The End of the Rainbow: In search of crossing points between organizations and games

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ABSTRACT
Against the backdrop of an unstable economic and social environment, managers and scholars of organization have been taking an increasing interest in computer games as a source of inspiration. This paper reviews three perspectives that have been taken when attempting to enrich organizations with elements of computer games. We consider the design of computer games to be the most interesting of the three perspectives and present two case studies in which game design principles were applied in an organizational setting. The studies show the value of such a design process as an instrument for exploring a complex organizational system. Furthermore, the use of isolated game elements in a finite organizational context was shown to be an effective way to create effects such as transparency and curiosity.

Keywords
Game analysis and design applied to non-game phenomena

INTRODUCTION
This paper reports on attempts to productively put the power of games to use in organizations. We start out by reviewing three perspectives that can be taken when looking at computer games from the vantage point of organizational life. We will then settle on one of those perspectives - the design of games - and go on to describe how this approach has been applied to organizations in two case studies. We will discuss the findings of these case studies in relation to the three perspectives identified earlier and we will close with some conclusions about what remains to be done in this area of research.

THREE PERSPECTIVES ON COMPUTER GAMES
Today's organizations and their managers are confronted by circumstances that are unique in the history of organizational life: conditions such as the rapid introduction of new technologies, globalization, shifts in demographics and the instability of the economic environment (Garud et al. 2008; Eisenhardt and Sull 2001; Edmondson 2008; Scott and Davis 2007; Davenport 2005; Castells 2000; Child 2005). Many organizations are facing these conditions using ways of working and structures that were designed in and for a different era. These organizational forms have worked in times past but may not be ideally suited for today's economy and society (Hamel 2007). There has been a call for organizational designs that retain vitality and that enable learning (Weick 2004; Jelinek et al. 2008; Spear 2004). Furthermore, there has been a realization that organizations are not taking full advantage of the skills of young workers who have grown up in the current social and technological context.

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Against this backdrop, one direction in which some managers and scholars of organization have been looking for inspiration is that of computer games. In this section, we will review three perspectives that have been taken when looking at computer games from the vantage point of organizational life:

- Focusing on the technological aspects of computer games
- Focusing on the behavior evoked by computer games
- Focusing on the design of computer games.

Focusing on the technological aspects of computer games

In the second half of the last decade, computer games suddenly started to be taken seriously by the business community. This was instigated by a sudden prominence in popular culture (and subsequent fall from grace) of the virtual world called *Second Life* (Linden Research 2003), as well as by research reports declaring a Massively Multiplayer Online Game (MMOG) such as *World of Warcraft* (Blizzard 2004) to be "Leadership's Online Labs" (Reeves et al 2008).

In digital games research, ethnographic studies of actual practice in and around these virtual worlds had shown the emergence of new ways of organizing (Copier 2007; Taylor 2006). There had also been some anecdotal evidence of employers using skills in online games as a decisive factor in recruitment (Seely Brown and Thomas 2006) and scholars studying group behavior in virtual gaming worlds were drawing parallels with cross-functional teams in organizations (Steinkuehler and Simkins 2007). Combined with a fair amount of media attention, this led to somewhat of a hype in the business community. This large-scale teamwork, rapid decision-making and risk-taking behavior managers saw in games was exactly what they were looking for in their organizations.

Elements that drew attention in particular were the way MMOG's fostered collaboration by making the classes and races of the game characters complementary and by making it difficult to advance in the game by oneself as well as the way community building was encouraged by the use of quests (Wolf 2007). Another aspect was the signaling function of the avatar: the way the avatar gives off signals about the experience and abilities of a player, but not about their age or gender. This led some authors to declare *World of Warcraft* a meritocracy (Reeves et al. 2008), with teams being based on skills instead of social relations.

