



Frustration and its effect on immersion in games

A developer viewpoint on the good and bad aspects of
frustration

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Abstract

Frustration has been present throughout gaming history and is often considered to be negative. However, there's been a lack of significant studies focusing on frustration and how it affects the game experience. This lead us to a qualitative study, based on nine semi-structured interviews with game developers, focusing on the effect of frustration in games. Results indicate that frustration encompass both positive and negative aspects that differ from each other in how they appear in game. Positive frustration is desirable for developers due to it improving the immersion and motivation in games and comes from players learning through frustration whereas negative frustration is undesirable and affects the game experience negatively and comes from aspects, such as technical issues, outside of the players influence.

Keywords: Frustration, immersion, game experience, motivation

1. Introduction

Frustration is often considered to have a negative effect in games but as there's often some part of a game that is frustrating and as the focus on game experience grows with the technical development and what can be done in games it's important to keep players coming back to that experience. This is why it's also important to understand frustration in games and keep it on a good level because players that get frustrated have a higher chance of quitting the game (Canossa, Drachen & Sørensen, 2011). However games that are considered to be challenging can get the players motivated to continue because of the sense of satisfaction when he or she overcomes a challenging task (Sweetser & Wyeth, 2005; Jennett, Cox, Cairns, Dhoparee, Epps, Tijds & Walton, 2008), games that are considered difficult can also facilitate a good gaming experience if it's done right.

The majority of research regarding games concerns the topics immersion, presence and flow. Immersion is an important factor for game enjoyment (Brown & Cairns, 2004; Nacke & Lindley, 2008; Jennett et al., 2008; Jennett, Cox & Cairns, 2009; Hoi & Cho, 2012) and is an outcome of a good game experience (Jennett et al., 2008; Jennett et al., 2009). When immersion is achieved, the player get immersed in a game and he or she focus their attention into the game world (Takatalo, Häkkinen, Kaistinen, Komulainen, Särkelä & Nyman, 2006; Jennett et al., 2008) resulting in lack of awareness of time (Jennett et al., 2008; Qin, Rau & Salvendy, 2010) as well as lack of awareness of the real world (Sweetser & Wyeth, 2005; Jennett et al., 2008; Jennett et al., 2009; Qin et al., 2010; Hoi & Cho, 2012). Even though the terms immersion and presence sometimes are used interchangeably (Hoi & Cho, 2012), presence is more connected to the field of Virtual Reality (VR) as it concerns the sensation of be in a different location than the person involved actually are (Brown & Cairns, 2004; Bayliss, 2007; Weibel, Wissmath, Habegger, Steiner, & Groner, 2008). Another cornerstone revolving around immersion is the flow method (Csikszentmihalyi, 1990) which concerns the

concept of the optimal experience in different activities. That the challenge level of the activity matches the level of ability making it an enjoyable experience.

However we could see a lack of research regarding the impact of frustration in games, which motivates our research and framing of the question: How do game developers view frustration and its effect on immersion and motivation in games?

2. Related research

2.1 Immersion

Immersion is considered to be a critical factor for game enjoyment (Brown & Cairns, 2004; Nacke & Lindley, 2008; Jennett et al., 2008; Jennett et al., 2009; Hoi & Cho, 2012) and is an outcome of a good game experience (Jennett et al., 2008; Jennett et al., 2009). Game characteristics can either make or break the experience of immersion (Brown & Cairns, 2004) and whilst it can evoke an enjoyable gameplay experience for some gamers immersion can also evoke an unattractive gameplay experience for others (Örtqvist & Liljedahl, 2010). Gameplay with strong immersion does not directly result in a *good* game experience but it's more likely to at least result in a *powerful* game experience (Ermi & Mäyrä, 2005). Even though they are connected, gameplay and immersion are two separate constructs in the gaming experience (Örtqvist & Liljedahl, 2010).

There have been three different levels identified concerning player immersion: engagement, engrossment, and total immersion (Brown & Cairns, 2004; Ermi & Mäyrä, 2005; Nacke & Lindley, 2008; Jennett et al., 2008). The first level of immersion is engagement which is the lowest level of involvement with a game that a player has to go through before moving to the next level. This level involves the players' preference; that the game is something that the player actually wants to play, that the game controls and feedback corresponds in an appropriate manner. As well as investment which refer to the time that the player invest in the game, the more immersive the game is the amount of time, effort and attention that is required from the player increases. When the player becomes more involved in the game he or she become engrossed, which leads to the player to be emotionally affected by the game and its features. At this level of immersion due to emotional investment, the player becomes less self aware and less aware of their surrounding. The last level is total immersion where the players are only impacted by the game, cut of from reality. This sensation is also known as presence (Brown & Cairns, 2004; Nacke & Lindley, 2008).

Similar to these levels of immersion Davidson (2003) identifies three levels of involvement; it begins with *initial involvement* where the players have the first experience of the game. When players become comfortable with the gameplay they move to the second level, *immersion*. The last level is *investment*, when the players have mastered the gameplay and are comfortable within the game world.

When a player is immersed in a game they focus their attention into the game-world (Takatalo et al., 2006; Jennett et al., 2008) which often leads to two features of immersion; lack of awareness of time (Jennett et al., 2008; Qin et al., 2010) and loss of awareness of the real world (Sweetser & Wyeth, 2005; Jennett et al., 2008; Jennett et al., 2009; Qin et al., 2010; Hoi & Cho, 2012). Immersed players may be less aware of their environment but they

can still be aware of some aspects of it, filtering out irrelevant distractions (Jennett et al., 2009), not excluding everything but still being immersed which differs from flow (Jennett et al., 2008). When a player encounters a task with clear goals and feedback that has a proper difficulty level, the player feel control over the task that leads to a feeling of total immersion (Sweetser & Wyeth, 2005). When the player is immersed and has to change their attention between two different interaction spaces the immersion is broken and the player has difficulty in switching focus (Jennett et al., 2008). The immersion can also be broken if the interface is in more focus than the task at hand (Gilleade & Dix, 2004), which makes Heidegger's (1996) idea that the controls or tools should be invisible, or "ready to hand", important.

Even though a task in a game, such as a boss fight, is too hard for a player who loses that fight it can still be an immersive experience, however, it would not qualify as flow. Some aspects of immersion also overlap with the concept of Gameflow (Jennett et al., 2008). Games with a fast pace can become more engaging for the player because the challenge of keeping up with the game can make the player get more emotionally involved, afraid of failure the player would focus more which would lead to a more immersive experience (Jennett et al., 2008). If the game is too slow the player will have trouble getting immersed because of lack of challenge and not enough to concentrate on (Sweetser & Wyeth, 2005). Overcoming a difficult task or obstacle results in a sensation of joy or satisfaction because they have accomplished something challenging (Sweetser & Wyeth, 2005; Jennett et al., 2008), this can also be referred to as challenge-based immersion (Ermi & Mäyrä, 2005). Games that cause an emotional response are considered as immersive (Sweetser & Johnson, 2004), both positive and negative emotions plays a big part of immersion, which differs from flow (Jennett et al., 2008) whereas the players needs to be in a serene state of mind (Csikszentmihalyi, 1990). Frustration is sometimes used to evoke an emotional response and heighten the game experience, but it's important that the designer don't overdo it, as it can have a negative effect on the game experience (Gilleade & Dix, 2004).

