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DESIGNING FOR EMERGENT SOCIABILITY IN VIDEO GAMES

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ABSTRACT

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Today, video games are widely consumed online. Many prefer to play socially with live players. However, the gaming culture reaches beyond play sessions. New ways to consume games emerge often and being a member of a community has become an integral part of gaming. While games are more popular than ever, they have also grown complex. The increased demand for quality from the players combined with added technical complexity of games create pressure to look for new game design paradigms. One alternative to fixed game design found in most games is emergent design that shifts some of the responsibility over design from game developers to players. To date, research over emergent design has not been widespread and instructions to implementing it have been few and far between. This thesis considers the requirements for adopting emergent design focusing on emergent sociability and presents the changes in thinking that the paradigm shift from fixed to emergent design requires from both designer and player. The results suggest that shifting to emergent design significantly reduces the amount of work required from the game developer. However, this improvement comes at a price, as the developer loses some control over the narrative of their game.

Keywords: emergence, sociability, video game design.

Contents

1. Introduction	5
2. Theoretical framework	8
2.1. Humans are social	8
2.2. Sensation of social presence in video games	10
2.3. Cooperation: explicit sociability.....	11
2.4. Alone together: sociability is not always explicit.....	12
2.5. Emergence: simple rules with surprising results	13
2.6. Why design for emergent sociability	14
3. Methodology: studying emergent sociability in video games	18
4. Findings: how sociability emerges in video games.....	20
4.1. Emergent sociability in video games	20
4.2. Video games are sociable by nature	20
4.3. Design, implementation, and testing	22
4.4. Emergent narrative	23
4.5. Social media and games.....	24
4.6. Pokemon GO: Singleplayer becoming multiplayer	26
4.7. Online communities.....	28
4.8. Virtual economies	30
4.9. Player-generated content	31
4.10. Politics.....	34
4.11. Uncertainty and Quality Assurance	34
4.12. Real-life factors create inequality in games	35
5. Application: designing for emergent sociability in video games.....	36
5.1. Preconditions for emergence in virtual worlds	36
5.2. Coaxing players to competition instead of conflict	37
5.3. Limiting technology to encourage emergent sociability	38

5.4. Making player-versus-player safe	39
5.5. Managing online communities	40
5.6. Inflation in virtual economies	41
6. Conclusion	43
6.1. Use of technology	43
6.2. The right kind of players	44
6.3. Letting go of control.....	44
7. References	46

1. Introduction

Humans are social beings and yearn for interaction with others. Games are a way of expressing our longing for social interaction. Sociability is a human characteristic that everyone shares. We exert ourselves to compete and improve ourselves. In this sense, most games are built to test their players. Potentially, games are a peaceful way to express the urge for improvement. Most games improve their players as very seldom does a game teach its player nothing. As the old saying goes “knowledge is power” and people that regularly play games develop certain skills that can be passed on to others. Consequently, the player passing her skills might get something in return. Gaining status as a leader or a contributor in games can carry on to the real world. A quantified term for this is *social capital*, a currency for social use. I use this fact to argue that games are inherently social. In fact, sociability is one of the most prevalent characteristic of modern video games. Even solitaire games that are designed to be played alone can be shared and enjoyed with others. Games that are played in the Internet can lower the threshold for both cooperation and conflict between players. Many people see multiplayer games as more emotionally engaging and interesting than single player games. It is inherent in gaming culture that people interested in games meet in various venues to expand their social circles.

Even the simplest game allows for social behaviour between player either during or between play. Arguably, it is not necessary to “turn on” sociability in game design. Sociability simply *emerges* in games regardless of the intend of the designer as the combined interactions between players inevitably create social structure between them. This spontaneous development of social rules is called *social emergence*. In addition to having implications to game development, emergent design changes the perception of rights to a game’s content which can lead to legal action.

The players sharing a virtual world often feel like the other player avatars are controlled by people and as such should be considered human. The players are the engine that implements sociability in games whether sociability is designed in the game mechanics or not. This does not mean that sociability or its emergence cannot be encouraged. On the contrary, there are numerous design decisions that allow game developers to enhance sociability between players.

Ways of player interaction in games include writing, talking, dancing and fighting. Video games have always been social, right from the beginning of the industry. An early example of a social video game is Pong played by two players. Today many video games are shared online between thousands of players which exhibits the need for sociability between players. Gaming culture transforms over time to new media forms such as *machinima*.

I preface this thesis by presenting theory of human sociability discussed in context of video games. I intend to present an overview of how sociability emerges in video game culture. My overview is not exhaustive as there are practically no limits to forms of human sociability.

This thesis concerns how to design for emergence in video games, i.e. what deliberate choices designers can make to facilitate spontaneous sociability between players. As stated earlier, most games are social by nature, but that is not to say their sociability cannot be encouraged. This is where emergent design shows its potential as emergent design in game mechanics often leads to emergent sociability between players. In other words, being a successful player in an emergent virtual world often involves creativity when dealing with other players.

The field of game studies is more subjective than most other disciplines, so it comes naturally to approach it subjectively by listing things that most find pleasing or what the current trends are. However, I approach the subject theoretically and present an objective and qualitative answer to the research question using academic theory. Consequently, the scope of my answer correlates to existing academic research, most of which concerns the appearance of sociability and emergence. There is little study on design choices that make some video games more inclined towards social emergence than others. To remedy this, I intend to make this thesis a practical synthesis of game design and social theory.

I review implications of emergent design and present arguments for and against emergent video game design. I examine emergence in narrative, testing, gameplay and the ways in which sociability emerges in gaming culture. I consider social media, online communities and virtual markets as forms of social gaming culture. Finally, after defining social emergence in video games I proceed to answer the research question

by defining guidelines for emergent design. In chapters *Findings* and *Application* I introduce the proverbial threads to the research question which are tied together to form an answer in the chapter *Conclusion*.

The social applications of information technology and field of game studies are both vast and the scope of this thesis considers only subsets of them. For purposes of this study I assume that social gaming can have two opposing purposes: the social goal of a game can be either *cooperation* or *competition*. I review emergent sociability in games from these two opposing perspectives. The two perspectives act as the scope by which I examine the topic of this thesis as much of social behaviour in video games can be categorised under either. While it can be argued that there is overlap in many games, the main difference between these two perspectives is that in competition the antagonists are players while in cooperation the game itself acts as the antagonist that the players band against. This difference makes the playing experience change dramatically which will be explained in the following chapters.

2. Theoretical framework

In this chapter I present general theory about human sociability and social emergence, argue for social emergence as a design principle and gradually move on to its applicability in video games.

2.1. Humans are social

According to Fiske [2019] sociability is a central human characteristic. Social relationships are evident in every aspect of human lives and the relationships are more complex than those of any other species. Fiske describes a social relationship as something that happens between two or more humans as their intentions and thoughts intersect and often complete each other. All humans are deeply social by nature even though sociability can manifest in various ways. Since sociability is so innate in humans they tend to long for company and the feeling of belonging which carries social rituals such as exchanging gifts or services. Having social relationships purely for selfish purposes is very rare. Arguably, even competitive values such as success and achievements are just as socially constructed as caring and nurturing.

Pearce [2009] argues that people tend to follow trends of their peers mainly because they wish to maintain connection to their community. This phenomenon applies to video games as well. It is important for most players to remain connected to their co-players, so they tend to follow the whim of their community. The number of players in an online multiplayer game can fluctuate rapidly as the masses migrate between game worlds.

Sweetser [2008] points out that the numerous interactions between players in multiplayer games are often unpredictable and highly emergent. Occurrences in popular games can cause much of the player base to abandon the game which can cause a chain reaction as those that stayed feel that “the game is dead” and soon leave. Conversely, games that have had a low player base can have sudden influx of players.

As playing games is generally done for social purposes social interaction is often the main purpose of playing. Sweetser [2008] argues that social play happens often without clear personal goals in the game. The game often serves as a medium for

social interaction between the players which can realise as social emergence. Arguably, a game does not need to be flashy to be entertaining. It suffices that the game has technical affordance for various player interactions and gives players ways to play the game at their leisure. This can include combining objects in the game and inventing new rules to create a sort of meta game inside the parent game world.

