

# Mock Games: A New Genre of Pervasive Play

**Martin Brynskov**

Center for Interactive Spaces  
Computer Science, University of Aarhus  
Aabogade 34, DK-8200 Aarhus N, Denmark  
brynskov@daimi.au.dk

**Martin Ludvigsen**

Center for Interactive Spaces  
Aarhus School of Architecture  
Nørreport 20, DK-8000 Aarhus C, Denmark  
martinl@daimi.au.dk

## ABSTRACT

In this paper we identify and characterize, in theory and by design example, a new genre of pervasive play for tweens that lies on the border between play and game, called *mock games*. The objective is to design digital support for more or less structured playfulness among preteen children, primarily girls, in a way that emphasizes humor, friendly battle and identity construction. The method used is a combination of a review of a number of theories of games and play and a field study into the social reality of children's playful activities. Based on these two investigations we characterize mock games as a genre and show that it is not covered well by any one of the reviewed theories, taking into account both social and technical aspects. Then we present a design example of such a system, *DARE!* We conclude by discussing ethical issues and set goals for future research.

**Author Keywords:** Computer-Supported Cooperative Play (CSCP), pervasive gaming, social computing, children, popular culture, entertainment, tweens.

## ACM Classification Keywords

H.5.3 [Information Interfaces and Presentation]: Group and Organization Interfaces – Collaborative computing, Computer-supported cooperative work, Theory and models.

## INTRODUCTION

*“[T]he rhetoric of progress sees play as preparing children for the future by promoting their cognitive, social, emotional, and physical development. And [...], though the rhetoric of progress may look like the friend of children's play, at times it can be the rationale for adults wrongly taking control of children's play.”* –Scarlett et al. [26].

With the still earlier adoption of mobile phones [18], instant messaging, and various digital entertainment systems, preteen and early teenage children – tweens<sup>1</sup> – are becoming heavy users of mobile computing technology and digital ser-

<sup>1</sup> In the literature on popular child culture, the term “tween” is usually referring to girlhood and girls between 7 and 12 years of age but it may as well include boys.

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vices. A recent study of Norwegian children aged 7 to 12 years [4] showed that boys and girls have equal and easy access to new media, but also points to gender differences in the way new media are used by children. In fact, in 2003, UNESCO [31] considered the “gender divide” to be “the most significant inequality to be amplified by the digital revolution”. An interesting fact is that the mobile phone is the only technology that the Norwegian girls use as much as the boys [4].

We are interested in how this digital augmentation of the environment and everyday life can be designed to support the life-style of these children, on their own terms. To be more specific, we are interested in designing support for more or less structured playfulness among preteen children, primarily tween girls, in a way that emphasizes humor, friendly battle and identity construction using pervasive computing technologies.

We are not designing learning environments (embedding a rhetoric of progress) and we are not designing games (creating a “magic circle” with no or little relation to the social and physical realities outside it). Actually, in this case we are rather reluctant to create designs – be it computer systems, services, applications, artifacts, or physical places – that have a very constrained scope on children's ability to develop their own meaning, use and experiences. To explore this type of experience or system we propose *mock games*.

## Revolutions in Children's Play

Children's lives and children's play is a heterogeneous set of intertwined activities acted out in a variety of settings with all kinds of different motives. Furthermore, as pointed out by many, e.g. Scarlett et al. [26], “play is tied to history and to economic, social and technological transformations occurring in the larger society”. When speaking of the “revolutions” in how today's children play, they highlight two areas, *electronic play* and *organized youth sports*, where they see signs of drastic changes. They are not offering any specific explanations nor do they point to causes. They simply state that it may be difficult to evaluate what is going on, “when we are in the middle of a revolution” (p. 112). Tween culture (cf. e.g. [21]) may be seen as another example of such a revolution having significant effects on children's play.

The tween years is a time of turbulence where children begin to orient themselves more towards adult values and life-style, finding themselves separating from childhood in the process of becoming or constructing an individual identity. The tween culture is a mix of values from childhood and adult-

hood. This is not in itself new, children mimic adults – that is what children have always done. The revolution may lie in the extent that the globalized consumer culture in general allows for an easier transfer of values and ways of personal expression from adult culture to child culture in a way that is much less controllable by the parents, e.g. by media exposure (including TV, internet, print media and physical advertising). It is difficult to say whether the change is indirect or direct, i.e. whether this happens because of changes in the culture at large which then extends down into children’s culture (so that the children’s situation in essence has not changed, they just mimic their close adults as always) or whether this is due to more structural changes in society directly related to the children’s situation (maybe they spend less time with parents and are more exposed to media). In any event, this is outside the scope of this paper. We look at some accounts of the phenomenon, summarize our observations and turn them into design.

