# Emergence, game rules and players

**Faltin Karlsen**

## Abstract

This paper will investigate the concept of emergence in relation to computer game studies. Emergence is a concept that in its broadest sense describes how various kinds of systems work, including solar systems, biological organisms and cities. A computer game can be analysed as a system on at least two levels. First, as a game system comprised of rules, and secondly, as a system that regulates social interaction. These two systems are often intertwined and can be difficult to separate analytically. This is an issue that has not been fully addressed within computer game studies, especially within the field that is now labelled ludology. With the ludological approach, the concept user often plays a subordinate role. This can obstruct analysis, as the actual use of games and the games' social and cultural context, might warp and transform the rules that are structurally embedded in them. The aim of this paper is to single out some of the aspects of games in which these two levels of analysis often get blurred, especially in terms of the concept of rules and game goal. The paper will focus particularly on multiuser games, where the social aspect is highly significant. My discussion of the concept emergence will rely mainly on theoretical reflections and vocabulary from complexity theory and social theory. Jesper Juul's use of the concept of emergence and his definition of games and rules will be the point of departure with regard to computer game theory.

## Keywords

Emergence, complexity theory, systems theory, game rules, MMORPGs, ludology, players

## Institution

University of Oslo
Department of Media and Communication
P.O. Box 1093 Blindern
N-0317 Oslo
Email: faltin.karlsen@media.uio.no
Phone: + 47 22 85 04 04
Mobil: +47 90 73 70 88

## Emergence and games

The concept of emergence is occasionally used within the field of computer game science, though mainly in passing, without much explanation being devoted to what the concept involves (Klastrup 2003, Pearce 2002). Some attempts have been made to give the concept a more analytical framework. For instance, Jesper Juul has tried to establish a theoretical distinction between two different game types; emergent and progressive games (Juul 2005). Salen and Zimmerman have used the concept to describe a specific property of game rules, and have focused on the relationship between simple rules and complex game play in design of computer games (Salen and Zimmerman 2004). Emergence is also a part of the developer's vocabulary. Will Wright, the creator of Sim City once stated:

> "But what really impresses me about Go isn't so much the abstraction as the emergence. The fact that it's one of the most amazing examples of emergent behaviour I've ever seen. And it's so clear and simple and you can just see before your very eyes that these simple little rules give rise to this incredible strategy. I mean it's just so apparent. They pulled away everything that has nothing to do with emergence, and all that's left is the emergence of the game." (Pearce 2002)

Go is a game that far exceeds Chess when it comes to combinatorial possibilities. As stated in Wikipedia, a standard 19x19 board grid will yield the possibility of 107.49 X 1048 different games. Or as they explain, "If that number were written down, with each digit as wide as a hydrogen atom, it would encircle the visible universe a trillion times" (wikipedia.org/Emergence). Needless to say, that is a large number of possibilities. Another popular way of describing an emergent game is that it is "easy to learn, difficult to master" (Juul 2004). This exact phrasing was used by the vice president of game design at Blizzard, Rob Pardo, who stated that this summed up the "first mantra" of the Blizzard Company and its guidelines in the development of World of Warcraft (WorldOfWar.net).

## Emergence in science

The concept emergence is often used within a larger theoretical framework, for instance within the fields of complexity theory or non-linear theory. In complexity theory, emergence is regarded as a fundamental quality of systems. As social theorist John Urry explains it: "Central, then, to complexity is the idea of emergence. It is not that the sum is greater than the size of its parts – but there are system effects that are different from their parts." (Urry 2005: 5) Complexity and emergence are hence both important aspects of systems theory, and disciplines as disparate as physics, biology, economy, meteorology, psychology, philosophy and sociology have at some point been affected by these concepts. One reason for this cross-disciplinary appeal is the concept's ability to generate reflections around the relationship between different levels of a system or between part of a system and the system as a whole. As the complexity theorists Bertuglia and Vaio explain:

> "The identification of systems is common to all sciences, whether natural or social: from the mechanical systems of classical physics, whose base is, or at least appears to be, relatively simple, such as a planetary system, to those of quantum physics, whose basis is more elaborate, such as atomic nucleus, an atom or a molecule, to systems of biological science, such as cells, apparatus, organisms, and again to those of social science, such as economic environments, populations, cities and many more." (Bertuglia and Vaio 2005: 3)

Along the same lines, Urry reports that in 1996, the Gulbenkian Commission on the Restructuring of the Social Sciences, that included non-linear scientist Prigogine, advocated

breaking down the division between ‘natural’ and ‘social’ science by defining both as characterized by ‘complexity’. (Urry 2005: 2). Systems are not only emergent and complex, they are also open. What this indicates is that systems do not always have clear boundaries, but are interconnected with other systems in a wider context. This is a reminder that the definition of a research object or the contextualisation of it seldom is straight-forward. As we will see later, how we define the boundaries of a game ‘system’ might be crucial to our success in analysing it.

Central to most definitions of emergence is the notion of a system where all parts are governed by simple rules that by interaction generate a complex system or behaviour on a higher level. Emergent systems are sometimes referred to as self-organising systems and are illustrated with references to phenomena found in biology, like animal flocks or schools of fish. What is important for this concept is that one doesn’t find a central entity that leads or organises the overall behaviour – the macroscopic structure is solely a result of decision making or the existence of rules on a local level. In some types of emergence, causality from the lower level to the higher level can be difficult to trace. This can be illustrated, for instance, by the human mind. Even though we understand much of how our neurons function, they only partly explain properties of the system at the higher level, such as the existence of thought and consciousness. Or as Stephen Johnson explains: “a neuron is not a self-conscious entity, but the brain is.” (Johnson 2001) The analytical point is that there is a qualitative difference between the two levels. If we follow Urry’s statement earlier, the whole is not necessarily more than the parts, but quite different.