The avatar in games play an important part for immersion, it's important that the player relates to the avatar (McMahan, 2003) and to immerse themselves into the game world where the players become the game character (McMahan, 2003; Grimshaw, Lindley & Nacke, 2008). To get fully immersed the players need to care about the character and the situation (McMahan, 2003; Takatalo et al., 2008) and feel that their actions have an impact on the environment and gameplay (McMahan, 2003; Grimshaw et al., 2008). Avatars that can be customized to look more like the players increase the sense of immersion because it's easier for the players to relate to a character that are similar to them (Hoi & Cho, 2012).

Interacting with the game world should be intuitive (Sweetser & Johnson, 2004) and it should be clear which artefacts that the players can interact with, which door can or can not be opened (Bayliss, 2007). Help shouldn't be given through dialogues in the game because that take the players out of the game world and breaks immersion (Sweetser & Wyeth, 2005). Consistency is important to keep the players immersed in the game world (McMahan, 2003; Sweetser & Johnson, 2004; Bayliss, 2007), if the game world fails to be consistent the players will have a hard time learning the rules of the game (Takatalo et al., 2006). However, when

immersion is achieved players are less aware of incoherent or broken elements in the game (Cheng & Cairns, 2005; Qin, Rau & Salvendy, 2009).

Changing the pace of a game is a way for game designers to keep the players engaged as well as immersed, changing between intense and calm instances of gameplay at a medium rate leads to a better player immersion (Qin et al., 2010). The use of narrative in a game is also important for keeping the player immersed by drawing them into the game (Gerling et al., 2013), striving to replace the real world with the game world for the player (Whitson, Eaket, Greenspan, Tran & King, 2008). Even though the use of high-fidelity graphics in game improve immersion and the overall impression of a game (Gerling, Birk, Regan & Doucette, 2013), there are games that have a realistic world and atmospheric sound and still doesn't mediate an immersive experience for the player (Brown & Cairns, 2004). To experience immersion it is important that there must be some sense of challenge and curiosity to engage the player (Qin et al., 2009), and as challenge based immersion concerns the balance between the player's skill and the challenge in the game there are some similarities with flow (Nacke & Lindley, 2008). Due to the fact that immersion also concern the sensation of losing awareness about ones surrounding which flow describes as a level of complete involvement, immersion could be considered to be a sine qua non¹ to flow (Nacke & Lindley, 2008).

2.2 Flow

The flow experience is considered to be the optimal experience of an activity and consists of eight different components; clear goals, high degree of concentration, a loss of feeling self-consciousness, distorted sense of time, direct and immediate feedback, balance between ability level and challenge, a sense of personal control, intrinsically rewarding (Csikszentmihalyi, 1990). The experience of flow is important due to it's focus on goal minded activities (Sweetser & Wyeth, 2005) and that people are willing to commit to them even though they might be dangerous or difficult because it's so satisfying (Csikszentmihalyi, 1990). The reason for this is that the flow experience in itself is an end goal, the flow experience must be intrinsically rewarding rather than the motivation being some type of external reward that is given after the completion of the activity (Csikszentmihalyi, 1990; Sweetser & Wyeth, 2005). These types of experience, intrinsically rewarding ones, are something people greatly enjoy and due to that are often repeated (Takatalo, Häkkinen, Kaistinen & Nyman, 2010). Another important aspect of flow that is related to the sense of immersion discussed earlier is the idea of being so involved in something that everything around you stops being important at that moment in time and you lose the sense of time while partaking in this experience (Csikszentmihalyi, 1990; Qin et al., 2010). The flow experience is the optimal experience due to it's balance between the eight components.

Flow highlights the challenge aspect of activities and showcases that people actually enjoy challenges (Nacke & Lindley, 2008). It's easy to believe that a challenging activity might be the cause of some frustration from the participant and would thus create negative feelings towards that activity, it's actually the complete opposite. Positive emotions are actually associated with more challenging activities (Nacke & Lindley, 2008). Of course it's important to be wary of the level of challenge, while flow offers a little leeway in the sense of it becoming

¹ Precondition

too hard or too easy the flow experience is about the optimal experience and thus striking a balance between challenge and participant skill level (Csikszentmihalyi, 1990).

Not so surprising is the notion of gaming being more fun when flow is involved in the activity, achieving the flow experience while gaming will contribute to players enjoyment of the game experience. (Weibel & Wissmath, 2011). Similarly when playing against human-controlled opponents rather than computer controlled opponents there's a difference in the level of flow, presence and enjoyment that players can feel (Weibel et al., 2008).

Flow and presence are two concepts that might look similar, however, presence focuses more on immersion in virtual environments whereas flow focuses on a certain activity that we're participating in and our involvement and immersion level of that (Weibel et al., 2008). They are two very clearly different concepts and thus serve different purposes or value in our experiences (Weibel & Wissmath, 2011).

2.2.1 Gameflow

The flow concept has expanded and been applied to different types of areas. Gameflow is another one of those types of situations where the flow model has been used as a pillar to explore another area. Gameflow is a model developed to identify enjoyment in games and was developed through the previous work on flow as well as game research (Sweetser & Wyeth, 2005). This model changes the focus of flow from general challenging activities to focus more on the very specific aspects of games and consists, like flow, of eight core elements, concentration, challenge, skills, control, clear goals, feedback, immersion and social interaction (Sweetser & Wyeth, 2005).

2.3 Presence

Presence is it's own concept, even though there are some who use the term interchangeably with immersion (Hoi & Cho, 2012), and revolves around the idea that the person involved believes that he or she is in a different location than their actual physical location where the experience is taking place (Brown & Cairns, 2004; Bayliss, 2007; Weibel et al., 2008). As mentioned previously presence is also defined as total immersion in terms in relation to the three levels of involvement and is considered to be the height of involvement in a game (Brown & Cairns, 2004). Playing the game is important when discussing presence, due to the difference of playing compared to observing in terms of interactivity it allows for a higher sense of presence to be experienced by the player (Bracken & Skalski, 2006).

Even though presence isn't a common term amongst most games outside of the term total immersion (Brown & Cairns, 2004) it is an experience that many strive for. However, it's extremely hard to achieve and presence tends to have a higher focus in the field of VR due to the belief that the VR technology has the ability to create a stronger sense of presence compared to regular video games (Steuer, 1992; Lombard & Ditton, 1997; Weibel et al., 2008)

2.4 Frustration

One concept that many gamers have experienced when playing games is the feeling of frustration, not that it is a concept solely related to gaming but we're focusing on frustration from a game playing experience standpoint, when discussing frustration it's important to

have a clear understanding of what this term actually means. Frustration is the feeling that occurs when a person is stopped in his or hers progress during the goal-attainment process (Dollard, Miller, Doob, L. Mowrer & Sears, 1939; Britt & Janus, 1940; Waterhouse & Child, 1953; Brams, 1997; Ceaparu, Lazar, Bessiere, Robinson & Shneiderman, 2004; Park, MacDonald, & Khoo, 2012). It can also be the idea that a player can't fulfill his desire in terms of expected outcome, which also involves an unsatisfying situation in which they are not in control of the current process of progressing further (Britt & Janus, 1940; Waterhouse & Child, 1953, Brams, 1997).