### Methods

One of the aims in our work has been to identify some of these children’s activities that are not well supported by contemporary digital designs. If we can find and characterize such activities, another question follows: What should we design, then? This relates to our second goal of developing a playful game that fits with the situation of this specific age group – refraining from designing either a children’s game or an adult game.

In order to investigate this, we looked to find theories of play and gaming that could help frame our topic. We are taking a broad approach to children’s play in order to grasp a rich context instead of focusing on learning or playing a certain type of games. This seems like an obvious advantage, but the downside is the multitude of aspects that need to be addressed in different ways on different levels using different methods and theoretical frameworks. Since it is hard to tell up front which aspects are most important for design, and since we cannot cover everything from every angle, we must make some choices regarding the framing of our investigation.

To lay the foundation for our investigation, we characterize a range of theoretical contributions that seem relevant to the topic: pervasive play for tween girls. Then we present some empirical studies that we have conducted to investigate children’s playful activities. After that, we characterize a new genre of playful systems, which we call *mock games*, that seem not to be easily addressed in a focused way by current theories. Then we present a design example of such a system. We also comment on related applications and systems before discussing various aspects that are important to consider when designing technology that has a potential effect in shaping children’s lives.

### THEORIES ABOUT PLAY AND GAMES

In his book on video game theory, *Half-Real*, Juul [14] complains that Huizinga’s *Homo Ludens* [13] and Callois’ *Man,*

*Play, and Games* [6] are too general for his purposes because they cover more than just *games*. We have a similar problem, except our problem is that not much literature covers the juxtaposition of young children’s play (including gaming), peer culture (including its socializing effects and role in identity construction) and actual *design* of pervasive and ubiquitous technology.

There are sociological studies of the *impact* of mobile phones [18] and media use, but they are descriptive, not giving many directions for design. There is also a long and strong tradition of design for playful learning building on constructionism [15,23], but here the *learning* aspect is foregrounded, thus putting heavy emphasis on the rhetoric of progress. Research into children’s play is generally descriptive [29,24] without many guidelines for design. Psychological research of electronic entertainment has focused a lot on the *violence, inactivity* and other *negative consequences* and thus seems more concerned with creating safe games than fun games. Besides, most of the game research that has been done is related to *adult gamers*.

In the following, we present a selection of contemporary theoretical views that focus on games and play and have suggestions for design that are relevant to our investigation.

### Characterizations of frameworks

We have grouped the selected theories in two categories: theories of games and theories of play.

#### Theories of Games

Juul [14] reviews seven game definitions and presents his own “classic game model”. It is called classic because it can be used on any game, digital or not. He uses six features to characterize a game which are summarized in the following definition:

- (1) A game is a rule-based system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels emotionally attached to the outcome, and the consequences of the activity are optional and negotiable. ([14], p.36).

Furthermore, a game can be characterized by looking at it from three perspectives:

- The game as a *formal system*
- The relationship between the *player* and the game
- The relationship between the game and the *rest of the world*

This approach seems useful for our purpose, since it is not restricting itself to deal with just the formal parts of a game or the player and the game. In contrast, Björk and Holopainen [2] choose not to include “implicit rules” (cf. Salen & Zimmerman [25]) in their conceptual framework because they are outside the control of the game designer. This might be true if the game designers are defined as only those defin-

ing rules and other “hard” game aspects. However, the informal, socially founded, highly negotiable aspect of being able to change the rules is very important in our case of designing (mock) games for transformative social play.

According to (1), any activity that fully satisfies the definition is a game. However, there is a fuzzy boundary between games and non-games which includes borderline cases that almost satisfy the game definition. Juul [14] claims that a *game* has a negotiable outcome without serious consequences (e.g. in Monopoly, you are not really ruined when you run out of money), whereas a *non-game* has real, non-optional consequences (e.g. in a war, people get killed); a game can be turned into a non-game if the consequences become real and vice versa. The same event can even be both a game and a non-game at the same time (for different participants, though), e.g. a marathon with professional and non-professional runners. Other examples of non-games he mentions are free-form play, traffic, noble war, hypertext fiction, storytelling, and game of life ([14], Figure 2.10).

Walther [32] has used Juul’s [14] definition as a basis for characterizing game rules in the special case of *pervasive* gaming. He offers the following definition:

- (2) Pervasive gaming implies the construction and enactment of augmented and/or embedded game worlds that reside on the threshold between tangible and immaterial space, which may further include adaptronics, embedded software, and information systems in order to facilitate a “natural” environment for game-play that ensures the explicitness of computational procedures in a postscreen setting. [32]

He notes that pervasive games tend to challenge two of Juul’s [14] requirements: (a) by not necessarily having a *quantifiable* outcome, and (b) by not necessarily having a *negotiable* outcome.