Within the social sciences, the interrelation between parts and a whole concerns one of the most central issues within the field – the relationship between the individual and society. The social scientist R. Keith Sawyer writes that the concept emergence plays a central role in social science within different types of systems theory, of which he identifies three losely defined schools. The first is normally referred to as "structural functionalism" and is associated with the works of Talcott Parsons. His work was inspired by mathematics and cybernetics and was primarily concerned with questions related to structure and stability within social systems. This is contrasted by the second school of emergence theory, that centred on questions concerning the dynamics and rules leading to emergent phenomena. This second school of systems theory is also known as "general system theory" and had its strongest impact during the 1960s and 1970s (Sawyer 2004: 15). The third emerged from computer science and sociological theory, and is also knows as “complex dynamical systems theory”. These theories are fundamentally concerned with emergence, interaction of components, and relations between levels of analysis. In Sawyer’s view, the third school allows for the incorporation of thoughts developed within symbolic communication theory and is therefore superior to the former two in dealing with complexity in human societies. (Ibid: 23)

This epistemological transgression of the boundaries between culture and nature suggests that the same law of change, the same law of nature, applies to both. For a researcher in the human sciences, such ideas are both interesting and slightly disturbing. Earlier attempts within social sciences and humanities to apply theoretical concepts from nature or biology on society, have been extensively criticised. Theories like functionalism, vitalism and social Darwinism have all been regarded as being based on a reductionist view on society and culture. Sawyer is obviously aware of this risk when he states that “Interaction between individuals is much more complex than synaptic transfer; semiosis, meaning and intersubjectivity become important” (Ibid: 26). Although he sees similarities between systems in nature, he points out

that there are important differences between the biological and societal that must be taken into account.

As was mentioned in the introduction, social emergence is only one possible application of the concept with regard to computer games. Games can also be analysed as a media structure with emergent properties. To illustrate the differences between these types of emergence, I will use Jochen Fromm's taxonomy. He defines emergence as follows: "A property of a system is emergent, if it is not a property of any fundamental element, and emergence is the appearance of emergent properties and structures on a higher level of organization or complexity." (Fromm 2005: § 2.1) In Fromms cross-disciplinary taxonomy, he distinguishes between four main categories ranging from simple to complex: simple/nominal, weak, multiple and strong emergence. I will focus on the two extremes of this range, namely weak and strong emergence. Fromm states that:

> "*Strong emergence* can be defined as the appearance of emergent structures on higher levels of organization or complexity which possess truly new properties that cannot be reduced, even in principle, to the cumulative effect of the properties and laws of the basic parts and elementary components." (Fromm 2005: § 5.4)

Some thinkers argue that the differences between simple and complex emergent systems are of a qualitative nature, and that truly complex or strong emergence exhibits properties that are not found in the other types. The philosopher Chalmers, for instance, claims that the phenomenon of consciousness is the only clear example of a strong type of emergence. (Chalmers 2006) Fromm's taxonomy also includes life and culture in this category. As for what mechanisms govern this type of emergence, Fromm states that "Life is a strong emergent property of genes, genetic code and nucleic/amino acids, and Culture in general is a strong emergent property of memes, language and writing systems." (Fromm 2005: § 4.3)

Feedback mechanisms constitute an important element within all complex emergent systems. A feedback system from the macro level to the parts is necessary for a system to adjust and not just be static. About this, Steven Johnson states: "Emergent complexity without adaptation is like the intricate crystals formed by a snowflake: it's a beautiful pattern, but it has no function." (Johnson 2005: 20) In a snowflake or crystal, the emergent pattern has no influence on the basic building blocks of the system whereas in biology or culture this is a common phenomenon. Feedback mechanisms coupled with (large) amounts of time ensure that systems adjust and evolve – elements that are intrinsically important, both within evolution in nature and in cultural contexts, change in society. Within complexity theory there are two main types of feedback mechanisms; positive and negative feedback. The negative feedback is a mechanism that dampens behaviour in a system before it makes too much of an impact and disrupts the system's equilibrium; for instance, the mechanism of a thermostat. Positive feedback mechanisms, on the other hand, enhance processes in the system so that the system reaches a condition where it is impossible to return to the original state of equilibrium. A global disaster that changes the trajectory of evolution on our planet would serve as an example of this. Urry states that the positive feedback mechanism is all the more interesting to study, as it is pivotal to change and development in nature: "the 'normal' state of nature is thus not one of balance and repose; the normal state is to be recovering from the last disaster." (Urry 2005: 6)

If we focus again on Fromm's taxonomy, we find the simple/nominal type of emergence at the other end of his range. An example of this type of emergence is a machine or a software

program, as it is an emergent property of the underlying parts, or code. What is interesting about this category is that it apparently violates the core feature of the concept. A machine, being the result of a centrally planned design process, cannot be self-organising. The interaction that goes on within this kind of system is planned, and nothing unplanned will *emerge* due to the interaction between the parts. As Fromms explains, this category is different from all other categories of emergence in that it does not include a feedback system and only produces intentional emergence. This use of the concept of emergence is interesting, since it actually seems to accord with the use we find within computer game theory. As we saw earlier, it is the rules of the game or the rules incorporated into the computer game program that cause emergent properties. To activate the machine's or the program's emergent properties, however, we have to integrate the user into the system, since the game has to be executed by someone. A user also introduces an uncertainty that is not present in the machine or system itself.