While the term frustration is filled with negative connotation for most people, frustration is not entirely a bad thing when talking about the game experience (Canossa et al., 2011). In fact, there's a clear distinction made between aspects that are either good frustration or bad frustration that will heavily impact the experience of playing through a certain game (Freeman, 2003). Playing games might not always be fun, but that doesn't mean that the experience may be considered unpleasant when that happens, it all depends on the context. Frustration and stress are two elements that can be pleasurable (Ermi & Mäyrä, 2005). Frustration serves a certain purpose in motivating players to overcome the challenge that they are presented (Britt & Janus, 1940; Amsel & Hancock, 1957; Canossa et al., 2011). Rather than being just a negative aspect, if done correctly the feeling of frustration might actually be considered favorable, especially when talking about creative behavior (Britt & Janus, 1940). Frustration in games is definitely a balance act that needs to be managed properly, small doses can even go so far to be integral to a good game experience, yet if the frustration is either too much or derived from the wrong part of the gameplay experience (i. e. external forces outside of the players control) it might have a negative impact on the player and end up causing anger to arise (Canossa et al., 2011). However, it's very important to note the distinction between anger and frustration, anger is an emotional response created by bad frustration and often focused towards something outside of the person's control (Britt & Janus, 1940).

While frustration, as mentioned earlier, can both have positive and negative effects on the player experience it is extremely important to note that tolerance of frustration is something that can be built up (Britt & Janus, 1940). Rather than forcing players head first into a fully frustrating experience, developers can pace the frustration in order to continue to build up the tolerance and desire for players to overcome the challenge presented in front of them later on in the game. Focusing on the tolerance allows more players to sense the positive effects of frustration.

If a frustrating experience is not dealt with properly a person will respond in three different ways or a combination between the three ways. Either condemning the outer world, himself or embarrassment and shame (Rosenzweig, 1935). Condemning the outer world is one of the aspects that can cause the player to feel anger at the game and thus not being a positive part of the experience (Rosenzweig, 1935; Canossa et al., 2011). Condemning him- or herself rather than the game is the closest in terms of positive responses towards frustration, taking the blame for his or hers misstep in the game rather than blaming the game for the barricade in the way of the goal, will cause a response of motivation for some players to work towards overcoming and breaking through the barrier. Worth noting here as well is that

frustration in relation to games also makes a clear distinction between at-game frustration and in-game frustration, the former blaming the input devices and the latter being frustration focusing on the knowledge on how to beat a certain challenge (Gilleade & Dix, 2004). In-game frustration also relates to the importance of interaction consistency, what you as a player can and can not interact with have to be consistent otherwise frustration will occur (Sweetser & Johnson, 2004).

So when we are speaking about frustration in this thesis we mean the act of being stopped or hindered in the goal-attainment for a player which will lead towards a stimuli to overcome the obstacle rather than becoming angry.

3. Method

3.1 Approach

This study focuses on perspective of game developers, in order to gain more knowledge of the design process and thus understand the underlying decisions behind creating frustrating moments and how it impacts the game experience. Another focus could have been the players point of view which would have given us a more personal understanding of what type of frustration they view as positive and negative but maybe not the reasoning why that is during the game experience, whereas we felt that understanding the underlying design process, which developers can give us, would result in a deeper understanding of frustration in games. To do this we decided to utilize interviews to gather our data from game developers involved with making games. Semi-structured interviews were the chosen interview structure and the first step was to create a substantive frame (Weiss, 1995) which consists of the main topics of our research in order to get an overview of our research to make sure that we could not only construct a relevant interview guide (Hesse-Biber & Leavy, 2010) but also allow us to select relevant game developers to interview. We made sure to identify developers of interest in relation to our substantive frame so that every developer would fit within our criteria's in terms of related research, we also wanted to make sure that each developer also were active in the industry today.

After identifying relevant developers everyone was contacted through e-mail to see if they were interested in participating in our study. Unfortunately a lot of developers had to decline due to being in a critical time period in order to finish their games before release which was unfortunate timing on our part, with those who were interested we booked a date for a Skype interview, because the developers were located all around the world it made face-to-face interviews impossible. We also allowed each developer to suggest a time that would fit them in order for them not to feel stressed and keep looking at their watch as to when the interview was over, we planned that each interview would last between 45 and 60 minutes but also have some leeway on time in order for tangents and post-discussion with the developer if necessary.

Before each interview was conducted each developer was informed that the interview was going to be recorded so that they were aware of that due to the importance of recording your interviews in order to have access of the data after the interview is done (Kvale, 1996), that all the interviews were completely anonymous as well as that we wanted them to explain their

reasoning behind their answers. Each interview was transcribed after completion in order to get easier access of the data for further analysis.

3.2 Interview selection

In order to facilitate the interview selection process a substantive frame (Weiss, 1995) was created to give us an overview of the study. This highlighted the core elements of the study which told us what types of developers were appropriate to contact for an interview to achieve our purpose of the study.

Each developer was carefully chosen based on having at least one highly acclaimed release, both in terms of reviews and continued player base post release. This of course removed early-access games, indie developers early in their development process and newly formed studios. The reason for this was to get a deeper and more long term view on both immersion and frustration from what the developers have learnt post-release about their own games. Each game also contained a potential frustration element that could cause players to stop playing which of course tends to dismiss the so-called casual gamer crowd and focus more on the mer hardcore and avid gamers.

Due to the popularity of computer games we contacted developers located anywhere in the world, this would allow us for a more diverse developer philosophy but also what is generally considered to be better games due to the limited amount of developers located in Sweden that would be available locally to us.

3.3 Semi-structured interviews

For this study semi-structured interviews was used as research method, a qualitative method, in order to achieve a more diverse and personal view on game design in relation to our research question. Semi-structured interviews allows for more of a discussion based interview (Hesse-Biber & Leavy, 2010). Due to the difference in developer philosophy concerning games, every game designer has a different view on how to best make the game they want to produce and we wanted to find out these thoughts. With using semi-structured interviews we created a interview guide (see Appendix 1) in order to keep the interview on track on the different subjects that we most of all want answers to but, as mentioned previously, it also allows us the freedom to talk about the different ideas, thoughts and subjects that the developers might think of during the interview. In fact, semi-structured interviews are great due to its ability to allow the interviewees to discuss topics and issues that we might have missed in our preparation for the interviews (Hesse-Biber & Leavy, 2010). The interviewees possess a different knowledge set than us and therefore creates an interesting dynamic in terms of what the results might be from the semi-structured interviews. We are looking for the industry perspective on the topics surrounding immersion and frustration and therefore the views of the developers, whatever that might be, is highly important for our study which motivated our use of the semi-structured interview format over a fully structured or open-ended interview style.

3.4 Analysis method

For the analyzing process we decided to structure the process with inspiration from the

grounded theory method, because some of the steps of grounded theory came naturally during the process and not necessarily in the right order when managing the interviews, which resulted that some of the steps of grounded theory were redundant. These steps were microanalysis, theoretical sampling and theoretical saturation (Patton, 2002). This is motivated by the demonstrated potential when grounded theory has been utilized during game research studies (Brown and Cairns, 2004). The first stage of the analysis is called *open coding*, where we analyzed our collected data to identify important and interesting themes, these themes were then compared with each other to find similarities and differences. When the themes had been identified they were labelled so similar themes could be grouped together and form categories (Corbin & Strauss, 1990; Patton, 2002; Pace, 2004). With the categories defined they were linked and structured with the corresponding sub-category, this stage is called *axial coding* (Corbin & Strauss, 1990; Patton, 2002). During *selective coding* we identified categories that were poorly developed and didn't fit our core category (Corbin & Strauss, 1990).

