for its ‘dynamic quality’: the balls roll down the slope, bouncing off barriers and redirecting their flow as if they have a mind of their own.

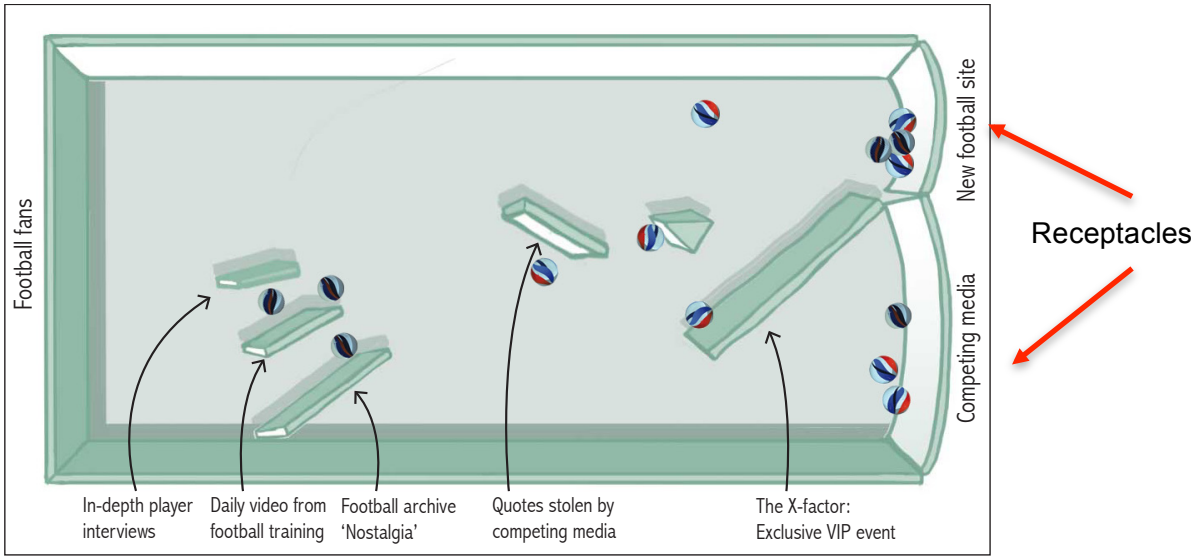

Figure 2. The Pinball playing field in the news production company. In this case, the chosen receptacles are 'New football site' (intended new value offering from the company) and 'Competing media'.

Case example 1: News production company

In the first example, I challenged a regional news production company to try the pinball game. The company entered the workshop with a focus on devising an online news service to attract football fans and attempt to amend decreasing physical paper sales. They were forced to consider niche markets and value propositions. In general, they were looking for ways to capture business value from digital content offerings. Participants were case owners, marketers, designers and students.

The news production company was inclined to experiment with ball trial runs. Within 30 minutes, the team ran five ball experiments. By the third one, the group had established that they needed an X-factor barrier (something of more value than they already had in the game) to help the balls run in the direction of the new media site, but the weight of the balls was so strong that they physically moved the barrier.

Case owner A: Let us run the dream scenario (lets go of the balls).

Participant A: Oh, I haven't thought about that. It was not strong enough.

Participant B: Bad press, no customers.

Participant C: That just illustrates the market conditions.

Case owner A: Is that the dream scenario—half the market and randomness?

This experiment creates a discussion about the X-factor barrier and how to make it stronger, opening up the field once again. Each ball experiment may be seen as a scenario being tested; the team moves back and forth between reflection and action. By the fourth time the group members ran the balls, it seemed they were running out of ideas on how to make the balls roll towards the media site:

Participant D: They hijacked all the nostalgia (points to the competitor site)

Participant E: What can you do about your archive so it becomes unique?

The discussion continued and they rolled the balls again quickly two times, this time moving the major ‘money’ obstacle, but nothing helped. After the second quick roll case owner B is frustrated:

Case owner B: Let’s just remove the money obstacle (the X-factor barrier gets a wider angle).