Both ‘violations’ are due to the fact that the game world includes what he refers to as “tangible space”. The outcome may be *less quantifiable* (a) because reality imposes a level of uncertainty on the game as opposed to the closed system of a console game where the game designer is in full control. Walther [32] points to Searle’s [27] distinction between two categories of social rules to explain the relation between the underlying computational (constitutive) rules of a game world and the negotiable (regulative) rules of players’ behavior. According to Walther the constitutive rules are quantifiable but the regulative rules are not. We argue that pervasive computing technology invites game-like activities where not even the constitutive rules are necessarily easily quantifiable (and thus easily represented digitally).

According to Walther [32], the outcome of a pervasive game is *less negotiable* (b) because “tangibility consequence” tend to be non-negotiable. However, while the *physical* consequences are unquestionably non-negotiable, we would point out – in line with the previous argument (a) that bringing the action out in the real world might actually increase negotia-

bility of the *social* consequences. If a game entity like Princess Toadstool gets mad at Mario (the player avatar), the room for negotiation is very limited compared to social negotiations in real life.

There is a range of other proposed typologies (e.g. [1,17]), but we have been selective and presented a few theories that we consider representative and sufficient for our present purpose.

To sum up our view of the impact of pervasive computing technology on games and playful activities compared to Juul’s [14] general game definition and Walther’s [32] pervasive game theory:

- (3) The outcome of a game may become harder to quantify *both* in terms of constitutive rules (laws) and regulatory rules (norms).
- (4) The outcome may become *less* or *more* negotiable.

As we shall see these are fundamental characteristics of mock games.

### *Theories of Play<sup>2</sup>*

Overall, the goals of play in late childhood are the same for boys and girls: to have fun, to belong to a group, and to make friends. However, while boys seem to value an activity in itself, girls seem to put more emphasis on the social context [26]. Humor plays an important role in socialization for this group of children. With reference to McGhee’s [19] stages of humor development (based on Piaget’s stages of development in general), Cunningham [9] describes some central features that are of importance to us. By preadolescence (9-12 years), not only do the children modulate their humor to depend on social context, they also put increasing emphasis on who gets a joke and who does not – either because of shared knowledge, cognitive skills, or simply different personal preferences (which is closely connected to identity creation). In this way, humor and jokes becomes a powerful mechanism in social group dynamics (think of the inside joke and secret nicknames), both within a group and externally toward others.

Whereas theories of video games and game design are dominated by people who play games themselves and are involved in game development, theories of play, even electronic play, tend to be written by non-gamers. Salen & Zimmerman [25] is an exception to this pattern, although much of their work is summarizing work done by others. They are themselves game designers, but in their book *Rules of Play* about game design they extend the perspective to include such issues as social play and games in culture, combining views from many sources. The chapter on social play ([25], p.461-489) does not treat digital entertainment but it has a useful set of

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<sup>2</sup> It is outside the scope of this paper to delve into theories of play as such, so the following overview is highly selective with regard to our purpose.

concepts and discussions derived from conventional social games that we can use to design systems for social play. Here we will only highlight a few of their points which we will use later on:

Social play is a special way of looking at games, focusing on social interactions in a community created around a single game or a larger game context. These interactions may occur in the game (following the rules) or outside the game, i.e. inside or outside the “magic circle”. The participants take certain roles in the game, exemplified by Sutton-Smith’s [29] list of social play roles.

According to Salen & Zimmerman [25], social play is tied closely to the concept of emergence. Even with simple rules and a limited number of roles, new and unforeseen patterns emerge. Their point is that when a game is viewed as a social system, the number of possibilities explodes. If the game permits, “players will find ways to create their own roles and styles of play.” ([25], p.467). Play communities may be strictly tied to one session of a game, i.e. the participants, in which case the community is “bounded”, it is a closed system within the magic circle. When spanning more sessions, play communities become “unbounded”, i.e. open systems where the participants come to share more than the game world. With reference to Piaget’s [24] model for children’s acquisition of rules, Salen & Zimmerman [25] note that learning the rules of a game is closely related to understanding social contracts, thereby drawing attention to the social construction of rules. When rules of a game are changed because of social interaction within the player community, it is called transformative social play, and according to Salen & Zimmerman [25] it “causes us to reevaluate a formal understanding of rules as fixed, unambiguous, and omnipotently authoritative.” Note that this is a general conclusion that was developed focusing on non-digital games.

Transformative social play opens up the discussion of conflicts of defining the *real* rules of a game. Many games has a set of core rules and a range of optional or “house rules”. But when rules can be negotiated, conflicts may arise. Children that are “ruining” the game for others may be well aware of the rules but choose to enforce their own rules. The conflict can also be between the community and the outside world, e.g. in the case of *forbidden play* [25]. One such example is a kissing game that allows the participants to do something they are not allowed to do if they were not playing this game.

