

# Understanding 21<sup>st</sup> Century's Mobile Device-Based Games within Boundaries

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## ABSTRACT

There are many new forms of entertainment in game industry. Often some of the forms are neglected in academic focus and research. Usually this is the case with marginal game forms. This paper will introduce two different, mobile device based game forms from the 21<sup>st</sup> century that are very successful among the users but are left out from the centre of game research. Qualitative studies of geocaching and SMS-to-TV human-hosted interactive TV games were conducted by analyzing the field of geocaching (by interviewing players and analysing geocachers' web-pages and forums on the Internet) and iTV-entertainment (by recording sample of interactive TV-formats). These game phenomena were analyzed and discussed to answer the following questions: What kind of game culture these games represent? What new viewpoints they offer to the field of game studies? What are the reasons behind their success? What different dimensions can be found? Finally, why is it important to study marginal games and what can be learned from them?

## Author Keywords

iTV, mobile games, geocaching, cross media, mixed-reality games

## 1. INTRODUCTION

Mobile devices with increased power, faster communications and higher resolution displays are increasingly common to our everyday life. Today's mainstream entertainment revolves around interactivity. Today, people want entertainment they can control and become fully involved in, a system that interacts intelligently with them and their surrounding. One of the top reasons why people play is participating in a social activity they can enjoy with their friends. [28] Cross media games focus on games that are played across different devices and media channels and that employ a wide variety of gaming devices and media channels in the game play, including state-of the art mobile and pervasive computing devices as well as more traditional communication and information channels such as television. [17]

Cross media games enable the possibility to explore mixed reality environments as game activities in the physical environment. Pervasive games and mobile edutainment applications represent a major advance for game culture. Such games use information and communication technology (ICT) to overcome the boundaries of traditional gaming environments by creating new, extended ones, where the real environments of the user becomes an essential component of the overall game. By joining both worlds, the real and virtual world, they integrate the social quality of traditional games into computer games in our everyday life. [5] This paper contributes to existing game boundaries and discusses the game culture these games present. Secondly, we take a new viewpoint on

game studies by describing the success of these games and boundaries.

### 1.1 Our Approach

In this paper we introduce two different game forms that are mobile device based. They are totally different for example from the mobility point of view but at the same time, there are also similarities between these game forms.

Interactive television is becoming one piece in a bigger puzzle of different interconnected devices. iTV is no longer just a TV; it is nowadays mixture of different mediums combined together. The current study of new forms of iTV-entertainment started in 2004. The research material consists of approximately 35 hours of TV-mobile games and call quizzes taped from 2004 to 2009. The current research method is qualitative content analysis, which, in this case, describes and makes inferences about the characteristics of communications. It concentrates on channel, message and recipient. [7] The research and analyzes are based on an analysis of the iTV-material and game studies, media studies and literature from digital culture. Observation results and descriptive analyses make it possible to define the phenomenon. This research is important beyond Finland since Finland tends to pioneer interactive entertainment that later spreads out to other countries.

The current study of geocaching game started in 2004. The research material consists of geocaching articles since year 2001, geocachers interviews from the year 2004 and 2008. The case study methodology allows an

integrated and interpretative analysis. The distinguishing characteristics of case study analysis derive from the attempts to examine contemporary phenomenon in its real-life context (especially when the boundaries between the phenomenon and the context are not clearly evident). This case study is qualitative, carried out as an internet enquiry for geocachers and analysis of geocachers own web-pages. Geocaching continues to evolve, because participants like to test the latest gear and the newest game ideas. The forums are places for sharing ideas and information to see just where the game will take us next. [9]

## 2. GAME BOUNDARIES PHENOMENON

### 2.1 Geocaching

**Table 1. Geocaching formats in the world**

Geocaching Format	Level of interaction	Technology
<b>Geocaching.com has more than 740 000 active geocachers around the world in 220 different countries. Web-page has published multiple articles and they are shared by geocachers.</b>	<i>Interactive communication, instant feedback, asynchronous communication</i>	GPS device, Internet, mobile phone (PDA- device) (Iphone application)
<b>Groundspeak forum for geocachers is to share information concerning the game. (<a href="http://www.geocaching.com/forums/">http://www.geocaching.com/forums/</a>)</b>	<i>Interactive communication, instant feedback, promotions social interaction</i>	Internet, mobile phone, (PDA –device)
<b>Geocaching events all over the world <a href="http://www.geocaching.com/calendar/">http://www.geocaching.com/calendar/</a></b>	<i>social interaction</i>	GPS device, mobile phone, Internet
<b>GCChat (<a href="http://gchat.clayjar.com">gchat.clayjar.com.</a>) every country has its own chat rooms.</b>	<i>synchronic communication,</i>	Mobile phone, SMS-function