By removing the money obstacle, the participants knew that the realism was gone, so they quickly worked towards a more realistic new scenario. It was a continuous negotiation of trying out, redefining the business model and opening up again, jumping between a divergent and convergent mode of thinking—a kind of abductive reasoning (Dorst, 2011; Kolko, 2010). The news production company case owners took with them an enhanced understanding of the need for more value offerings to differentiate them from competitors.

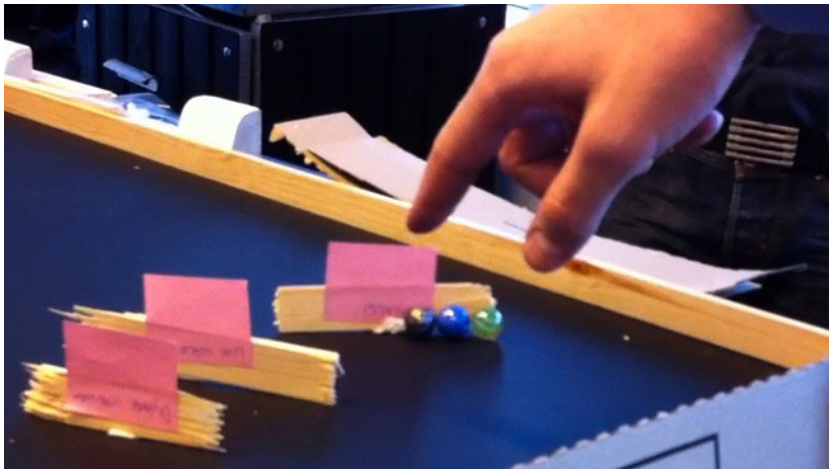

Figure 3. Customers (balls) are stuck behind a barrier in the news production company

Case example 2: Amusement park company

I introduced the pinball game to a large amusement park company. The company presented a multifaceted problem of how to create a smoother experience around the park for the visitors, with a start-up idea of using digital bracelets, as well as how to get customers to spend just a little more money at each place. Aside from a manager and marketer from the amusement park, the participants were consultants, researchers and students. In this team, the participants used more time before experimenting with the balls. They first tried out the balls after I asked the question, ‘Do you have to build it all before testing?’, but this immediately led to surprises and restructuring.

(The participants let go of the balls and watch the run of the balls)

Participant A: Oh, this is good.

Participant B: This table is tilting well!

Case owner A: This was very good. Half of the guests in the right ending point (half of the guests end up in the receptacle in which they have used a bit more money).

Participant C: Then somebody is stuck already when the [digital] bracelet is delivered.

Participant D: There is a bit of ‘revenue highway’ over here.

Case owner B: Those are the people who always use more money, those who have a little more to begin with. They have been awarded a pay rise!

Case owner A: Or who use their pension funds!

Here, participant D introduced a business term to name the stream of balls he observed as a ‘revenue highway’. Case owners A and B tried to find a reasonable explanation based on their park experience: there are ‘people who always spend more money’.

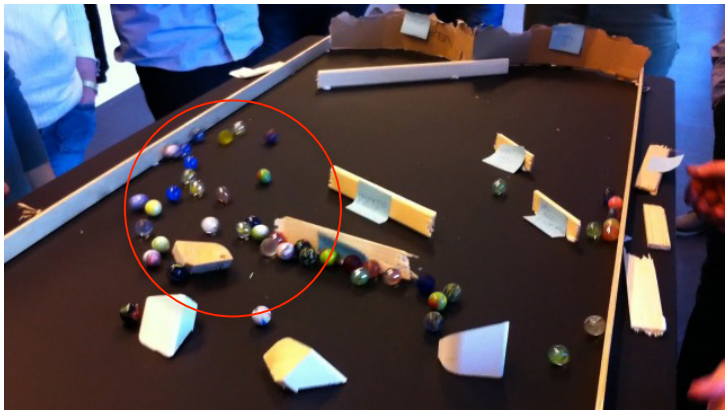

Figure 4. The ‘revenue highway’ in the amusement park case

The causality of the physical world is brought to bear on the business context, not as a ‘true’ simulation, but as hypotheses to be shared. The term *revenue highway* is elegant in its simple combination of business term and metaphor. It is an example of a vibrant, socially constructed concept that has the potential to move the conversation in an innovative direction (Buur & Larsen, 2010). The term was used throughout the rest of the activity. The amusement park personnel in the evaluation session stated that they went home with new insights regarding the way to structure the value offerings in the park. The manager was inclined to use the activity at employee meetings afterwards.

