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Teaching Gameplay Design *is* Teaching Interaction Design

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ABSTRACT
This paper describes the benefits of integrating gameplay design in interaction design teaching since this allows students to practice designing for unusual situations, considering ethic and aesthetic issues as well as issues of use and abuse, often all in the same project. Some examples – ranging from a three week group project to a half day exercise – are described, each together with aims and noted learning outcomes related to interaction design, as well as with a general discussion. In addition, a few student projects are described together with learning outcomes. Finally the pros and cons of this approach are discussed, and educators willing to try it, but inexperienced in games, are getting some useful information on what to look into.

Categories and Subject Descriptors
H.5.2 [**Information Interfaces and presentation**]: User interfaces

General Terms
Design

Keywords
Interaction design, gameplay design, didactics, game design

1. INTRODUCTION
Interaction design is a wide subject. Interaction design students may encounter a variety of work situations when they graduate; they can design graphical interfaces, work with information visualization, do user tests and use analysis, design interactive toys, create cell phone navigation, design novel hardware widgets or improve existing ones, design information structures, create games or become artists within interactive art, well, almost anything. Now, *how* would it be possible to train the students for all of this? How can we train students for solving all of the unusual design problems they may run into in any of these disciplines, how to deal with moral issues, how to foresee possible use and abuse of a product? And, how many of these aspects can be joined in one project in order to maximize the learning outcomes? There is at least one solution to this problem, and below, I present an approach which definitely deserves more attention and consideration.

1.1 Gameplay design… interaction design?!
One can list several disciplines that are a part of, or closely related to interaction design e.g. cognitive science, graphic design, programming and electronics, just to mention a few. However, one that deserves to be mentioned is almost always forgotten: *gameplay* design. This is not the same as game design, which covers any aspect of designing a game (e.g. designing the sounds for it, or the hardware, if any). No, gameplay design *is interaction design at its purest*, since it deals with design of the core game, i.e. the rules of the game – in practice how players play the game. There is no absolute definition of the term, but one reads as follows:

> *"…we define gameplay simply as the structures of player interaction with the game system and with the other players in the game. Thus gameplay includes the possibilities, results and the reasons for the players to interact with the game."*
>
> *– S. Björk and J. Holopainen*
> *in "Patterns in Game Design" (2004), p. 3*

Note that even if not mentioned, it is implicit to many that gameplay also strongly effects what players think of a game; is it fun? Exciting? Immersive? Too tense? *Every single design decision matters* – it has direct consequences for how players interact. For example, imagine a game of chess where the pawns, instead of just moving one step forward can teleport to any non-threatened square of their color. Obviously this would change gameplay since the pawns suddenly become a lot more powerful. This design decision – if one decides to stick with it – brings with it other rule changes as well; the rule where a pawn turns into a queen if it reaches the last row may no longer be suitable to keep. Or, imagine a broad jump grand prix where the organizers suddenly announce that the finale will be carried out using high jump rules! Would a previous strategy of trying to jump as long as possible in the first jump in order to intimidate the others still work, or would it just be energy spent for nothing? This connection between design decision and interaction is very clear and absolute, especially if compared with more traditional interactive systems, like GUI design for instance, where the effects of, say placing an item in a certain place, may be hard to predict.

1.2 If game designers study interaction design…

Interestingly game designers have already acknowledged the presence of and need for interaction design(ers). Since game design itself is just as multidisciplinary as interaction design, it has readily acknowledged practices, methods and approaches from its related subjects, e.g. pattern languages (Björk and Holopainen 2004) as inspired from architecture (as described by Christopher Alexander in 1977) and programming (as described by Gamma et al 1994), iterative design processes from programming as well as from many other fields (c.f. Fulton 2002, Salen and Zimmerman 2004). In addition, there is a strong tradition of prototyping and playtesting (Jackson and Schuessler 1981, Fullerton et al 2004) and what is the latter if not a toolbox of different types of user tests (game experience can be tested, replayability can be tested, abuse can be tested, general requirements can be tested…)? In addition the increasing costs of producing computer games and computer augmented games bring with it elaborate prestudies and pre-design analysis using many typical HCI and marketing analysis methods. It is clear that game design and interaction design share many disciplines as well as incorporating each other.

