Massively Multiplayer Online Games and their Implications for Game-Based Learning

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Seminar Work: Game Based Learning

January 2005

Chapter 1: Introduction - The History and Different Kinds of Massively Multiplayer Online Games

The roots of Massively Multiplayer Online Games (MMOGs) can be traced back as far as to the 70s when the first Multi User Dungeons (MUDs) came to life. Basically MUDs were chat rooms for people playing pen-and-paper role-playing-games online. Over the years more and more sophisticated MUDs and graphical MUDs appeared, but Lucasfilms Games' *Habitat* was the next big leap forward. Started in 1987[1] and called a "many-player online virtual environment"[2], it ran on a C64 and allowed for people to interact in a graphical environment similar to the adventure-games of the 80s.
But it was not until 1996 that the term "massively multiplayer" was coined. The first game that was supposed to be a "massively multiplayer" online game was *Meridian 59*, which allowed for up to 250 players to wander around the same persistent world over the Internet.[3]

One year later, in 1997, Origin Systems released *Ultima Online* which went on to become the first success-story. After 7 years it still has over 150.000 monthly subscribers. The next hit was *Everquest Online* which launched in 1999 and still has over 400.000 subscribers. But these numbers are not big enough to consider MMOGs part of the mass market. In Europe and the US, the market for MMOGs is still a niche, but brand new releases like *World of Warcraft* and *Everquest II* might well be able to change that.
In Asia MMOGs seem to be a step closer to the mass market. The Korean game *Lineage* has over 2 million subscribers...[4]

But what exactly is a MMOG?
"A massively multiplayer online game [...] is a type of computer game that enables hundreds or thousands of players to simultaneously interact in a game world they are connected to via the Internet. Typically this kind of game is played in an online, multiplayer-only persistent world."[5]

1 Development started in 1985, Beta started in 1987 according to http://en.wikipedia.org/wiki/Habitat_(video_game)
2 see http://www.fudco.com/chip/lessons.html
3 see http://en.wikipedia.org/wiki/MMORPG and http://archive.gamespy.com/amdmmog/week1/index2.shtml
4 see http://www.mmogchart.com/ for current stats
5 http://en.wikipedia.org/wiki/MMOG

Basically a MMOG is defined by the shear amount of players on a server and therefore almost every real-time genre can spawn massively multiplayer games. There are „massively multiplayer first person shooters“ like *WWII Online* or *PlanetSide*, „massively multiplayer real time strategy games“ like *Mankind* or *Shattered Galaxy* and there's even a discussion if new first person shooters like *Joint Operations* or *Battlefield 2* should be called „massively multiplayer“ too, since they allow for more than 100 people to play on the same server. But the bigger part of MMOGs are MMORPGs (Massively Multiplayer Online Role-playing Games) where the player controls and develops an avatar he created.[6] Let's look at a typical view of a player playing the MMORPG *Saga of Ryzom*:

In the lower center of the screen we have our avatar whose actions we control via mouse and keyboard. (Right now she's hitting the giant crab with her sword) Around her we see the virtual world with other avatars and biots (short for bionic bots. „[A biot] acts like an avatar, but it is being commanded not by a person but by coded instructions.“ (Castronova, 2001, p.8). All around the screen there are freely movable windows showing important information. In this case clockwise from the lower left we see the „system info“, which logs all events, the „chat window“, a window

6 For more info on Avatars see: Walker, 2003

that shows health-, sap- (magic power), stamina- and focus-bars as well as the actions we're currently performing, a little window showing the name and health of our current target, a customizable „quick bar“ that allows us to quickly access specific actions and shows what our avatar holds in her hands, the „team window“ showing the stats of all the people we're currently teamed up with, a radar/compass, our inventory, the „actions window“ and a map.

Chapter 2: Some state of the art examples

To give a short impression of how current MMOGs look and what they are about, let's have a short look at a few state of the art MMORPGs:

World of Warcraft (released: November 2004, Fantasy)

The Saga of Ryzom (released: September 2004, Fantasy/Science Fiction)

EVE Online (released: May 2003, Science Fiction)

Lineage II (released: April 2004, Fantasy)

Everquest II (released: November 2004, Fantasy)

Star Wars Galaxies (released: June 2003, Science Fiction)

Chapter 3: Possibilities and Features that set MMOGs apart from other games.