Feedback technique: Surprise through randomness

The news production company experimented many times with the balls; as facilitators, there was no reason to suggest try-outs. It was different with the amusement park company. Based on observation, it was not that the participants were reluctant to experiment; rather, they were just focused on the making and suggestions of value offerings. I wanted to increase the chances of surprise through the try-outs. The surprises happen in this case either through the materials alone, e.g. the balls and the foam barriers, or with the support of the facilitator. Letting the balls go can be compared to rolling the dice in board games; it belongs to the family of games of chance described by Caillois (2001). Participants can suggest value offerings and try to predict the run of the balls, but they cannot know for sure. Hence, as long as participants keep experimenting, uncertainty is present and surprise is still a high possibility. In this case, the trial runs functions as a way to eliminate habitual thinking and enable new perspectives followed by action taking. In both examples, following the ball try-outs, the participants immediately started to restructure the existing picture and explore new scenarios. Another observation about the pinball game is that it is hard to sustain the scenarios that the participants make, as the changes happen at a rapid pace.

Game two: Market dominance

For the second game, I departed from management tradition by rethinking the typical ways of performing competitor analysis. Competitor analysis is seen as an important factor in business model innovation (Casadeus-Masanell, 2011). After an initial brainstorm and discussion on the types of competitors, three competitors were chosen together with the business case. Participants were asked to role-play a competitor and write on larger balls an 'advantage', they would argue the competitor had in the market. The procedures of the game were an open discussion and a democratic roundtable agreement activity on whether the 'advantage' would be aloud to enter the market. In this way, the group, through the colours of the balls, 'painted' a picture of the market situation. Finally, halfway through the game, I proposed a change of perspective on one of the competitors, asking the participants to consider that competitor a partner instead. I gave the participants a new set of balls for them to discuss the following question: If we are partners, what kind of co-value offerings can we make?

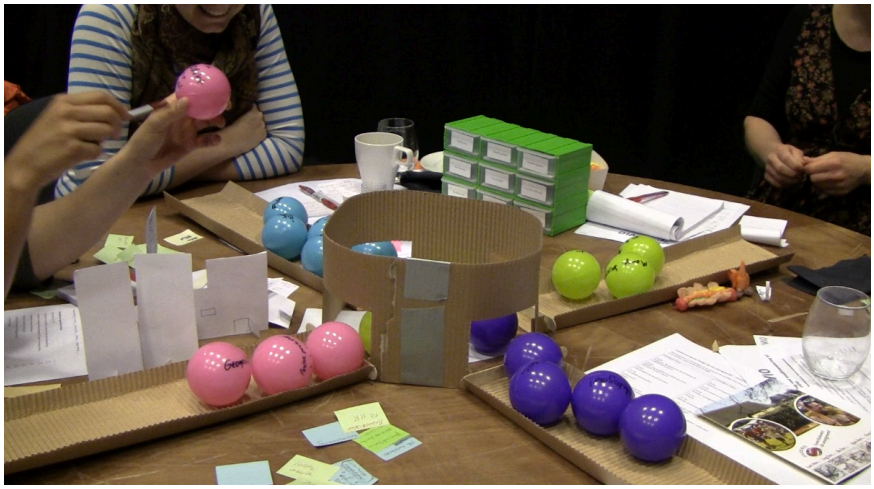

Figure 5: Painting a market picture in the cultural heritage company

Case example 1: Cultural heritage company

In the first example, I ran the activity with a cultural heritage consultancy company that focused on offering visitors at museums, experience centres and so forth feel-good events with a high degree of both entertainment and learning and that related to the history and theme of the place. The company was trying to expand its clientele and new perspectives on the business model after some initial successful deals with a couple of museums. In this example, I, as facilitator, had just asked the participants to consider one of the competitors as a partner instead.

Case owner: But isn't it the same value offering we deliver?

Participant A: As I see it, no, it's more like we offer the frames or the setting, so you will have to customise your service to our settings. We can't afford to build a new area as we have low visitor numbers, but if you offer package solutions, it might look different.