By including the broader social context into the analysis of a game, Salen & Zimmerman [25] invoke what Garfield [11] calls the *metagame*, the game around the game. It consists of four elements: (a) what the player brings to the game, (b) what the player takes away from the game, (c) what happens between games, and (d) what happens during the game other than the game itself. These are highly relevant to our case, because the children’s playful activities are characterized by intermittent participation intertwined with other activities.

### **Conclusion: What is missing?**

To conclude the theoretical overview, it seems that the game-centric theorists have developed a number of theories and typologies that grasp almost any aspect of all possible games (e.g. [1,2,14]), but they do to a large degree (and for good reasons) confine themselves explicitly to ‘proper’ games, i.e. games that do not mix a game world with real life. Walther [32] – coming from outside the game design tradition – seems closer to addressing this issue with his pervasive game theory by pointing out that “tangibility space” disturbs the traditional game perspective, but even though he touches upon the social construction of reality, he is still locked into the game design rhetoric of a game world with little connection to the social reality outside of the magic circle.

Play theory related to social play (cf. Salen & Zimmerman’s [25] game-oriented version), on the other hand, seems rather well equipped to grasp many of the aspects that are left out by the game-centric perspectives. However, digital design for social play is not very developed, and even less so when we look at digital support for children’s social play. Although humor is an important element in tween social group dynamics, it is often downplayed in favor of the rhetoric of progress, i.e. learning, in theories of play

In short, game design theories tend to shy away from social reality, whereas play theories tend to shy away from augmented realities. Thus, it seems that something is missing, something that combines both traditions. For the lack of a better technical term, we call this something *augmented social reality play*, or *mock games*.

We shall later use the theoretical concepts and distinctions presented above when characterizing mock games as a genre. But before doing so, we will motivate further the appropriateness, or need, as it were, of a genre of this sort by looking at some empirical support from qualitative studies of children.

### **EMPIRICAL STUDIES**

In order to get a first-hand experience with the reality of everyday life for children in our target group, we conducted a range of different user studies from three different perspectives: (a) interviews and observations, (b) cooperative design workshops, and (c) prototyping and testing a simple game which combined physical context and digital interaction.

#### **Interviews and Observational Studies**

Initially we made several rounds of interviews with children of different age and the people who take care of them either as kindergarten staff or as teachers in school. In this preliminary study we worked with kids at the age of kindergarten (age 4-5), 3<sup>rd</sup> graders (age 8-9) and 9<sup>th</sup> graders (age 14-15). In the second and third part of our user studies we focused more directly on the group from age 8 to 13, but we did this preliminary study in order to attain a background for reflection on the broad topic of the children’s development.

The interviews with the kids showed us how the notion of play and playful activities evolves with age and, for the older children, points to differences in social sub-cultures affecting perceptions of play and playfulness. We saw social interaction as a big part of almost any kind of playful activity. Even playing a single-player game on a single-player console, like the Game Boy was definitely a social activity. Boys would stand around the player and watch how far he got and if he made a new high score, comment on it and suggest actions. Another aspect of play that we especially observed with the younger kids was that the physical space is a generative context. A game can be initiated by someone finding an object that can somehow be used for a game or competition – like a string, a skipping rope or a hole in the ground. For the older children, this improvisational aspect of the physical surroundings is somewhat superseded by the importance of the social context. In both cases, the negotiation of rules for the game almost has the same playful and collaborative character as playing the game itself.

As the children are getting closer to adolescence they become increasingly aware of not being perceived as children. They dress up and they attempt to no longer (admit to) play games. “We’re not kids, you know,” as they responded when we asked if and what kind of games they played after school and during recess. It seems like the girls start earlier to “hang out” and, in game terms, their activities could be better characterized as free play, with a strong social focus, constructing social reality or mock realities where they experiment with social relations. At the same time, we see membership of sub-cultures influencing patterns of play. Some boys play computer or role-playing games together, and girls go shopping and hang out, both of which seems mutually exclusive.

### Cooperative Design Workshops

Having observed and interviewed, we turned to cooperative design workshops where we wanted to see whether the kids could produce good ideas for games and plays, as experts on their own lives. Through the design exercises, the kids would then let us get a glimpse of what they thought was important when it comes to playing. We invited three groups from two schools to come and brainstorm based on a preliminary talk about new technology. This time we focused our efforts on the 3<sup>rd</sup> and 6<sup>th</sup> graders.