3.5 Method critique

For this study a qualitative method were chosen rather quickly because we wanted a more individual and deep understanding about the developers thought about our subject, it would however be interesting to conduct a quantitative method to get a broad understanding about the subject and compile it into statistics (Hartman, 1998). This could be used to draw general conclusions that could be used to enlighten game developing, but to get a broad quantitative result it's important to get a good amount of participants which could be problematic in our case due to the tight schedule of game developers.

During the interview selection we had a clear view of which game developers we wanted to contact, but the selection we had was still kind of broad and the result could be more focused if we had chosen game developers from a single genre of games. This was considered beforehand but getting results from game developers that focused on different game genres would result in a broader understanding of frustration in games, which was really interesting for this study. When contacting the game developers we found that they were rather busy and choosing game developers from a certain game genre would result in fewer game developers to contact and perhaps not enough game developers to interview.

Due to the fact that we contacted game developers all around the world the possibility of conducting the interviews face-to-face was highly impractical because of the geographical differences. Even though face-to-face interviews would be preferable, thanks to modern technology we could conduct the interviews in a similar manner via a Voice over IP (VoIP) program, which gave us the same possibility to conduct a semi-structured interview as if we would have conduct it face-to-face.

4. Results

In the following section our results will be presented based on our nine interviews with different game developers, every developer has been involved with a successful game that has

over a 70% rating on Metacritic² as well as a very positive or higher rating on Steam³ user reviews. In order to make sure that the developers are kept anonymous each developer has been given a false name, some parts of the quotes has also been modified to keep them anonymous whilst keeping the essence and meaning of the quote true.

Table 1: interview participant's summary

Name	Gender	Age	PE ⁴	Role	Location
Danni	Male	30	5	Game designer	Sweden
Leslie	Male	29	9	Programmer/Designer	England
Charlie	Male	38	10	Lead artist & Art director	Canada
Louie	Male	30	8-10	Game & Level designer	France
Sam	Male	41	14	Creative director	Sweden
Terry	Male	31	5	Director & Art	Sweden
Max	Male	27	5	Game designer	Poland
Jess	Female	30	8	Game designer	Finland
Andy	Male	29	8	Game designer	Canada

4.1 Key elements of a good game

When discussing the key elements of what makes a good game the first and most obvious answer from the developers were gameplay. The most important aspect of any game is the gameplay that is presented, if the gameplay is not fun or good than it's never going to be a good game, that's what is unique to games compared to other media for entertainment.

*“Well for me its gameplay, and when I say gameplay I mean gameplay balancing everything. I am pretty lacks on art and I don't care much about it as long it's not so bad that its degrading the experience, like [if] I can't tell what's foreground or background, that annoys me, but I play games with boxes”
(Andy)*

Another important element that was brought up was that they have to be engaging, you are playing a game because it is something that you want to do. There's no other motivation or

² Website that collects review scores from respected critics online and in print to create an average score based on all those reviews.

³ User reviews from the biggest PC game distributor and platform, based on either a positive or negative opinion on the game from users.

⁴ Professional experience in years.

purpose beyond the game itself, that type of engagement is important, giving the players the motivation to play the game.

Also when talking about these aspects it's important to note that everything needs to be connected and working together to create a good game, as Charlie states *"I think routing everything through a central creative pillar is to me what makes a truly great game."* meaning that the mechanics of a game reinforces story which reinforces art which reinforces the mechanics. Making sure that everything is connected and helping each aspect become better by allowing them to reinforce one another.

Further on, a complex world that allows the players to become involved with interesting choices is a huge part of what makes a good game. There needs to be a certain level of complexity to the game world and how you are treated as a player, whether that is interacting with the world or what choices you make doesn't matter but has to have some sort of complexity and weight to it in order to create interesting choices. Which Sam clearly says *"The player must be confronted with interesting choices"*.

Emergent gameplay is a construct that derives from these types of stories with interesting choices and complexity that exists within a world. By allowing emergent gameplay or emergent stories to appear it allows for the creating of a good game experience. Another hugely important aspect of a good game is its pacing, you need to have a good sort of rhythm to what is happening within the game to evoke emotions and reactions from the player.

"That's the most important thing in games, if a game has a good rhythm it's really, it's perfect, before making video games I wanted to make cinema and to edit films, I really like editing and making the video trailer for games and stuff like that, so yeah pacing or rhythm like I said is very important" (Louie)

Of course you can also not forget the over arching goals of video games as Jess mentions *"Well it must be fun, that's kind of, that applies to all genres because that is what games are about"*. Having fun is important for games, that's why so many people play games.

4.2 Immersion

There was a consensus between the developers regarding to what immersion in games actually means. Losing the sense of awareness and getting drawn into the world presented by a game is often the optimal experience that each game tries to achieve. A different viewpoint of the core aspect of immersion was also presented with the idea of instead of being swallowed or drawn into the game, a person could willingly allow themselves to become immersed due to their personal interest of the games mechanics or premise. As well as immersion on that type of level might be hard to achieve, depending on who you ask.

4.2.1 Importance of immersion

Immersion was found to be an important aspect to the majority of developers, all but one actually, and is considered to be an important part of the game experience. However, the importance varies depending on what type of game that's being developed. The game mechanics that are integral to the overall game experience dictate the amount of immersion that is required for a good game experience. Simplistic game mechanics, like chess for

example, is one type of game experience that doesn't require immersion for a good game experience.

"I think certain game benefits from a high level of audio visual immersion whereas it's not necessarily a key ingredient for every type of game. Some games that are perhaps a bit more tactical or strategic, don't communicate or require the same of types of immersion as other games. So I think it depends on the experience that you're trying to create." (Charlie)

A different view on the importance of immersion is that enjoyment of a game is not dictated through immersion but rather that they are separate from each other and thus immersion is not required for a good game experience and enjoyment from playing a certain game.

"I don't think it's that important to be immersed, you can also play Super Meat Boy and just enjoy one level and stop playing after 5 minutes and you have not been immersed and the game is still very good and you liked playing it so no I don't think it's that important" (Louie)

4.2.2 Core elements of immersive games

"I think that complexity is important. It is like solving a puzzle, you have so many facets and so many things going on that your brain, you can't quite wrap your head around and you need your full attention to have it." (Leslie)

So in order to become fully immersed in a game you need the full attention of your brain, this type of complexity is not limited to just game mechanics but can also exist in other aspects of game design, like for example story and character development.

"Well I think the game has to draw you in, and it has to present itself as something that is very multi faceted and sort of engage your brain on a couple of different levels." (Charlie)

Another hugely important aspect of game immersion lies in the idea of consistency, whether this consistency is in the visual style, the art of the game or the idea that the game world that you explore and interact with is consistent with how the rules of the game world is presented to the player. A game doesn't have to be realistic but it has to be consistent with the sort of realism that the rules of the game world manages to build up, if the game world allows a player to do a certain action it must be consistent throughout the game as well as making sense within that particular created world that a player finds themselves in.

"Possibly it's about the consistency in how it operates with its own realism, not about some kind of external realism that works like reality, that type of realism is uninteresting to me in a game. That's why I play games, reality is not interesting enough or I can do things that I can't do in real life." (Danni)

This also relates to some sort of believable world, if the game world that you interact with is not believable then immersion won't be achieved. This type of believable world also requires the player to have a certain amount of freedom in the actions allowed in the game as well as a well done narrative that actually relates to the game world.