Case owner: That's right, I would have to change my services and compromise in order for us to collaborate.

(In the end, the group threw a new coloured ball, 'tailor-made product', into the middle with the co-offering.)

In this dialogue, we see how the turn of events resulted in a novel discussion on partnerships instead of competition. The case owner realised that she might have something to offer a museum that was originally considered a competitor.

Case example 2: Personal development consultancy

In the second case, I challenged a start-up consultancy to try the market dominance game. The consultancy came in with the following problem: they suspected that modern-day business people did not have time for soul searching and personal development, even though they might be in search of this. The value offerings the consultancy company focused on were courses on meditations, visualisations and movement patterns. The group had to discuss how a previous competitor, *A Union,* could be a partner instead.

Participant A (roleplaying a Union): I guess I might be interested if we can offer something together like various courses or similar run of events.

Case Owner: What kind of courses could we do together?

Having discussed for a while what kind of co-offering they could think of, the case owner eventually settled on a red ball with the label 'twin-axle lecture', referring to a package in which both the case owner and the union offer courses. Having previously considered the Union to be a strong competitor the focus is now on how to design a co-offering in which both firms receive value, beyond what is possible if they were alone.

Figure 6. The co-offerings (red balls) in the market dominance game.

Feedback technique: Surprise through a change of purpose

This feedback technique has some overlap with the act of conjuring by magicians or illusionists; the game deliberately deceives the participants to create big surprises, which can eventually lead to new insights and a revelation of ideas to pursue. Although the shift of events from that of a competitor view to a partnership view does not have the grand mystery effect that the illusionists can provide, it corresponds with a typical conjuring endeavour called *transformation* in the showmanship literature (Fitzkee, 2011; Sharpe, 2003). A transformation is simply defined as 'from being in this way to being in that' (Fitzkee, 2011, p.). It is a deliberate deception to elicit surprises and a specific viewpoint.

LeBlanc (2006) noted that, in many computer strategy games, a feedback technique called *fog-of-war* is used to limit information in a certain period of the game. The difference is that, in the market dominance game, there are no hints of unrevealed information. Both the complete conjuring and the 'fog' have potential; it depends on the game design idea and how much to reveal beforehand. Although I did not observe it in the two examples, ethical issues might arise. Few people enjoy being deceived unless they are somewhat prepared for it. If conjuring is to be part of design facilitation and a specific kind of game feedback technique, it seems important to address the participants' preparedness for the act of conjuring.

Game three: Revenue circle

The last game combine the business model elements of value propositions, customer segment, customer relationship and revenue streams corresponding to major categories of importance in the business model literature (Osterwalder & Pigneur 2010; Johnson, M. W., Christensen, C. M., and Kagermann, H. 2008). Part of the idea was also to have more than one customer segment present to see how a change in one situation might change the whole value offering picture of the business. I provided a paper surface in which I had the four categories in three circles and each of them deals with a specific value proposition and customer segment (see Fig. 7). *Squares* are the value propositions. *Circles* relate to a specific customer group. *Hearts* are the characteristics of the relationship between the company and the customer. *Arrows* are the revenue types currently under consideration. After filling out every space, the participants had to throw a large dice with a different kind of revenue type on each side.

Figure 7. The revenue circle game surface (left). The large revenue type dices (right).

Case example 1: Company on city planning and user involvement

This company came in with the following problem: They had run a successful project over the past year and had collaborated with 12 local municipalities on youth involvement in city planning. Now, they wanted to keep the success going by delivering new products or services.

The group start by discussing the existing revenue types, which is based on direct sale and selling in various phases of a project. Throwing the dice a couple of times do not give them any new insights, but the third time they throw it they experience a revenue type they could maybe use instead. The revenue type is 'license'. As the company had developed a set of collaborative design methods from the first project they discuss the opportunity of selling a license municipalities. This is followed by further discussion in which a participant also suggests that the company can sell process facilitation along side the design methods.

The company saw this as a new opportunity to explore further though they also indicated that it was maybe to early to think about license, as they needed more project experience.

