



The Open and the Closed: Games of Emergence and Games of Progression

Jesper Juul

Dept. of Digital Aesthetics and Communication

IT University of Copenhagen

Glentevej 67, DK-2400 Copenhagen NV

Denmark

jjjul@it-c.dk

<http://www.jesperjuul.net>

ABSTRACT

This paper proposes a conceptual framework for examining computer game structure and applies it to the massive multiplayer game EverQuest.

Keywords

Gameplay, emergence, game history, game variation, EverQuest

INTRODUCTION

The point of this paper is frightfully simple: That most computer games are the combination of two different ways of presenting the player with a challenge, one which I will term emergence (simple rules combining, leading to variation) and one of progression (serially introduced challenges).

In another phrasing, this paper is about the relation between the rules of a game and the actual game sessions played. Having discussed emergence and progression, I will use the terms to examine *EverQuest*.

EverQuest is, of course, a Massive Multiplayer Online Role-playing Game. That it is a game with many simultaneous players means, at the very least, that the actual game played has input from a lot of different sources in addition to the game designers.

In a game of this size, it is quite obvious that the game designers have not been able to describe every possible event in the game. But yet, *EverQuest* has a distinct feel to it. The point I will be making here is that especially the concept of emergence can be used for explaining how games can feature huge amounts of variation even though they are based on simple rules, and how this variation is not just random or supplied by the user, but is a non-obvious consequence of the rules of a game.

Jesper Juul:
The Open and
the Closed

EMERGENCE AND PROGRESSION

The history of computer games can be seen as the product of two basic game structures, that of *emergence* (a number of simple rules combining to form interesting variation) and that of *progression* (separate challenges presented serially).

Emergence is the primordial game structure, where a game is specified as a small number of rules that combine and yield large numbers of game variations, which the players then design strategies for dealing with. This is found in card and board games and in most action and all strategy games. Emergence games tend to be replayable and tend to foster tournaments and strategy guides.

Progression is the historically newer structure that entered the computer game through the adventure genre. In progression games, the player has to perform a predefined set of actions in order to complete the game. One feature of the progression game is that it yields strong control to the game designer: Since the designer controls the sequence of events, this is also where we find the games with cinematic or storytelling ambitions. This leads to the infamous experience of playing a game “on a rail”, i.e. where the work of the player is simply to perform the correct pre-defined moves in order to advance the game. Progression games have walkthroughs, specifying all the actions needed to complete the game.

Introducing emergence

Many games are simple to learn to play, but knowing how to play is not sufficient to play the game *well*: There is more to playing games than simply memorising the rules. So we need a framework for understanding how something interesting and complex (the actual gameplay) can arise from something simple (the game rules). How can something made from simple rules present challenges that extend beyond the rules?

I propose that we can take a cue from what is broadly called “the science of complexity”, and look at the concept of emergence. Emergence is a contested term, but a few simple definitions may serve us. Classical examples

of emergence are life (life is just molecules), consciousness (the result of interactions between brain cells), anthills (there is no central command in an anthill), bird flocks (there is no leader in a bird flock).

In John Holland's description,

[Emergence] occurs only when the activities of the parts do *not* simply sum to give activity of the whole. For emergence, the whole is indeed more than the sum of its parts. To see this, let us look again at chess. We *cannot* get a representative picture of a game in progress by simply adding the values of the pieces on the board. The pieces interact to support one another and to control various parts of the board. [4]

Mark A. Bedau makes the distinction between a strong emergence and weak emergence: In strong emergence, the higher level is autonomous and in principle underivable from the lower level. In weak emergence, the higher level is derivable from the lower level, but only through simulation. [2]

Strong emergence makes sense for consciousness: We tend to have a hard time understanding ourselves to be merely the interactions between small cells. But if we play a game, it is very hard to believe that what happens is in some way above or entirely different from the rule set.

Emergence in games

Additionally, emergence is currently something of a buzzword in game design circles. In a 2001 talk, Harvey Smith of Ion Storm uses emergence as an overall term for situations or player behaviours that were not predicted by the game designers [5]. He makes the distinction between desirable emergence, where the interaction between the different elements of the game leads to interesting gameplay, and undesirable emergence, where players find ways to exploit the rules that make the game less enjoyable. As an example of undesirable emergence, Smith uses the "proximity mine climbing" exploit from *Deus Ex*, where it was possible to climb a vertical wall by attaching a proximity mine to it, climbing on top of it, placing a new proximity mine, climbing on top of it and so on. This naturally broke the structure of many levels in the game.