## Emergence within computer game studies

According to Juul, emergence is a game structure comprising simple rules that, when combined, give a high number of possible outcomes and consequently complex game play. Chess and Go are two examples of this kind of game. The sheer combinatorial possibilities of the pawns make it impossible to give detailed advise about what to do in every possible stage of a game. You simply have to resort to general strategy. On the other hand, progressive games are, in terms of Juul's use of the concept, a newer, linear form of game where the player has to traverse a specific route with few or no real choices. The adventure game genre is notorious for this kind of gameplay. Juul further states that MMORPGs, in general, employ an emergent structure, and that they have embedded progressive features represented by quests. When Juul claims that MMORPGs are basically emergent games, he also implies that they are founded on simple rules. Salen and Zimmerman support this view when they state that:

> "Even a game with a much more complicated rule set, such as Warcraft II, contains emergence. Although the game seems very complex compared to Pong, in essence Warcraft II only has a few dozen different kinds of elements, and the ways that they can interact are quite limited. If two enemy units meet, they will either fight or not fight. Despite the complexity of the code, there is still arguably a 'modest number of rules' applied to a 'limited collection of objects'. " (Salen and Zimmerman 2004: 159)

What is interesting here, is that they synthesise parts of the game mechanics and label them "the rules". In their view, the complexity of the game is also only on the surface, for in reality it can be distilled into a few fighting elements. What Salen and Zimmerman can be accused of here is what complexity theorist David Byrne in an oxymoronic fashion has called 'simplistic complexity'. Of this, he has the following to say:

> "Write a few rules – the selfish gene, the territorial imperative, profit maximization, rational choice, or, preferably, a combination of all of these, and away we go. Simplistic complexity does deal with a kind of complex emergence but it remains reductionist." (Byrne 2005: 103)

Byrne is in fact warning us against the temptation to try to identify a few rules that will serve as an all-embracing explanation of emergent and complex phenomena. To Salen and Zimmerman's defence, it must be noted that Warcraft II is a singleplayer game and that it therefore lacks the social complexity of a multiuser game. In even simpler games, the emergent structures that occur during the game can of course be traced down to simple rules –

simple rules is what a game of Go or Chess is all about.

With regard to MMORPGs, however, there is no way the user can know all the details of the rules or the game mechanics. Whereas it is uncontroversial to agree that Chess and Go, or Donkey Kong, for that matter, are based on simple sets of rules, this is hardly the case with a game like World of Warcraft. The complexity of World of Warcraft can be illustrated in many ways, for instance if we look at the website wowwiki.com that is developed as a source of information about game mechanics. At the time when this article is being written, the website has 25,761 *articles* about World of Warcraft[1]. (19. March 2007) Not all of them are about rules, but quite many of them explain basic aspects of the game, such as, the different races and classes, and how equipment and spells work. Compared to a game like Chess, where the rules could be written on a small piece of paper, the difference is quite striking. It might be that Juul is right in maintaining that MMORPGs have emergent properties, but there is no obvious simplicity in the building blocks for this complexity.

What, then, is the relationship between game mechanics and rules in a modern computer game, and where does the complexity of the game lie? Andreas Gregersen has tried to define rules in computer games as follows:

> "I take it as a defining characteristic of a rule that it is actually possible to state the rule in natural language, but I would also like to hold on to the idea that game rules are fundamentally conventions: Players are supposed to understand, acknowledge and follow these rules, as emphasized by both Caillois and Huizinga. Following this, a modern game world is governed by mechanics that I would rather call simulated laws, since they do not regulate what is law, but what is *possible* in that universe." (Gregersen 2005: 48)

Gregersen further suggests that we should regard modern computer games as simulated worlds that share similarities with, for instance, sports. Like sports, these games have explicit rules, but they also rely on being executed in an environment that limits how the activity might be carried out. I think Gregersen highlights the complexity of modern computer game rules in an interesting manner, but I find it hard to identify exactly how to distinguish between a rule and a law in an arbitrary game world. To examine this, we should have a closer look at the function of rules in games.

Most definitions of a game include a notion of rules and goals. A classic definition is Avendon and Sutton-Smith's that states that games are: "an exercise of voluntary control systems in which there is an opposition between forces, confined by a procedure and rules in order to produce a disequilibrial outcome" (Avedon and Sutton-Smith 1971: 7). The outcome is the goal of playing, and the state where the process of playing ends. The rules are, on the other hand, crucial guidelines while the game lasts; breaking the rules will violate the game or break the "contract" the player commits himself to when he plays a game. By combining several older definitions of games, Juul has come up with what he calls a classic game model. In this more elaborate game definition the role of the player is given more emphasis:

> "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

[1] At the 25. October 2006 the site had 17,814 articles. The growth rate is therefore also quite remarkable. An article is what the site describe as "probable legitimate content pages". The database the site is based on consists of a total of 65,322 pages at the time of writing.

activity are negotiable." (Juul 2005: 36)

Juul states that this is a definition that first and foremost covers traditional games, as well as older and simpler computer games. At the end of his book, he states that newer features of games, such as the possibility to save during play and persistent games, give us games that will deviate from the classical model, and hence he warns us of the limitations of his game model (Juul 2005: 199) In a spirit of cumulative theorizing, I shall try to sort out some of the inadequacies of Juul's classical game model with regard to contemporary computer games.

If we start with Juul's definition, above, we see that the concept of quantifiable outcome is central; it is important that there is a criterion for success in a game, a goal, and that this goal or outcome can be clearly defined. Common types of outcome in computer games are that the player's name gets on the high score list, or that he or she defeats the last boss in an adventure or role-playing game – the equivalent of defeating the king in a Chess match. He writes: "Since playing a game where the participants disagree about the outcome is rather problematic, the specification of the outcome develops like the rules of a game, toward becoming unambiguous" (Ibid: 39) As I intend to demonstrate, the term outcome or game goal is not necessarily unambiguous when it comes to actual play.