1.3 …why shouldn't interaction designers study gameplay design?

The relation between game design and interaction design is not new within an educational context. Already in 2001 Karen White and Katie Salen (2001) carried out a summer workshop called "Games + Play" held by the University of Arizona, in which students explored the relations between design, interactivity and play. Part of the workshop had already been used by Katie Salen in the course "Design and Social Environment" at the University of Texas, in which the study of social games like board games etc were used as a way to understand basic principles of interactive design. At several universities (e.g. Zürich University of the Arts, Chalmers University of Technology) the education programmes for interaction design and game design are intertwined, in others, additional courses in either game design or interaction design are offered (e.g. the game design educations at Cornell and Georgia Tech offer additional courses in HCI, just as the interaction design programme in Malmö offers a course in game design). The multidisciplinarity of game design and the need for interaction design is especially well described by the educators at Georgia Tech (Murray et al 2006).

1.4 Mission Statement

I too argue that a useful part of an interaction design curricula is to train students in gameplay design; this approach is interesting, enrichening and deserves to be considered. Below are a few examples of how gameplay design can be used to teach interaction design, as well as a discussion and conclusion on why, when, how and by whom this approach may be used.

2. APPLYING GAMEPLAY DESIGN IN INTERACTION DESIGN TEACHING

Below, I will present a series of examples to illuminate my points. The first three are examples of how gameplay design and game design can be integrated in teaching, and the following four are examples of student projects together with gameplay design-related learning outcomes.

2.1 Dragon's Gold – system state and unusual design problems

Dragon's Gold is a group project where the task is to turn the board game Dragon's Gold into an online computer game, i.e. transfer it from the physical world to a graphical user interface. It strongly addresses three important issues; it is about designing to show system state (after all it *is* part of a course on the design of Graphical Interfaces), it deals with seeing the connection between changes in gameplay design and interaction, and in addition it presents the possibility to work on an unusual design problem: negotiation.

2.1.1 Research

Dragon's Gold is an action research project within an education context (cf. Bassey 1998, Carr and Kemmis 1986, Elliot 1991, Hopkins 2002, Schön 1983 and many others). Hence it was based on the authors' professional experience from teaching, gameplay design and GUI design. Data has been collected from course questionnaires, project reports, each student's own reflection on what he or she learned, and the teacher's (i.e. the author's observations whilst supervising. The project has been run for three years with minor changes.

2.1.2 Project setting

The project is part of a course on designing graphical interfaces. It takes approximately 3,5 weeks to carry out with groups of 3-5 students, spending half their study time on this course. None of the students have explicit background in interaction design (although all have taken a course in HCI basics); they come from different educational backgrounds and have studied at university level for at last three years.

2.1.3 The game and the task

Dragon's Gold (designed by Bruno Faidutti in 2001) is a negotiation game with a fantasy theme; players use their cards to kill dragons and then negotiate about how the dragon's treasure of gems should be divided. In the end, scoring is based not only on the amount of gems one has, but also on different combinations of gems, which means that in a negotiation players may have different interests, e.g. one player may be collecting blue gems whilst another player desperately needs a white gem to get a certain combination.

The negotiation part is the main reason for having chosen this game for the task – in the board game version vivid discussion and/or moving the gems physically is an easy and natural way to negotiate, whereas this cannot easily be transformed to an online version; here, great care must be taken when designing the negotiation part, since the time to agree is limited. Hence it must be very clear who wants what and who gets what and how much time there is left etc.

Also, designing the dragon-slaying part of the game requires extreme focus on visualizing system state. An extra twist is that the game features 15 significant colors; six player colors and gems of nine different colors. Dealing with all these information carrying colors is an extra burden that poses a need for new solutions.

The task is to design the online interface, however *not program* it; i.e. students produce "screen dumps" (in the form of just images, animated powerpoint presentations or Flash programs, all

Design: Magnus Lorentzon, Robert Holzmann, Christofer Magnusson, Azadeh Shirzad and Min Juan Wang.