In the final analysis, this first wave of interest takes an exceedingly literal view of computer games. It approaches games as a form of technology, putting it on par with technologies such as those in use to support collaboration in organizations. This perspective thus remains limited to what happens on the screen, as is evidenced by a representative quote: "[W]e're convinced that someday important enterprise tasks will be performed by people in an environment that looks a lot like today's massive multiplayer games. Our forecast is that this will come about in stages in which subsets of game ingredients are introduced into business software currently used by information workers." (Reeves and Read 2009: 227). When taking a bit more distance from what happens on the screen, another aspect of computer games comes into focus: what happens in front of the screen, i.e. the behavior of players.

Focusing on the behavior evoked by computer games

We are currently in the midst of a second wave of interest in computer games by the business community, brought about by the view that computer games have the remarkable capacity to make mundane or routine tasks more interesting and fun. This realization has led to various attempts at "gamification": the use of game design elements

in non-game contexts (Deterding et al. 2011). In a business or commercial context, the aim of gamification usually is to increase turnover by selling more products or making employees work harder.

There have been fairly innocent examples of gamification such as the *Chorewars* application (Davis 2007) that makes household chores into an MMOG as well as the many examples in *The Fun Theory* initiative by Volkswagen, which encouraged sustainable behavior (such as recycling bottles) by transforming it into a little game. But a more prevalent use of gamification is to increase engagement with online applications and websites. The emblematic and one of the most successful examples of this is *Foursquare* (Foursquare 2009): "You have an activity you wish your users to do and therefore give points for it. You have badges or levels users get for certain points or activities. And to create some competition between users, you throw in a leaderboard for good measure." (Deterding 2011: 22). Similar recipes have been directed at managers: "integrate productivity-boosting game mechanics into your business", which involves "the use of status symbols like high scores, virtual badges of achievement, and 'rare' virtual items" (Edery and Mollick 2009: 160).

One of the central problems with this "just add points" principle (Deterding 2010) is that its replay value is limited. It is an extrinsically motivated mechanic in that activities are not performed for their inherent enjoyment (Ryan & Deci 2000). Rather, the behaviors are performed to satisfy an external reward (points and badges) or to attain ego enhancements (beat your friends' ranking on the leaderboard). As such, gamification is not a sustainable strategy for engagement. The criticism from game-design circles on the gamification trend has centered on the contention that using isolated game elements does not constitute proper game-design. According to many game designers, full-fledged games are based on more refined mechanisms: points and badges are "the least important bit of a game, the bit that has the least to do with all of the rich cognitive, emotional and social drivers which gamifiers are intending to connect with." (Robertson 2010)

When looking at this gamification trend from the perspective of organization and management theory, another form of criticism can be formulated. To adequately frame this criticism, we refer to Scott & Davis (2007), who take a systems perspective in organization theory and distinguish between three views: rational system, natural system and open system. The rational system perspective is the one inspired by engineering at the beginning of the twentieth century, seeing the organization as unified and formalized: a machine, to which general principles can be applied. However, the rational system perspective has given way in the middle of the last century to natural models, which put a stronger emphasis on human actors and their relations. In this perspective, the organization is not so much designed; it evolves. The third, current perspective (which can be combined with both a rational or a natural view) is that of the organization as an open system: organizations are loosely coupled, their boundaries are permeable and they have a reciprocal relationship with their environment. It seems that the field of game design has skipped the rational system perspective, starting from the assumption that behavior or experiences cannot be designed, but rather evolve or emerge. One could therefore say that they work from a natural system perspective. In a sense, the "gamification" movement is a throwback to the rational system perspective in that it is a design approach based on general prescriptions, which its proponents say work in similar ways in any, or at least in many contexts. The focus is on isolated game elements, not on the player experience with its lack of predictability as the design objective.

The interest in "gamification" shown by the managerial community seems to indicate that indeed, many organizations are still being run "by long-departed theorists who invented the conventions of 'modern management' back in the early years of the 20th

century." (Hamel 2007: ix) From this perspective, the gamification trend is worrisome in that it sends the wrong message to the business community about the potential that computer games have. It chooses not to focus on the striking similarities that well-formed gameplay - or "meaningful play" (Salen and Zimmerman 2004: 34) - shows with Castells's ideal image of the modern worker in a networked enterprise: the "autonomous, educated worker able and willing to program and decide entire sequences of work." (Castells 2000: 257). Rather, it places games in the outdated field of *scientific management* (Taylor 1911), focusing on optimizing employee productivity through the use of extrinsic motivators.