## Game goals and game sessions

In Juul's classic game model, the closure or outcome of the game is crucial for the whole definition of a game. In some types of games, the *game session* can be described as an activation of the total game structure. The game session ends when the *game goal* is reached. This is a playing structure that we find in traditional games, such as card games and board games. Ending the game earlier means the game was not fulfilled. The game structure and the game session simply correlate. In arcade games, the player will normally play as long as he or she is able to, and the game ends when the player fails to continue. Also here, the game session ends when the game goal is reached. However, the possibility to save the game in various game states, as we can on a computer, matched with the possibility to create various forms of game-play and massive amounts of game space, changes this. In contemporary computer games, there is often no obvious end state or final goal. If you intend to play an adventure game or a role-playing game, knowledge of the genre will lead you to expect to solve quests and to kill monsters. The player might also have a concept of a final boss or a final battle that may conclude the game. Or he might *not*. Espen Aarseth, for instance, reports that when playing the adventure game Morrowind, he was under the illusion that it did not have a linear structure or any major goal, and that the player could explore to his or her own liking. After playing for a while, he came to realise that the game actually did have some kind of final goal to reach. He said: "My free, improvised play had not helped me to discover essential parts of the game. In failing to discover the main quest, I failed as a model player, in spite of my great enjoyment in the game." (Aarseth, 2003)

Structurally speaking, if we take the whole game into account, the prior smaller obstacles and quests that are overcome and solved, serve as preliminary stops on the road to defeat the final monster. However, the player will often not reach this end. And certainly not in one single playing session. This illustrates that players might not have any idea of where the game is supposed to end. What they experience is normally that they have to progress through increasingly more difficult challenges. In most contemporary computer games, the game session and game goal are separated both practically, due to the length of the period needed to reach a closure of the game, and conceptually, as the ultimate goal of the game is not an

important motivation for finishing a play session. Players may have a concept of an end to the game, but what motivates the playing is more likely a concept of continuous progress, and the obstacles or puzzles at hand. The game goal, as a structural closure of a game, is not necessarily a part of the individual game session.

The relation between game goal and game session can also be reversed. In for instance a Chess tournament, each Chess match will only be partly conclusive. Even though the Chess match is encompassed by Juul's classical game definition, the main goal transcends the individual match. Not until the last match in the tournament is finished will it be possible to declare a winner. What this demonstrates is that a main goal is a context dependant term. A main goal will in many cases correlate with the game session, but in most contemporary computer games it will not.

The concept game session is analytically important, as this is a unit that is recognisable, from a player's point of view; it describes how computer games are actually being used. The question is whether a final conclusive goal is necessary for a definition of a game at all. In my view, this is not the case, and I will argue that games of a certain complexity can be broken down into smaller pieces that can serve as *games on their own*. For instance, a quest in World of Warcraft will easily fulfil Juul's classical game model.[2] To reiterate Juul's definition: A quest is rule-based (based on the general rules within the game and specific rules related to the quest); it has a variable and quantifiable outcome (the player receives currency, experience points or other artefacts when he completes the quest). The player exerts an effort in order to influence the outcome (he has to execute the quests as required), and he feels emotionally attached to the outcome (he "wins" something and makes his character more powerful, richer or better equipped.) The consequences of the activity are negotiable. (Players can for instance sell currency earned from questing with real life currency).

World of Warcraft comprises thousands of quests, as well as many other different activities. The insistence of the importance of a main goal could exclude World of Warcraft from being a game, but there are arguably also many single-player computer games that have the same quest structure. It can be argued that a MMORPG is a collection of games, or a playground, rather than a game, but in my view this only confuses matters. It might be easier if we define a general gaming goal for World of Warcraft, for instance something along these lines: *The main goal in World of Warcraft is to keep developing a character so that the player can make further accomplishments within the game space*. A goal like this does not have an ending point, and there is no structurally identifiable place or situation in the game where it can be reached; it is more an ongoing cognitive approach from the players point of view.

The simple question is: If the game structure does not have a clearly identifiable goal, is it still a game? As part of an ethnographic study of the MUD Discworld I conducted earlier, I interviewed some of the players about their playing experience. One of the questions I asked was whether they had clear goals when playing. The answers varied as to what degree they set themselves goals, but all of them had a clear notion of setting goals as part of the play experience. As this player explains:

> F: When you play in general, do you set yourself overall goals?
> I: I usually set myself goals, mostly small or partial goals rather than a major goal. I can for

[2] A typical quest will be handed out of an NPC and can concist of killing a specific number of beasts and return to an NPC for a reward.

instance aim at getting higher in some skills or mastering the technique of killing a specific kind of monster, or something like that.
F: But do you sometimes run out of objectives, or goals, for your play?
I: No. I wouldn't put it like that. If you check out my player info you can see that I've listed a few rather impossible goals.
F: I think I've actually seen that, that you want your skills back to…
I: To where they were before the skill cut. That will involve, with full focus on experience points, at least 20 years of playing.
F: Okay, so the long term planning is done with then.
I: Well, I know that some of those skills I'll never get back, but when I get most of it back, I guess I'll drop the rest and set myself another goal that is actually possible to achieve. But I think I'll never run out of goals.