“It should not feel like you're running through the same place over and over again. I even know AAA games that has problem with that. It's strange that rather than scaling the game down they try and have a huge game with too much reuse of assets.” (Terry)

When you start encountering things that you already have seen, immersion becomes affected in a negative way. Repetition in game assets or textures will cause the players to realise that they are actually playing a video game and thus destroying the potential for immersion to appear.

4.2.3 Heads-up displays impact on immersion

Information is needed for the players to be able to journey through the game experience without feeling that they have no clue of what is actually going on. This is often done with an Heads-up Display (HUD) that allows the players to view the information needed about their condition and status in the game.

“But I think it's immersion breaking when you have a complicated or sort of comprehensive HUD and the players [are] actually looking for the information, that breaks immersion. Cause now you're wondering where you find where your health bar is, and that has pulled you out of the experience right away so you're better off having [...] a big red line on the screen. If that's relevant information.” (Charlie)

The information that the HUD represents is more vital than how it's actually constructed. As Jess states, *“I think it helps immersion if you know what is going on it's much easier to get involved in the world. For example if your elf is dying or doing really well”*. While clever HUDs that are hidden within the game are intriguing visually and very interesting in the beginning of the game, the actual information that the supposed HUD is representing becomes the more important part the more you involve yourself in the game.

“I think it more kind of like a curve where it really breaks immersion in the beginning but then disappears later on. I don't think anybody raved about the HUD in Dead Space 72 hours in.” (Andy)

4.2.4 Customizing your avatar

The ability to customize your avatar is something that a lot of games these days allow a player to do. Depending on what type of experience you're trying to achieve it can either improve the immersion or hamper the immersion for players. Customizing a character allows the player to easier identify with the character in the game, which makes the player more attached to that character and how the world around the character reacts.

“So if you can customize the player will for more kind of immersed in the characters but if you give them a ready made character you can tell kind of stronger stories or more bold ones. Because the character is further away from the player. But is down to is it a game about player choices or is it a game about a character in the world.” (Jess)

So while it’s easier to connect with the character if you have the ability to customize, it might affect the overall narrative depending on the context of the game. A pre-defined character allows for a stronger narrative from a developer point of view due to having control over the character and how he or she should react and respond to the world. That being said, it is harder for a player to get attached to the pre-defined character compared to someone the player has customized.

“I think both approaches can be done well and give you the sense of immersion but it’s harder with pre-defined characters because you rely on the players empathy.” (Max)

4.2.5 Losing the sense of immersion

While achieving immersion is important for the game experience it’s equally as important to make sure that the immersion is not lost throughout the game experience. Once again the rules of the game become important to achieve this. Allowing players to do the things that make sense within the context of the game is important, if something doesn’t feel right within the context or premise of the game world than immersion can be lost immediately.

“I think that the player should be allowed to do everything that makes sense within the context of the game, it doesn’t mean that player always has to do everything that a human being can do.” (Max)

This type of behaviour in games revolves around the idea of, once again, consistency. Inconsistency in games can quickly destroy the sense of immersion. Whether the inconsistency is from art, how a player is treated in the game or in the mechanics of the game it doesn’t really matter. Consistency within the rules of the game and the game world that the experience is taking place in is the key aspect of being able to continually keep the sense of immersion for a player.

“It has just got to be consistent so it fits the game. If it’s a game about jumping and there’s invisible walls that kind of directly work against each other or they’re now intuitively linked. If it’s a game about exploration and you can’t get in the water for some reason that is strange as well. So I think any time a game doesn’t do what it advertises explicitly or implicitly that can turn into problems.” (Charlie)

Immersion is unfortunately a very fragile concept, it’s hard to achieve to begin with but at the same time extremely easy to destroy. As Andy says *“Everything has to be in a certain level*

and the lowest point, or at least the worst aspect of the element it's what is going to take you out the immersion." which creates problems for developers due to being forced to look at the game from a holistic viewpoint. Even when developing small budget games the lowest aspect of quality will destroy the sense of immersion and thus creates the dilemma in being able to achieve a consistent experience from all aspects of the game being presented to the player. Continuing on this Andy mentions the technical aspects of games *"if anything breaks immersion it's load times"*. When the technical aspects of a game becomes apparent the sense of immersion is lost, similar to how the HUD can make the players feel that they are interacting with a computer rather than just playing the game, technical problems or necessary things like load times can stop the sense of immersion dead in its track.

Annoyance can also be immersion breaking, when the game starts to work against the players' intentions within the game parameters it becomes a huge problem for immersion. For example, if a player wants to only explore and look at the scenery a sudden battle might be considered an annoyance and will affect the sense of immersion due to unforeseen events that are working against the player is taking place.

4.3 Motivation

4.3.1 Keeping players engaged

To keep players engaged within a game it's important for them to feel a sense of progression, as the story progress the game shouldn't just encourage the player to continue playing because of what might happened next in the story, but also because the player feels a sense of progression, that the players feels that they're learning and getting better at the game. Progression could also be in the form of character progression in the game, that the character gets better and better armour for example, something that represents the time that the player put into the game, as Charlie stated *"...as long as they can point to something and say that this is my measure of my time spent in game I think that is really important"*. It's also important that the game doesn't stay at a certain difficulty level throughout the game, as the player and story progress the challenges within the game should also progress giving the player new obstacles to overcome and learn from.

"There are many factors, I already said a few of them, clear and well defined goals that feel achievable, also a sense progress throughout the whole game, in every point of the game the player need to feel he's doing something, he's achieving something, he's making some progress and what's more, some graduality because when the players plays the game he's learning it, he's becoming better so you need to gradually, usually you need to gradually make the goals harder, more complicated to achieve because you want the player stay in this so called flow channel when the goals are not to easy and not to hard and they give you this special boost to seek for even more pleasure from this experience." (Max)

Giving players the possibility to discover the game world and progress through the game in their own pace is a crucial point but as a developer it's also important to change the levels of

intensity with pacing, which the majority of the developers thought, is important for keeping the players engaged by having an intense moment followed with a calm moment so the player can regroup before the next attack of enemies for example. But if the game is too repetitive it can result in that the player lose interest rather quickly.

“Well, pacing I think, you have to let the player play the game and understand things by them self and you have to propose new things along the path, it's like that, that I think about games that are engaging. You want to play a game because you know that the next session will help you understand more of the game or discover more of the game if you, most of the time when I know that something will be really repetitive I just don't want to play the game.” (Louie)

4.3.2 Keeping goals on a proper level

Overcoming obstacles and fulfilling goals are an important factor when it comes to games, for example, enemies to fight, puzzles to solve or bosses to beat. These obstacles should be on a proper level for the players keeping their desire to overcome these obstacles, as Andy said *“the easiest way [to do this] is to make sure to 1) reduce repetition and 2) make sure that player's learning”*. The players shouldn't have to repeat a cut-scene before a boss fight over and over again if the boss is too hard the first times, and even if the boss is too hard there should be a way for the player to learn how to beat him.