But even if gamification of organizations were desirable, there are objections that can be made to its feasibility from a theoretical perspective. One of the main problems is formed by the fact that between organizations and computer games, there is a sizable gap of what Shaffer (2005) calls epistemic frames: "the conventions of participation that individuals internalize when they become acculturated". This means that it is very hard to "transplant" a mechanic that works in a computer game environment to an organizational environment. It could be effective in an isolated and temporary organizational context, but the dominant epistemic frame of the organization will likely take over after some time and render the mechanic ineffectual.

To overcome these problems, an integrated rather than an isolated view is needed. We need to go one level deeper: to the design of games.

Focusing on the design of computer games

By exploring the potential that the design of computer games holds, we do not mean designing business simulations (Greenblat & Duke 1981) or designing games that cross over to (business) reality (McGonigal 2011). Although it is obvious that these approaches hold value, what we aim to do is take the process of game design and apply it to the design of organizations and organizational artifacts. In this way, we are not "transplanting" a designed object (a game mechanic) from one context to another but rather a design process. We anticipate this re-contextualization of the design process to be more feasible than that of the designed object.

We approach the game design process by distinguishing three constituting elements of computer games.

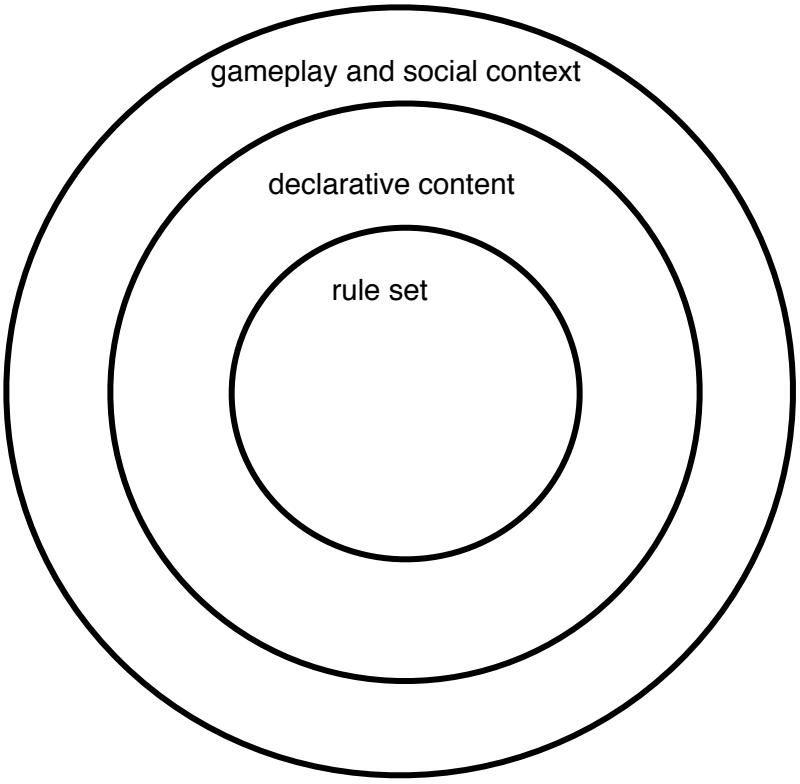

Figure 1: Three elements of games (Salen and Zimmerman 2004; Van Mastrigt 2006).