According to Pearce [2009] play can act as an engine for emergence as it is inherently spontaneous and experimental. Real world social phenomenon such as weddings, protests and fashion trends can often take place in virtual worlds. Managing social ties between individuals is more important than conveying information when communicating in multiplayer games [Stenros *et al.* 2009].

Stenros *et al.* [2009] defines single player games as playing only for entertainment of oneself. However, very few games are without possibilities for social interaction. Playing a game increases the player's social capital as she can share her playing experience with others. Stenros *et al.* [2009] points out, that in this regard, playing games increases one's gaming capital through acquisition of skills and knowledge which can be relevant in a wider societal context. This is especially evident when one is playing a single player game in presence of others. In this case it is possible that the player is performing for an audience.

According to Stenros *et al.* [2009] sociability occurs in multiplayer games in following levels: the player is always a part of a *macro-community* which most general actions interact with. Inside that, a player usually shares some goals with a *micro-community*, usually a small group of peers. The most intimate relationships are formed among *friends* which arguably creates the most memorable play experiences.

Technology has the potential to act as a catalyst for social interaction even with total strangers. This can have implications for design of social video games. Paasovaara *et al.* [2016] divides such technology assisted interactions to six levels with different interaction intensity ranging from passive to active: At the first level, *affecting automatically*, the devices that nearby strangers carry interact with each other without any required user effort. The users might notice the interaction right away or the interaction event might even go unnoticed. User actions can happen prior or after the encounter. At the second level technology helps users *sense each other's presence* and

become aware of each other. At the third level, there is *interacting through technology* in which nearby strangers interact with each other with the help of devices. At the fourth level, users *interact with face-to-face gestures* that only need to be brief to be experienced meaningful by the users. At the fifth level users *interact verbally* between nearby strangers. This can be brief or lead to conversation. At the sixth level users *act together physically*.

All game platforms are essentially social systems, but they differ from each other in the way they afford social interaction. Jones *et al.* [2012] uses Nintendo Wii as an example of a system that uses its technology at its fullest to bring people together to play in shared spaces instead of competing in graphical fidelity with other console makers. This is considered in the design of both its hardware and software.

2.2. Sensation of social presence in video games

Sociability occurs as people interact so that their thoughts, actions and emotions complement each other. This requires sensing the presence of others. Sociability is made possible when a person senses the presence of others in the same space or indirectly, for example through a video recording. Fiske [2019] argues that it is not necessary for a meaningful social interaction that the other persons are present or even exist. Rather, assuming that one is acting under a shared meaning with others is vital for such relationship. This assumption is important to video game sociability discourse as games have both direct and indirect social interaction.

Malinen [2016] describes social presence as something that can exist in the absence of physical presence and sense of the others' emotions. The theory of social presence Short [1976] suggests that communication media have different capacity to transmit non-verbal cue between participants. The less social cues there are present the less involved they typically are in the communication. Of all the methods face-to-face communication is considered to have the most social presence while text-based communication has the least. Without social presence social interaction is challenging to maintain and tends to end abruptly. Conversely, online interactions can be less restrained and people tend to express themselves more openly than in face-to-face situations which is referred as *the online disinhibition effect* [Suler, 2005]. A reason for this is anonymity. Suler emphasises that one's online personality is not any truer than

an offline one. Instead, these personae are modifications for one's expression of personality. Anonymity can act as a basis for personal experiments and bring benefits for individuals. Naturally, this experimenting is not without drawbacks as some online encounters can be rather intense. Clever user interface design can mitigate the possible dangers of anonymous interaction while acting as a catalyst for enjoyable communication. However, due to the complexity of social interactions it is difficult to design guidelines for online interactions that apply in all circumstances. Malinen [2016] suggests that designs for online communities should be flexible and customizable to allow users to create configurations that best serve their individual needs.

According to O'Connor *et al.* [2015] social relationships in massively multiplayer online games (MMO) form around the following three aspects: a psychological sense of community, social identity and social support. His studies indicate that they are what most players look for in such games and should be a design priority.

Paavilainen *et al.* [2017] argues that the ability to observe the actions of others and react to them is essential in creating a social game setting. However, as previously noted, physical presence is not a requirement for social presence. What is important is having the impression that the game world is alive.

2.3. Cooperation: explicit sociability

Pearce [2009] argues that "people are addictive" pushing players to higher levels of engagement in play communities which blurs the line between individual and social. She calls the phenomenon *intersubjective flow* which is derived from *personal flow* [Csikszentmihalyi, 2009]. She argues that intersubjective flow is one of the drivers of emergent behaviour and is central in construction of both individual and community identities.

Cooperation is a part of human sociability. Cooperation is a major aspect in social games and most multiplayer games have some form of it. Cooperation can be partly competitive when players team up to beat their adversary. It can also be fully collaborative when the game presents a common challenge that players try to collectively beat. Cooperation is tied to politics as alliances can emerge and form as the game progresses. Some alliances can be brief and formed to gain advantage over other groups in a limited time frame while some alliances can last a lifetime. The alliances

can even extend into the real world as online players often become friends offline as well.

To cooperate, players need to be able to communicate with each other.

Communication can be verbose or minimal depending on the challenge presented by the game. Even though body-language is hard to convey online Paavilainen *et al.* [2017] argues that game-based activities can be sufficient to transmit information between players and to produce the feeling of social presence which he names a prerequisite of communication.

Cooperation, as opposed to competition, can be a strong catalyst in bringing players together emotionally and to create feeling of mutual enjoyment. Waddell *et al.* [2014] has found that competition and cooperation affect players differently. Competing against others can cause aggression that remains even after the game is already finished. Cooperation, however, has been linked to positive prosocial behaviour such as extended collaboration and mutual affection between participants.

Playing games increases one's social capital, which is can be a major motivator for players, especially in multiplayer games. Waddell *et al.* [2014] reports that, even when playing with total strangers, only few participants remain total strangers after the game. This is especially evident when playing cooperatively which suggests that playing the same game creates bonding between players and increases the players' social capital to be used in the player community. Pre-existing player relations can influence post-game aggression. Surprisingly, playing cooperatively with someone not close socially resulted in less aggression than playing with someone in one's own social group. However, when playing with friends cooperatively players showed more commitment to game goals which may indicate that playing cooperatively happens more naturally between friends. Research is not unanimous on this statement and some have found that there is no difference in behaviour between friends and strangers. [Waddell *et al.* 2014]

2.4. Alone together: sociability is not always explicit

It is worth noting that sociability is not always explicit and not every player seeks to cooperate with others. In this group sociability can be implicit and latent. Even though massively multiplayer games are designed for constant player interaction, Stenros *et*

al. [2009] argues that for most parts it is possible to play them alone. In this sense one could argue that other players are seen more as conceptual objects than social actors. However, this argument sees games only as collections of rules and ignores the importance of spending leisure time with others. Stenros *et al.* [2009] points out that play is social by nature and it is virtually impossible to remove its social aspects. Stenros continues that even though player relationships are inherently social they are not necessarily active as players can become neutral towards each other as if they were merely props inside the game.

In fact, some massively multiplayer games favour players that prefer to play alone as it can be more efficient to develop their character that way. It can be argued that this is contradictory to the games' emphasis on sociability but Virtala [2019] argues that some players want to reach the top fast to be able to brag to others of their accomplishments. Stenros *et al.* [2009] reinforces this argument by stating that, even without direct cooperation, other players can simply provide an audience and a sense of social presence which, as previously stated, is vital in creating engaging multiplayer game experiences. This is just another aspect of sociability which should be accounted for by the game developer.