“If a player dies for example and he feels that it's because the problem can be solved for example the gap between the platforms is too wide to jump above them, he may just, he probably won't play it again any more but if he doesn't succeed but he feels that he can learn something that will make him succeed the other time or perhaps the next and the next time, he feels that he's making progress even though he's failing, it will make him try again and again to the point he feels that it can not be achieved.” (Max)

There was a common agreement by the developers that games should have difficult obstacles, and that it's mostly a good thing that the player has to try a couple of times before he or she overcomes it. Mainly because if it's too easy to achieve a goal it will get boring in the long run, as well as, when players finally overcome an obstacle they have been fighting with for a long time the feeling of satisfaction and mastery is so much greater.

“It feels so satisfying when I finally succeeded, I went completely crazy, when I finally managed to defeat the world's most annoying boss which I had been pissed off on for so long.” (Terry)

However, there should always be different ways to overcome obstacles, a different path to take or a different way of fighting, which gives the player the possibility to figure out a better way to tackle a problem, and overcome the obstacle. Because even though difficult obstacles are rewarding when you as a player overcome them, they shouldn't be too hard driving the

player into giving up, there should be some fun in what's difficult, it should be fun to fight or solve a problem.

"It should always feel like you could have done it in another way and then it would have gone well. If it's not I think it's badly designed and it's only hard to annoy." (Sam)

4.4 Frustration

The feeling of frustration is surrounded by the idea that it is bad, you don't want to feel frustrated, it is something that you try to avoid for the most part. When it comes to games however, there's a slight difference when discussing the word frustration. Depending on what type of frustration you deliver in your game experience you can evoke certain positive emotions and responses from the player, ranging all the way from enjoyment to motivation and desire to play. That being said, frustration is still a dangerous tool to utilize from the toolbox when designing games, for all the positive aspects that exists within frustration there's also the negative ones that you have to consider. Frustration may either help the game reach new heights in terms of enjoyment but at the same time if it's done wrong it might just as well ruin the game experience and cause players to never return to your game.

"So I love it whenever I hear about [someone] freaking out and being extremely frustrated and I saw this one guy [who] was screaming at the screen and then smashed his keyboard right over his knee, but do you know what? He came back the next day and played it for another eight hours and streamed it and again the day after that. So I think if you have the right amount of addictiveness [...], that frustration can be a powerful allie. If you're still delivering that consistent experience if it's frustration that you can't do the thing that you want to do then it erodes the experience. Carefully contained frustration I think is a very powerful tool." (Charlie)

The defining notion of positive frustration lies within the idea of blaming yourself rather than the game. The developers agree that if the frustration that arise from the game can entirely be blamed on the player rather than the player blaming the game it will be a positive aspect in gameplay and the experience overall. One could argue that there's two types of frustration, either blaming oneself or the game for the frustration that you feel. Positive frustration that motivates the players revolves around blaming oneself whereas if the game is to blame it will cause negative frustration which is not a good thing in game design.

"I think Spelunky would be the perfect context for which a game that perfectly [utilize] frustration [where] you blame entirely yourself for messing up and you're frustrated because it's so hard and frustrated for you're not winning but that's all, and that's not a negative emotion. I think that games can be frustrating in another perspective that you don't understand it, that you don't see why you died, that you think it's unfair." (Leslie)

It's worth noting that there might be a different view in what the game is about as mentioned by Louie "Yeah it's not frustrating because the game is about that, the game is about playing it again, the game is not about succeeding it's just about trying". The idea of continually trying until you achieve success is a motivational factor that frustration can result in. It mostly depends on how the game designer has made the dying experience, some games make it an integral part of the game whilst other use it as some kind of punishment. For example dying in games can often be connected with a negative feeling, as Jess said, "it is some form of losing".

"It depends so much on whether or not you make a big deal out of it, for example Super Meat Boy whereas dying in the game is just a integrated part of the experience, you're expected to die all the time and it's not a big deal." (Danni)

However, making sure that the players blame themselves is important but rather difficult, the experience must make sure that the players can feel that there's another way of doing it rather than the situation being impossible for them, otherwise they'll have a hard time taking responsibility for their failures because they'd rather not believe that they are the reason they can't beat a game.

"So it's really rare that players will blame themselves but if they can find a way of understanding of why 'I did this thing wrong' or 'I didn't get that' they feel that they can improve and that frustration turns into motivation." (Jess)

With the type of frustration where the player can blame him or herself rather than the game, those situations causes the player to think about what went wrong and what they learned on that try. Next time playing that section or that game again they will have a better understanding of what went wrong and why it went wrong causing them to learn and improve and thus eventually completing the frustration section as a better player. This is intentional from designers as Andy states regarding difficulty "We did that purposefully because we wanted the boss to be difficult we wanted you to be able [to] play him multiple times and learn his behaviour".

"But in small doses, in [our game] at least, a tiny bit of frustration clearly help the people to learn how the game system works because clearly it is possible to handle everything with the current game system." (Jess)

So the key difference as Jess states "Yeah that might be the key to if it is positive or negative frustration because the players who don't master [a certain] system they feel that the game is broken" is that the player understands it was his or her fault and has learned something and can see a way of improving the next time. There is a consensus between the interviewed developers, something like dying in game doesn't only have a purely negative effect, Charlie even stated "I think dying is awesome", it can also be motivating for the player to confront a difficult boss that results in that the characters dies and the players has to try a couple of times before he or she is successful. But if it's an obstacle or enemy that doesn't offer any

possibility for the player to learn how to beat it, resulting in hours of trying and dying without any progression the player would probably lose interest.

“Every time you die in Spelunky you’ve learned something new about why you died, how I can avoid it next time and the number of times you die until you finally do it.” (Terry)

When looking at the negative aspects of frustration you need to make sure that the game is not working against the player, if the player feel hindered by the game itself due to poor mechanics, bad user interface, lack of information or something of that order the player will feel frustrated but not in the positive way as discussed above and as mentioned by Jess *“The game can work perfectly but if a player can’t understand what is going on then they feel lost and they feel that it is something wrong with the game”*.

“For example a platformer with a poorly implement camera system it directly robs you of your ability to platform and I bought the game to platform. So that’s a situation where the value proposition of the game is being undermined by the game itself, and that type of frustration sits solely on the developer, and should be avoided at all costs.” (Charlie)

That type of frustration will never achieve anything but negative effects on the player, it doesn’t allow the players to blame themselves and are just focusing on how bad the camera implementation actually is and due to that will feel demotivated and eventually stop playing the game altogether.

Another aspect of negative frustration revolves around repetition, unfortunately due to a major source of frustration coming from dying in games that will also lead to some sort of repetition due to having to play a certain section again. There is a difference though in what type of repetition that the player will find acceptable, as Andy said *“make sure that players are learning”*. The players shouldn’t have to repeat a cut-scene before a boss fight over and over again if the boss is to hard the first couple of times, and even if the boss is to hard there should be a way for the player to learn how to beat him.

There was a common agreement by the developers that games should have difficult obstacles, and that it’s mostly a good thing when a player has to try a couple of time before he or she overcomes it. However, there should always be different ways to overcome obstacles, a different path to take or a different way of fighting, which gives the player the possibility to figure out a better way to tackle a problem and overcome the obstacle.

“It should always feel like you could have done it in another way and then it would have gone well. If it’s not I think it’s badly designed and it’s only hard to annoy.” (Sam)

If they learn something and they only have to play the difficult and challenging section again rather than the basic mindless beginning again that they have already mastered then repetition is fine. But otherwise and especially, events or sections of a game that were only

meant to be seen once starts to repeat themselves the repetitiveness become a major source of negative frustration.