The inner circle is the rule set, which forms the essential logical and mathematical structure of a game. The rules prescribe what is possible and impossible in this environment and how the system reacts to actions performed by the user. This inner circle is the core of the design for a computer game. The rule set is communicated through the representation or declarative layer which is shown on the screen. The outer circle is the social layer where the actual behavior of the players takes place. The behavior and experiences that take place in the outer circle are ultimately the result of the design of the inner circle. This explains why an iterative approach is important in game design: "it is not possible to fully anticipate play in advance" (Salen and Zimmerman 2004: 12). In essence games are emergent systems that consist of a set of interacting elements. An emergent system that takes on new dimensions when it is set into motion, thus generating unpredictable patterns. What good game designers realize is that they cannot directly design behavior. They are tackling what Salen and Zimmerman call a second-order design problem: a "game designer designs the rules of the game directly but designs the player's experience only indirectly" (Salen and Zimmerman 2004: 71). Fullerton (2008) was the first to give a clear description of the iterative game design process which now forms the basis of most game design curricula. It captures the second-order design problem because it has the player experience as a goal and the rule set as the object of design. Through a prototyping process involving the players, there is a constant evaluation of the design goals.

Of the three perspectives reviewed, it is our contention that focusing on the design of computer games holds the greatest potential for organizations and their managers. We believe this to be the case because the game design process is aimed at designing complex behavior and experiences. These are elements closely related to the complexity

of organizational life that the current generation of organizational scholars and managers is called on to address. In the next section, we will describe two case studies in which these ideas were put to work. The question we are trying to answer is: what value does computer game design hold for the design and development of organizations?

PUTTING THE IDEAS TO WORK

In this section we describe two organizational interventions modeled after the game design process that were undertaken to explore the potential that game design holds for the design and development of organizations. Both case studies have been documented individually in more detail (Van Bree et al. 2010; Van Bree & De Lat 2011).

Methodology

The research was conducted using a 'research oriented action research approach' (Eden and Huxham 2006). The primary reason for the action orientation of this research is that we were researching the validity of a new theoretical notion. We did not know of an organization that has applied computer game design in this way, so a traditional case study was not feasible. We as researchers performed the interventions ourselves, based on our theoretical insights and experiences from prior projects. The interventions each consisted of a number of workshops, which are described in detail in the section 'Description of the interventions'. The organizational contexts for the interventions are described in the section 'Case contexts'.

This action oriented approach has some complications, both on a practical level and on the level of research rigor. On a practical level, it is difficult if not impossible to perform an intervention (e.g., lead a workshop) and at the same time observe its effects. This same problem also applies to research rigor: how do we as researchers prevent losing our objectivity and how can we avoid simply describing the success of our own interventions? One of the measures we took to counteract these problems was in both cases to invite an external researcher to join the team who had had no prior involvement with our work. This created room for all researchers involved to record observations, during and after the workshops.

Next to the observations, a second source of data was formed by semi-structured interviews in two rounds. The aim of the first round of interviews, which took place before the first workshop in each case, was to describe the organizational context before our intervention. The interviewees for the first round were people closely involved with the organization in question. The aim of the second round of interviews, which took place after the presentation of the final results, was to collect experiences from the participants about the workshops and their effects.

Between the workshops, there were several organized reflections involving the research team, external researchers familiar with the topic and workshop participants. These reflections were recorded and also constitute a source of data. A final source of data is formed by documents. These are documents we received from the organizations in question about their organization, the scripts we developed for the workshops and the output that was produced.

Analysis of the data was carried out in several stages. The core of the data was formed by the interview transcripts and the observation reports. This core data set was coded inductively (Patton 2002), within the sensitizing framework of our research topic. Codes were then organized into categories. The list of categories was used as the outline for a descriptive text, in which some of the categories were grouped under one heading. This text was then evaluated by the other members of the research team, which led to further

improvements. A final piece of data analysis was the use of the reflections recorded by the researchers as input for the discussion of the findings and conclusions.