A) Social Interaction

"In the end, an online game is really just a mechanism to allow players to socialize in a context. In the industry, we are fond of saying, 'They come for the game and stay for the socialization.' There is more than a little truth to that statement. Past a certain point in a player's 'career' in a game, being with friends and associates online is more important than the game itself, or at least equally important. If both elements aren't present, the player really has no reason to stick around." (Mulligan and Patrovsky, 2003, chap. 8)

Most important for social interaction are of course the tools through which players communicate. An example for pretty good ingame-communication-tools is *EVE Online*. It has ingame-email (EVE-mail), chat rooms, lots of options for Corporations (the EVE equivalent of guilds) and even an ingame-browser with support for html 3.2, style sheets and more. This is most likely the main reason for its really devoted community. A group of people even launched a web radio (EVE Radio) that broadcasts a web stream 24/7 where they talk about ingame-events, interview players as well as developers and even host competitions where ingame-money is given away...

But due to its science-fiction-space-setting *EVE Online* is missing one important kind of mmog-communication: emotes. Since you're travelling about the vast universe of EVE in your little spaceship you don't really see your character in action. In other MMORPGs where you control your humanoid character directly you can make him point at things or express your mood through gestures. Although I have to state, that I still have to find a game that makes emotes easy and fun enough so that people would really use this feature extensively. Most games make you either type the emotes in the chat-window ("/wave") or make you click through layered menus to execute an emote, both are ways that take far too long to express sudden emotions... It will be interesting to see what changes growing connection speed and technical advance will bring for online communication. Voice-recognition and gesture-driven-input spring to mind. Both means that could speed up communication and deepen the players involvement.

"In sum, activity in the [Virtual World] requires social integration, but social integration requires

activity: the avatar faces the same sort of social reward systems as are found in Earth society. The levelling and integration system also draws on the basic human tendency to get self-esteem from the opinions of others, and the result is that users are powerfully motivated to increase their avatars' abilities.“ (Castronova, 2001, p.14)

This motivation can easily get to a level where one could call it an addiction. The average gamer spends about 20 hours a week playing MMOGs, some even a lot more... “Why? Certainly, one can understand why many people would prefer existence in a VW to existence in the 'real world'. Unlike Earth, in VWs there is real equality of opportunity, as everybody is born penniless and with the same minimal effectiveness. In a VW, people choose their own abilities, gender, and skin tone instead of having them imposed by accidents of birth. Those who cannot run on Earth can run in a VW.” (Castronova, 2001, p.15)[7]

B) Persistent Worlds

A “persistent world” is a virtual world you can log into 24/7 and that continues to exists whether there are players online or not. In recent MMOGs the possibilities to shape the face of the virtual world increase. Many of them allow groups of players to build and own structures like houses, guild-halls, star bases or storage arrays.
Due to technical restrictions most of the current MMOGs split their player-base into „shards“, identical copies of the same persistent world, whereas most of the current MMOGs allow for about 3000-5000 people to play in one instance. *EVE Online* has all people playing in the same virtual world and the highest number of people being online at the same time was 12.258 on November 28th, 2004.

C) Economy

“Like the humans who imbue them, avatars find themselves on something of a treadmill of social success through avatar capital accumulation” (Castronova, 2001, p.14)

7 Two Interesting stories about addiction and life in a MMOG:
„Everquest: What you really get from an online game“
(http://slashdot.org/article.pl?sid=02/12/27/1748252&mode=flat&tid=127)
„The big scam - A story about a life in EVE Online“ (http://static.circa1984.com/the-big-scam.html)

Therefore developing a character in a persistent world also requires taking part in the virtual economy. Edvard Castronova of the Department of Economics of Cal State Fullerton calculated in 2001 that "the nominal hourly wage [in *Everquest*] is about USD 3.42 per hour, and the labors of the people produce a GNP per capita somewhere between that of Russia and Bulgaria. A unit of Norrath's currency is traded on exchange markets at USD 0.0107, higher than the Yen and the Lira." (Castronova, 2001, p.1)

One of the big buzz-words in the MMOG-Scene now is "player-driven economy". What this means is that most of the good items won't be available from NPC-merchants but only from avatars who have the skill of "crafting". And since there are no fixed prices within the system, the players have to make up their own.