Discworld is a varied MUD, where both ordinary play involving questing and killing, as well as role-play and mere socializing are possible venues for the players. This openness with regard to play gives the player many options, but also demands a certain amount of focus and decision making. A developer (a so-called creator) I interviewed, that still played the game, put it this way:

F: Do you have any goals? Do you set yourself goal when playing?
I: Yes, short goals. I sort of make smaller projects. Now I'm going to advance my other.health skill so it reaches 2000 for instance. And that'll probably take a month to accomplish. And then later on I can decide to make guild max on stealth, and run that until I am done. It's that sort of minor goals I set for myself.
F: But do you ever run out of goals?
I: Well, sometimes. It may happen.
F: What do you do then?
I: Then I…if I don't really know what to do, log on another character. If I'm online with my play character and do stuff, I can suddenly feel that things are getting boring, like: this doesn't lead me anywhere. Then, for instance, I log on my creator character. And then I start checking around a little bit, do some bug reps. Then that's the goal instead.

As we see, setting goals is important to a degree that it seems like an intrinsic part of the playing. In the last example, the lack of a goal makes the playing loose direction, as a result of which the player gets bored. Paradoxical as it might seem, the player resolves his boredom by logging on a developer character and starts working instead. This could be a nice introduction to a discussion about the relationship between play and work, but my aim is to highlight that a game goal only to some degree needs to be part of the game structure. As long as the game includes elements for which progress and development can be monitored and registered, the player can easily define his or her own goals for playing.

The analytical point I would claim, is that we must acknowledge that the game and the player work together as a system, and that analysing the game structure alone will not give a comprehensive understanding of what the game is. In this case the symbiosis works like this: The game provides different ways of measuring the outcome or progress of the game character, but does not give a clear answer as to what kind of action must be taken. The player, on the other hand, decides what goal to pursue. In my opinion, Juul is right in claiming that a central aspect of a game is goals or outcome, but these goals do not have to be of a singular or finite character. Nor do the goals exclusively have to be embedded in the physical structure of the game; they can just as well be defined by the user, or rather, users. The reason why Juul in his classic game model finds that games have to have a singular goal, is probably that his focus is mainly on the media structure and not on the applied use of the medium – the

player is somewhat lost in the analysis. In the next section I will give a discussion of another aspect of Juul's classic game model where his notion of the user becomes problematic, namely the rules.

## Game rules

As I mentioned earlier, Juul distinguishes between games of emergence and games of progression. For both of these types of games the rules are important elements. Juul excludes Dungeon & Dragons from his classic game model, due to the fact that they do not employ strict rules: "If we begin with the borderline cases: pen and paper role-playing games are not classic games because, having a human game master, their rules are not fixed beyond discussion" (Juul 2005: 43) Juul here seems to imply that because these rules are upheld by a human being instead of a machine, they do not really qualify as rules. My main objection to this argument is Juul's general and limiting definition of rules and the consequences of it – that Dungeons & Dragons is a borderline case and not a real game.

Gary Alan Fine performed a fascinating ethnographic study of players of fantasy role-playing games around 1980 (Fine 1983). These games are played by the aid of pen and paper and one or several dices. Usually 5−10 people play these games together. Dungeons & Dragons is probably the best-known title of this game type. A fantasy role-playing game usually has a handbook of rules with a description of the game universe that can be as large as several hundred pages long. The game commences when the players "roll a character", deciding what features the character will have, for instance how strong, agile or intelligent he or she is. The character will develop further during the play, and the player can use the same character in its enhanced form the next time he or she enters the game. The Game Master or referee makes decisions during the play on what kind of obstacles the game party will meet.

Fine did observatory studies in different playing locations, both at people's homes and at public gaming clubs. The players he observed usually met during weekends and played for several hours each time. Some of them continued to play the same character within the same game universe for several months, sometimes even years.

It is noteworthy that many of the elements from these games are easily recognisable in today's role-playing games and MMORPGs; take for instance the creation of a character and the further enhancement of it during the play. Even the concept of "rolling a character" still exists in MMORPGs and is used by players who probably have no idea of the origin of the expression. What I want to focus on is Fine's findings concerning game rules. Ideally, the handbook of rules and the falling of the dice should be strictly followed. In reality, the gaming community seem to have come to agree that on some occasions it is better to keep characters alive than to follow the rules strictly. In specific encounters in the game, the referee would roll a die to decide the outcome of a situation. Some rolls would be lethal for the character, but since only the referee could actually see how the die fell, he would sometimes moderate the outcome so that the character only got a critical blow, instead of a fatal one. (Ibid: 191) Fine states that:

> "Two related rationales are suggested for the referee's legitimate right to use his discretion: to keep the game plot logical, and to keep the game balanced in terms of having players-characters face that level of foe they can reasonably be expected to handle." (Ibid: 103)

The possibility of having characters irreversibly die created some tension in the D&D gaming

community Fine was analysing. Fine quotes a player that had played a wizard for more than three years: ”I’d be, if he died, if the (referee) got him killed off, I’d be very unhappy. Very upset. Because it took a lot of work. It took a lot to accomplish that.” (Ibid: 220) When the player invests a large amount of time in developing a character, it can be painful if the character eventually dies. We should also notice that this player obviously lays a great amount of responsibility for the character's well-being on the referee. Fine explains that:

> ”Players often feel that death is unfair when they believe that the death is not their fault – when it appears to be determined by unfair circumstances or by the roll of the dice. Deaths typically are legitimate only when the character has brought it on himself (Ibid: 220)

The players are upset because they identify with the character they play, which is amplified when the character keeps living session after session. In games where the rules are not inscribed into material entities, as in computer games, but are collectively upheld by the participants, rules naturally become a matter of negotiation. It may seem strange that Juul takes such a stern view of rules in his classic game model, as he is obviously aware of folk games where rules are not upheld like this. He refers for instance to a study conducted by Linda Hughes of girls playing a ball game called Fourthsquare. In this game, the participants have a square each and a ball that must be bounced into the squares. When the ball lands on one of the participants square, he or she has to bounce it into the square of another participant. The ball can only be bounced once in each square. According to Hughes, this game was a good example of a folk type of game where rules are constantly challenged or altered by the participants. Juul describe the game as follows: “This turns out to be a combination of official and unofficial rules, conflicting success criteria, and rule negotiations.” (Juul 2005: 11) In spite of this insight, Juul chooses not to reflect it in his classic game definition. It seems that the relatively strict rules that we find in early computer games, classic board games and sports have been, for some reason, formative for his model, on expence of games where the rules are subject to more flexibility.