Between those two groups there were still big differences in what they saw as playful. The 3<sup>rd</sup> graders could get a lot of play from a rope or a ball, but it was difficult for them to project these games into a general idea for a new game. The 6<sup>th</sup> graders, on the other hand, were better at concluding in general terms on what would be desirable in the future to have as a play device or a game. As we reported in [6] the kids cannot be said to be very creative in this as they basically (re)produced a spin-off of our inspirational examples. They designed a device that could do anything. It was a handheld, pocket-sized device with any relevant functionality built in. This “EF-Watch” should have an instant messenger, calendar, SMS-service, a clock, a mood connector, a projector and several other features personally customizable. But

	Strict rules	Changing rules	Few rules
<b>Fiction</b>	Pacman	Mock game	‘House’
<b>Some fiction</b>			
<b>Non-fiction</b>	Traffic		Hanging out

**Table 1. Mock Game as a new genre characterized by transformative social play transgressing boundaries.**

the most important aspect of this EF-Watch was not the functionalities, but the brand strategy behind the product. The EF-watch was to be produced by FUBU, Karl Kani, Nike, Sisters Point and Puma collaboratively, implying a totally optimized street respect object. This duality of being connected and showing off once again points towards this age group as being extremely aware of the social peer network they are participating in and how important it is to do well in this context.

### User Studies Through Prototyping a Pervasive Game: StarCatcher

As the third step in our user studies we developed a first prototype in order to experiment with how simple a mobile game can be in order to be fun and engaging. We developed a version of capture the flag called *StarCatcher*, running on mobile phones with GPS receivers. The game was tested as part of a larger workshop where 7<sup>th</sup> grade pupils were using a new context-aware system [8] for school work. During recess from school work, a few of the pupils played with our mobile game. Integrating the prototype into a larger context meant that the prototype in itself was not that interesting as technology (the pupils were already “acclimatized” to a quite heavy induction of high-tech at this point) but a playful artifact – a game – in its own right.

The StarCatcher game prototype was based on the physical location downtown with maps on the mobile phone representing the gameboard. Each playing team had a phone and a GPS receiver and these had to be close enough to stay paired via a Bluetooth connection. Then a star was placed somewhere on the map and the task was then to find it first. The center of the map on each mobile phone was locked to the position of the GPS and if the star was located outside the visible area the team had to zoom out. Zooming was relatively slow and the players then had to decide whether they wanted to spend time on zooming or just run in a direction and find the star as they got close enough.

Unsurprisingly we found that the teens were very quick at understanding the game. As they had learned the rules of the game, they started to challenge each other on who could catch the star. Very quickly the game had been integrated into the social context of the class, and results – future, past and present – were claimed, negotiated and debated.

### Conclusion: Design Goals and Values

From our range of studies we believe we have built a good foundation for understanding and developing games for children in this age group.

We are focusing on the age of establishing one's own self – defining “me” as opposed to all others: parents, teachers, friends etc. Therefore we want to design an application that is a value-free platform for social exchange. The users need to be able to create their own values and external rules for using the application and regulating the social play around the application. This openness in the design should also address the fact that the children at a certain age no longer see themselves as someone who plays games. The defining of self implies experimentation with frames for interaction and established norms. Furthermore, the system, platform or genre needs to support the communication of the community around its use. Everything is structured along terms of social interaction, and the exposure of one self in the group is positive and very important.

This change in focus from artifacts to social play, from physical experiments with the world to social experiments is the change from child to teenager we wanted to address with our design. We see a general trend in game design to land in either of the categories of child or adult player. The first being a very young user with a strong focus on physical challenges and kinesthetic experiments often using the rhetoric of progress, and the second, provocatively said, being the designer him- or herself – a young (wo)man with a desire to play video games.

#### A NEW GENRE: MOCK GAMES

*“Peer interaction is not a preparation for life, it is life itself.”*  
–Brian Sutton-Smith [29]

In order for something to be a genre, there must be exemplars in which we can identify a set of common traits, e.g. of format, setting or mood. In that sense, mock games is not yet a genre, since there aren't really many – if any – exemplars to compare. A brief look at available lists of computer game genres (e.g. [12,16,17,26]) reveals that mock games are certainly not already covered. Therefore, mock games remain a postulate on our behalf. However, the current evolution of information and communication technology combined with our knowledge of preadolescent children lead us to believe that it is only a matter of time before we will see many systems that are designed to fill this vacancy. In this section we characterize what mock games should look like in general terms. The next section offers a first design example of a mock game.

Using the concepts and distinctions presented earlier, we can characterize more specifically what we propose will be the traits of this still tentative genre:

- (5) A mock game is a type of peer interaction that combines elements of pervasive gaming and transformative social play. It is a role-based game of emergence involving social reality, explicitly formed by and forming communities. It invites humor and friendly conflict as primary ingredients in social interaction. Real identities are constructed and blended with play roles.

Compared to existing game genres, perhaps a mock game comes closest to a game show or location-based game ([17], Fig. 3). Such a prototypical definition might look like this:

- (6) A mock game is an open-ended “game show” for small communities with no clear distinction between the roles as producers, participants, and audience.