2.5. Emergence: simple rules with surprising results

This thesis deals with the fuzzy term *emergence*. Pearce [2009] describes emergence as a system that is complex, often decentralized and self-organized in ways that cannot be predicted by its apparent rule sets or by behaviour of its individual agents. In a nutshell, emergence occurs when low-level rules create sophisticated behaviours. Pearce [2009] states that emergence is a set of collective behaviours in which all parts are interdependent. Emergent properties cannot be studied by taking the system apart by terms of reductionism. Instead, the properties reveal themselves in context of the system. Examples of emergent systems are neural networks, stock markets cities, the Internet and, most importantly, computer games.

According to Salen *et al.* [2004] an emergent system has agents that interact by simple, local rules oblivious of the system as a whole which produces behaviour in a bigger scale. A system is emergent when there is a disconnect between its rules and how those rules play out producing patterns and results that often bend the rules.

Sweetser [2008] states that emergent gameplay is made possible by simple rules that interact with the game world and its players. Emergence occurs when those interactions are unexpected but acceptable. Emergent gameplay enables practically unlimited possibilities for player behaviour and strategy but requires certain complexity from the system. The possibility of emergence separates complex systems from merely complicated ones. This means that not all systems that are complicated are complex. Complex systems can have simple low-level rules but what makes them emergent is the way how the rules interact.

Sweetser [2008] separate emergence to *local* and *global*. Local emergence occurs in localized parts of a system when a section of a game allows for new behaviour that does not have consequences for the rest of the game. Global emergence occurs when individual agents create constructs that affect the whole system as simple game objects interact changing the way in which the game plays out. Emergence can be further divided into three orders. The first order of emergence occurs when objects in the game world affect their neighbours. The second order of emergence occurs when game actors form new strategies to overcome challenges in the game. Third order of emergence occurs when the game allows new and unique paths that players can take in the game.

This thesis concerns *emergent sociability* which is arguably the most complicated aspect of emergent gameplay. Most games allow varying level of sociability regardless of their genre. What makes sociability emergent is when it is not fully expected.

2.6. Why design for emergent sociability

Emergent design is the next step towards deeper sociability in video games. All games arguably allow some level of sociability so the need for change might not be apparent for some. However, benefits of encouraging the emergence of sociability can be many. Importantly, emergent design can make game development easier since part of the burden of tuning the game mechanics can be handed to the players. The approach can be practical since the players can discover the mechanics that they enjoy best and the developer can simply implement the mechanics that the players are already deemed worthy.

The graphical fidelity of games has increased but the game worlds and its inhabitants often remain static and lifeless, limiting their interaction with players. This is another problem that emergent design can fix. Game developers can create bigger and more engaging game experiences by adopting emergent design.

Paasovaara *et al.* [2017] argues that Pokemon Go encourages emergent sociability which in turn promotes physical and mental wellbeing of its players. This suggests that emergent sociability can have wide positive effects.

Social play creates engaging gaming experiences so naturally designing for emergent sociability is a key factor in a game design paradigm that embraces emergence.

Vogiazou *et al.* [2005] argues that designing for emergent sociability prolongs the lifespan of a game significantly. Such design can also increase cohesivity in player communities which increases the chance that they emigrate to other games, contributing positively to social online gaming.

It is usually easier to modify and extend emergent, co-created, systems than systems with a fixed design. Emergent gameplay design is based on simple rules that can be easily modified and implemented. This means that emergent systems generally scale better than fixed ones as it is easy to add more content as player numbers grow.

Rather than having to fix every instance of a bug manually the developer can adjust rules of objects that make up the world, potentially fixing all problems that involve those objects. This way the developer can save time in the long run. Emergent design can enable massive worlds that would be too complex to manage in a fixed design.

[Sweetser, 2008]

According to Sweetser [2008] emergent gameplay allows the game to be more dynamic and diverse as emergence allows the players to experiment and find their own path in the game world. This can make the game more satisfying while increasing its replayability.

Sociability is a key factor for an engaging game experience, so naturally designing for emergent sociability is an important part of the emergent game design paradigm. In an emergent paradigm the social code can be allowed to form through social interactions between players.

According to Pei-Shan *et al.* [2014] playing against human opponents creates more feeling of flow, presence and enjoyment than playing against computers. As such, social interaction is an integral part of massively multiplayer online games. This means that encouraging social interaction should be a top priority for such game. However, some “social media games” can in fact be almost anti-social as will be pointed out in the chapter *Alone together*.

Vogiazou [2005] points out that by designing for emergent sociability it is possible to prolong the lifespan of a game significantly. Such design can enable the player community to find ways to best enjoy the game. Communities that form thanks to emergent gameplay can in time migrate to other games.

Allowing emergent sociability can bring advantages to game developers. Emergent design can sometimes be the best solution both philosophically and economically. Benefits of emergent design are two-fold: by facilitating emergent sociability in a game it is possible to reach a deeper and more dynamic level of sociability while reducing maintenance costs.

Paavilainen *et al.* [2017] states that social interaction is a stronger motive to playing social media games than simple escapism. While not all players play for social purposes, the ones that do are on average more mentally and economically devoted to the game than players that are not playing for social purposes. According to Paavilainen *et al.* [2017] even shallow sociability enhances the players’ motivation to play the game and to bond with other players. With proper design choices the developer can enable levels of sociability to emerge between players. It can be argued that allowing for sociability and keeping social restrictions at a minimum are key design choices for emergent sociability.

Sociability does not necessarily require direct interaction. Paasovaara (2016) points out that even simple automatic proximity-based interactions can promote a feeling of belonging and prolong the use of applications that have such a feature. The mere promise of interaction with other players can encourage people to explore their surroundings and places that they might not attend otherwise.

Finally, when designing for social emergence one needs to know why emergence cannot be planned fully in advance and why adopting a fixed design can result in partly emergent gameplay.

This chapter introduced differences between cooperation and competition as goals of social play. It also argued why social interaction is central in multiplayer games and what design requirements it creates. Finally, the chapter argued why designing for emergent sociability is worthwhile.

3. Methodology: studying emergent sociability in video games

The title of this thesis *Designing for emergent sociability in video games* included a natural main research question for the thesis. Taking a practical approach, the thesis intended to answer both the “whys” and “hows” of the topic. I feel like answering both was necessary as often the reason for a social phenomenon is just as important as the way to create it.

The first step was collecting references to use as arguments in my answers. Using mainly the university library’s academic search engine I quickly found multiple promising sources. Most of them were online journals but there were also a few relevant printed publications, especially in social sciences. To my delight, I came across Penny Sweetser’s book *Emergence in games* that included useful information. To date, there were no relevant master’s theses published of the subject, but I found one relevant doctoral thesis. Finding further sources was possible using the references in the sources I already had.

As the saying goes, “the laziest worker is often also the most efficient” which I quickly absorbed. My method of researching the subject was systematic right from the start. First, I collected all the relevant parts I could find from the material I had and copied them to a list of references. I took photos of printed material that I then fed into a text recognition service found in the *Google docs* service which produced editable text with acceptable accuracy. I had to proof-read the references, but it was faster than writing them by hand.

At this point publishing my list of references would clearly have been plagiarism so I proof-read everything and turned it into references while removing plagiarism. This turned out to be perhaps the most work-intensive part in making the thesis. After deciding that my list of references was long enough, the next step was organizing it into arguments that slowly started forming groups, finally turning into chapters. At this point I had the general structure of my thesis. What remained was fine-tuning it.

I specifically insisted using only academic sources, but I did not run into any major problems finding such material or making arguments about the subject. English is not my native language so writing the thesis might have been foolhardy. Fortunately, I

found out that it was not that bad. Using the many online language sites and the *Google translate* service helped immensely.

The arguments for emergent design in this thesis are generally based on combined academic theories of social and game studies. The issues in the field of game studies are arguably more subjective in nature than most academic fields. In this sense, it is interesting to approach the topic by combining established social theory with the rather experimental games study theory. Doing so, I hope to create a novel approach to the research question *designing for emergent sociability in video games*.

The theoretical basis of this thesis is processed in a practical way that is customary to the field of human-technology-interaction (HTI). Coming from the practical field of HTI it was not easy to find a fitting perspective to studying the field of social sciences that is more theoretical. But as the saying goes, opposites attract each other, and combining these two different fields can create novel results.