Case example 2: Coaching consultancy on fertility treatment

In the last example a consultancy company on helping couples with fertility related issues came in with the problem that revenues were decreasing and she had a had time finding new ones. She had written a book with the subject of egg donation, and offered various courses and workshops on fertility related issues. She believed that the problem was related to marketing aspects and the lack of visibility.

In this case they worked with three customer types: A sperm donor bank in which they write ‘negotiation of percentage’ as the revenue type, a man and the revenue type of ‘subscription’, and a woman with the suggested revenue type of ‘direct sale’.

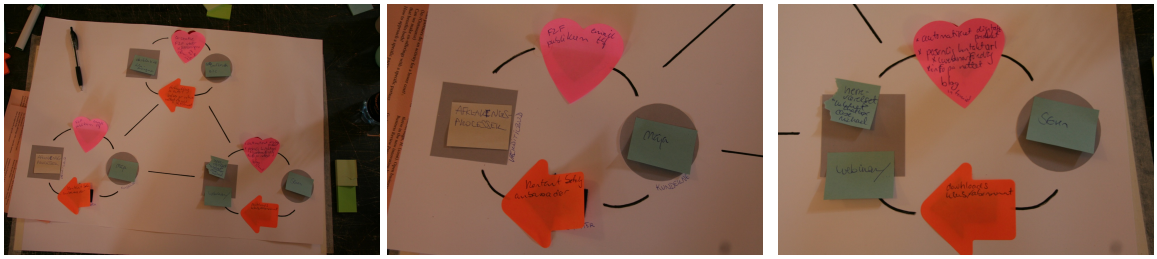

Figure 8: Revenue circles in the Coaching consultancy case

Throwing the dice triggers a discussion in the group in which a new revenue type also leads to a new perspective on the value propositions. The dice shows ‘subscription’ and this leads to considerations over what kind of information and knowledge the consultancy can provide on a monthly basis in regards to either the man or the woman.

In the group they continue to throw the dice in order to discuss new revenue types, and in the end they simply examined the dice for every type. The consultancy owner ended with several revenue types she wanted to explore further before settling on a specific kind.

Feedback technique: Surprises through forced analogies

In cases where participants are stuck or just need a beginning point in exploration, a simple forced analogy can be used as a way to get the imagination going. A forced analogy is comparing two dissimilar objects by continuing to list the attributes of one item until a comparison can be found that sparks the imagination. The first combination might not spark any new ideas, but as participants keep trying, new ideas tend to arise. Therefore, it is important for the facilitator to encourage throwing the dice again for new combinations to be discussed. Creative thinking expert Michalko (2010) argued that forced analogies are a way to take the forces operating in a challenge, change their positions and neutralise a specific impact. In the revenue stream, circle game participants are ‘forced’ to discuss a specific combination and work with this particular opportunity. I have experimented with forced analogies in other games. For instance, we used a children’s toy called a ‘flip-flap’ as a way to investigate various marketing channel opportunities (Gudiksen, 2014). Here, the participants also created the categories, which was not the case in the revenue circle game. In my experience, who should decide the categories depends on the presumed knowledge that participants have on a subject; a specific group might be good at thinking about a range of channels, but not a range of revenue streams.

On feedback techniques and the facilitator role

I demonstrated how the feedback techniques create surprises in various ways and showed how the participants handled these surprises. It differs based on whether participants initiate the feedback themselves or if the facilitator induces it. I find that the relation between the design game and the facilitator is undervalued in the literature; I consider it crucial, as the facilitator, in my experience, can make or break the situation.

Creating surprise moments

In my experience, surprise incidents do not just happen by default in business model design situations through the use of materials. To the constructionist endeavours, I therefore added ludic elements, e.g. rules, procedures and feedback techniques. The feedback techniques in particular provided dramatic tension and increased the chances of surprise. I find that the participants, after three to four rounds of try-outs either with the balls or the dice, began to wish for closure. The insights from the surprise moments need to be dealt with in new, advancing activities ways afterwards.