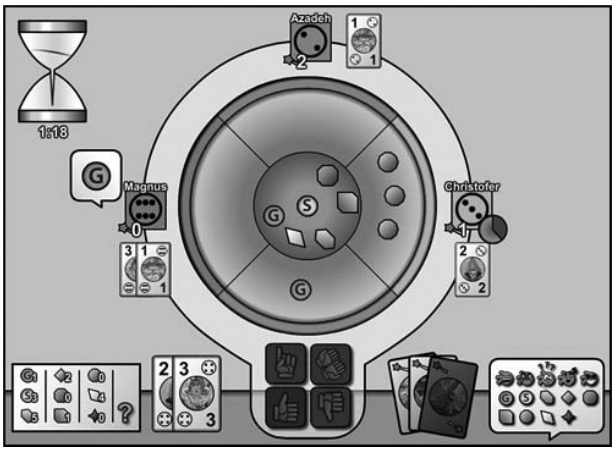

Figure 1: One example of how to design the negotiation phase in Dragon's Gold. It is very close to the board game version in that one drags gems one wants to one's area. Note the speech bubbles that players can used to express their interest in a certain gem.

Design: Emma Moore, Matthias Klein, Joel Sandlund, Jordy Voesten

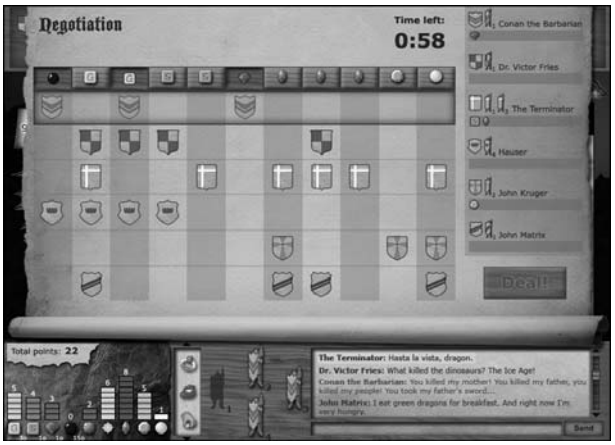

Figure 2: Another, rather different solution of how to design the negotiation phase in Dragon's Gold. Here, players indicate their interest in a certain gem in a matrix. Note also the difference in look and feel, here we see a more fantasy-inspired design.

depending on skill). Thus the students need to describe the following:

- How the GUI looks from start
- How the GUI looks after having played awhile
- The entire negotiation process
- The end screen – who won and why

Certain parts of the game, like the effect of special action cards have been omitted to shrink the task. Also, students are allowed to change the negotiation rules, if they can motivate why. To read the entire description of the task see http://www.cs.chalmers.se/~lundsus/dragons_gold.pdf

Two parts of the project are strongly related to gameplay design. Firstly, students get to play the game and analyze it. This analysis automatically highlights the close relation between rules and interaction, especially since the students are encouraged to try out different strategies and player-styles to discover the different ways one can play the game, so that they can design to accommodate all. This analysis is very important since it shows which screen elements that are needed, and which information that seems to be most important. Secondly, the students need to come up with a strategy for visualizing the negotiation; it seems that there are three distinctly different approaches (See Figures 1 and 2), of which one comes in two variants. Again, there is a close connection between minor rule changes, ways of visualization, and ways to play.

2.1.4 Learning outcomes and discussion

In questionnaires some 63% of the students state that the project was very interesting and that there was much to learn from it. But, what did they learn? A study of each student's individual comment on what they learned from the project (submitted together with the project report) reveals that the obvious learning outcomes are related to working in groups, agreeing on design, the need for rapid prototyping, and that one needs to take great care when creating even the smallest graphical detail. All of these are comments that could have come from any graphic design project. There were no comments stating things like "I got a clear insight on the interrelations between rules, GUI and interaction." Does this mean that the project was a fail? No, because the aim *was* that students should learn about interaction design, not gameplay design. And they did. But, one may ask, was the game part really necessary? Couldn't it have been any project? Of course it could, but the advantage of this project (or any other project where the task is to transfer a board game to an online environment) is two-fold. Firstly, the task is very distinct. There is never any discussion on what needs to be done or why. Secondly, the project reports imply a very clear insight on the main goal; exploring a new interaction-problem to which there was no obvious solution that, and how different approaches (i.e. different versions of gameplay design) affected interaction.