As I mentioned earlier, the description of the game universe and the rules in D&D can cover hundreds of pages. There are simply very few players or referees that actually know all the rules. Rules in fantasy role-playing games are of such a complex nature that they can easily be manipulated by skilled referees or players in directions that favour themselves or the group in any given situation. Salen and Zimmerman have labelled a player that excels in a game a dedicated player: “The dedicated player desires to become an expert at a game, and diligently studies the rules of play in an attempt to maximize the chances of winning.” (Salen and Zimmerman 2004: 269) Dedicated players are, in their definition of the term, a variant of standard players. They are players that follow the rules of the game and play it the way it is supposed to be played. In other games, the players will invest time practising tactical or motoric skills. In a game like D&D the player will have to spend time learning the rules of the game. The rules are simply another element of the game that the player can excel in.

As a rather striking example of a game with flexible rules I shall briefly mention the game Nomic, as does Juul in his book. The philosophy professor Peter Suber originally created this game in 1982 as a means to illustrate a point within law studies[3]. Suber describes the game as follows:

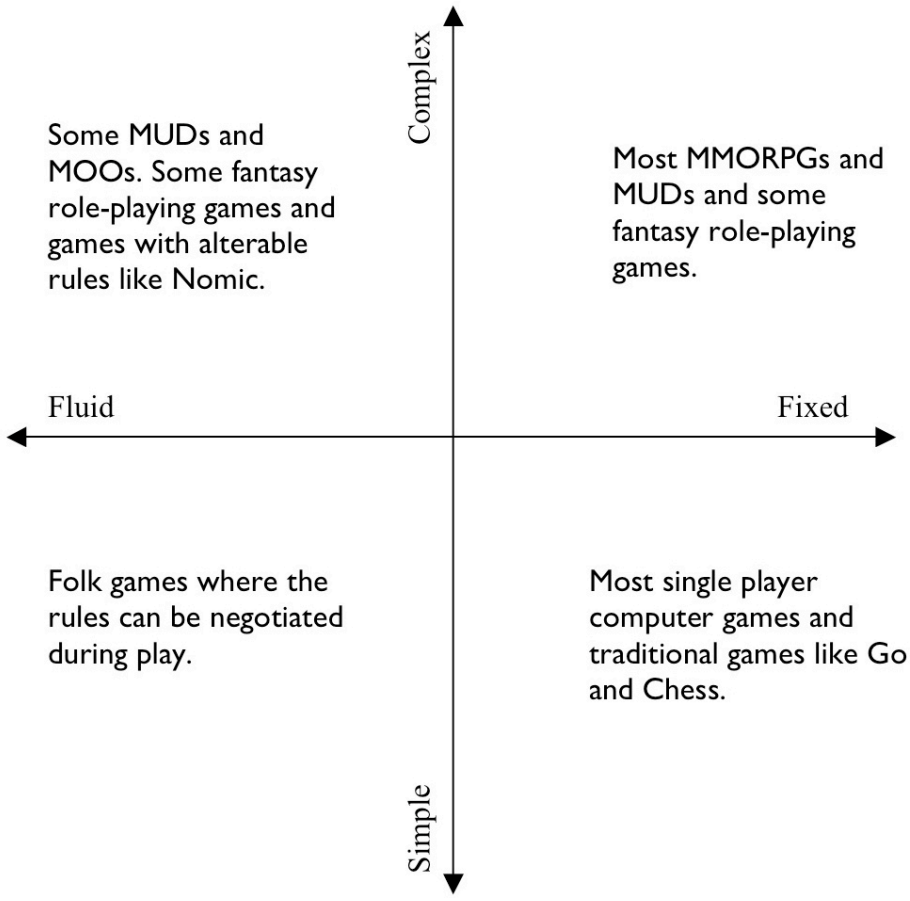
[3] He later included the game into the book *The Paradox of Self-Amendment* (1990). His argument is that a legal "rule of change", such as a constitutional amendment clause, may apply to itself and thus authorize its own amendment (http://www.earlham.edu/~peters/nomic.htm

> "Nomic is a game in which changing the rules is a move. In that respect it differs from almost every other game. The primary activity of Nomic is proposing changes in the rules, debating the wisdom of changing them in that way, voting on the changes, deciding what can and cannot be done afterwards, and doing it. Even this core of the game, of course, can be changed." (http://en.wikipedia.org/wiki/Nomic, retrieved January 8. 2007)

The possibility to change the most fundamental rules of the game is in clear contrast to Juul's classic game model. Nomic can be regarded as an exotic specimen of a game, but it is currently being played, facilitated by different web solutions. The MUD Discworld has for instance developed a citizenship feature based on this concept. Nomic is a great example of a game with flexible rules. It also demonstrates that game definitions tend to be more rigid than the games they are created to define, simply because it is unlikely that anyone can predict every kind of game someone might invent. More specifically, this demonstrates again that Juul's classic game model is too limited to be able to grasp the range of existing games.