No matter how we define mock games, a main feature is that systems within this genre holds a constant invitation to *transgress boundaries* between fiction/reality, physical/virtual, quantifiable/fuzzy, negotiable/absolute, hectic/slow, open/closed, serious/mocking etc.

The most central feature of this new genre, we propose, is the ease of transition across the boundaries between fiction and nonfiction and between playfulness (few rules) and gaming (strict rules) (Table 1).

The participants are not bound by any rules unless they agree with others to be so, and they can find themselves in any mix of fiction and non-fiction. This is similar to other games, but the easy transition is different. An activity that does not break Juul's [14] rules as in (3) and (4) is not a mock game.

For social phenomena, this creates a situation where e.g. roles and identities that are being created may not easily be separated; the mix between game roles and real identity is not discrete as pearls of different color or two immiscible substances. It becomes a blend where once put together they can no longer be clearly separated. The reason for this irreversible nature is its partial grounding in social reality. As tweens construct their identity, it may be difficult – if not impossible – to separate the various inspirational sources from the resulting identity.<sup>3</sup> This issue, which resembles what McGonigal [20] has termed “the Pinocchio effect”, the wish for a fiction to become true or vice versa, may be seem a bit disturbing, but we shall return to the issue in the discussion.

As the social play aspect of mock games is the grounding rule and all other rules are negotiable, one could argue that it is not a game at all, but merely a platform for pervasive mini-games or an interface for social interaction. So, if it is not a game, why call it a game at all? Why not play environment, chat space or friend finder?

One argument for insisting on the game-ness of mock games is that games may be viewed both as activities and as objects [14]. It is quite likely – although it would have to be verified empirically – that the mock games are indeed perceived as games because of the form they take. They reside on hardware, they involve rules, they may require player effort etc. The whole *mock experience* may feel like some kind of game, perhaps because most of the time the consequences can indeed be negotiated and are not serious.

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<sup>3</sup> We are not saying that personal identity is a pure social construction; we regard peer interaction as a contributing factor.

On the other hand, mock games may lack many features of a game according to Juul's [14] definition. Children can choose not to participate (no player effort), or they can be indifferent to the outcome. Maybe participation in the mock experience will not be referred to as playing but as something else, perhaps *mocking*. Still you may stay within mock space, which would indicate that the "game" is still on.

The mock-part of the game denotes the un-real element of the game. Like mock plays or mock battles mock games are not real in the sense that participants act within a safe frame or "magic circle" of set rules and shared understandings. The boundary to reality is very thin and it is this fragility that makes the mock game interesting. Even if a mock game itself takes place in the physical and social reality of the players, the actions and results do not have to be rooted directly in this reality. Furthermore there can be an extra layer of irony or tongue-in-cheek which separates the players and their actions from the real world since they are "just playing a game." E.g., if someone dares another player to expose the name of their secret love, the player can answer that it is her cat. Then the other players must evaluate if this is a good answer and why the player gave this answer. This is similar to the evaluation in the card game "Apples to Apples" [22] where the players estimate and negotiate semantic associations between objects and adjectives.

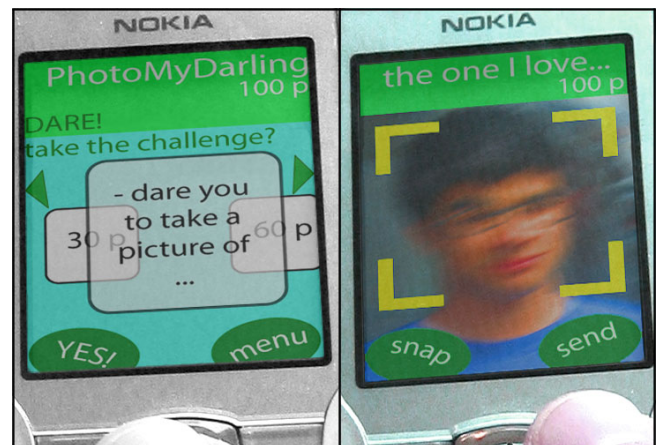
As children reach the stages (9-12 years) where humor becomes an important element in forming and maintaining peer groups which, in turn, contribute to the development and construction of the personal identity of the group members, children's urge to form their own definitions of fun and appropriateness are reinforced. Part of this development is to define oneself as different from the parents and their norms. This may result in irresponsible humor that breaks the social codes and goes to the border of good behavior – it is a stage of experiment. Experimenting with humor on the border of the acceptable standards of the parent generation, or humor that is simply too private to share with a larger audience, is likely to be a part of the mock game genre that we expect to see.