In the field of game studies and partly in HTI it is natural to approach topics quantitatively and subjectively. Many researchers ask users of technology what they like to find out “what works”. However, in this thesis I refer to academics instead of users. By doing that I aim to create results that support certain design choices that enable emergence.

Emergence is a hazy concept and to this day rules for designing it have not been clearly presented. This is the gap in research that this thesis aims to fill. This thesis presents “what is out there”. The thesis then uses these findings to draw “rules of thumb” for design. Combining these it is possible to create a starting point for anyone wanting to implement emergent design to their game. The chapter *Findings* presents ways in which sociability emerges in video games currently. The following chapter *Application* turns attention to practical research. While the chapter’s contents can help in designing emergence the information is rather specific and not enough to create general rules for designing emergence. Instead, the chapters act as steppingstones for the final chapter *Conclusions* which is a synthesis of the two previous chapters. In this chapter the theoretical and practical study is combined to form a general guide for emergent game design.

4. Findings: how sociability emerges in video games

This chapter presents actual appearances of emergence found in and around video games.

4.1. Emergent sociability in video games

According to Pearce [2009] social emergence is inevitable when the number of players exceeds a certain threshold. Novel gameplay that emerges in one game can carry on to another and contribute to game culture. It is not unusual that a game is based on a feature that emerged in another game community. Play communities adapt to each other, the Internet and to real world communities creating another kind of social emergence. This forms something called *a ludisphere*. The merging of Internet and real-world communities is becoming increasingly evident with ubiquitous computing. According to Lenhart *et al.* [2008] playing online games with other people increases likelihood that a player gets involved in other forms of gaming. Examples of novel gameplay that formed into genres of their own created by emergence are *tower defence* and *rocket jumping* games. As online gaming becomes increasingly ubiquitous it is possible that games blend into the everyday activities. This is already evident with the growing popularity of game streaming services.

According to Sweetser [2008] social emergence is the most complex and unpredictable form of emergence in games. Because of complexity of social systems, it is virtually impossible to design them in games. Instead the game designers should refer on humane sciences such as psychology and sociology to support and model interactions that arise naturally between players.

4.2. Video games are sociable by nature

Historically, video games have been considered an unsocial form of entertainment mainly consumed in solitude. However, I argue that video games are sociable in one way or another. Paavilainen *et al.* [2017] argued that single-player games of the digital age have been an anomaly in the history of gaming as sociability is integral to games so even single-player games can be seen as social. Jones *et al.* [2012] calls the single-player games of the early computers a blip on the history of games and that their choices for design were mainly due to the technical limitations of their age.

Sociability manifests in video games in various ways that include writing, talking, dancing and fighting. Games that are played in a physical space or online can both be social. Video games can act as a social catalyst for some. Even single player games have narrative which the player takes part in and most game narratives can be discussed with other people.

In multiplayer games most players abide by the rules but there are always *trolls*, i.e. players that get joy from spoiling the game for others. A game designer should expect both player types to emerge. Bartle [1996] has classically divided players into four groups: *achievers*, *killers*, *socializers* and *explorers*. Socializers are a vast majority (around 80%) but it can be argued that all player types have social motivations to play. Most people gravitate toward cooperation or light competition. Only a small portion of players called *killers* enjoy ruthlessly dominating others.

Killer <1%	Achiever ~10%
Socializer 80%	Explorer ~10%

Figure 1 Bartle's player types

Paavilainen *et al.* [2017] divides social play into *internal* and *external* levels. The internal level emerges from roles of the game characters while the external level is influenced by the pre-existing social relationships of the players. Both levels can be modified during play and both are necessary for deep social gameplay.

Paavilainen *et al.* [2017] continues that playing in a shared physical space concurrently is a fundamental aspect of a truly social game. *Asynchronous* gameplay in which the players are not necessarily constantly connected with each other throughout the game can be seen to allow less social interaction than *synchronous* gameplay although asynchronicity can have benefits for sociability as it allows players to play at their leisure. Both types of gameplay have been implemented successfully in games.

4.3. Design, implementation, and testing

Pearce [2009] divides virtual worlds into fixed-synthetic and co-created ones. While fixed worlds have rigid structure and rules, co-created worlds can allow more contribution from its players which encourages emergence. Co-created worlds are often designed with emergence in mind. In them the developer expects that strange things happen. This can open possibilities for novel game mechanics but requires a flexible rule set which can require more rigid testing and groundwork from the developers. Co-created worlds potentially make players more emotionally attached to the game world they have had a part in creating. They might even feel they have certain rights to the game. In co-created certain players can become major influencers of their internal culture. In time, such culture can morph into original content and produce new intellectual property. Such content is usually good as it is already deemed worthy by the community.

It is important for any game to maintain a level of immersion. The game can use clever mechanics to keep the player engaged. A working and believable game system is vital for creating the feeling of immersion. One way to create immersion is through a believable game system. In fixed game design every interaction needs to be planned by the designer. As games get exceedingly complex the amount of work required can get out of hand quickly.

Sweetser [2008] argues that this is where emergent system shows one of its main advantages. Emergent design requires careful planning but can be maintained easily once its foundation is working. Maintaining it can be more efficient in the long run since modifying the game requires less programming. This is because the behavioural code of objects is general. Although there are contexts in which an object behaves oddly, in most times it is acceptable. Designing general rules for object interaction

instead of every interaction between objects explicitly potentially create a system where everything works adequately with less chance of a major failure.

The bigger the game grows the more an emergent approach eases the burden of the developer. Emergent interactions inside the game can constantly bring new life into the game without much additional effort from the developer. Additionally, it is easier for both the developers and players to create additional content, modify it and fix bugs faster which all result in a more enjoyable game. A downside of a general system is that it can be challenging to make it robust enough so that interactions between every object make sense [Sweetser, 2008]

However, all of this requires exhaustive feedback between the game system, the developers and the players. An emergent system often produces unexpected interactions and logging them for inspection is essential. Sweetser [2008] points out that in an emergent system the players must be given more feedback but giving them proper feedback is more difficult than in a fixed game. This can be a major challenge for the designers.

4.4. Emergent narrative

Players yearn for stories and experiences when playing games. Everything in the game including the game world, relations between characters and the presentation form the narrative that the player experiences. This narrative between the developers and the players can be either fixed or emergent.

According to Sweetser [2008] emergence can manifest in games in objects or actors. In fact, the whole game world can be designed for emergence, meaning that the game's narrative that includes conversations with other characters, solving puzzles and finding objects can provide emergence.

Sweetser [2008] lists three models that can act as the basis for designing game narrative:

The *player as receiver* model is traditionally found in movies and books but also in many games. In this model a pre-written story is simply delivered to the player without giving any means to change it. In the second *player as discoverer* model it is up to the player to uncover the pre-existing plot meaning that the player has some influence

how and when the story is presented. The third model *player as creator* allows the player to influence the contents of the story with her actions which create a different narrative every time. Each of these models have been applied to games with varying success.

The player as creator model has the most potential for social emergence. The story is for the most part produced by the player's interactions in the game world between objects and other players. The narrative is not fully pre-scripted. Instead, it is created as entities, including the players, interact in the game world. Most relations between player characters regardless of their nature create emergent narrative which can lead to many memorable moments. The results of using this model can be challenging to predict but is often satisfying to the players while the developers get content to their game with little additional cost.

Sweetser [2008] argues that for game developers a potential drawback of applying emergent systems is losing creative control over the game's narrative. Since emergent systems only deal with the types, rather than specific cases, of interactions in the game it is difficult to design how narrative sequences resolve exactly. This makes telling a specific story harder in an emergent system than in a more traditional model in which most situations are planned. This means that the flow, order and nature of the game's narrative is more approximate meaning that rather than deciding things for the player the developer acts as her guide providing boundaries for gameplay in which the player is free to act as she pleases. In an emergent system the developer can set goals, but it is up to the player to decide how to reach them.

