Situated Play – Just a Temporary Blip?

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ABSTRACT
In this paper we discuss how cognitive science may contribute to understanding the concepts of *situatedness* and *situated play*. While situatedness has become something of a catch-all term, it actually has several different meanings, ranging from "higher" social-cultural forms to "lower" sensori-motoric activities. We also discuss an often overlooked, but crucial aspect of situatedness, which is the use of external resources such as tools and their use. As will become apparent, a more thorough understanding of situatedness and tool use are key to understanding computer games and people's everyday playing activities.

Author Keywords
Situatedness, tool use, situated play, computer games

INTRODUCTION
Considering the popularity and widespread use of computer games, and the time and effort (young) people spend on playing them, computer games can be said to be truly successful. An interesting question that arises is why those games are usually more successful in capturing and keeping people's interest than, e.g., games developed for purposes other than mere entertainment [32]. Also, how do games, which people play on their own terms and of their own choice, enable successful learning/teaching processes, and which cognitive aspects of such processes do we need to consider in our study of game play activities? Without doubt, the immense popularity of computer games and the fact that they are near ubiquitous in our society tells us that games truly deserve our attention; a lot can be learned from people's everyday computer game play, both in terms of game play as *situated play* and with respect to the learning/teaching processes that take place.

The view on game play as situated play is not a novel idea. We have seen, e.g., discussions on the *socio-cultural context in computer game play* [1,29], which draw quite heavily on situated approaches to cognition. We have also seen discussions of *game play and learning* as a situated phenomenon, with focus on the interplay between the body, development, and cultural aspects, and the way they are integrated in learning and game play [14]. These and similar work of other researchers provide important insights on game play as a situated phenomenon. However, besides the socio-cultural side of situatedness, there are many more aspects to it that have not been much considered in the context of computer game play. Firstly, it often remains unclear what researchers have in mind when referring to game play as being situated; situatedness itself can have many different meanings [4,5,30]. Secondly, a crucial aspect of situatedness that is often overlooked is the use of external resources in people's playing activities in terms of artefacts and tools. This is somewhat surprising considering that computers and computer games themselves constitute *cultural artefacts* [23,24,37] which involve complex cognitive activities.

Conceptions of situatedness have largely been discussed in the area of *cognitive science*, an interdisciplinary field with influences from areas as different as psychology, computer science, neuroscience, biology, anthropology, and philosophy. Naturally, the focus is on the study of the human mind in general, not on game play in particular. However, current cognitive science research can further our understanding of computer games and game play as situated activity.

Aim and focus
In this paper, we aim to discuss different conceptions of situatedness, as proposed within the theoretical frameworks of *distributed, embodied*, and *situated cognition*, with regard to game play. The concept of "situated play" seems to have reached somewhat of a buzzword status in the field of game studies, but its meaning is still quite vague. Some conceptual clarifications and distinctions on this issue are therefore needed. Subsequently, in this paper we will focus on *different conceptions of situatedness with bearing on computer game play.*

In the following sections, we describe and discuss different theoretical aspects of situatedness in general and situated play in particular. Also, as an important aspect of situatedness, *the use of artefacts and tools* will be explored in more detail.

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SITUATED COGNITION

While the terms *situated, embodied*, and *distributed cognition* (SC/EC) denote a sharp deviation from the classical view of cognition as disembodied abstract symbolic processing inside the heads of individuals, they also have become something of a catch-all term. However, the concept of situatedness has very different meanings albeit they are all placed under the same label. Subsequently, merely saying that some activity is "situated" does not explain much of what is really going on, except that it may reveal the researcher's own perspective on matters, but sometimes not even that. Both traditional and current situated cognition perspectives are interested in the same phenomena, that is, the nature of knowledge and intelligence, but they are fundamentally different in their approach to how these issues should be studied [24]. Instead of studying cognition, or game play for that matter, by means of experimentation, it is said that theories of "situated cognition maintain that intelligent human action has evolved within and is shaped by and adapted to the specific forms of activity within which it occurs, and that cognition must therefore be understood and studied as an aspect of embodied practical activity" [24]. Subsequently, to study cognition apart from the specific setting of activity within which it takes place would destroy the very phenomenon being studied. In research on computer games similar views are emerging; for instance, instead of testing player's performances experimentally on tasks that really got nothing to do with their playing activities, it is argued we need player-centred studies, that is, qualitative studies of game players and game play communities [11, 39].

However, as mentioned in the introduction, we need to keep in mind that there are different forms of situatedness to consider, which we will address in the sections to follow.