2.2 Redo it right – analysis and designing for emotions

This is a workshop where the participants get to redesign already existing games in order to improve them. It is based on a workshop on game design patterns (Lundgren 2006). The original aim was to explore how game design patterns can be used in game design, but the aim may just as well be practicing how to design in order to evoke certain feelings (preferably unwished ones), hereby exploring unusual issues. Regardless of which, it is also an exercise in analyzing and interactive system.

2.2.1 Project setting

This exercise was the first part of the original workshop and it took two hours, but could easily be extended to four. It was, and should, be carried out in groups of ca four people, since they are supposed to play a game.

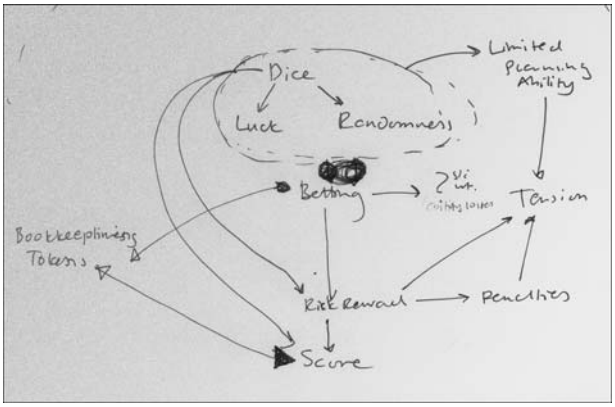

Figure 3: The map of interactions, actions and feelings in Exxtra.

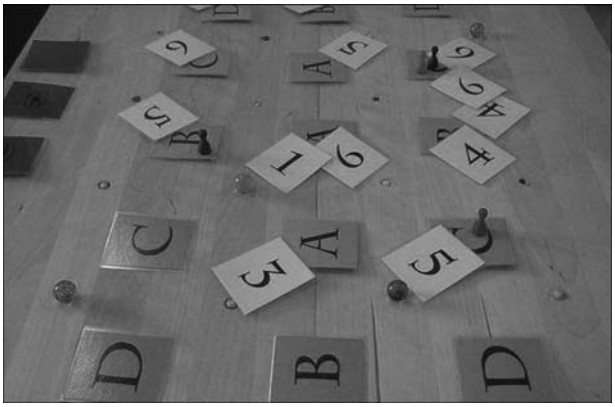

Figure 4: Ongoing board game design. Note the different pieces, cards etc.

2.2.2 The task

The task is to play a very simple game, mostly based on luck, or a game that is "broken" in some aspect, it may be unbalanced or boring. In the mentioned workshop, the participants played two games: One was Exxtra (by Reiner Knizia 1998), a simple dice game which is mostly about rolling pairs and avoiding X'es, albeit spiced up with some betting. The other was Lift Off (by Marcel-André Casasola Merkle 2000), a card game about colonizing planets – its dysfunctionality is related to the fact that it is a real-time game where all cards are played simultaneously, and where thinking is not rewarded; it is about being fast and dexterous and relying on luck.

Players get to play the games and then they must analyze them, drawing maps of the features of the game, as in Figure 3 (including feelings, like stress, and actions, like dice roll, and interactive processes, like bidding) and how these are related. E.g. bidding could result in stress. Thereafter, they redesign the game to reduce or remove any problems. This results in a new map, and so on.

2.2.3 Learning outcomes and discussion

The outcome aims to be – and in the workshop case it was – an increased skill in analyzing an interactive system plus a stronger insight in how interaction and thus experience can be changed fairly easily by changing the rules. It is probably important to clarify the aim to the students, otherwise the exercise may seem meaningless to them.