Case contexts

Case study 1: the Elective Care Center

The context for the first case study is one of the largest non-university hospitals in The Netherlands. In the spring of 2008 the hospital started setting up a new organizational unit: the Elective Care Center (ECC). This new centre was to be a separate entity on a different location, with the aim of providing low complexity care that can be well planned. It had to be able to compete with similar services by other healthcare providers. To achieve this, the hospital wants to emphasize innovation and new ways of working and organizing. An important element in this is a different attitude towards patients: the patient has to be approached individually and as an equal partner. If desired, he can direct part of the care process himself. Although discussions about setting up a separate ECC had been going on for a long time in this hospital, the design of this new centre had finally started in early 2008. Within that context, we were asked to direct a project in which the points of departure were to be defined. These points of departure should be usable to develop five design variables: care process, real estate, information and communications technology (ICT), human resources management (HRM) and general management. The question was posed to us based on earlier presentations we gave to the managing director of the ECC about our research topic: applying game design to enrich organizational design (Van Bree and Copier 2008). The ECC was suitable as a research arena for our purposes because of its blank slate nature: an organizational entity was being designed from the ground up, which allowed for a complete application of an organizational design method. The project took place from September until December of 2008.

Case study 2: We Beat The Mountain

The context for this case study is a small start-up company called We Beat The Mountain (WBTM). We Beat The Mountain was founded in late 2009 with the aim of designing, producing and marketing products made entirely from recycled materials. At the time that this project took place (October 2010 until January 2011), the company was at the brink of bringing its first consumer product to market. Within this context, we were asked by the founder of We Beat The Mountain to apply our game design methodology to the organization to see if it could help them to further develop their strategy and way of working. This question was posed because of a familiarity the founder had with this research topic, being a Ph.D. candidate at the same business school. We Beat The Mountain was suitable as a research arena because of its start-up nature, without any set organizational designs or structures. The limited size of We Beat The Mountain made it possible to include the entire organization in the scope of this design process.

Description of the interventions

In both case studies we used an approach that was based on the description of the iterative game design process by Fullerton (2008). In both cases, the proposed approach consisted of four workshops with the end result of a validated organizational rule set (also referred to by us as a ‘meta-design’). In the second case study some adjustments were made to the approach, based on the lessons learned in the first case study. The approach consisted of the following steps:

- workshop 1: setting the experience goals / filling in the framework
- workshop 2: envisioning core mechanisms / exploring the players
- workshop 3: paper prototyping

- workshop 4: playtesting and refinement.

The goal of the workshops was to incrementally produce the meta-design. Below we describe each workshop in more detail. This description is based on the script we developed for each workshop. The workshops were set up as 'game design games' (Kultima et al. 2008). This meant we demanded a strict adherence to the rules from participants and made use of principles such as competition, time pressure and incomplete information. Although the participants were not considered designers in this process and were obviously not familiar with game design, these games were meant to help them look at the issue through a game design lens. Furthermore, we believed these game structures would make the workshops as productive as possible and would create energy with participants that would extend outside the boundaries of the workshop. Next to producing the meta-design, creating this energy could be considered a secondary goal of the workshops.

Workshop 1: setting the experience goals / filling in the framework

For this workshop, there was a difference in approach between the two case studies. In both cases, the workshop took about two hours and consisted of a number of brainstorming rounds that were structured as mini games: there was time pressure, there were conditions for winning the round and there was a prize for the winner. At the end of the workshop, there was homework: the participants each had to invite representatives of the player groups they had identified for workshop 2. The difference was that in the second case study, a so-called framework diagram for We Beat The Mountain was developed. This framework diagram contained a high-level overview of the organization, with the bias of attempting to uncover a game mechanic that could be a useful basis for the "paper prototype", to be developed later on. The framework diagram contained a number of elements that had to be filled in (such as players and areas of knowledge) and formed the basis for the brainstorming rounds of workshop 1. In the first case study, we brainstormed based on more general elements, such as players, locations and gear.

Figure 2: Scenes from workshop 1, We Beat The Mountain.