4.5. Social media and games

Networking social systems together provides social emergence which accelerates the use of the services and draws in more users. The process feeds on itself: as people consume media, they encourage content creators to create more media for users to consume which in turn attracts more people to the service. Feedback is vital as without the sensation of each other's presence a community quickly dissolves. Therefore, it is imperative that game developers support the communities that form around their product.

Social media amplifies the social traits that have been in video games for decades. Leaver *et al.* [2015] argues that the success of Angry birds was largely due to the fact that it had high score and star systems that enabled players to compare their performance on social media. Arguably high score lists are only relevant when there's competition that changes the list. In case of Angry bird is the social media helped bring competitive players together while the developers of Angry birds supported the competition by posting daily challenges for specific levels that created new grounds for competition that were beyond the game's build-in challenges. However, Rovio's use of social media went beyond encouraging competitive play. Leaver *et al.* [2015] reported that Rovio's social media accounts were highly popular in 2015 and they used this fact to effectively encourage fan engagement by showcasing fan creations. By doing this Rovio increased the exposure of their players' accounts which was mutually beneficial as the popular fan creations gave Rovio effective advertisement virtually for free. Fan creations included art, craft and even pastry. In fact, a video of a game played with real catapults and cakes attracted more than 13 million views on Rovio's social media.

It can be argued that social media is not always a boon to sociability between players. Paavilainen *et al.* [2017] reports that the social features in Facebook games are considered having a low degree of actual sociability. Some players even see social aspects such as tagging your friends in these games as a nuisance as it is often mandatory but does not enhance the sociability in any way. Many people were not even aware who had tagged them in their games. The same was true to gifting in social games as it was often considered a chore. To make matters worse Facebook users often experienced massive message spam that increased with every game they were subscribed to. On the other hand, getting notified of your friends' games potentially created curiosity for those games. Paavilainen *et al.* [2017] reports that Facebook games were widely considered to be single-player games with some social aspects as players often had a vague feeling of playing for an audience which often made up for poor game design. Direct player-to-player interaction, a central aspect of sociability, was missing from most Facebook games. Facebook games were also very simplistic as they focused on very few gameplay patterns, two at most. These patterns involved individual players being against the game with players occasionally being put against

one another. As opposed to massively multiplayer games, Facebook games have been described as massively simultaneous single-player games.

Nonetheless, the social aspect of Facebook games was enough to increase the engagement of their players. Arguably, it is in general very hard to predict the success of social games as the outcome is the sum of many parts and highly emergent.

4.6. Pokemon GO: Singleplayer becoming multiplayer

Pokemon GO is known for its sociable take on mobile gaming. It was released at a time when location-based gaming was in its infancy. It includes many aspects that allow sociability to emerge among players. Perhaps its success is due to the fact that its sociability is not apparent. Instead, it leaves room for players to come up with ways to socialize while playing the game.

Paasovaara *et al.* [2017] argues that although Pokemon GO is predominantly a single player game it promotes social interactions between its players. Its sociability is arguably emergent as the praise of its sociability seems to have surprised even its developers.

Paasovaara *et al.* [2016] has observed that Pokemon GO caused masses of strangers to gather in public spaces trying to catch Pokemon which lead to many interactions between the gatherers even though the social features in the game are minimal. These interactions are induced by idle time during the game that is further emphasized by getting various benefits from exchanging information with each other. [Paasovaara *et al.* 2017]

Paasovaara *et al.* [2017] continues that even those that mainly play alone have reported to have interactions with other players. The location-based nature of the game is one reason for this since it encourages players to spend time outdoors which leads to encounters with other players. This can lead to a sense of belonging to a community which enhances the experience for many. While it is not necessary to interact with others the game design motivates players to do so even with unfamiliar players.

Engagement in Pokemon GO is intermittent with short bursts of attention allowing time for other activities including social interaction. Playing the game is easily

integrated in daily activities without requiring constant attention. This allows players to discuss about topics in and out of the game. Paasovaara *et al.* [2017] points out that Pokemon GO differs in this aspect from more immersive games that require full attention from their players and where interactions between players is mainly related to the game itself.

Pokemon GO has asymmetric information which means that players initially possess different information that they can share with each other. This is further reinforced by the fact that Pokemon GO is a positive-sum game which means that a Pokemon in a single location can be caught by multiple players. [Paasovaara *et al.* 2017]

Gyms and PokeStops specifically attract players to converse which leads to local players to quickly get to know each other which is prime for friendship and further enforces the feeling of community between Pokemon trainers. [Paasovaara *et al.* 2017]

Ambiguity in the game makes it difficult for players to play it efficiently by themselves which in turn encouraged them to seek other player to share information with. This is made possible by the persistent game world. The lack of an in-game communication channel seems to encourage players to interact directly with each other face-to-face. [Paasovaara *et al.* 2017]

Paasovaara *et al.* [2017] argues that *geocaching* motivates outdoor group activities in which different group members can contribute differently. This includes joining the group just for a walk without disturbing the main activity. Geocaching arguably shares qualities with Pokemon GO as it enables social interaction while doing the activity. However, the difference in Pokemon GO is that it motivates interactions between its players more than with non-players.

Being a successful trainer in Pokemon GO requires that the player understands the underlying game mechanics and learns hidden information. According to Paasovaara *et al.* [2017] this act of reverse engineering the game called *theorycrafting* is prevalent in Pokemon GO as it is in most online games.

The way the game is designed makes players gather to certain locations where the above-mentioned idle time provides opportunities for experienced players to mentor and share information about the hidden mechanics. [Paasovaara *et al.* 2017]

Another feature missing from Pokemon GO that promotes sociability is a way to share player statistics to others inside the game which seems to encourage players to discuss and compare their findings in their face-to-face meetings. [Paasovaara *et al.* 2017]

Paasovaara *et al.* [2017] points out that big enough playerbase also known as *a critical mass* is necessary for sufficient social interactions. The number of co-players in a shared world must feel big enough or a player will likely quickly lose interest.

Paasovaara [2016] argues that even though a location-based game traditionally relies on a map interface a critical mass of users could keep it running by player encounters alone providing surprises, intimacy and highly emergent gameplay. However, in case of Nintendo StreetPass the lack of a map interface leaves players guessing where one could encounter fellow players. [Paasovaara *et al.* 2016] Although proximity-based gameplay is more susceptible to lack of a critical mass it can offer the players surprises. The long range of wi-fi connection and the automatic nature of the exchanges mean that the StreetPass suffered less from low user density than a system requiring explicit input from users.

4.7. Online communities

Online communities are a central part of video game culture today. Lively communities can keep an online game running for years, if not decades. Players tend to get emotionally attached to their peers and communities which can have a dramatic effect on their identities as gamers. After all, other players make both interesting adversaries and good friends.

Rheingold [2000] describes virtual communities as "social aggregations that emerge from the Net when enough people carry on public discussions long enough, with sufficient human feeling to form webs of personal relationships in cyberspace".

Malinen [2016] describes online communities in following characteristics:

1. An online community consist of people that interact with each other to satisfy the social needs of their own or of the community's. Shared social interest creates a purpose that gives the community a reason to exist.
2. It has assumptions, rituals and rules that guide the interactions between its members.
3. It uses computer systems to support social interaction and create a sense of social co-existence.

Online communities are a source of support for members that share an attachment to the group. [Malinen, 2016] The psychological component of communities has been emphasized by defining virtual communities as “groups of people who interact primarily through computer-mediated communication and who identify with and have developed feelings of belonging and attachment to each other”.

The term online community is flexible and applies to many different configurations from closely knit groups to loosely defined communities of millions of people. In other words, virtual communities include a varying number of people that share an interest or goal and use an online environment to repeatedly interact with each other. [Malinen, 2016]

Pearce [2009] identifies group play as one of the central markers of identify for play communities. Combinations of different behaviour patterns and the skills and values of players in a particular virtual world create emergent behaviour for its communities. The mastery of certain play styles obtained in one play ecosystem can sometimes be translated into new play patterns and forms of game culture.