Geocaching is a sport game: partly treasure hunting, partly outdoor exploration based on principles of orienteering. The concept of geocaching is simple. One person puts together a collection of things, like toys and trinkets, and places them in a container, a plastic box called the cache. Then he/she measures its position with a GPS device and posts the location numbers to the Web site called [www.geocaching.com](http://www.geocaching.com). Someone else, an interested player, looks up the location coordinate (to be printed from the above-mentioned web address), finds the cache, takes one item from the collection and replaces it with another. Caches are hidden in the wilderness, in parks or even in urban locations accessible to the public. [21]

Games played with mobile devices, in which mobility and the movement of players in the real world are part of the contents of the game, are called mixed-reality games. Geocaching can also be seen as a mixed-reality game [16]. In mixed-reality games, games can be seen

as part of life or life can be seen as a part of the game field. This kind of linkage between the real life and games comes partly from the Reality TV programs.

According to Geocaching.com, since the 1980's a group



of Finns in Helsinki have played a variation of orienteering in which they hunt locations with compass and map. See figure 1. The members

introduced GPS systems in the 1990's to check accuracy, so they might be the original geocachers [22].

Geocaching began after the Clinton administration removed selective availability from the GPS system in May 2000. Geocaching was introduced by one of the enthusiasts, Dave Ulmer, a computer consultant, who wanted to test this field by hiding a navigational target in the woods. He called his idea the "Great American GPS Stash Hunt" and posted coordinate on an internet GPS users group. Dave Ulmer placed his own container, a black bucket, in the woods near Beaver Creek, Oregon. First month, Mike Teague the first person to find Ulmers stash, began gathering the online posts of coordinates around the world and documenting them on his personal web page. [21, 22]

Seen as a game, Geocaching is a new research area. Over the past nine years the game has grown by leaps, with worldwide participation. Geocaching is on the cusp of a major growth sport, fueled by the realization from outdoor retailers and manufacturers of its significance. When writing this article, there are more than 747 124 caches in the world. (14.3.2009)

### 2.2 Interactive TV

From the beginning of the 21<sup>st</sup> century, there has been a wide range of interactive TV (iTV) formats on television.. Interactivity (two-way), multiple choices and editing of contents are typical to new media. [15] Therefore, it is important to keep in mind whether we are discussing of attending TV-broadcast such as TV-chats/games (instant feedback) or influencing on a TV-format such as Big Brother (power to influence on TV-content later on). [19] Interactivity can also be defined through different kinds of distinctions [20]. They can be; duration of interaction, quantity of possible choices and specifying impacts of choices [19]. See Table 2.

**Table 2. Interactive TV formats in Finland**

iTV Format	Level of interaction	Technology
<b>TV-chats, chat functions in different TV-programs</b>	<i>synchronic communication, instant feedback</i>	Mobile phone, SMS-function
<b>TV mobile games, call quizzes</b>	<i>synchronic communication, instant feedback</i>	Mobile phone/landline, SMS-function
<b>Interactive TV - formats based on voting</b>	<i>asynchronous communication</i>	Mobile phone/landline, SMS-function
<b>Interactive advertisement on TV</b>	<i>synchronic communication,</i>	Mobile phone, SMS-function
<b>Interactive choices and added value to TV broadcasts</b>	<i>asynchronous communication</i>	Internet

TV is often considerable part of a gaming experience. As often it is forgotten when game cultures and – technologies are defined. TV-set has however a huge effect on building gaming situations and –experiences. TV-screen is usually defined in relation to other technologies such as mobile devices or game consoles. Lev Manovich states that the screen itself can be either dynamic, interactive or real-time based, but it is still just a screen [18]. Often add on devices are created precisely to give extra-value to TV’s purposes of use (for example VCR). [4] This research concentrates on both iTV and mobile entertainment since it would be almost impossible to separate them. A qualitative study of game-TV was conducted by analyzing Finnish game-TV contents in the 21<sup>st</sup> century. The different roles of interaction and gaming were analyzed and discussed to answer in which ways is it possible to play with the TV nowadays and what are the different playful functions TV operates with?