The theoretical problem is that this is not emergence according to any of the technical definitions outlined above: Proximity mine climbing is actually easily derivable from the game rules.

But while being unable to predict everything that is going to happen is a common game design experience – perhaps universal to game design – it is not so useful analytically. Predictability from the part of the game designer is not a good criteria for emergence since it would in actuality require biographical readings of games: We would have to find out whether Harvey Smith or Warren Spector had in fact understood the possibility of proximity mine climbing at the time. (This would be a version of the intentional fallacy – the idea that to understand a work, we should figure out what the author really meant.) It would be more useful to be able to examine a game (and possibly its effects) so that when faced with a game, we are able to say

something interesting about it. Or in other terms: The designer may very well have failed to predict an emergent property of the games' rules, but that is not what makes that property emergent.

This also means that emergence comes in different shapes and sizes, and that we have to acknowledge that some of the things that happen in games are too simple to merit the label. I propose that we split emergence into three different types.

Rule interaction

The simplest form, which is not really emergence, I would like to name *rule interaction*.

- *Quake III*: Rocket-jumping. (Fire rocket into the ground, fly on the blast.)
- *Deus Ex*: Proximity Mine Climbing

Combination

Secondly, games usually feature a lot of different potential game sessions to be had from their rules. This is simple combination:

- The variety of possible states and game sessions that a game's rules allow.

Emergent strategies

Thirdly, there are the actually emergent properties that are not immediately deductible from the game rules.

- All game strategies. (Imperfect emergence – rules of thumb rather than absolute commands.)
- The teamwork required in *Counter-strike* or the advantage of working in groups in *EverQuest*.
- Dominant, complete strategies. (Completely defined strategies that will always lead to victory.)

Progression

The progression structure is in many ways less interesting than emergence. In a pure progression game, the player is simply presented with a series of challenges where all of the options and solutions have been explicitly described in the game rules. Branching narratives are probably the purest example of this: Everything that happens in a branching narrative is explicitly pre-determined.

In progression structures, the player is occasionally afforded some freedom to roam an environment with the only interesting experiences to be had in one direction. Progression games are also characterised by the fact that they *can* be completed, and that their replayability is subsequently very low.

Jesper Juul:
The Open and
the Closed

THE DETERMINATION OF AN OPEN WORLD

To describe this in a more general way, progression structures are heavily pre-controlled by the game, whereas emergence structures allow for much variation and improvisation that was neither anticipated by the game designer, nor is easily derivable from the rules of a game. However, this does not mean that players are a) completely free to do whatever they like or b) that their behaviour is devoid of pattern or regularity.

Jesper Juul:
The Open and
the Closed

Rather, even in an open rule-based system, some events can still be determined or are at least very likely to happen. This can both be a property of the system – some games will drift to certain conclusions, no matter what the players do, and it can be a psychological effect. One way to put it is to say that players tend to respect the *game contract*, where they agree to pursue the game goal. This means that players will tend to do certain things. Since players pursue the game goal, they will also search for a good strategy. If the game allows for a good strategy that leads to interesting interaction, it is a good game. If the optimal strategy for playing the game leads to dull game sessions, the game will be considered dull.

Even in open system with strong emergent properties, the actual game sessions may still follow fairly regular patterns. For example, games of *Counter-strike* almost always lead to fights between the two teams. Neither the *Counter-strike* instructions nor the *Counter-strike* programming state that fights will take place, but they take place because the players try to win, and because winning is best achieved by subduing the other team. In a non-electronic example, *Monopoly* games always end with a player going bankrupt. There is no rule in *Monopoly* stating “a player is going to go bankrupt”, but it nevertheless always happens as a *result* of the rules.

ANALYSING EVERQUEST

Having established a small theoretical framework, we can then proceed to look at *EverQuest*.

On a most general level, *EverQuest* is a game of emergence, in this case a large world¹ governed by a typical *Dungeons & Dragons* system where each character belongs to a certain class, has a number of statistics (such as strength, agility, wisdom, charisma, hit points, mana), a level, skills, and possessions. Killing a sufficiently strong monster increases the player skills, adds hit points, and eventually lets the player progress to the next level, thereby allowing the player to kill even bigger monsters. As such, the actual events in the game are not explicitly determined by the game rules, but they will follow certain patterns.