The interesting part of analyzing the games and drawing the maps is that this also highlights *feelings*, e.g. stress, tension or boredom. This part can be exaggerated by asking the students to redesign the game so that it evokes certain feelings, thus exploring some of the mechanism that trigger them. In this case the chosen games should be simple – and thus perhaps boring – but not dysfunctional. It may be important to start with a working game instead of designing one from scratch, since the latter means spending lot of energy and creativity just coming up with a basic rule-set.

If one doesn't own a collection of dysfunctional board games, one can use children's card games, since these are often simple and luck-based and played with ordinary decks of cards. Links to a few (including rules) can be found at: http://www.pagat.com/ class/#children, games like Beggar My Neighbour, Go Fish are mostly luck-based whereas Spit (aka Speed) is based on luck *and* being fast.

2.3 D6 – analysis and design of interaction

This is an upcoming workshop based on a game design competition where the participants got a set of components (see Figure 4), and then got five hours to come up with a board game using most of them.(Lundgren 2002). This is a lighter variant, again aimed towards analyzing interaction and designing it.

2.3.1 Project setting

This exercise is planned to take five-six hours. It requires an even amount of groups having 3-4 members. A huge pile of material like cardboard sheets and pens, dice, wooden pieces and other small "thingies" can be useful too.

2.3.2 The task

The task is to *design a new game*, starting out with one six-sided dice. Now, a participant may add one rule to the game, whereafter it is playtested briefly. Thereafter, another participant may add or change an existing rule, adding or removing components if needed. New playtesting takes place, and so on. This carries on for ca one hour, and the aim is explicitly not to be "finished" with a good and interesting game. Then, two groups switch games (i.e. components and rules). They play and analyze their new game, writing down problems they have discovered. Then, they keep on redesigning the game for two more hours. Again, the pairs of groups meet and now they play each other's game (i.e. the revised version of their own game) being observed by the other group. The groups then discuss what has happened in the process and why with each other, they have to answer questions and comments and have to motivate their design This can be facilitated with a set of general questions, if needed.

Unfortunately, designing games is facilitated by having played games already, so if possible, each group – or at least each pair of groups – should contain a person fond of games and gaming.

If the students are skilled in programming and/or Flash, the exercise could deal with designing a small computer game, but programming and creating graphics must not overshadow gameplay design. Or, the exercise could evolve partly around

rapid-prototyping, in this case not necessarily involving GUI programming but just as well hardware design and prototyping.

2.3.3 Learning outcomes and discussion

There are two important parts here, one being designing from scratch, the other being altering an existing design. Also, the change of groups, and seeing the other group playing the created games inculculates one of the most important insights in all interaction design; people are not alike, they do not play, interact, react alike. Groups may become really disappointed with their "baby-games" that are being brought up in a way they did not at all expect!

The exercise can also be part of a rapid-prototyping exercise, requiring the students to create prototypes at least two times; before the handing over of the game to the other group.

If one also wants to prove the point of well written instructions and manuals, one can require that the game versions are handed over without any other explanation than the rules. In this case on may have to assign more time for writing them down clearly. If one instead wants to avoid this special kind of confusion, one can instead let one group member stay with the same game throughout all transitions

2.4 Examples of learning outcomes from existing projects

Below, a number of games designed by interaction design students are presented. In all cases the students were master students who after at least three years of previous studies chose to specialize in interaction design. In all cases they had also studied interaction design for at least half a year prior to working on the projects. In most project groups the students came from different educational backgrounds; typically at least one member came from computing sciences, but members could also come from a background of cognitive science, systems analysis, technical design, textile design etc. The projects will be described together with those learning outcomes that are related to the *gameplay design part*. These outcomes have been recorded partly by reading the student's own reflections in their project reports, but also by during tuition.

2.4.1 Coop games – design towards abuse and making ethical considerations

Coop games (by Johan Andersson, Jennie Antonsson, Cecilia Eriksson, Magnus Jonasson and Annika Lundberg in 2003) was a computer augmented cooperative outdoors game for two teams of children. The background story is that the children play two groups of rivaling aliens, who have accidentally crashed on Earth. They compete to get a hold of keys which will give them access to the hangar with Earth's only interstellar space ship, so that they can get home. The game consisted of a number of physical artifacts, most notably the keys, which are hidden in the playing area (e.g. a park), and the combination lock to the space ship.