The amount of time people use these more interactive formats is increasing relative to television. Interaction is best seen in cross media formats. Cross media entertainment means connection between mobile devices, Internet or/and television – the same contents are used in different platforms. Cross media enables gaming experiences between TV and mobile phones [14]. By the end of the 90s and especially at the other side of the millennium, it has become increasingly normal to establish different forms of ‘two-channel’ interaction in order to produce interactive television programs or interactive moments in traditional formats for example via chat-functions. This means that another media steps in as a ‘return channel’ from the television viewer to the program broadcaster, for instance, the telephone, e-mail, web chat, fax, SMS, and MMS. [12] The mobile phone brings the viewer and the TV screen together. It is a symbiosis of TV, mobile phone and remote control.

At first, one could participate in different TV-chats – one could send greetings with a SMS (2000) and almost immediately see his/her text on the TV-screen. This new form of entertainment soon became adopted by SMS game show producers. From the year 2002 there have been different kinds of TV-mobile games on

television. At first they were games one could participate in with a text message – just by choosing the right coordinates to hit a certain target. Games were often based on problem solving and the interaction between the player and the game was limited to text messaging. Later on (2004), games developed further and a live human host stepped onto the playing field. Hosts were now playing against people on their sofas. For example, games were based on getting a football past the host or trying to hit her with a snowball. Since the participation took place via SMS or IVR, literally all viewers were able to participate. The level of interaction grew enormously, especially after the chat-function was added to the games. Now it was possible to play against a live host and talk to him/her – and most importantly: to get a response to one’s action!



Interactive TV mobile games are games one can participate in by text messaging on a mobile phone. The games are usually based on coordinates that one must choose in order to throw, for example, a snowball towards the host or kick a football past her. See Figure 2. It is exciting to participate from one’s sofa, with one’s own phone, in a live TV show. It is as though the TV has become a game console and the mobile phone a game pad. This can be seen in a TV-mobile game called Horse Derby where the player is supposed to press phone buttons one and three as fast as possible in order to make his horse (trotter) run on the screen. There is a clear resemblance to old Commodore 64 sport game Track and Field, in which players were obligated to hit joystick buttons constantly. In these games, one message/game move costs approximately one euro. There are no physical prizes and therefore it is a spiritual battle between the player and the host/other players. It is motivating to get on the TOP 10-list and pursuing to get better results. [3] However, having one’s text-message sent from one’s mobile phone cause a person on the TV-screen to move, creates a feeling of power. Every sent message activates the host and the feedback is instant.

Another form of interactive entertainment on TV is a call quiz. See Figure 3. TV-quizzes have been on television since TV was born. However, these new types of TV call quizzes started soon after the first TV mobile games were launched. These quizzes are based on time and the participants’ reactions. Call quiz questions are usually ridiculously easy and everybody knows the right answer to them. For example: ‘What is the currency in Finland? A) Euro, b) rupee or c) dollar?’ TV quizzes can be categorised by how much they really measure participants’ intelligence. Highest in ranking are quizzes that measure academic intelligence, lowest are quizzes that are based on luck and guessing. [1] One can participate in a call quiz using both mobile and land-based phones. Call quiz versions and prizes vary,



but usually the prize is big enough to make people want to give it a try.

### 3. THE INTERACTION BETWEEN GAME AND PLAYER

#### 3.1 Geocachers Communication on the Internet

Geocaching is a part of the new social online games, GPS-games and mixed reality games. Geocaching could be seen as a global social online game. According to Siitonen, online game communities are active all the time and they change very fast [23]. Belonging in a community is not compulsive, and it is based on one's choice of identity. The new social communities have elective features, in other words communities are based on one's own choice to participate in them. This means that geocachers all over the world (who share treasure hunting adventure) voluntarily participate in the community. Our social worlds can be seen as varied network, which creates the geocaching culture. "I think the biggest attraction for geocachers is the uncertainty, the challenge of the unknown treasures." [9] Johan Fornäs states, that different technology based communities are nowadays in the middle of the cultural practicum. [2] In geocaching culture geocachers are joint together through different communication instruments; Geocaching.com -webpage and Groundspeak forum discussion board. [9]

Network can be seen as commutative *environment*, which mobile network connection act different community shape. Network is extending the operational environment, which is human implementation of both technology and operational communication spaces. The network mobile media creates a new relationship both in place and locality. [13] Groundspeak forum's discussion board can be seen as place and network for social relationships. Groundspeak forum discussion board is a communal state, which offers geocachers "environment" to act, be present and modify geocaching culture. Groundspeak forum is still regional, because of the fact that different countries have their own discussion boards. For example in the North discussion board, where Finnish geocachers belong; communication language is primarily Finnish. [9]