Workshop 2: envisioning core mechanisms / exploring the players

For workshop 2, the members of the core team had invited representatives for each of the player groups that they had identified in workshop 1. Examples of players were physicians, patients, insurers (in case study 1) and producers, social media and government (in case study 2). The player groups were represented by one or two participants. The first part of the workshop consisted of the participants giving life to the character that represented their player group by giving him or her a name, age, character traits, goals and other attributes on posters that had been attached to the walls of the workshop room. The player personas were then presented to the rest of the group. The second part of the workshop was meant to generate ideas about how the goals of the

players and the overarching goal of the organization could be achieved. For this, we used two different approaches. In the first case study, participants had to lead a brainstorm about how their character could achieve his or her goals. One person would start the brainstorm by taking an activity card, the second person would continue on this idea with either a location card or gear card and the third person would finish it with a characteristic card. This brainstorm technique was partly based on the verbs, nouns, adjectives (VNA) brainstorming technique that was developed for game designers (Kultima et al. 2008). In the second case study, we used a "speed dating" session in which players did short, timed brainstorms in pairs about contributions they could make to the goals of We Beat The Mountain.

Figure 3: Scenes from workshop 2, Elective Care Center.

Workshop 3: paper prototyping

The ideas collected during the first two workshops were the input for the design process. There was a considerable difference between case studies 1 and 2 with regards to this part of the process.

In case study 1, the research team brainstormed in this stage about possible game mechanics that would fit the Elective Care Center as it was explored in the first two workshops. We chose a game mechanic in which players collaborate to construct something but have to switch roles in the process. Once the game mechanic had been chosen, the content generated in the first two workshops was used to design a prototype, which was then tested and adjusted in several sessions. Originally, we had planned Workshop 3 to be a prototyping session with the core client team. However, in the course of the design process we decided not to involve the client in the prototyping process, because our own design and prototyping work took more time and effort than expected.

In case study 2, the framework that had been set up before the first workshop was developed into a game mechanic suitable as the basis for the paper prototype. This game mechanic revolved around beating the mountain of waste by means of producing and selling products as well as by other contributions that the players could make. In the course of developing this game mechanic, it became clear that some additional information had to be collected from the core team in order to make the prototype most closely fit reality. To this end, workshop 3 with the core team was used. In workshop 3, there was no game element. I.e., there were no time limits or winners. The workshop centered on classifying and valorizing some of the information collected earlier. E.g., each contribution to the movement (the results of the speed dating sessions in workshop 2) had to be connected to the goals of the players involved. This was done by showing the

elements to be categorized in a presentation and having the participants mark their scores in forms which had been prepared for the occasion. After the last missing information had been collected in workshop 3, the paper prototype was finished, which took the form of a board game. It was tested by the research team to make sure it was correctly balanced. I.e., to make sure that the possible actions and the scores that could be obtained did not lead to undesirable dynamics.

Workshop 4: playtesting and refinement

In the last workshop, the paper prototype that had been developed was played. In both case studies, this workshop had a similar structure: a practice round was played to make everyone familiar with the rules, after which the game was played for 45 minutes. The game was played with the same group of players that were invited to workshop 2.

For case study 1, the goal of the game reflected the goal of the Elective Care Center: to prevent and cure as many non-complex ailments as possible. In the game this goal could be reached by building the ideal ECC. Time and budget were limited, however. What the ideal ECC looked like was determined by the players themselves in the first round by prioritizing the components. The components were based on the results of Workshops 1 and 2. A higher priority for a component meant a higher contribution to the ECC goal. Prices of the components were set beforehand. The components were divided into categories according to the five design variables of the ECC: care process, real estate, ICT, HRM and general management. The rules of the game were meant to align the individual and collective goals. Players took on different roles in the course of the game. Each role was based on one of the characters of Workshop 2 (physician, patient, insurer, etc.). There were three types of components. The first type could be built individually (if you had enough funds), the second type could only be built in collaboration with a specific other role and the third type could only be built collectively. Components of the third type had to be agreed on by everyone and were paid for with collective funds.