The main learning outcomes in this project evolved around designing for abuse, and dealing with certain moral issues. Firstly, there is always a risk that a player decides to throw a key important to the other team into a ravine or a pond or whatever, effectively ruining the game. The students had to find several ways to counter this. Secondly, the group also had to work through some moral issues that one does not naturally run into (even if one perhaps should!), e.g. would the possibility to steal keys turn the children into thieves? Also, they did not want to allow any violence in the game. However, these two constraints made the game dull and unentertaining, and thus they had to develop the rule that players could stun (but not hurt) each other. The stunned player had to drop the key he or she carried and stand still for a certain amount of time, whereas the other player could pick up the key and run. By creating these rules, the students felt that they still stuck to their moral values and their initial objectives.

Read more about the project at: http://www.cs.chalmers.se/idc/ituniv/student/2002/revolution/project681a.html?id=1.

2.4.2 Gregor – aesthetic considerations

The Gregor project (by students Rickard Andersson, Christoffer Du Rietz, Torbjörn Martin, Jon Mårtensson, Jenny Samuelsson and Andreas Sandlund in 2005), was a live full-scale tangible version of an adventure game – very much in the spirit of games like Myst, Monkey Island, and King´s Quest. They built a typical interior in such a game, an entire room with numerous interactive items; a lamp which when lifted illuminated UV-writings on the wall, a radio controlling the sounds of the room as well as the surroundings of the house (depicted as a projected window), a showroom dummy saying random deep things whenever someone approached (this was achieved by creating numerous film clips, masking off everything but an actors face, and then projecting this upon the face of the dummy) etc. Obviously, the expression and logic behind Gregor could only be fully explored by actually building the room.

The major learning outcome of this project was all the aesthetic considerations the students had to make when designing the room. As a project it deliberately toyed with issues like ambiguity, and in line with this it intrigued some users and annoyed others – just like the old computer games. A very interesting feature was that the floor of room was covered with a lawn, adding a very intense smell to the room; this is a dimension seldom used in interaction design, and it was also noticed and commented upon by the users.

Read more about the project at: http://appserv.cs.chalmers.se/users/peterlj/runtime05/projects/gregor/

2.4.3 Funny Floor – system state in relation to interaction

The Funny Floor project (by students Carmen Flores Montano, Mikael Karlsson, Karin Lövsund, Johan Wannheden, Andreas Wiberg in 2006) was again a children's game, however this time targeted towards ill, injured or disabled children in an hospital environment. The game board was projected on a pressure-sensitive floor on which the children moved. The board represented a pond with stones and currents, and the objective of the game was to move balls across the water to the beach, which was made by stepping on squares next to them moving them with one's surge.

The major learning outcomes from this project were related to how the animations of system state affected the way the children played the game. The animation of the surge, for instance was helpful since it indicated why balls moved, but it was also a bit slow, which generated some confusion.

Read more about the project at: ttp://www.imaginize.se/funnyfloor (Swedish only)

2.4.4 Dogfight – aesthetic considerations and moral issues

Dogfight (by students Niklas Kihl-Forsberg, Axel Roos, Jim Suonpää and Mikael Törnered in 2007) was a simple game where two players controlled two airplanes and tried to shoot each other down. However, the planes were flown by moving one's arms and shots were fires by screaming *"BANG!"* (or making some other loud noise).

Thus, the project did not evolve very much about creating the game idea, but around designing immersion and an aesthetic whole. Also, the students discussed whether it was morally justifiable to create yet another war game. In their discussion they write (translated by the author):

> *"On the other hand it was interesting to face one's feelings when one implements status = STATUS DEAD. It is not uncomplicated at all, and maybe it does not just numb but also starts thoughts on why?"*

Read more about the project at: http://web.student.chalmers.se/groups/id07-6

3. DISCUSSION

As has been shown from the projects and workshops mentioned, there are at least six explicit reasons for making gameplay design a part of workshops or projects when teaching interaction design:

- Most games are "different worlds" which means that designing them poses **interaction problems that differ from everyday design**. Because of this, their solutions are not already seen and known by most; the design problems are "fresh".
- As a consequence of the "different world", one sometimes needs to take a position in the **moral, ethic or other unusual issues** that may arise, e.g., designing for a certain amount of tension or competition.
- As mentioned, the connection between every design decision and the interaction is very clear, and thus gameplay design plus playtesting plus redesign will help students practice their **analyzing skills**, not only after the playtesting sessions but also, hopefully in beforehand, applying and practicing imagination and common sense.
- In most games, **indications of system state** heavily influence players' thinking processes and thus interactions. (Note that studying what happens in the absence of a clear system state, as in poker, can also be interesting).
- Many games rely on immersion, i.e. a unified look and feel. Designing this per se is of course interesting, but designing gameplay that fits to it is even more interesting and leads to many **aesthetic considerations**, which are more or less easy to relate to the look and feel and vice versa. E.g. it can be about "designing" a suitable background story and thus plot to a game.
- Also, an important issue in gameplay design is **designing against abuse**, i.e. players that do play by the rules but are looking for loopholes or combinations of rules that justify a non-intended way to play which in turn ruins gameplay. This increases awareness of non-intended use.

Arguably, these aspects can be found in non-game projects too, but in a gameplay design project one may often encounter several of them at the same time, which can be time-economic and effective, especially if short time is assigned.

So, are there any downsides? Of course this is not a universal solution, several things need to be considered. One interesting issue is the one that surfaced in the Dragon's Gold evaluations; if we aim for learning outcomes that are not related to gameplay design, but to interaction design, how can we then be sure that gameplay design had anything to do with it? Now, that question can be asked in pretty much the same manner for any task we design; was this task suitable for teaching what we intended it too, or did the students somehow learn it anyway, and is there a better task somewhere out there?

One may argue that it is not so interesting to present students to unusual design problems, since they are per definition unusual and it is thus not very likely that the students will run into them in the future. However, students are likely to run into *something* unusual in their upcoming work life, and it can be useful to know how to handle a design situation where there are no previous designs to look at – if running a Dragon's Gold-like project make sure that there are no online versions of the game available.

As you may have noticed, all of the presented student projects in section 2.4 used hardware to some extent; in Coop games it was the keys that were RFID-tagged plus a personal tracking device with lots of sensors, in Gregor it was a lot of sensors e.g. motion sensors, light sensors etc, in Funny Floor it was above all the pressure sensitive floor, and in Dogfight a lot of motion tracking. Our experience shows that having much hardware in a project is rather troublesome; a very large part of the time will be spent struggling with putting together the hardware and making it work, not to mention the instability of hardware that perhaps has to be moved to an exhibition site or a test site. Note that several student projects evolving around games have been excluded in the descriptions above, simply because their learning outcomes were almost solely related to hardware. In several cases, the original and promising game ideas had to be severely mutilated and simplified to fit hardware demands, to the students' frustration. Of course, students that are very experienced in electronics and mechatronics will have fewer problems than others, but if the students are not, it is strongly recommended to try to minimize the hardware part of the project as much as possible.

Another issue related to supervising especially longer projects where the students design games is that someone – preferably the supervisor and at least one student – needs to be rather experienced in games. Knowing how games in general are constructed of course helps solving more basic design problems. Also, having played a lot of games facilitates the process of choosing games for projects and workshops.

Due to the latter two issues, it may be recommended to limit design tasks to either board games, which are easy to prototype and test, or to simpler computer games that can be programmed using some quick tools like Flash or Game Maker (the latter is a free software for game design, see http://www.yoyogames.com/gamemaker/). If so, and the project or task is short, it is advisable to provide material like game pieces, paper, figures etc, or a large collection of pre-made graphics and sounds, in order to keep the focus on designing gameplay rather than artifacts like pieces or nice graphics. It must be clear that the task is not a beauty contest.

When presenting tasks and projects is it also advisable to clarify the aim, i.e. that gameplay design has been chosen as *a tool for reaching some interaction design related insight or skill*. Of course one always clarifies aims, but it may especially important in this case, since some students simply don't like games and gaming. Thus they may question the task if the aim is not explained properly. On the other hand, many students like games, and they may work harder on a gameplay design-related task than any other task.