Sustaining surprise moments

Novel ideas are tough to communicate because they do not yet have models; thus, I find tangibility to be of major importance in sustaining and working further with the insights from the surprise moments. For instance, the red balls in the market dominance game easily show the new insights, which can be brought along in subsequent activities. In future workshops, I will pursue how, instead of pre-planned activities, one can embrace these moments of surprise and sustain the novelty by providing toolkits on the fly. To be able to comprehend and work with surprise moments demands careful attention from the facilitator and a repertoire of design games to adopt during the workshops.

Enforcing feedback techniques.

In video and computer games, computation upholds the rules and, through algorithms, decides what happens in response to player inputs (Juul, 2003). In design games, as in some board games, I find that the game materials together with the facilitator uphold the rules and provide feedback. For instance, in the pinball customer flow game, the balls provide feedback, but if no try-outs occur, the facilitator reinforces it as part of the game. The role of the facilitator is up for a continued discussion. Schein (1999), among others, argued that it is the role of the facilitator to take care of the process, but in an objective manner in which there is no interference with the content. Brandt (2011) contradicted this viewpoint and stated that, together with colleagues, she has had good experiences with the facilitator being part of the process and openly participating with ideas, understanding and preferable solutions. I argue that if the game designer and the facilitator are in fact the same person, this would create an advantage for that person as provoker through the game purpose and through active participation. In line with the findings in the workshops, I suggest instead that the facilitator can interfere in a more objective, sophisticated manner through the application of game feedback techniques, not by specific content suggestions during play. If participants both create and play the game as part of the workshop, it might be a different matter. Furthermore, the facilitator, through the position of occasionally observing the situation, might be the one who can identify and hold on to moments of surprise. This might turn out to be difficult to attend to if there is a content agenda from the facilitator as well.

References

Brandt, E. (2006). Designing exploratory design games: A framework for participation in participatory design? Proceedings of the ninth conference on Participatory design: Expanding boundaries in design - Volume 1, August 1-5, 2006, Trento, Italy. Edited by Gianni Jacucci, Finn Kensing, Ina Wagner and Jeanette Blomberg.

Brandt, E., & Messeter, J. (2004). Facilitating collaboration through design games. Proceedings of the eighth conference on Participatory design: Artful integration: interweaving media, materials and practices - Volume 1, July 27-31, 2004, Toronto, Canada. Edited by Adrian Bond, Andrew Clement, Fiorella de Cindio, Doug Schuler and Peter van den Besselaar.

Bucciarelli, L. L. (1991). Delta design game. MIT lecture notes of introduction to aerospace engineering and design.

Buur, J. & Gudiksen, S. (2012). Innovating business models through pinball designs. In *Proceedings of the 18 Design Management Conference Leading Innovation through Design.* MassArt. Boston: 337-248.

Buur, J., & Larsen, H. (2010). The quality of conversations in participatory innovation. *CoDesign*, *6*(3), 121-138.

Buur, J., & Soendergaard, A. (2000). Video card game: An augmented environment for user centred design discussions. In Proceedings of DARE 2000 on Designing augmented reality environments (pp. 63-69). ACM.

Caillois, R. (2001). *Man, play, and games.* Chicago, IL: University of Illinois Press.

Casadesus-Masanell, R., & Ricart, J. E. (2011). How to design a winning business model. *Harvard Business Review*, *89*(1-2), 100-107.

Dorst, K. (2011). The core of design thinking and its application. *Design Studies, 32*(6), 521-532.

Ehn, P., & Sjögren, D. (1991). From system descriptions to scripts for action. *Design at work: Cooperative design of computer systems,* 241-268.

Fitzkee, D. (2011). *The Trick brain: The Fitzkee trilogy.* Utah: Magic Box Productions.

Frayling, C. (1993). *Research in art and design.* London: Royal College of Art.

Govindarajan, V., & Trimble, C. (2011). The CEO's role in business model reinvention. *Harvard Business Review*, *89*(1-2), 108-114.

Gray, D., Brown, S., & Macanufo, J. (2010). *Gamestorming: A playbook for innovators, rulebreakers, and changemakers*. Sebastopol, CA: O'Reilly.

Gudiksen, S., Poulsen, S., & Buur, J. (2014). Making business models. *CoDesign, 10(1), p. 15-30.*

Gudiksen, S. (2014). Business model design games. *Creativity and innovation management journal. Special issue 'Gamification of innovation' (forthcoming).*

Gudiksen, S. (2014). *Co-designing business models: Engaging emergence through design games.* Ph.D. dissertation. Aalborg University.