The goal of the game in case study 2 was to beat the mountain of waste within a set time limit. The winner would be the player who was able to obtain the highest score on their individual goals. But if the overall goal of beating the mountain was not achieved, there would be no individual winner either. A round in the game consisted of We Beat The Mountain producing a product with the collaboration of other players (who needed to contribute their knowledge areas) and consequently selling the products produced. The second part of a round was each player recruiting a partner for a contribution to the WBTM movement, which also helped them achieve their individual goals. A lot of the actions involved negotiations and deal-making between players.

Figure 3: Scenes from workshop 4, We Beat The Mountain.

After the last workshop, the meta-design was produced. In both cases, this was presented as the end result of the process in a session with the core client team.

Findings

In this section, we discuss the findings that arise from reviewing both case studies.

The effect of limited information

One of the important attributes of the process was that limited information was given to the participants, both the core team as well as the other participants in the workshops. This lack of information caused excitement, curiosity and eagerness in most participants, during and between the workshops. Because the core team did not know what to expect either, it made their task of inviting participants rather difficult. One participant in the We Beat The Mountain workshops describes how he was invited:

> *She said: 'We're going to do something, but we don't know what exactly. And we're going to do it with a group of people. But we don't know what the outcome is going to be'.*

An important side-effect of this way of inviting participants was that there was a measure of self-selection. That is to say, participants that were not receptive to an informal setting in which they could not be sure what to expect would not respond positively to such an invitation. As a member of the ECC core team put it, they looked for people that they felt would contribute freely and that were willing to "enter into this adventure with them".

A result of the limited information was that participants entered the workshops rather blankly. In some participants this caused uneasiness, but in general their curiosity gained the upper hand.

The effect of game elements

The fact that the workshops were set up as "mini-games" had several important effects. First and foremost, it led to an air of playfulness characterized by laughter and a high level of energy. The game elements thus caused an open and relaxed atmosphere in which participants contributed in ways they might normally not. This is evidenced by these two quotes from participants in the We Beat The Mountain workshops.

> *Because of the game element you trigger people and bring things to the surface that you wouldn't see in a formal setting.*

> *I think the game element invites a bit more transparency. I think that if you were to just put people around a table, everyone would be more inclined to play their cards close to their chest.*

However, it is important to strike a balance between the game element and the actual content of the workshops. If the game element - and the eagerness to win that it causes in some participants - gains the upper hand it can cause silliness and distract from the content.

One game element that was mentioned specifically as causing emotion and energy is time pressure. Time pressure was shown to be especially powerful when connected to the achievement of a shared goal, as in the final workshop at We Beat The Mountain. In that way, it became a tool to create a sense of urgency and caused the players to look beyond their own personal goals.

Another important gaming aspect of the workshops was role-playing: giving life to a representation of one of the player groups. It became clear that the dynamics of this role-playing are dependent on the person taking the role. This also means that individual players can thus have a sizable effect on the outcome of the game as a whole. The switching of roles that was employed in the case of the Elective Care Center had the advantage of forcing players to see the issue from a new perspective but also led to the roles being played with less fervor.

Finding the boundaries of the rules

The structure of the workshops was circumscribed by strict rules which defined the game element. Enforcing these rules proved very important to keep the game and its effects going. If the rules were not adequately enforced, or if they were circumvented, the game element would disappear. This would result in the workshop getting bogged down in discussions or in participants opting out.

In general, participants in the workshop accepted the fact that "rules are rules", as witnessed by the frequent questions for clarification. But there were also instances of participants looking for the boundaries of the rules. In both case studies, this was done for individual gain, caused by the competitive element of the workshops. But in the case of We Beat The Mountain, two other motivations for this manipulation of the rules arose. One was a personal impulse to challenge conventions and the other was an attempt to show to other participants the consequences of abiding by certain rules.

Process versus end product

One of the most important findings is that members of the core team in both case studies saw the greatest value in the process rather than in the end product (the latter being the paper prototype with its rule set). The game (paper prototype) that is played in the final workshop is considered an illustration of how things could be. The rules of the game describe interactions and dynamics and playing the game shows that there are many possible outcomes. The value that lies in the exploration of this dynamic system that reflects their organizational reality was mentioned several times in both case studies. Playing the game is a learning experience that helps participants to understand the mechanics and how to deal with them as a group. Exploring the organizational framework together with (external) stakeholders has the important side-effect of increasing their involvement and understanding.