Geocaching.com webpage has created a successful interactive environment for geocachers. Geocachers can link their own web-pages to Geocaching.com web page. Geocaching.com web page collects geocaching articles from all over the world, also from radio programs and TV program's web pages. At the Groundspeak forum geocachers can also publish stories, narratives and articles. Additional services develop constantly and in this way geocaching hobby has exploited the idea of the 'multiple channel' in a good way. [9]

If network is perceived as an *instrument* and network is seen especially as a communication channel, where

technology gives usage-benefit to people by creating a technological infrastructure around their everyday life and social action on the internet. [13] Geocaching.com -webpage can be seen as a network instrument, where geocaching information is transmitted all over the world, for example to local geocaching associations. Geocaching.com -webpage benefits from this by being able to use users shared web pages, collected statistics and saved data on the webpage. Additionally Geocaching.com webpage describes new geocache descriptions of the world on their own webpage and also offer more hobby related information. One mission is to spread geographic information world wide. [9]

#### 3.2 Geocaching for Mobile, Movable and Social Game

Kalle Toiskallio et. al did a report called "Mobile application context – Mobix" that examines mobile, context and mobile context. Use of mobile phones, talking and sending text messages are already familiar to Finnish users. GPS devices are used only in certain limited cultures, as in young male groups. [24] Mobility is central in geocaching game; one is hunting for caches. Mobile devices turn into GPS-device, mobile phones, PDA device or computer. In the future outdoor mobile games like geocaching and the technology development could benefit from the ubiquitous computing side. However as pervasive games can be played anytime and anyplace, game action is often inseparable from nongame action. Moving and mobility are quintessence in geocaching. Caches are searched from nature-, build-up- and cultural landscapes. [9]

Johan Fornäs introduces interactivity concepts together with sharing social interaction, users and machine technical interaction both interaction within text and users. [2, 20, 8] Physical skills do not play a big role, because players' interactivity within a game is limited to players' movements and other physical information transmitted. In geocaching game interactivity influences physical features, which is to get out hunting for caches. In this case interactivity with the geocaching game is more straightforward than in typical computer sport game. In geocaching game users use new technology in new ways, which were not predicted by inventor, salespersons or legislator. When using devices they define us and we create new meanings around them.

Ubiquitous computing offers a possibility for especially mobile game area to extend context- and group awareness dimensions. The games are not usually placed in only one ubiquitous computing category, the games can benefit from ubiquitous computing ideas and other mobile contexts with the group knowledge [14]. Players are then able to play physical and virtual game at the same time. Allocation based on locality brings many possibilities to ubiquitous computing games. When mobile devices are used in games, where player's mobility in real world are included in game contents, games are called mixed-reality games. Geocaching could be interpreted as a mixed-reality game. Player's location in a physical environment becomes a part of



the game field. Interactivity in the geocaching game is essential when experiencing the game. For example in geodating, this is very popular in United States. You need to find another geogacher with whom you find a cache place together. Social side in geocaching can also be seen in Groundspeak forum's discussions and geocaching events all over the world. Geocachers want to use the new technology in new ways, which is one of the good reasons to study geocaching.

### 3.3 TV-Centred Communication - a Significant Feature in Today's Interactive TV-Formats

Interactive entertainment has brought to life a new kind of TV-host culture. A game show host or an iTV-host is very active and demanding on the viewers. The host's role in games and in quizzes is to make viewers participate and pay. The game show host is in the position of activating consumers to gain as many participants as possible [26]. Usually TV and its stars and hosts are only trying to create simulation of interaction between spectators and the TV [10]. Nowadays iTV-shows enable two-way traffic between audience and TV via chat-functions [26]. In this new game show host culture it is possible to communicate with the "TV-stars" by text messaging (SMS) and mainly because of this, there are different roles played by the iTV-hosts. This is a significant feature in today's interactive participation TV-formats. [26]