Situatedness

Situated theories have proposed a number of alternative assumptions about the nature of cognition, even though not all SC/EC researchers would agree upon them [24]: a) the mind and the world are fundamentally interconnected, and the character of the world depends upon the agent's construal in the course of activity. Such construals are enabled and constrained by the agent's brain, body, and the physical and social context, b) representations of the world arise in the course of situated activity, c) knowledge is located in the evolving relationships between people and artefacts in culturally evolved activity systems, d) cognition is mediated by and distributed across artefacts and people, and e) cognition is opportunistic and improvised, and the primary phenomenon to be explained is successful participation in everyday activity, rather than engagement in tasks based on formal logic. While these issues are at the core of situated cognition, they also implicitly point out different forms of situatedness.

Firstly, we find *"high-level" situatedness*, which commonly refers to the socio-cultural setting or context of an activity, meaning that the activities in which we engage are guided by cultural and social norms and values [cf.,27]. Much interest here lies on learning/teaching processes, as in guided participation or legitimate peripheral participation [18,27]. Generally, in Anglo-American research, this form of situatedness usually addresses the social side of activities, that is, the social interaction in guided learning processes. Russian and Scandinavian research, on the other hand, places more focus on the individual and her/his use of tools within social-cultural settings. Importantly, this view on situatedness suggests that all activities are social in nature, even those carried out individually.

In recent years, this perspective has also found its way into research on computer games; it is increasingly realised that game play needs to be viewed in terms of social-cultural practices. Learning and playing certain computer and video games is a very cultural process where, e.g., newcomers, participating in a group of community members' activities, gradually advance from being a "newbie" to higher levels of expertise. This is, for instance, very much the case in games such as *World of Warcraft [8]* and *Counter-strike [38]*, where game play is largely based on social interactions with others. This perspective has also become quite influential in research on serious games and digital computer-based learning (DGBL) [1,10,14]. It has been argued that much can be learned from people's everyday playing activities in terms of learning and commitment when it comes to designing games for more serious purposes, such as educational games, considering that (young) people often put a lot of time and effort into playing and mastering games.

Another aspect of situatedness is *the contextual "here and now" of a scene, or setting*, which is emphasised, e.g., in ethnographically inspired approaches to cognition and in situated robotics/AI [3,30,36]. The common emphasis is that in order to understand peoples' cognitions, we need to consider what is taking place around the individual and the interactions in which s/he is involved. Focus lies on the distribution of cognition between individuals and their material surroundings, e.g., when people use calendars to aid their memory, or when people cooperate to solve a task. This form of situatedness is also generally recognised to be affected by socio-cultural factors, even though it is often more implicit than explicit due to the emphasis on the "here and now" of an ongoing activity.

In the last couple of years, an increasing number of scientists interested in games have highlighted the need for greater scholarly attention on the contextual "here and now" of games, i.e., the actual activity of playing computer games, with the players and their actions in focus [11]. However, as pointed out by Arnseth [1], research on games, with few exceptions, tends to view game play in terms of its impact on people's cognitions, and a game's content is viewed in separation from the activity of playing it. An early exception is Wright et al.'s [39] exploration of creative playing actions; they argue that "games like Counter-strike are not merely embodied in the graphics or even the violent

game, but in the social mediations that go on between players through their talk with each other and by their performance within the game".

A third sense of situatedness is what might be called *"low-level" situatedness* (sometimes termed embodiment), which is emphasised, e.g., in embodied cognition and situated robotics/AI [3,4,5]. Much focus here is placed on the agent having a physical body, through which the individual, or agent, is sensori-motorically coupled to the world and perceives constant feedback on actions. The assumption is that the body (moving, manipulating objects, etc.) is key to our cognition, that there is a constant perception-action loop in which our actions affect what we perceive, and our perceptions affect our actions. The role of the body is also emphasised, e.g., in situatedness-oriented developmental studies where object manipulation is considered central to development [9,13].

The idea of human cognition being inextricably intertwined with bodily experiences needs, of course, also to be taken into consideration when studying game play. However, the third sense of situatedness has not received a lot of attention compared to, e.g., formalistic approaches to games [26]. Exceptions are few, but one of them is Wilhelmsson [35] who argues that the identification with a game character is fundamentally related to the physicality of having a body, even in simple games such as *Pac-Man* [25]. A promising, embodied approach to games has also very recently been proposed by Murray [21], who argues that games and game play are rooted in embodied social processes such as mimicry and imitation.

As seen here, there are clearly different forms of situatedness, and the term takes on different meanings depending on domain and research focus. However, situatedness is not always as readily divided into different forms as done here – there really is not one form of situatedness without the others, but for the sake of analysis, explanation, and discussion, we need to consider it from different angles. Thus, so far we have a) socio-cultural situatedness 2) contextual situatedness, the "here and now" of an activity, and 3) sensori-motoric situatedness. Now, it is time to turn to a quite essential facet of situatedness: tools and their use which quite commonly are involved in all the above forms of situatedness.