Lastly, the metagame [11] will be an integral part of mock games since they will by definition be intertwined with other activities. Mock games are in a way metagames, games about gaming.

## DESIGN

The next step in exploring mock games was developing the *DARE!* game. It is a socially embedded mock game of challenge, and users can challenge their friends with different kinds of tasks. The challenges are either readymade or can be constructed through an interface on a mobile phone.

The game itself is inspired by classic social games such as spin-the-bottle and truth-or-dare, and the key component is the challenging of friends to do things normally not within social acceptance, almost like the notion of forbidden play [25], but where the actions taken lie on or just a little beyond



**Figure 1. The construction and manipulation of the challenges takes place in an interface on the mobile phone.**

the limits of the acceptable so that players will be dared to participate.

The *DARE!* game has three stages. Firstly there is the creation of challenges. Challenges are supplied with the game as well as the tools needed to construct new challenges from scratch. Challenges are basically constructed in a slot-and-filler fashion based on a linguistically inspired understanding of a challenge as an activity. There must be a sender and a receiver of the challenge, this has to be stated regardless whether the challenge is supplied or constructed from scratch. All challenges have an action, an object and possibly a timeframe. An example could be as follows: "I(sender) challenge you(receiver) to take a picture(action) of the boy in our class you like the most(object) within a day(timeframe)". These simple distinctions then make up the building blocks that can be creatively reconstructed into new challenges and written by the children themselves (Figure 1).

Secondly, the *DARE!* game is played anywhere – at home, in the schoolyard or around the neighborhood where the children play or hang out. A challenge is sent to a friend and she then has to decide whether to take the challenge or not. However, the challenge is not fully exposed to the receiver upon reception. The example from before would read out like this: "X challenges you to take a picture of Y within Z". Since the *DARE!* game is about being bold and about trust and challenge, the receiver then has to consider whether the sender is sending something acceptable simply based on the social relation between the two and based on the amount of points attributed to the challenge. If the receiver is uncertain of whether or not he or she wishes to take the challenge and get the full points, the hidden parts of the challenge can be exposed – at a price. In our example above, the starting price of the challenge is 100 points, and exposing one of the parts "costs" a minimum of 40 points. Thus the price of exposing all the hidden parts of the challenge will always exceed the total amount of points attached to it. At any point in this, the receiver can decide not to take the challenge. This space of negotiation is the first part of receiving a dare or challenge in

the game. Next is of course performing it. Here the game play is taking place in the physical world, and our digital tools can only provide some evidence or record of accomplished tasks. One fundamental aspect of the game is that it takes place in the physical context as well as in social context of the players. Results will be reflected in the social group as well as the way the results have been attained. We currently have three other types of challenges: karaoke, poll, and “Truth, Percent, or Dare” (which may lead to a dare as described above).

The third and last part of the game is the community interface (Figure 2). This is a piece of software running on the players’ PCs and mobile phones, keeping an eye on the statistics of the game and the current state of affairs within the player’s social group. The program is sitting in the taskbar like an instant messenger since this is a known position for social software and applications that are positioned in the peripheral awareness of the user. We suggest that it could become as big a part of the children’s normal use of computers as instant messaging is today, where they keep a peripheral awareness on the application just to see if things have changed and what is going on. The community interface is connected to the server where all challenges are monitored when sent, received, negotiated, accepted, evidenced and accomplished. The final step of a challenge is to be accepted by the sender and finally socially accepted by the community, leading to discussions and chats on the challenge and the participants. In this manner, we have designed a way for the community to be alive and present even when the user is not physically present where the action is.

The DARE! game is still a work in progress and we have not yet had the opportunity to evaluate it in a realistic setting.

In this paper we have not included results from actual tests of the game as we stress the importance of developing it into a community practice and let it become part of the everyday tween life. Currently we are in the process of refining the system to work over longer periods of time in e.g. an actual school environment and see how children will accept the game and start develop their own challenges, retrofitting the game to suit their social environment.

### RELATED WORK

We do see a few games that in different ways address some of the same issues as mock games. On a general level there are augmented or pervasive reality games that mix physical and digital or virtual space, but keep social space divided between in-game and outside-game interaction. Often used examples of this are *CanYouSeeMeNow* and *UncleRoyAll-AroundYou*, both from the UK based artists group BlastTheory [3]. These are physical games where players run around a city trying to catch other players that are running on the same map, but with avatars controlled from computers in their homes or from net cafés.

When it comes to mixing social interaction around the game with the social interaction that occurs in the game, *Sissyfight*



Figure 2. The community interface showing the activities of friends in the same social context.