“Personally, the worst example of frustrating moments I can imagine are all those scripted story moments that go wrong and you have to repeat them again and again, and something that was designed as a one shot event, for example escaping a car full of bandits like in Uncharted games, and it can be very exciting for the first time but if you have to do it again and again, because the game is so hard you just feel [that] the game becomes artificial, it becomes just like a movie that goes in a loop and just can't end. It's the worst example of events that are meant to be seen once are repeated because of obstacles can't be beaten by the player.” (Max)

4.4.1 Frustration as a design element

Frustration is sometimes used as a design element of games, either explicitly stated as frustration or hidden as the idea of challenge for players.

“Yeah I did, in [our game] we used plenty of negative emotions, even frustration, and we did it on purpose for narrative reason, for example, in this game the player can die very easily and he can feel it wasn't his fault of course there is small window of opportunity for him to prepare better next time, [...] we did it to correspond with the overall theme and the story of the game were a war broke [out] and it reflects the hardship of the people struggled during the war and even though those are negative emotions the players accepted this way of telling the story. Many of them were interrupting their play through, they were too frustrated to play but still they had interesting thoughts about the world, about war and it was a reward on a very different level than just the reward that comes from playing the game.” (Max)

Similar to how Charlie view the implications of death in games, *“I think that death in games and perma death to some extent actually heightens the emotional experience”*. A player can be really invested in a high level character and doesn't want to lose the character or the gear making the risk of dying increasing the situational danger that's presented in the game for the player. Making the player more immersed in the setting and actually feel that he's part of the game world.

“No, yeah I don't think that dying in game has a negative effect, I think that dying in game provides motivation, in the sense of [our game] it's hugely important because it provides immersion it provides the element of you're a space captain in dangerous territory on dangerous mission and any wrong decision will get you killed.” (Leslie)

Frustration has many different types of usage for game designers, but as mentioned, all the developers don't explicitly state they are designing with frustration in mind but they are looking for that type of positive emotion caused by frustration and the fear of failing.

"I have never really thought about the term frustration, but I want it to be possible that everything just goes to hell, otherwise the players are never really presented with a real challenge. If you can't die or lose then it's not really a challenge at all, you become more engaged if there's a threat of losing." (Sam)

The reason for this lack of frustration as a typical game design word and explicitly stated idea from the beginning springs from the word itself. Frustration as a term in game design is too simple of a word, it doesn't allow for the separation between negative and positive frustration that the game designers discuss.

"I think frustration is too simple of a word. There's frustration when something is difficult but you can blame yourself and then there's frustration where when it breaks immersion, whenever a player, I've done it a bunch of times - 'oh my god why did they do this? Why did the designers do this?' And then you're referring the game you're referring to the people who made the game, and that's real frustration, that's where you go everything up to now is mute, or whatever I've been doing it doesn't matter because what actually matters was what the designers wanted, that's annoying. So I called that true frustration and we try to avoid that but frustration from learning, frustration from getting better, I'm okay with that." (Andy)

"If I were to use frustration in designing I would use it as a negative I would use it in the context of it will be frustrating to not be able to figure out how do this, so it will [be] frustrating and trying this over and over and not be able to do it. This is all the reason, all the things I'm just saying on how it could be bad when it relates to understanding the game, playing the game, and feeling like it was your fault you died, but it's not because I think frustration is bad, but that would be the way I would use the word as oppose in the other context I would think of it as merely providing challenge but challenge to one player is frustration to another." (Leslie)

As we can see from both Andy and Leslie the idea of frustration and the word itself is too limiting and restricted for the way they want to use it in game design. Frustration needs to be able to handle both positive and negative aspects in order to be fully utilized as a term for game design.

4.4.2 Reasons for quitting

Gamers quit playing the games if they feel that they are not learning and loses their motivation to continue trying until they succeed. As Max says *"I think there's situation when you feel that the goal cannot be achieved when you feel that even though you've tried so*

many tries you are not learning". This sense of frustration that arise causes players to quit and never come back, similarly to how Terry states *"I think it is when there's a too difficult challenge and it doesn't feel interesting for the players and there's no way around it."* the sense of progression is lost completely and thus motivation disappear and frustration suddenly becomes negative. As Charlie stated *"[...] as long as they can point to something and say that this is my measure of my time spent in game"* frustration will still be a positive aspect and the players will stay motivated.

Also when the game starts working against the player and once again frustration, the negative kind, start to appear then the players are more likely to quit the game and do something else. And also the bad type of repetition causes players to quit the game. So developers believe that the bad type of frustration is the main reason behind quitting a game, which makes frustration as a game design element even more difficult to balance because if done incorrectly it will just push away the player from ever enjoying the game and go and find something else to do with their free time.

"Well I would say frustration, at least for me personally as a player. If I get frustrated, I close the game and never come back." (Jess)

There's also the idea of understanding the concept of failure as well as trial and error in games. A skill which more experienced players have honed whereas newer players might have a difficult time grasping the idea of having to try something again after a failure.

"I think experienced players understand that there's going to be a little bit of trial and error and people that don't play a lot of games might not be familiar with that." (Charlie)

5. Discussion

During our research we found that the developers consider frustration to be either good or bad, and that bad frustration can ruin a game experience and force a player out of immersion. But with good frustration a game can take the player to higher levels of emotional engagement, and therefore also improve the sense of immersion because of the player becoming more engaged and focused in the game.

5.1 Good frustration through learning

From the interviews we could clearly see that the developers think that it is important in a game that the player should be faced with a difficult obstacle and not overcome it the first time, and maybe not even the second time, but that the player really have to try and try again, not achieving the goal right away by overcoming the obstacle and progress in the story. This is heavily connected with the traditional definition of frustration, where a person is stopped whilst trying to achieve a goal (Dollard et al., 1939; Britt & Janus, 1940; Waterhouse & Child, 1953; Braams, 1997; Ceaparu et al., 2004; Park et al., 2012), which strongly indicates that frustration is an important part in game design, by creating goals that the players wants to achieve even if they have to struggle for it, as challenging activities can convey positive

emotions (Nacke & Lindley, 2008), however, if the player feel that it's impossible to achieve the goal and therefore fails to progress in the game the frustration has a negative effect, making the player too frustrated by the repetition and most likely quit the game.

Therefore it's important when designing a game to facilitate good frustration, when looking at the previous research about frustration and games we could not see any contribution regarding elements of good frustration. This makes the result from our study interesting due to the fact that there was a consensus among the majority of the developers that as long as the player learns something about how to better tackle a difficult obstacle the player will experience good frustration as they progress skill-wise during the repetitive process of trying to overcome an obstacle. If the game experience facilitates a different path or solution to an obstacle that the player can learn or figure out, the player will blame him- or herself instead of the game whilst trying to overcome an obstacle over and over again. On the other hand, if the player feels that the game works against the player or feel that it's the games fault that he or she can't progress in the story, the player will experience bad frustration. That's why some developers, for example, make a boss fight difficult so the players have to try a couple of times to defeat the boss and by doing so learn the boss' pattern and find a way to defeat the boss. Resulting in keeping the player interested and motivated to continue even though it's frustrating because of the difficulty level of the boss. So as long as the player is learning something about the game and the player can't blame the game for his or hers shortcomings frustration is good.