In my view, we need a rule concept that is able to reflect some of the variation and flexibility we find in applied games. To illustrate this, I shall present two different axis that incorporate different qualities of rules. One of these axis goes from simple to complex, the other from fixed to fluid. These axis can further be put in an axis system as illustrated in the figure below.

Figure 1:



The illustration above shows how the rules of these games can be positioned in relation to each other. The exact positioning of individual games is of course open to debate, and there is no straightforward way of evaluating, for instance, to what degree rules are fixed or fluid. In the same game, some rules might be fixed, such as the number of participants that can play, while other rules might be more flexible.

In the square with simple and fixed games, most single-player computer games can be placed. Bug abuse, walk-throughs and cheat codes might introduce some flexibility to the rules of this kind of games as well, but single-player computer games are to a large degree tied to the materiality of a fixed medium. MUDs and MMORPGs will, due to their complexity, largely fit into the square of fixed and complex games. Here, too, materiality limits the flexibility of use. However, having a layer of socially generated rules, makes these games slide toward the fluid side of the scale. Roleplaying MUDs and MMOs, where the players can construct items within the frames of the game, combined with a layer of socially constructed rules, will place them even further to the fluid end of that axis. In the square with simple and alterable rules, we can find games where the rules are typically negotiated or altered during play.

## Planning emergence

So far, I have discussed the systemic qualities of games in general. If we focus on commercial games we find that they are part of larger systems that also involves the game developers. As a concluding remark, I will briefly touch upon how this aspect influences the nature of computer games in general and multi-user games especially.

In the book *Rules of play* Salen and Zimmerman address several issues concerning emergence in games, but their focus is on the creation of games and game design, not so much on actual use. They state that game creators can only create the rules, and that the actual play is a second-order creation. (Salen and Zimmerman 2004) Because use is unpredictable, it is not possible to plan for every kind of way the how players will use the game. Harvey Smith, the lead designer of Deus Ex, was probably the first to label this phenomenon *emergent gameplay*. Smith explains that the development team wanted to avoid a special-case structure of play or a gameplay consisting of predominantly progressive elements: "We wanted to do this in a way that did not limit the player to a few predefined choices, but instead allowed the player to come up with his own strategies within the flexible rules of the environment." (Smith 2001) This was partly achieved with a three-forked structure, whereby the player could choose between a stealth, a combat or a high-tech hacking strategy. He explains, further: "The moments that I perceive as failures tended to rely on special-case triggering or scripting" (Ibid). A challenge to this open-ended or emergent design, is the large amount of possibly unwanted types of use this opens for, some of which might give the players an unwanted advantage[4].

Salen and Zimmerman describe the process of trying out different rules as some sort of a journey into the unknown, simply because there always will be user strategies that are impossible to predict. They quote the game designer Marc LeBlanc that describes the design process as "game tuning: iterative tweaking, testing, and refinement of game rules in order to

[4] In Deus Ex the players learned how to climb walls by attaching series of proximity mines on the wall and climbing them and thus getting access to areas in the game that otherwise were unaccessible or difficult to reach. This is probably one of the most used examples of this kind of unforseen advantage due to so-called emergent gameplay.

create a rich play experience." (Salen and Zimmerman 2004) The complexity theorists Bertuglia and Vaio explain why making emergent design is such a difficult task. In terms of complexity, the difference between a linear and a nonlinear system is dramatic. In a linear system, for instance, a two-body system consisting of a pendulum and a gravitational mass, movement is simple to predict. Merely by the addition of one more body into this system, the system is no longer linear and the mathematical calculations of body movement become far more complicated. Most complex systems consist of substantially more entities than this – entities that have a mutual impact on each other. This is the reason why predictions by modeling or calculation of nonlinear systems in principle is close to impossible. As Bertuglia and Vaio explains:

> "The behavior of a system made up of numerous nonlinear equations, containing various parameters, is generally unpredictable a priori, because it is extremely difficult, or even impossible, to identify the effect of the various parameters in a multifaceted system, whether such are considered individually, or are considered in their entirety. The only way to discover the dynamics that the model envisages is a posteriori, i.e putting the model in question 'into action'." (Bertuglia and Vaio 2005: 233f)

Simply put, the nonlinearity of most games is of such a nature that it has to be used and tested to see how the rules play out. This gives the mathematical explanation of why design of games, as well as other networked and nonlinear media, is closely dependent on real life testing. This also explains why computer programs in general heavily rely on program testers or play testers as part of the development process.

In a study of EverQuest, T.L. Taylor has demonstrated how the player community influenced the continued development of the game after it was released. One of the possibilities the developers did not predict was players that organised large raids to conquer monsters in the game. These organised groups strained the medium in many ways. For instance, the players had to use public channels to write messages to each other instead of their own group channel. To plan such an event, the players had to use other web facilities like World Wide Web. After a while, the developers incorporated functionalities into updates of the game that amended some of these losses. Taylor uses this as an example of how the game industry to an increasing degree includes player communities into the production processes, resulting in the development of a concept of the "prosumer" (Taylor 2006).

In World of Warcraft, these elements have been even further incorporated into the game: Players are given the possibility to develop sub-programs that can be directly incorporated into the game, facilitated by net-based distribution. These programs (or so-called add-ons) are not allowed to change the basic game play, but they can dramatically change the interface of it. With these add-ons, the player can get information that enhances his or her playing in substantial ways. There are for instance add-ons that give detailed information about different resources in the game. What is important is that this user-creativity gives the developers ideas for further enhancements of the game design. World of Warcraft is constantly being updated in so-called patches, and often one find functionalities from earlier user-created add-ons being incorporated into the design. This kind of feedback mechanism is not endemic in multi-user games; it is a systemic trait of other networked or community-based media as well. The bloggosphere is another community medium that is founded on an architecture built on feedback mechanisms. The possibilities to comment in other blogs, the trackback system and link structure make the blog medium adaptable as a tool for social and cultural moulding.