*2000* [28] is one of the few nice examples. *Sissyfight* is a web-based game where users challenge each other online. Each player plays a girl in a school yard fighting other girls, and there is an extensive use of harsh language, violence and satire. This probably makes the game fitting for adolescents as it stimulates the humor aspect mentioned earlier. The very limited set of rules and actions does not leave much space for experiments, but this is somewhat compensated by the wide variety of combinations of moves giving an unpredictable range of possible outcomes. The social interaction takes place both in and around the game in the chat interface. However, the fact that players probably do not know each other and have no relationship beyond the game makes it socially harmless. None of the players are potentially playing with their true social standing. The same argument goes for the very popular *Sims* game series [30]. Although very interesting as a platform for simulating social interaction setups, there is no real interaction between human players in the game.

In contrast to this, interaction between real humans take place in *FIASCO* [7] (which was later launched as “digital street game” [11]), a street performance game developed in New York. The plot is to conquer turf by performing stunts around the city. When a stunt or performance is concluded, the documentation for it is uploaded to a website, and the community will then decide who gets the turf around the site. As opposed to *Sissyfight 2000*, the social interaction takes place both in the physical world and on-line. Although not aimed at children, *FIASCO* is probably the closest we come to an example of an actual mock game.



A design which is based on the use of humor as a starting point for interaction is the Danish children's community web site *Arto.dk*. It started out as an exchange of jokes and has ended up being the single most popular site for school children. The site has 550,000+ users<sup>4</sup> building profiles, meeting and making friends and romantic friends, virtual and real, via Arto, and the most important aspect of it is the construction of their profile web space – their identity.

A third aspect of mock games is their being intertwined with the social reality. *MSN Messenger's* mini-games can be said to do exactly this. They are small games to be played in an ad-hoc manner, as breaks from work or while chatting with friends who are not necessarily co-present. These games fit into the everyday interactions somewhat like mock games as small, lightweight activities, and they can be played among friends and used to tease and taunt each other like any other game. Compared to mock games, they are not open-ended, leaving no space for creating own rules and interactions. And they definitely do not balance on the edge of reality and fiction.

As mentioned, we believe that mock games is something that will evolve and spread in the near future, and platforms such as the *Nintendo DS*, which has peer-to-peer networking as well as internet access over Wi-Fi, are perfect as platforms for such games.

## DISCUSSION

Next step in developing the concept of mock games is to get the working prototype into a real setting and have it run in a longer test period. Then we will see how well the tweens actually appropriate our design. Hopefully the DARE! game will become a natural part of the playful interactions among the tweens and they will start to develop and construct their own challenges, defining their own rules, using the components that we make available. This requires a stock of components that are ready to use and extend.

The concept of mock games is not fully unfolded with this paper. We need the actual trials and further reflection based on this in order to fully distinguish this game genre from other kinds of games. However, we are certain that mock games is a relevant and novel notion not only within the game developing community, but indeed also as an example of taking children seriously as creators of their own contexts when designing interactive systems aimed at tween users.

## Ethics

When researchers deal with children, there are obvious ethical issues to address. As we design digital, pervasive technologies for children to use, we may be at the risk of letting technology shape children's lives without a close scrutiny on the values implicit in the design. Similarly making mocking

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<sup>4</sup> Compared to Denmark's population of 5.5 million, this number represent a considerable proportion of school aged children, even when considering "inflation" of profiles.

games – are we supporting bad behavior? We are rather certain that we are not introducing anything new and harmful into the lives of tweens. As Ling [18] has already shown, the use of technology at a relatively early age is already a fact in some countries, with the blessing of the parents. This, we believe, can be seen as a forecast for other countries. Secondly, the conceptual introduction of mock games is based on observations of activities already present in the social context of tweens. As we have emphasized earlier, providing a platform for social experimentation is not value-laden in either a positive or negative direction – it is simply supporting a kind of interaction which is basically a part of coming of age. A part of children's lives that has been left largely unapproached by interaction designers. We do not consider mock games to support harassment any more than mobile text messaging does – on the contrary. This brings us to the ever-present discussion of surveillance in pervasive computing systems. When dealing with children and teenagers there is already some degree of surveillance by parents and other adult supervision. We find it difficult to say whether our proposed DARE! game will be easier or more difficult to monitor compared to "ordinary" teenage activities. On the general level we lean towards the view that systems should be designed so open that the existing social norms can govern interaction within the system as well as outside.

## CONCLUSION

On the basis of a range of qualitative user studies, including a review of some current theories of games and game design and a process of prototyping, we have suggested a new genre of digital pervasive games: mock games. With this new genre of games we are aiming design efforts at developing a game or a game-like system for the preteen age group – tweens. The objective of such a game is to provide a platform for more or less structured playfulness in a way that emphasizes humor, friendly battle and identity construction. We have presented a game of this character in the DARE! game. Mock games provide an alternative to both value-laden edutainment-style games for children and adult games with hard defined rules for play and social conduct.

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