Pearce [2009] continues to challenge the asserted imperviousness of the magic circle that separates the time and space of play from “reality”. Instead, she claims that players migrate between magic circles of different games taking their play patterns with them. These migrated play patterns have the capacity to mutate and be influenced by one another and finally bring the altered versions back into the original play context. This creates another form of emergence as play communities adapt to new games forcing the play ecosystem to adapt to them. She also introduces the concept of a ludisphere which is formed by interconnected online virtual play spaces

that use various forms of communication to enable real life to merge with the virtual. Some styles of play can even be derived into the real world from virtual spaces.

Sweetser [2008] states that political structures including parties and even governments that form around common desires are instances of emergent social behaviour in games.

The phrase "nature will find a way" can be applied to online communities: due to the abundance of online messaging services players tend to find ways to gather and communicate if no such way is provided by the game developer. This is a form of social emergence in games. The developer cannot possibly account for every third-party service that emerges in the player community. Instead, the developer might come up with an engaging concept and let the community invent the best way for it to serve their needs. Providing rudimentary tools to manage and form communities inside the game lowers the threshold of interaction between players as they are able to form subgroups inside the community that suit their needs. However, it should be noted that streamlining player interactions too much can have a detrimental effect on social emergence of a game. Auction houses found in many modern MMOs are an example of this phenomenon: the players seldom meet in the game to trade goods or services because the auction house is faster and more convenient to use.

4.8. Virtual economies

Virtual economies are featured in most games one way or another. Arguably the most diverse selection of virtual economies is found in MMOs, most of which have designated marketplaces with systems planned by the developers. However, Sweetser [2008] has discovered that in some games markets and venues to trade are formed by the players in an emergent fashion without explicit initiative by the developers. Marketplaces can form naturally in unremarkable places that structurally have no clear characteristics to support them. Instead, in games like *Everquest* and *Star wars galaxies*, marketplaces form to these locations because they are safe and in convenient places to do missions that support trade and cooperation between players. At first, this fact might be secret information inside a smaller group but as it is eventually discovered by more players it becomes part of the virtual landscape and a market hub for the whole game world.

Sweetser [2008] has observed that virtual economies change dynamically with supply and demand dictated by their inhabitants. Decision of trade goods prices move from developers to players. This makes these economies potentially highly emergent systems. They also share many characteristics with real-world economies such as banking and stock markets but also many problems such as inflation and gambling.

Sweetser [2008] lists persistence, scarcity, specialization and ownership as some of the properties that are shared between virtual and real-world economies. Persistent player ownership in virtual economies is reflected in the state of the world. In a way, economies shape the world as it is a major component in player relations. The limited quantity of goods and services within a virtual world leads to scarcity as the players' time and money is limited. Players can usually specialize to certain roles which results in complex trade relationships and division of labour. If the game economy is persistent the items in it can have unprecedented value.

Similar to real-world economies the price of items in a persistent online game depends on the amount of money and goods circulating in the market. When the economy is balanced having money means having a set level of wealth as money has certain value. However, it is not uncommon for money to suddenly lose its value. At its extreme, it becomes hyperinflation which can have a dramatic effect on the economy and general health of a virtual world. Conversely, in case of an economic depression the value of money increases widening the gap between the rich and poor. [Sweetser, 2008]

However, Sweetser [2008] points out that although some realism is required the goal of economies in games is to add fun gameplay experiences for the players. In fact, game economies should not be perfectly stable as it can be boring for the players. Instead, they should be slightly unstable to encourage players for more efforts.

Markets in virtual worlds differ from the real-world as they usually have radically more buyers than sellers and the transactions between participants are often private. Virtual markets are often emergent systems that are formed by these individual player transactions.

4.9. Player-generated content

As stated in chapter *Emergent narrative*, virtual worlds enable varying amount of player participation. Players can participate in co-creating the narrative through the

player-as-creator narrative model. They can create social relationships that form the community. In some cases, they are even allowed to design new mechanics for the game. Virtual world can be divided roughly into two categories: fixed-synthetic and co-created. Fixed-synthetic worlds are less influenced by players while co-created worlds depend on content created by players. Emergence happens in all virtual worlds, but some world types promote it more than others. Fixed-synthetic worlds are considered traditional with fixed narratives and structure while co-created worlds are social systems where the ways in which players achieve their goals might not be as predictable. [Pearce, 2009]

The capability of its players to change the world physically varies between virtual world types. The strategy of co-created worlds might depend on players to create most of its consumable content for one another which enables emergence well as the number of players as game designers can be so high that the official team of developers does not have the resources to actively check everything that the players unleash into the world. As emergence in all virtual worlds is inevitable regardless of their type the players will likely come to feel that they have certain rights to the world as they have participated in its creation. Sense of player ownership is strongest in co-created worlds. [Pearce, 2009]

Arguably, this challenges the notion that play is inherently unproductive. In fact, active players can be a major driving force for emerging cultures in co-created worlds. Some players can get so immersed into a game world that they migrate its systems and structures to another game potentially in which they are the developer. [Pearce, 2009]

Emergent social behaviour can produce fan creations that in time can become original content. Regardless of how they present themselves the players seem to have a need for self-determination. Whether they have created a piece of clothing or a virtual continent they want others to know about it. [Pearce, 2009]

Ideally in an emergent system adding more content is as easy as dropping in objects, setting conditions and goals for players and letting the game scenario run its course. Conversely, modifying a fixed game world can be very time-consuming and as such practically impossible. [Sweetser, 2008]

The fact that emergent systems make it easy for players to create additional content can provide another benefit: players that regularly create content can become *modders* that extend the official game content. Modders can create parts of game that later detach from the parent game to become products in their own right. These products can even become a livelihood for their creators. Some developers such as Valve support modding of their Source engine actively, hoping to get fresh ideas from hobbyists for their next commercial product. [Sweetser, 2008]

Popular modder communities can have hundreds of people working on a common project for years without being kept down by deadlines and budget given by investor. This often results in creative and bold ideas that most game companies deem too risky or impractical. Counter strike, a mod of Half-life is probably the most popular shooter game of all time, surpassing even its parent. There have been multiple standalone versions released since the first Counter strike mod and some of them have been some of the most contested e-sports games. Some developers provide tools and support for modders to modify their products. This can add years to the life of a game. [Sweetser, 2008]

Although modding a game without consent from its developer can technically be a violation of rights many developers choose to allow it. In any case, modding is often beneficial to gaming culture. Modding gets developers valuable publicity for their games and fresh ideas for further development. It creates new content that is potentially both free and of high quality. [Sweetser, 2008]

Social emergence in virtual worlds can feed on itself as worthy player creations are often distributed by peers. Sweetser [2008] points out that player communities are often not only efficient in testing the viability of user-created content but also spreading good content throughout the game community.

According to Sweetser [2008], often the biggest threshold for developers to enable user-generated content is in having the appropriate game design and creating the tools to support it. Giving the players more responsibility in shaping the game limits the developers' ability to dictate things but in turn the players might invest mentally more in the game and develop a closer bond to it. This can have a dramatic effect on

the longevity of the game as players often feel having certain rights to the game worlds they play in, especially if they have participated in its creation.

Sweetser [2008] argued that bridging real and virtual economies is one of the most interesting and controversial forms of social emergence in online games. A year later Rosenberg [2009] reported that China had banned the use of virtual currency to purchase real goods. At the time of writing there are only a few Western online games that allow players to exchange their virtual currency for real money, most prominently *Entropia universe*, *Second life* and *Team fortress 2*. So far, the practice of earning a living selling virtual goods has not been widespread. In 2007, only 157 Second life players made in excess of 5000\$ a month [Berger, 2019].

4.10. Politics

Social bargaining, or politics, is a major part of social playing. As it is closely connected to human sociability, political relations emerge in almost all games regardless of their theme. Politics can even be turned into a game mechanic that games can use as their main form of attraction. *Metagaming* is a phenomenon in which virtual occurrences have real world consequences or vice versa. Stenros *et al.* [2009] lists the following as examples of metagaming: lying low to appear less threatening, begging others to not hurt you or even offering benefits or threats that reach out of the game. Metagaming can produce novel gameplay and even influence gaming culture.