DISCUSSION: THE VALUE OF GAME DESIGN FOR ORGANIZATIONS

In this section, we will discuss the findings in the context of the theoretical background and the research question as mentioned in the section 'Theoretical background': what value does computer game design hold for the design and development of organizations? In answering this question, we distinguish between two perspectives:

- Short term effects: gamifying a workshop
- Longer term effects: exploring a complex organizational system

Short term effects: gamifying a workshop

Importing isolated game elements into the non-game setting of an organizational workshop proved to be an effective tool to create effects such as: openness, transparency, curiosity and energy. Game elements and their effects are foreign to most organizational settings, which makes their application both challenging as well as full of potential. Challenging because it tends to confront organizational actors with contexts they are not familiar with, which can cause uneasiness or even opting out. But also full of potential

because the novelty of the game elements make them all the more powerful in causing curiosity and eagerness.

In the section ‘Focusing on the behavior evoked by computer games’, we have discussed a number of criticisms that can be expressed at the concept of gamification. We mentioned its limited ‘replay value’ (and thus: the fact that its effects are short-lived) as well as its focus on extrinsic motivators. However, these factors did not form an obstacle to the use of game elements in the workshops in question. Points and the ensuing competition were an effective way to accomplish the goals of the workshops, which in many cases centered on gathering as many new ideas as possible. Game elements that proved especially effective in this case were: providing limited information and creating time pressure.

From the findings of these two case studies, we see nothing wrong with gamifying workshops. On the contrary, if put to use in the correct way it can be an effective tool for many contexts which require the generation of new ideas or the exploration of new viewpoints. Since workshops are by definition somewhat isolated and limited in duration, the epistemic frame of the organization can be diluted to make the game elements more effective.

Long term effects: exploring a complex organizational system

Although the effects of importing game elements into these workshops is significant, its value is rather short-lived. Participants enjoy the experience and the output is considerable, but the impact on the organization as a whole is negligible. There are other aspects of the process that hold a larger long-term value.

As mentioned in the section ‘Focusing on the design of computer games’, we consider the re-contextualization of a design process to be more feasible than that of the designed object. Our findings show that this game design process holds value as an instrument to explore a complex organizational system. What makes it effective is its focus on complex, emergent behavior and on interactions between players (in this case: organizational stakeholders). The process of prototyping and playtesting a ruleset that reflects an organizational reality helps those involved to understand the mechanics at play and how to deal with them.

Our findings further suggest that this rule-set as the end-product does not hold much value beyond the design process. It cannot be considered a basis for an organizational strategy or organizational structure, as was the original objective of both case studies. Rather, it is a representation of the organizational mechanics that are uncovered during the process. In playing the game that these rules define, the organizational stakeholders are shown possible outcomes as well as ways to deal with the mechanics. The personal and group reflection that this causes can indeed be considered a constructive basis for forming and articulating a new or revised organizational strategy.

CONCLUSION

Even though the relevance of computer games as a social phenomenon continues to grow, their relevance for organizations remains elusive. In our research so far, we have seen the successful application of game elements to improve the quality and productivity of workshops as well as the value that the game design process holds for exploring complex organizational systems. In an era in which conventional organizations are developing increasingly emergent qualities and permeable boundaries in order to survive in an unstable environment, using the instruments of game design can be a significant addition to the toolbox of organizational theorists and designers.

However, it remains unclear whether the application of computer games extends beyond the design and development phase of organizations. Can organizations be made to look more like computer games? Answering this question requires a more ambitious project, such as the one being undertaken in the area of education by Quest2Learn in New York: the first completely game-based public school (Corbett 2010). It will require an organization (and its associated epistemic frame) to be set-up from the ground up, based on game principles. Whether there is a pot of gold at the end of that rainbow remains to be seen.

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