3.1 Crash Course: Learning Games

For educators interested in exploring this side of interaction design, or who just need tips on what to look into, the following lists can be useful.

Board games and card games (see www.boardgamegeek.com for further information on board games) that feature interesting mechanisms:

- **Dragon's Gold** – interesting negotiation
- The **Settlers of Cataan** – the best selling board game in the 1990ies an onwards, should be available in your local toy store. Interesting trading mechanism, resource management and area competition
- **Poker** and/or **Bluff** (aka **Liar's Dice**) – bluffing and betting mechanisms, also highlights issues of showing and hiding information
- **Puerto Rico** – extremely well designed and much liked. Lots of interesting mechanisms, features dilemmas of choosing the right action as well as planning in advance how other players' actions can be used.
- **Magic** or any other collectible card game – features drafting, resource managemtn and of course choosing one's deck.
- **Chess, Blokus** or **Othello** – games where all information is known by everyone and where there is no element of luck involved.
- **Modern Art** – interesting and well-balanced auction-bidding game.

Computer games that may be interesting to look into, beware however since some can be addictive!

- **Myst** or **Riven** – seminal adventure games, non-violent, just about riddle-solving and very beautiful, intesring from an aetheti point of view, especially Riven.
- Any **Tycoon game** or **simulation game**, e.g. Roller Coaster Tycoon, Zoo Tycoon, SimCity, Civilization – to explore the complexity and intricacy of monitoring and steering an ongoing chain of events. These games also feature very much resource handling and planning. Most are non-violent.
- **Tetris** – *The* computer game for quick work breaks, available online in thousands of versions.
- **Zookeeper** – small, fast, extremely well designed in terms of graphic design and showing system state, see http://www.2flashgames.com/fullscreen.php?id=231.
- **StarCraft** or any other **real time strategy game**, to explore decision making under stress and resource management.
- **World of Warcraft** or **Epic** or any other **online role playing** game, to explore games in which social relations and player-relations mean a lot.
- Counter Strike or any other first person shooter game.

Books on games and game design

- **Homo Ludens: A Study of the Play-element in Culture** by Johan Huizinga (Beacon Press). There is not a gameplay designer in the world that hasn't read this seminal work on gaming and games.
- **The Art Of Computer Game Design: Reflections Of A Master Game Designer** by Chris Crawford, Osborne/McGraw-Hill. Note that the author also has written "The Art Of Computer Game Design: Reflections Of A Master Game Designer"
- **Rules of Play: Game Design Fundamentals** by Katie Salen and Erich Zimmerman, MIT Press
- **The Oxford History of Board Games,** by David Parlett, Oxford University Press. Here, games are grouped according to main mechanism/goal in only a few overarching groups.

4. CONCLUSION

Gameplay design, the design of the core rules of a game – and thus the interaction in it, can be seen as *interaction design at its purest*, since every design decision immediately affects how players interact with the game and each others through it. Thus, elements of gameplay design are highly suitable to integrate in interaction design projects or in an interaction design education since gameplay-related tasks can bring the following (interaction design related) learning outcomes:

- Practice in how to analyze and solve unusual interaction design problems.
- Consideration of ethical and moral issues.
- Practice in the analysis of interaction patterns and how to improve them.
- Practice in the design of modeless feedback and showing system state.
- Making aesthetic considerations.
- Designing against abuse.

However this of course requires that the educator and at least some of the students have some basic knowledge of, and interest in games. This strongly facilitates supervision and design. In addition it is recommended to design either board games or computer games, as opposed to hardware intense games, since the latter tend to get focused around getting the hardware to work, rather than designing the game. If so, gameplay design-related projects are a very rewarding approach to teaching interaction design.

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[18] Chalmers University of Technology: http://www.cs.chalmers.se/idc/ituniv/

[19] Cornell University http://gdiac.cis.cornell.edu/

[20] University of Southern California Interactive Media Division: http://interactive.usc.edu/courses/

[21] Zurich University of the Arts: http://www.zhdk.ch/pages/en/graduate_studies/InteractionDesign.php