Habraken, N. J., & Gross, M. D. (1988). Concept design games. *Design Studies*, *9*(3), 150-158.

Huizinga, J. (1949). Homo ludens: A study of the play element in culture (Vol. 3). London: Taylor & Francis.

Johnson, M. W., Christensen, C. M., & Kagermann, H. (2008). Reinventing your business model. *Harvard Business Review*, *86*(12), 57-68.

Jordan, B., & Henderson, A. (1995). Interaction analysis: Foundations and practice. *The Journal of the Learning Sciences*, *4*(1), 39-103.

Juul, J. (2003). The game, the player, the world: Looking for a heart of gameness. M. Copier and J. Raessens (eds). Proceedings of Level-Up: Digital games research conference. Utrecht. University of Utrecht: 30-45.

Kaplan, S. (2012). The business model innovation factory: How to stay relevant when the world is changing. Hoboken, NJ: Wiley.

Kolb, A. Y., & Kolb, D. A. (2010). Learning to play, playing to learn: A case study of a ludic learning space. *Journal of Organizational Change Management*, *23*(1), 26-50.

Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development (Vol. 1). Englewood Cliffs, NJ: Prentice Hall.

Kolko, J. (2010). Abductive thinking and sensemaking: The drivers of design synthesis. *Design Issues*, *26*(1), 15-28.

Koskinen, I., Zimmerman, J., Binder, T., Redstrom, J., & Wensveen, S. (2011). *Design research through practice: From the lab, field, and showroom.*

LeBlanc, M. (2006). Tools for creating dramatic game dynamics. Salen, K. and Zimmerman (eds.). *The game design reader: A rules of play anthology,* (pp. 438-459). Cambridge: MIT Press.

Magretta, J. (2002). Why business models matter. *Harvard Business Review*, *80*(5), 86-93.

Martin, R. L. (2009). The design of business: Why design thinking is the next competitive advantage. Boston, MA: Harvard Business School Press.

Michalko, M. (2006). *Thinkertoys: A handbook of creative-thinking techniques.* Ten Speed Press.

Nachmanovitch, S. (1990). *Free play: Improvisation in life and art*. New York, NY: Tarcher.

Osterwalder, A., & Pigneur, Y. (2010). Business model generation: A handbook for visionaries, game changers, and challengers. Hoboken, NJ: Wiley.

Roos, J., Victor, B., & Statler, M. (2004). Playing seriously with strategy. *Long Range Planning*, *37*(6), 549-568.

Salen, K., & Zimmerman, E. (2004). *Rules of play: Game design fundamentals*. Cambridge, MA: Massachusetts Institute of Technology.

Sanders, E. B. N., & Stappers, P. J. (2008). Co-creation and the new landscapes of design. *CoDesign*, *4*(1), 5-18.

Schell, J. (2008). *The art of game design: A book of lenses.* Boston, MA: Morgan Kaufmann.

Schein, E. H. (1999). *Process consultation revisited: Building the helping relationship*. Reading, MA: Addison-Wesley.

Schön, D. A. (1983). The reflective practitioner: How professionals think in action. New York, NY: Basic Books.

Schön, D. A. (1987). *Educating the reflective practitioner.* San Francisco, CA: Jossey-Bass.

Star, S. L. (1989). The structure of ill-structured solutions: Boundary objects and heterogeneous distributed problem solving. *Distributed Artificial Intelligence*, *2*, 37-54.

Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning*, *43*(2-3), 172-194.

Vaajakallio, K. (2012). Design games as a tool, a mindset and a structure. Aalto University, School of Arts, Design and Architecture.

Zimmerman, J., Forlizzi, J., & Evenson, S. (2007). Research through design as a method for interaction design research in HCI. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 493-502). ACM.

Sune Gudiksen

Sune Gudiksen has worked with design thinking, co-design and design games in regards to new frontiers such as service design and business models. He has recently defended a Ph.D. dissertation named ‘Co-designing business models: Engaging emergence through design games’. He has published several articles on the subject to international design and innovation journals and conferences.