Unfortunately, playing with other people is not without potential negative consequences. There can be bullying and various kinds of abuse. In games, as in social media, the privacy of the users can get compromised. Another example of the grim side of social play are gangs and mafia that have emerged in some multiplayer online games to torment players, especially those that are just starting. In its extreme this can become extortion and organized crime. [Sweetser, 2008]

4.11. Uncertainty and Quality Assurance

According to Sweetser [2008] emergent systems tend to behave in ways that their developers have not anticipated, in both good and bad. This uncertainty can either make gameplay more interesting or become a headache to the design team. The more complex the emergent system, the more possibilities there are for unexpected

interactions between players and rules. Thorough testing is vital for making sure that the interactions are generally acceptable, but designers have to accept that not every interaction in an emergent system can be foreseen by the design team before the game is released to public. This can be turned into an advantage by marketing the game as emergent system, but it requires that everyone agree that unexpected things can happen. Again, this can be an advantage as there is a surplus of players eager to hunt bugs and loopholes. Giving players free reign to experiment with the game can create novel play experiences for them and in turn help make the game more enjoyable for others.

4.12. Real-life factors create inequality in games

In some cases, the players' social status in real life can affect the social and economic dynamics inside a game. One of the most apparent consequence of this is the ability to use real money to gain an advantage in the game, also known as *pay-to-win*. Apart from money, there are other ways to gain unfair advantage. People with programming skills have the ability to create exploits to create an advantage for themselves in form of increased efficiency or getting knowledge that would be hard to get by usual means. [Sweetser, 2008]

A group of people that has migrated into gaming from the real world or other games can create an advantage for its members by organizing means to bypass tedious gathering of resources, also known as grinding normally required from new players. Having a low status with few commitments in real life, such as jobs or family, can be a big benefit for players as it allows them to spend their time building up resources in the game. Consequently, this can create unequal starting opportunities for players even though the designers have tried to avoid it. Inadvertently giving some players advantage is a major challenge that most game designers faces. Failing to avoid it can spell failure for the game as players can feel strongly against inherent inequality in the games they take part in. [Sweetser, 2008]

This chapter has used academic research to illustrate ways in which sociability can emerge in video games. The next chapter studies the practical side of research on the subject: how practical application of emergence is considered in academics.

5. Application: designing for emergent sociability in video games

Human sociability is complicated and integrating its essence into video game design is not a simple task. Fortunately, certain game features, unintended or not, can promote emergence. In this chapter I present how affordances for sociability are created, i.e. what kind of design decisions encourage emergent sociability.

5.1. Preconditions for emergence in virtual worlds

Certain requirements must be met if a game developer aims to enable sociability among players in multiplayer game worlds. Succeeding in satisfying the basic requirements increases retention i.e. it is more likely that players remain committed to the game longer. Vogiazou *et al.* [2005] lists the following as some of the basic requirements for sociable gameplay:

- a) A context. This can be a goal that players share, or the game might be more open-ended without apparent end conditions. It is important that the game makes its context clear or it risks confusing its players.
- a) The ability to act within the social context. This is usually a way to interact with others within limitations of the game mechanics. The context can be virtually anything as long as it is consistent and makes sense.
- b) Consistent feedback. The player needs to be made aware of things that are important to the situation at hand. Is the player alone or in company? What is the avatar doing and how are they doing it? The game should make the presence of other players obvious and provide a way to connect with them. Both local and global status of the game should be apparent unless ambiguity is intentional. However, the final outcome should not be obvious too early. It is generally desirable to allow the power relationships in the game to shift back and forth. [Vogiazou *et al.* 2005]

Pearce [2009] lists properties that enables emergence in games:

- a) The game world should be *discrete*, meaning that the system should have its own rules and ways to give feedback while allowing interaction outside of themselves to other games and the real world.

- b) The game should be *open-ended*, meaning that it should not have a definite end state or a conclusion.
- c) It should remain *persistent*, retaining everything that has happened in it and letting itself progress over time.
- d) Players should be allowed to play the game at their own pace. Allowing both *synchronous and asynchronous* interaction between the players and the game world supports emergent behaviours. Online multiplayer games often play out over long periods of time.
- e) Designing the game *long-term* allows more time for the game to evolve
- f) Social relationships tend to form at an *accelerated* pace in online multiplayer games which increases the rate of emergence of player communities in and outside the game.
- g) *Networking* players creates more possibilities for emergent gameplay.
- h) *Diversity* creates more emergent behaviour than homogeneity. According to Surowiecki [2004] collective intelligence emerges at a higher rate in diverse groups compared to groups with similar skills.

Feedback is important in all things but for online interaction it is vital. To get a sensation of being socially connected a player needs to know if they are received i.e. if others are paying attention to them or not. [Vogiazou *et al.* 2005]

5.2. Coaxing players to competition instead of conflict

Encouraging competition between players while offering recognition for their success can create varied and emergent gameplay as it coaxes players to push the limits of the game to discover new ways of utilizing its mechanics. It also helps keep players engaged and interested in the game. Many games, even single-player games, benefit from multiplayer support that enables social interaction whether it is cooperation or competition. [Sweetser, 2008]

Waddell *et al* [2014] states that competition and cooperation are two different goals with different outcomes. Competition aims for individual advantage over another while cooperation aims for mutual effort towards a collective goal that is shared between all participants. There are techniques in game design, one of which is called *priming* that can be used to push players towards either competition or cooperation.

The players with certain terms or concepts that can trigger the players to adopt certain attitudes towards others. This can have a prolonged effect on how players see themselves as part of a team and can encourage helpful behaviour later.

Waddell *et al* [2014] continues that through priming, players who are told to think of competitive situations before play exhibit increased aggressiveness during play while players that are primed for cooperative thoughts adopt a more prosocial mindset. This can have an effect on how players react to the outcome of the game as the ones primed for competition show more post-game aggression and general negative feelings whereas those in a cooperative mindset feel less anxious and react more temperately to a failure. The differences between these two mindsets are evident even after the game has ended.

Waddell *et al*. [2014] suggests that game design can have a profound effect on the behaviour of players which can reach even to the real world, especially if the players are engaged in the game actively. This is explained by the different interactions that cooperation and competition create between the participants. Simply put, cooperative interactions promote mutual affection and collaboration which cause positive emotions in the participants while competition is more probable to cause feelings of discord and anxiety.

It is worth noting that verbally instructing players may not suffice to direct them towards competition or cooperation and using certain game goal structures can be more efficient. Player behaviour is often emergent and unpredictable and can be nudged at best towards a certain outcome. This is to say that players most likely will not follow orders given by a game's developers. Rather, the designer can only lead the players towards certain behaviour through design choices and hope it goes well. If appropriate game design does not suffice the developers should enforce safe play which can include having to consult legislation.

5.3. Limiting technology to encourage emergent sociability

Technology can enable novel game design, but it can also hold down sociability. Giving players the ability to interact socially in a certain way can either promote or inhibit sociability. Technology can influence the social atmosphere by setting the ways in which the players interact with other players. Technology is central in every game as it

offers the players the tools for interaction. Interestingly, limiting the tools that players have for reaching the goals given by the game can make players more dependent on each other possibly encouraging sociability. It is not uncommon for player communities to create tools to replace missing features in the game. Sometimes the developers even provide them with necessary data for making such tools. This can be beneficial for all parties as the tools usually improve the game which saves time for the developers and in turn can increase player retention. [Paasovaara *et al.* 2016]

The game can encourage interaction by providing excuses to meeting with strangers. The system can provide topics of common interests and make them either mandatory or optional to discuss. Rather than making the discussion literal the game can create moments that create a natural convergence between players which is not necessarily verbal. [Paasovaara *et al.* 2016]

Successful interaction between players can be a sufficient reward as it can be highly motivating for all parties. The system can create additional motivation for interaction by providing tangible rewards that can even have monetary value. [Paasovaara *et al.* 2016]

5.4. Making player-versus-player safe

Differentiating between sociability of playing and social play inside the game is important for both designers and researchers. [Stenros *et al.* 2009] points out that designers should aim to understand all the relevant aspects of social interaction in games to avoid simplifications that lead to false conclusions. A way to avoid the pitfall of conflicting benefits is to implement a non-zero-sum design where a person's gain is not another's loss.