### 3.4 The iTV-Host as a Game Figure

There are different roles played by iTV game show hosts and this study concentrates on the host as game figure and a part of the gaming experience. TV-mobile games tempt consumers to play again and again; just like to put coins into arcade games. [11] The main tendency in these games is to maintain the player between two ends – on one hand, to attain control, on the other hand on the edge of losing it. The iTV-host needs to make saves in a virtual football game or the players will complain he/she is not playing properly. On the other hand, the iTV-host must also pass footballs, so that the interest in gaming remains. This emphasizes the importance of the host in gaming situations and -experiences. The live host is able to manipulate the gaming situation in a way traditional game figure would not. The trick is to give a promise that grips the player to think that with an adequate amount of energy player can finally be victorious [29]. The feeling of almost succeeding is one of the key elements of any game. [3] The game and the hosts grip the player to continue - maybe the next text-message/virtual football will be a success? It could be said that we have gone back to the era of slot machines, this time straight from our living room. Similarly the spreading and fecundity of slot machines got attention in the media and caused a lot of criticism. [8] iTV-host is a great part of the gaming experience and the use of the hosts is worthwhile in today's iTV games (it is both profitable and consumers seem to prefer iTV formats with hosts – especially the young viewers).

## 4. DISCUSSION

We are trying to define two different mobile device based forms of games. We see these forms of gaming as different interconnected devices that enable gaming experiences that are usually listed something else than games. Firstly, the whole term *mobile* is tricky. As tricky is the term *mobile game* [16]. This paper highlights the fact that it is extremely important to define what the term mobile device based game means in different contexts. Intention of this study is to emphasise and clarify the term mobile device based game in the field of game culture. In TV-mobile games term mobile is valid mainly only because of the fact that the games are played via mobile phones. They can not be labelled as TV-games because this would emphasise to console games too easily. [26] Similarly, the term mobile game would give an impression that we are discussing of games played only on mobile phones. Still, it is important to notice that we are not discussing mobile games more like mobile device based games.

In addition, the level of mobility differs drastically between these mobile gaming forms. In TV-mobile games, despite the term mobile, a player is not free to play whenever or wherever. On the contrary, the player is confined to a TV-screen: gaming can only take place in front of the TV and when the iTV-formats are on. Compared to iTV-formats, geocaching represents totally reversed form of mobility. In geocaching gaming situation the user is able to start playing whenever and wherever he/she wishes. The game is not bound to any certain space or even time. Everything the user needs is his/her necessary equipment and some geographical information where to start and what to seek. This enables the gaming situation to occur for example during holidays or even on the spur of the moment. This emphasizes the fact that there are lots of dimensions in mobility, which is why it is important to redefine the term mobile or mobile game when introducing the term in the first place. The relation of the games mobility and sociality vary. <sup>19]</sup>

Mobile device-based games are games blurring the traditional boundaries of games. They also need to be suited as nongame phenomena. Games are not only games; they seem to come part of the everyday activity. Geocachers spend time in forums and interact socially with the other players. The way geocaching include nongame reality in game play allows things to happen for real during the game. Exploring, puzzle solving, planning and making caches and running to find them can be done for real. The whole world can be seen as a game area. For example there are 220 geocaches in different countries, which means that players are sometimes required to travel even long distances. Geocachers use mobile phones to take pictures, video clips and record their surrounding at same time as they hunt for geocaches. Move to play is a philosophy that can be found in number of subcultures form skateboarding, parkour to roller-skating and train surfing [28]

## 5. CONCLUSIONS

This paper presented a qualitative study of mobile device-based 21<sup>st</sup> century's forms of game culture and described different aspects around marginal games. In conclusion, this paper highlights the fact that the game cultures are expanding rapidly which is why the academic study of these marginal games is essential for current game studies. There are multiple different ways of gaming in addition to mainstream game culture and these ways should be studied properly. If not explored, the future of games based on mobile devices will be problematic. iTV-entertainment and geocaching represent game phenomena that break traditional game boundaries for example in game genres.

In the end, iTV-entertainment is popular because of the new real-time mediated communication with the live game figure aka iTV-host. TV's role in creating gaming experiences is not diminishing. Passive TV has turned active and consumers are enjoying game based choices that cross media formats enable. Geocaching is also popular hobby and game because of its fairly easy implementation and use. Geocaching game offers multi-player gaming experience, the set of elements are added with a dimension of sociability. Geocaching game takes the player to areas with historical or cultural significance to solve puzzles and learn about the history of a place as well. Solving a puzzle typically provides further instructions on how to find other location. It is also a great example of mixed-reality games – geocaching combines technology and gaming with outdoor sports and use of the nature when creating gaming experiences. Geocaching can be seen as updated, technology-enhanced version of the treasure hunt games and at the same time a physical variant of popular digital adventure games.

Mobile device based games are presumably products of the future – the whole idea of gaming experience and interaction between the player and the game are rapidly changing. Because of this development the game genres and forms are more difficult to define. The focus of the game research must follow the rate of change. This paper attempts to give its own contribution on this field.

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