Viewed as a system, a multi-user game consists of a specific relationship between producers,

users and the medium itself. Designing a MMORPG is a collaborative process where the users and the developers work together as a whole out of necessity. This is not to say that the relationship is balanced with regard to influence, as the designers make the most important decisions by far. The users do, however, have two types of influence on the medium. First, the possibility to create and develop rules of play or codes of conduct within the game space. Secondly by influencing how the designers plan further developments of the game. MMORPGs are arenas where the user has a real impact on how the given game is facilitated and, in a wider framework, also the development of the genre. The largest system we are witnessing here is therefore not singular games, but cultural processes.

## Theoretical and methodological considerations

For some time, our field has tried to establish an episteme that is based on the idiosyncrasies of our specific medium, the computer game. As we know, a game is a fundamentally different system than media that are both linear and non-interactive, like novels or films. As part of a system, the player of a computer game has an important configurative role to play (Aarseth 1997). The field of ludology has done a great job of fending off 'colonising attempts' from related disciplines such as literature and film studies (Aarseth 2001). Juul's classic game model is an important contribution in this respect. I think, however, this model might be symptomatic of a general focus within computer game theory that predominantly revolves around the materiality of games, of design and of game structure instead of actual use of games.

Complexity theory and the concept of emergence is a theoretical framework that offers a vocabulary and a tool for analyzing computer games as systems. Complexity theory makes it easier to see why players are part of the system and why we need to include actual play in both our theoretical and methodological considerations when analyzing contemporary computer games. When the players are included in the equation, we see how they influence several aspects of games, such as rules and goals. My two axis concerning rules illustrated the variety of ways players influence the rules when playing a game. The methodological implications of this is that we need to assess whether the study of a game's aesthetics, materiality and design, alone, yields an adequate description of it. For some games, this might be the case, but in many games a research design where the players are not included will not represent the game very well. The fact that most contemporary computer games are so complex that the developers need real life testing to be able to see how the rules work, should probably, alone, be a strong indication that the study of real users is a necessary prerequisite to an account of the nature of these games.

## References


AARSETH, E. (1997) *Cybertext : perspectives on ergodic literature,* [Bergen], University of Bergen.

AARSETH, E. (2001) Computer Game Studies, Year One. *Game Studies,* 1, issue 1, available from http://www.gamestudies.org/0101/editorial.html. Last accessed May 20. 2007.

AARSETH, E. (2003) Playing Research: Methodological approaches to game analysis. *DAC 2003.* Melbourne.

AVEDON, E. M. A. S.-S., BRIAN (Ed.) (1971) *The Study of Games,* New York, John Wiley & Sons, Inc.

BERTUGLIA, C. S. & VAIO, F. (2005) *Nonlinearity, Chaos & Complexity: The Dynamics of Natural and Social Systems,* New York, Oxford University Press.

BYRNE, D. (2005) Complexity, Configurations and Cases. *Theory, Culture & Society,* 22**,** 95-111.

CHALMERS, D. J. (2006) Varieties of Emergence. *The Re-Emergence of Emergence: The Emergentist Hypothesis from Science to Religion.* Oxford University Press.

FINE, G. A. (1983) *Shared Fantasy: Role-Playing Games as Social Worlds,* Chicago, The University of Chicago Press.

FROMM, J. (2005) Types and Forms of Emergence. Cornell University Library, available from http://arxiv.org/pdf/nlin.AO/0506028. Last accessed May 20, 2007.

GREGERSEN, A. L. (2005) Designers, games and players: Same game, different rules? *Digital Arts & Culture 2005 Conferance.* Copenhagen, IT-University of Copenhagen.

JOHNSON, S. (2001) *Emergence: the connected lives of ants, brains, cities and software,* London, Penguin.

JUUL, J. (2002) The Open and the Closed: Games of emergence and games of progression. IN MÄYRÄ, F. (Ed.) *Computer Game and Digital Cultures Conference Proceedings.* Tampere, Tampere University Press.

JUUL, J. (2005) *Half-real: video games between real rules and fictional worlds,* Cambridge, Mass., MIT Press.

KLASTRUP, L. (2003) Toward a Poetics of Virtual Worlds: Multi-User Textuality and the Emergence of Story. *IT University of Copenhagen.* Copenhagen, IT University of Copenhagen.

PEARCE, C. (2002) Sims, BattleBots, Cellular Automata God and Go. Game Studies.

SALEN, K. & ZIMMERMAN, E. (2004) *Rules of Play: Game Design Fundamentals,* Cambridge, Mass., MIT Press.

SAWYER, R. K. (2005) *Social emergence: societies as complex systems,* Cambridge, Cambridge University Press.

SMITH, H. (2001) The Future of Game Design: Moving Beyond Deus Ex and Other Dated Paradigms. IGDA - International game developers association.

TAYLOR, T. L. (2006) *Play between worlds: Exploring online game culture,* London, The MIT Press.

URRY, J. (2005) The Complexity Turn. *Theory, Culture & Society,* 22**,** 1-14.

WIKIPEDIA (2007) http://en.wikipedia.org/wiki/Emergence, accessed 15. January 2007.

WORLDOFWAR.NET (2003) Game Design and Philosophy Information. *WorldOfWar.net.* Available at http://www.worldofwar.net/articles/analysis150703.php. Last accessed May 20. 2007.