Tool use

Situated cognition approaches generally emphasise the role of tools in cognition, and it has even been argued that they are part and parcel of our cognition, and that it is a mistake "to posit a biologically fixed 'human nature' with a simple 'wrap-around' of tools and culture. For the tools and culture are indeed as much determiners of our nature as products of it" [6]. Nevertheless, tools and tool use have not attracted due attention neither in cognitive science, nor in other sciences, although there are notable exceptions [2,5,16,37]. Russian psychology, for instance, has long emphasised tools as inherent to cognition and their role as mediators in human activity [13,19,34], and today, these ideas are increasingly finding their way into current situated theories. In extension, these ideas will also help to further explain and understand situated computer game play, of which the tools used in play are an important aspect.

When talking about tools, what we have in mind is the use of different kinds of tools for the purpose of achieving some end. What exactly constitutes a tool, or what end a user wants to achieve depends on the activity under consideration. When considering artefacts and tools, there are some important distinctions between the two [cf. 31], but let us settle with the fact that we use the term tool in the present context, rather than artefact, since an artefact basically could be any object, even one not used for achieving some purpose (e.g., a stone placed on the window sill simply because we happen to like the stone's appearance). What is important about tools is that they allow us to extend our cognition beyond skin and skull; tools are external resources that we may employ to off-load our cognitive workload [5, 37]. An example is the use of a to-do-list, which changes the task of remembering the separate items on the list to remembering to read the list, which instead holds the items. As for computer games, cognitive scientists have not paid much interest to the issue, but there are some exceptions. One of them, which also is a good example of off-loading, is Kirsh and Maglio's [17] study of Tetris game players where the game's screen played a considerable role in the game. Another, similar example is discussed by Wilson [37].

The external resources we employ to aid our cognitions include the two well-known categories material (physical) tools and psychological (mental) tools. *Material tools* include all the things we may use in an activity, for instance, a hammer, pen and paper, computers, calendars, diagrams, written instructions, laws, and regulations. *Psychological tools* instead include language, heuristics, mnemonic aids, strategies, conceptualisations, implicit social and cultural norms and rules, etc. Most research on tool use in cognitive science has been individual-oriented and focused on, e.g., the way different forms of external representations affect human reasoning. However, tools are important not only for individual cognition, but also for inter-individual cognitive processes. Among the first to take an interest in tools and tool use on social levels of activity, and to consider both material and psychological tools, probably was the distributed cognition approach [16,28]. In this view, cognition is not confined to internal processes, but instead is distributed between people and the material resources employed in activities.

Much of our daily tool use goes by unnoticed, that is, we are not consciously aware that we are using tools, instead they are transparent and tend to "disappear". Neither is there always a sharp line between one or the other kind of tool, and they may be used for individual or inter-individual purposes. For instance, we may place an empty beer bottle in a strategic place as a reminder to buy some more beer the

next time we go out. While the bottle is a reminder for the person who placed it there, it may also provide feedback to someone else who in turn will buy some more beer. When we use a beer bottle in such a way, or leave a message on a post-it note, or use any other object in such a way, we modify our environment so as to reduce our cognitive workload. In other words, we off-load some of the cognitive burden onto the environment. At the same time, such an adaptation of the environment may serve as a signal or message to others, to which they may/may not respond, because even though we remind someone to do something s/he may as well ignore it. Thus, what takes place is an *indirect interaction*. This kind of indirect interaction is quite common, and at day's end, it leads to coordinated, cooperative collective behaviour [31]. Thus, indirect interaction relates individual and social levels of behaviour. In the world of social insect behaviour, this kind of indirect interaction has been explained through the principle of *stigmergy*. The basic principle in stigmergy states that traces left and modifications made by individuals in their environment may feed back on themselves and others – activities are partly recorded in the physical environment, and that record is used to organise collective behaviour. An example of stigmergic behaviour in computer games, although at between-groups level, is the exploring of instance zones (dungeons) in *World of Warcraft* [38], in which members of a party have to work together to defeat monsters. As the players defeat a monster, they also make an alteration to the environment, which allows all players to benefit from the dungeon experience instead of all players having to take turns for the same monster.

The principle of stigmergic behaviour also leads us to a third category of tools, namely *social tools*. The concept itself originates from the area of non-human primate tool use [15, 20], and is not commonly used in the context of human activities, but arguably it applies equally well to humans [31]. Basically social tool use is to make use of other people as tools, that is, to "use" others in order to achieve something. Examples include to ask someone for help to reason about a problem, or to ask someone to remind us of something. As in the case of the previous two categories of tools, we rarely (if at all) consciously think of such cases as "tool use". Social tools are also typically highly transparent in that we just use them without much thought. We engage in social tool use both directly and indirectly; joint problem solving is a case of direct social tool use, while leaving a note to someone with instructions to, e.g., file a document for us, is a case of indirect social tool use.