"But what happens next? Are gamers going to have to pay taxes for online property?"[8]

D) Problems

Probably the biggest problem in MMOGs is "lag". (from "lag behind", is a slang term for slow Internet speeds, or Internet latency, sometimes due to a server problem, but more frequently due to the connection between client and server.)[9] Higher connection speed doesn't nessesarily solve this problem "There's little that can be done about lag due to communications [...]. Even with a perfect connection, the speed of light through glass is such that someone in Sydney playing in a virtual world with servers in San Diego would experience a delay of over 0.06 seconds in each direction with a direct cable connection." (Bartle, 2003, chap. 2: "How to make virtual worlds" - "On architecture")[10]

On the game creator's side one of the biggest challenges is to create enough content to fill a whole (persistent) world. Since every company is working under time- and money-constraints MMOGs never achieve the level of detail current single player games can provide. (Just compare the level-architecture of *World of Warcraft* and *Doom 3*) The same is true for the quality of the Non-Player Characters (NPCs) which brings us to a big problem for the user: Often times the NPC-Dialogue is so bad, that it confuses new players instead of helping them to learn the game. Together with a

8 http://archive.gamespy.com/amdmmog/week8/index4.shtml
9 http://en.wikipedia.org/wiki/Lag
10 also see Cheshire, Stuart (1996): „It's the latency, stupid", http://www.stuartcheshire.org/rants/Latency.html

rather complicated interface this is a major reason for many not-hardcore-gamers to not play beyond the free-trial-period...[11]

The same lack of time for content-creation produces dull quests and repetitive gameplay ("timesinks") that drives players away from the game.[12] [13]

Another difference from other games is that in MMOGs the development can't stop after the game is shipped. The developer has to have a "live team" that looks after the virtual world and has to make sure that the game is in balance and, equally important, it has to make things happen in the virtual world. Changes, big challenges, wars, new NPCs, new items and stuff like that keep players interested and happy...

11 more on this topic: Mulligan and Patrovsky, 2003, chap. 17
12 on how to do it right see: Freeman, 2003
13 also see the two links under A

Chapter 4: Massively Multiplayer Online Games and their Implications for Game-Based Learning

There is already a lot of learning going on in MMOGs...
The most obvious idea is to use MMOGs for improving language skills. Just play in a shard that speaks the language you want to learn or (in mmogs without shards) travel to places where people who speak this language predominate. It won't be hard to find someone who can also speak your native language and is willing to help from time to time. *EVE Online* is especially suitable for learning languages since all people are playing in the same virtual world and there's an in-game-browser that can access the world wide web (and therefore online-dictionaries and such). (Your pronunciation will have to wait until MMOGs support voice communication...)

For pupils a MMOG could become something like a virtual classroom where the teacher creates quests and the pupils have to form teams to solve them. Also in-game-meetings with other schools could be arranged and classes from different schools could solve tasks together, exchange knowledge or compete against each other. German-learning British kids could team up with English-learning German kids and wander around the virtual world together teaching each other the names of all the things they see.
Factual knowledge could be taught in quests. The player would be collecting bits and pieces of information and in the end he'd have to master a task based on the gathered information.

So what would a MMOG be like that was specifically designed for learning purposes?
Most importantly it would be really easy to use!
It would have good communication tools and rich teamplay-possibilities.
The virtual world would be very diverse and interactive.
Good tools would be provided, so tasks and quests could be created easily. (buzz-word: “player-derived content”)
Pupils would have easy access to background-information. Explanations, formulas and such would be available in-game, or the game would allow access to the world wide web from within the virtual world (like *EVE Online* does).

Yet MMOGs are not only for children. With the idea of life-long learning in mind, massively

multiplayer persistent worlds could also be used for adult education, social experiments or major scale simulations, a possibility that is currently explored by the US Army, who is planning to use MMOGs to train troops for large scale urban situations. The training simulation they're currently developing is called *AWE* (*Asymmetric Warfare Environment*) and is based on the *There*[14]-Engine.

Along similar lines runs the idea that a MMOG could be a huge playground for physics and mathematics, would the virtual world allow for calculation and interaction with all objects.

And one thing we should not forget is that ultimately a MMOG could incorporate almost all kinds of single-player-learning-games. The virtual world would then serve as an environment full of people who could help with difficult tasks.

Chapter 5: Short Summary

The massively multiplayer genre is the fastest growing computer game genre. With MMOGs only barely scratching the mass market, we're beginning to see the vast array of possibilities that virtual worlds open up for game-based learning, the most important one being the possibility to socialize in context and to learn and explore together.

14 see http://www.there.com

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Additional Links:

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