Most game developers consider the use of real money to gain advantage in-game. Some try to minimize the effects of real life while others simply conceal them as best they can. Progression in a game can be regulated so that players are unable to buy higher status with real world or virtual currency or benefit from other players' help to gain power. However, no matter the real-life status of a player, time is same for everyone. Sweetser [2008] points out that tying progression in a game into time can create a more equal foundation for a game as activity past certain point does not necessarily bring additional progress.

5.5. Managing online communities

Healthy player communities are important for all games but a necessity for multiplayer games. Making a community remain active requires not only attracting new members but also retaining existing members for extended time.

Malinen [2016] lists five major challenges that play a part in sustaining online communities:

1. Starting a new community
2. Attracting new members
3. Keeping members committed
4. Encouraging member contributions
5. Handling conflict between members

It is important to ensure uninterrupted communication by not redesigning the methods of communication for members. Surprisingly technology is often not the primary reason why members leave a virtual community. Instead, Malinen [2016] argues that lack of interesting people and content to become committed has been central in termination of communities. If feedback and response from others is lacking a previously active member can eventually leave the community.

Bad usability is seldom the reason for deserting virtual communities. In short, even though they might complain about technical aspects, people will use a service if it has good content. The positive social experiences outweigh the negative. [Malinen, 2016]

The tendency to follow what is happening to one's network of friends has been a major factor in the success of Facebook among other social media that leverage this fact by notifying members with every event, regardless how trivial they might be. This can create a feeling of needing to be constantly updated of everything, a phenomenon also called *perpetual contact*. Mobile phones can amplify this as they enable constant access to updates of social media. This can become a norm as users expect to become notified of every change in their network. [Malinen, 2016]

According to Malinen [2016] the most important part is creating trust, which can be attained by creating an environment in which members can feel safe to participate and in which they can get support and trust others.

Malinen [2016] concludes that the most important role of a virtual community is supporting the users in processing and circulating of their digital content. If members find certain aspect of an online community lacking, they will likely leave. At a minimum, an online community should provide methods of communicating between members, to which feedback is key. Members should be informed about others' presence and activity which should also be logged. Getting notified of the presence of users that are concurrently using the service can reinforce the feeling of community while preventing the feeling of stagnation. [Malinen, 2016]

Even users that mainly consume the content of others should be made visible as they play an important role as audience for the more productive members. Reinforcing trust among community members is desirable as it can make discussion more personal improving the experience which potentially reinforces commitment. In general, to create trust a community should make the history of public activity of each member reviewable by all. Allowing members to easily evaluate the trustworthiness of others can speed up the building of trust. [Malinen, 2016]

5.6. Inflation in virtual economies

Inflation is a familiar phenomenon in most markets and virtual markets are no exception. In fact, inflation is an issue that most games need to address. Sweetser [2008] points out that inflation is not necessarily a bad thing and only becomes a problem when it gets so high that the game's currency loses most of its value. Unattended this can collapse the whole economy or migration to an alternative currency, driven by the developers or alternatively by the players. This can be turned into an advantage as the economic collapse can be designed to be part of the gameplay. Placing valuable commodities to various parts of the game world can support migration to alternative currencies.

According to Sweetser [2008], another method of avoiding hyperinflation is to fix prices of goods sold by non-player characters to the amount of cash in the economy so that the prices adjust to the total wealth of players. Games such as World of Warcraft use a tax system that applies to every transaction made by players. Economies sometimes become unstable leading to erratic prices that are determined by demand rather than available cash. If money is too easily available it is no longer a bottleneck

for getting new items. Instead, a new bottleneck is the willingness of players to use their time to generate more money for circulation. In order to keep a virtual economy stable over time, the developers must provide a balance between currency generation and money sinks for the players.

6. Conclusion

This thesis has reviewed the subject from both theoretical and practical perspectives. This chapter aims to make a synthesis of preceding chapters and present how a designer should change their way of thinking when switching from fixed to emergent design.

Based on the preceding theoretical and practical research I present general guidelines for designing emergent sociability. There are three parts to designing emergent sociability. In order to increase probability for emergent sociability the game should have the right ratio of implementing the following:

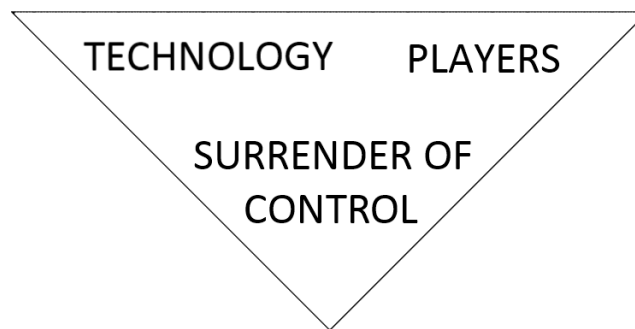


Figure 2 The parts of implementing emergent design

6.1. Use of technology

Technology enables sociability by allowing communication but making the game too streamlined can set players apart instead of bringing them together. An example of such are the centralised marketplaces in MMOs that remove the need for players to meet in person. An emergent virtual world has different requirements for technology than a fixed world. Both the design and technology foundation should be resilient to unexpected occurrences. The players should be provided with services to manage the content they have created. There should to be constant communication between developer and players so that player-made tools can be integrated in the game and properly supported.

6.2. The right kind of players

A major factor in emergent design are the players themselves. Many things can make a player community successful. Bigger playerbase increases the probability of social emergence. Having more players leads to more encounters between fellow players and in general increases player variety. Different ways of thinking potentially creates more interesting ideas, especially when players can easily discuss them. When players feel safe to encounter strangers they do not necessarily stay within one closed group of players for long. This *social mingling* can be a catalyst for emergence. Therefore, the playerbase should not only have a critical number of members but also the atmosphere should be welcoming to different ideas. The social atmosphere in a virtual world affects player creativity and plays a major role in the eventual outcome of the world. *Priming* is a powerful way to direct player and influence their behaviour in which game design plays a big role. For instance, whether players adopt cooperation or competition can depend on the game having either zero-sum or non-zero-sum design. However, cooperation and competition are two sides of the same coin. In some *free-for-all* games players compete against each other alone while in other games players cooperate in teams to compete against other teams. In any case, it is important in any multiplayer game that the players sense the presence of others. While sensing other players is important it does not mean that everyone likes to cooperate with others. In fact, some prefer to play solo, answering only to themselves. However, even these lone wolves need an audience so in order to keep everyone interested the developer needs to design the play experience in a way that it presents challenges to both group and solo players. Ways to achieve this include scaling the content i.e. adjusting difficulty based on participating number of players or creating separate sequences of content called *instances* that only selected participants can join.

6.3. Letting go of control

Emergent design requires that the developers hand some control over their game to its players. The role of the developer changes from creating official content to supporting players to realize their creativity. Instead of writing scripted content the developers should create avenues for the players to share their creations. Emergent design shifts the responsibility for creating narrative from developer to player. Scripted narratives can be hard to achieve in emergent design. Instead, the players should be

the ones to create narratives for their own use. Again, the developer should only create the environment in which the players should be relatively free to roam and build. This means that the players can ultimately play a larger role in running the game than the developers even though the developers were the ones that created the foundation.

In principle, emergence is easy to adopt as social play naturally leads to it. Therefore, the developer needs only create a foundation and support the players as they build on it. Being aware of the explicit as well as implicit player behaviour becomes important in order to be able to quickly help the players or intervene in case of a problem.

The technical tools for game development have improved in leaps and bounds over the last few years. Unfortunately, game development is being held back by outdated design paradigms. The next breakthrough in game development could be the wide adoption of emergent design. It might in fact be *a game changer*.

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