As for computer games, cognitive scientists have not taken much interest in the issue. However, a few exceptions exist. In their study of *Tetris* players, Kirsh and Maglio [17] illustrated how players reduce the mental effort by performing some actions directly on the game's display instead of performing them in their minds; however, their main interest was on the nature of the human mind in general and not so much on computer games in particular. In the field of game studies, on the other hand, discussions with focus on these issues have not really been raised yet [26]. Researchers have, of course, looked into social aspects of game play, but not in terms of social tool use, which might provide new perspectives on matters. Researchers have also considered, e.g. different kinds of input devices in games, but their use as tools, as discussed here, seems to be as transparent to researchers as it is to the players using them. The same goes for the use of virtual objects/tools, which can play an important part in people's playing activities.

To summarise, commonly the concept of situatedness, when used in games research, represents a fairly narrow view of its many facets. Quite often, it refers to high-level situatedness, that is, the social-cultural context. However, the concept has more nuanced, not always that easily discernible meanings, and tool use is an extremely important aspect common to all the different forms of situatedness. Having reached this point, we may ask what the concept of situatedness can tell us about games and game play, that is, *what does situated play actually mean*?

SITUATED PLAY

In computer game play the different forms of situatedness are manifest in player's everyday playing activities, i.e., game play is a culturally evolved system of activity in which actions are affected and guided by social and cultural norms. These cultural and social norms are inherent both in games themselves, which constitute a kind of cultural artefact, and in the player's interaction with them; these interactions are influenced by many different aspects, including players' backgrounds, the use of different kinds of tools, their interactions with other players and the attendance of, e.g., computer game events. In Counter-strike (CS), for instance, young people who start playing the game, are guided by the social and cultural norms prevailing within the game and in the game community. Such norms underlie, e.g., the development of skills as players new to the game engage in play activities with more experienced players.

Players are also highly immersed in the "here and now" of game play; what they do, which actions they take are very much affected by the circumstances of the play activity. Decisions in CS, for instance, are based upon constantly changing conditions which require players to know strategies and moves by heart.

Furthermore, players are physically situated through their bodies; the physical constitution allows certain kinds of interactions with the equipment used in game play, the (direct and indirect) interactions with others and the manipulation of available tools affect the kinds of skills developed. The use of mouse and keyboard in CS requires players, for instance, to develop motoric and sensory skills such as good manual dexterity and eye-hand coordination. Also, players' physiological constraints determine to what

extent they can bend and shift their hands during game play, which can have an impact on the game's outcome. Last but not least, behaviours like reeling, swerving, and ducking also appear to increase the gaming experience considerably even though such movements usually are not registered by game control devices [cf. 22].

Players are also engaged in different kinds of tool use. They use material tools such as computers and headsets, and psychological tools such as language, strategies, and tactics. Cooperation and coordination in competitive games such as CS hinges, e.g., on good communication, which is why it is important that each team member knows and masters specific CS-related terms. Importantly, however, when it comes to computer game play and the virtual worlds they offer, we find yet another dimension of situatedness and tool use. Players are situated not only in the above mentioned ways – they are *simultaneously situated within the game's virtual world*; the activity of controlling a game's characters places the player in the virtual game world. This represents something of a challenge for players since the simultaneous "situatedness" in both worlds needs to be handled by players if the game is to be played successfully. Furthermore, players use not only the different kinds of tools mentioned above, but also the *virtual* tools available in the game itself. While trying to find a way through a marsh in *Escape from Monkey Island* [12], players have, for instance, access to a virtual compass and a virtual clock which make navigation, and subsequently playing the game, much easier.

It bears repeating that, even as we may describe there being different forms of situatedness and tools, they are *not* separate entities or levels that can be studied in isolation. On the contrary, as Clark [5] phrases it, "brain, body, world, and artifact are discovered locked together in the most complex of conspiracies". The fact that computer game players experience an additional dimension of situatedness and tool use does not allow us to separate that into a solitary unit, instead it shows the complexity of play activities. Taken together, all these different aspects show us just how truly complex situated computer game play is.

CONCLUSIONS

As we have seen, there are different meanings to the concept of situatedness, ranging from "higher" social-cultural forms to "lower" sensori-motoric activities. This also raises important methodological concerns. If the unit of analysis for computer game studies is to include all the different forms of situatedness, future research will require some serious thought on how to approach and capture this broad scope on games and playing activities. Nevertheless, we hope to have raised some awareness to the potential pitfalls of using a term like "situated play" without being aware of its multi-layered, often hidden meanings. This should not prevent researchers from investigating aspects of situatedness in games though. Game play as a situated phenomenon, i.e., situated play, certainly has the potential of broadening our understanding of people's everyday playing activities. So, let us make sure it is not just a temporary blip in current research on computer and video games – it certainly has a lot to offer.

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