At the same time *EverQuest* contains a large number of quests, where a computer-controlled character (non-player character, NPC) through a simple conversation system presents the player with a task to complete, such as bringing a specific object to some other NPC, killing a monster, etc.

This is of course a progression structure since the game in detail describes the actions that the player has to perform.

As such, *EverQuest* is a game of emergence, with embedded progression structures. This kind of double structure can be traced back to the original textual MUDs (Multi user dungeon) pioneered in 1980 by Richard Bartle and Roy Trubshaw.² [1]

We can also note that a lot of interesting elements of co-operation appear due to the emergence aspects of the game: Some higher-level monsters can only be defeated using team-based attacks where different players with different abilities co-ordinate to perform a role each (plain attacks, healing spells etc.) What the emergence aspect of *EverQuest* does not do is characterise the more social/cultural aspects of the world. This is rather done using progression structures, with NPCs giving away small amounts of personal story and background such as personal conflicts as they send the player on a quest. So the social aspects of the world are characterised using progression.

As what should by now be an obvious point, it is the rules of *EverQuest* that, especially least on higher levels, make *EverQuest* group-oriented game requiring long sessions. It will take time and perhaps advance planning to gather a group sufficiently large to perform anything worthwhile. This is not because the rules state that *EverQuest* sessions are to be long and gameplay is to be group-oriented, but because this is the requirement of a good strategy for playing.

Jesper Juul:
The Open and
the Closed

CONCLUSION

As a rule of thumb, the simplest way to tell games of emergence from games of progression is to find guides for them on the net. Progression games have walkthroughs: lists of actions to perform to complete the game. Emergence games have strategy guides: rules of thumb, general tricks.

Emergence and progression also relate to the origins of the computer game: Basically all pre-electronic games are games of emergence; simple rules leading to complex gameplay. Action games, strategy games come from this vein. Progression games are historically new, beginning with the adventure game. *EverQuest* and the MUD genre that predates it clearly combine the two structures: *EverQuest* is an open world (a game of emergence) with built-in quests (progression structures).

On a theoretical level, emergence is the more interesting structure. It is where we find that it neither makes sense to describe games as open (the player free to do everything) or closed (choosing only within a number of options set up by the designer). So emergence in games is the third way, somewhere between a designer completely specifying what *can* happen, and leaving everything to the user/reader/player. The concept of emergence is an attractive one, and it is helpful in understanding how the simple rules in a game can create the variety we often witness.

That the rules of a game influence how the game will be played is, of course, an obvious point. What is less obvious is how this happens. The concepts of emergence and progression are useful for describing this in more detail.

NOTES

Jesper Juul:
The Open and
the Closed

For an extended version of this presentation, see <http://www.jesperjuul.dk/text> .

1. Since *EverQuest* consists of a number of servers containing the same world, *EverQuest* is really multiple instances of the same world with some variations and with different players.
2. As a testament to the heavy inspiration from textual MUDs, *EverQuest* was for a time rumoured to contain programming from the textual DikuMUD. *EverQuest* programmers have officially denied this. <http://www.dikumud.com/diku/EverQuest.asp>

REFERENCES

1. Richard Bartle: *Interactive Multi-User Computer Games*. 1990. <ftp://ftp.lambda.moo.mud.org/pub/MOO/papers/mudreport.txt>
2. Mark A. Bedau: *Weak Emergence*. In J. Tomberlin (ed.): *Philosophical Perspectives: Mind, Causation, and World* Malden, MA: Blackwell 1997. <http://www.reed.edu/~mab/papers/weak.emergence.ps>
3. DMA Design: *Grand Theft Auto III*. Rockstar Games 2001.
4. Holland, John. D.: *Emergence*. Redwood City: Addison-Wesley 1998, 14.
5. Harvey Smith: "The Future of Game Design: Moving Beyond Deus Ex and Other Dated Paradigms." http://www.igda.org/Endeavors/Articles/hsmith_printable.htm
6. Ion Storm: *Deus Ex*. Eidos Interactive 2000.
7. Valve Software: *Half-Life*. Sierra 1998.
8. Verant Interactive: *EverQuest*. Sony Online Entertainment 1999.