5.2 Frustration as a motivational tool

The view of frustration from developers also touches upon motivation. Frustration has the capabilities of creating motivation for the player when done correctly. Continually trying to beat a certain section, boss, enemy or puzzle that a player is confronted by until success is achieved creates a motivational aspect for gamers, which also can be seen in the previous research regarding frustration (Britt & Janus, 1940; Amsel & Hancock, 1957; Canossa et al., 2011). However, this only happens when it's positive frustration rather than negative frustration, furthermore there's one huge aspect of frustration when creating motivation and that is the idea of blaming oneself for the failure rather than the game. If a player can take responsibility for the failure in the game rather than feeling cheated by the game that frustration develops into motivation that continually pushes the player towards his or her goal. This is due to when a player can blame oneself that player can also see that there are things to learn and/or do differently the next time. This motivates the player to continue playing and wanting to achieve success rather than giving up on the game.

While the concept itself seems rather easy to achieve, using frustration for motivation, making sure that the player blame themselves for the failures is considered to be difficult and is why the concept of frustration is so complex and dangerous to use when creating games. If the frustration type or reason is wrong, motivation is instead lost rather than gained and the players will quit and look for something else to do with their time, which is not something that a developer wants to have happen.

Frustration in games is best showcased through dying in games, which often represents a losing condition and requires the player to try again. The developer consensus regarding

dying was that dying in fact doesn't represent a purely negative effect on gamers, but rather the complete opposite if done correctly. The idea of dying and in some way losing is in fact a source of motivation that comes from frustration and wanting to try again and achieve success. So as long as the frustration is positive and forces the player to blame him- or herself the view of developers is that frustration is a good aspect of a game and something desirable to try and achieve due to how powerful it can be in creating motivation.

5.3 Frustrating emotions

We could see throughout the interviews how the idea of frustration actually impacts immersion in games due to its impact on players' emotions. The idea behind using frustration when designing games allows players to feel that there is a consequence when failing to succeed, most notable in games where perma death is a core aspect of the gameplay. Being invested in your character or characters that might be lost forever if you fail actually heightens the emotional experience that you as a player is part of and thus making the player more immersed in the experience. Similarly being frustrated and losing causes people to think about the experience, whether this is about the game theme or about how to continue on forward and succeeding it allows the players to become more immersed. This is supported by the previous research surrounding games and immersion (McMahan, 2003; Gilleade, 2004; Grimshaw et al., 2008; Takatalo et al., 2008) and also falls into engrossment which is one of the three levels related to player immersion (Brown & Cairns, 2004; Ermi & Mäyrä, 2005; Jennett et al., 2008; Nacke & Lindley, 2008) as well as being afraid of failure and the so called challenge based immersion concept (Sweetser & Johnson, 2004; Ermi & Mäyrä, 2005; Sweetser & Wyeth, 2005; Jennett et al., 2008; Qin et al., 2009).

So with immersion being a core aspect of the game experience in the majority of games as seen both by developers as well as previous research within immersion in games (Brown & Cairns, 2004; Nacke & Lindley, 2008; Jennett et al., 2008; Jennett et al., 2009; Hoi & Cho, 2012) using frustration as a design element is actually something positive due to its ability to heighten the emotional experience in games. A tool which such capabilities is incredibly strong and worthwhile using to improve the immersive experience in games, but as we've talked about earlier, there are two sides of frustration which needs to be separated from each other due to having different effects on the game experience. While the type considered positive experience heightens the emotional experience the negative type of frustration actually hampers the immersive experience and can go so far as to completely remove the sense of immersion in games.

Most of these types of negative frustration revolve around things that are outside the players control, things that they can't impact in any way sort or form. Most of these are also technical issues with the game, for example a bad camera system that fights against what the player wants to achieve is a negative type of frustration that will cause immersion to disappear. The reason for immersion being lost is because the player becomes aware that he or she is playing a game rather than forgetting about that, when technical aspects of games become apparent immersion quickly dissipates and causes players to not want to continue the game experience. Even though most of the negative aspects of frustration is technical, developers needs to be careful of creating to difficult challenges that a player doesn't find

interesting and there's no way of getting around it. Rather than being a motivational factor and heightening the emotional experience this type of negative frustration stops the sense of progression and the frustration suddenly becomes negative and the player once again becomes aware of the fact that it's only a game that he or she doesn't want to play.

6. Conclusion

Our study focused on understanding the game developers view on frustration and how it affects immersion and motivation and with our study we could see that the concept of frustration is hard to define in regards to game design, developers view frustration both as positive and negative yet would be hard pressed to actually call the positive aspects frustration. They believed that frustration is too complex to fit in the current definition when discussing game design and aspects of gameplay. Due to the fact that frustration affects people differently it's hard to foresee how it will affect the players during the game experience, some might think that it's a good amount whilst others will feel that it's overwhelming, making frustration even harder to define.

There were two clear distinctions that could be made between negative and positive frustration. Negative frustration ruins to game experience very quickly, both in enjoyment as well as immersion whereas good frustration improves the experience in ways that other constructs of game design can not achieve. It's important to note that positive frustration revolves around the idea that the player is learning and can blame him- or herself for what happened in the game. When good frustration is achieved the player will also feel a higher sense of motivation to continue progressing in the game even though he or she might find the obstacles ahead difficult, mainly due to the learning aspect. This leads to a higher sense of motivation as well as emotional engagement resulting in a deeper sense of immersion for the player and a better gaming experience.

Frustration is not explicitly stated as a design element from most developers, however, they all viewed it as an important feature for the game experience by giving the players difficult tasks that they have to try a couple of times before they overcome them. Frustrating elements could be identified in their game design in terms of positive frustration such as the player learning and trying to heighten the emotional experience by adding risk and weight to the player actions.

6.1 Future studies

In terms of future studies we suggest that the developer view of frustration and immersion needs to be compared to what the player perspective is on these aspect of the game experience, because in the end to fully understand the benefits of both frustration and immersion there needs to be a balance or agreement between the player and developer perspective. Furthermore the word frustration needs a better definition when it comes to game design, at this current moment frustration is too complex of a word to handle both the positive and negative aspects that can occur according to developers and needs to be properly defined to improve the understanding of frustration in games. Lastly with this being a rather small study in terms of the amount of developers interviewed for their views on frustration

and its impact in games, player testing should be conducted in order to identify more types of frustration outside of our results that might be good for the player experience.

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Appendix 1

Interview guide

Introduction

What is your favourite game of all time? Why?

What do you think are the key elements of a good game?

How long have you been working in the game industry?

How old are you?

What is your role in the company you work in?

Immersion

Literature describes immersion roughly as when a player is really engaged with a game, loses his sense of awareness of his surrounding. How would you define immersion in games?

Do you consider immersion to be an important part of the game experience?

What would you consider to be the core elements for creating an immersive game experience?

The HUD represents vital information in games, how do you view the importance of the HUD in terms how it affects immersion, for example, a game like Dead Space manages to integrate the HUD into the game both as a gameplay element but also to showcase important information.

What can break the feeling of immersion and how do you go about avoiding it when designing games?

All the major platforms for gaming these days have fully embraced the so called “outer shell” with things like steam overlay, xbox guide, achievements and whatnot, how would you say this affects immersion and is it important to either fully embrace it with your game or work towards a more in-game solution?

- Any other external elements that could possibly ruin the immersion?

How do you decide on the rules of play in order to create a consistent experience without losing the sense of immersion?

Do you use pace for player engagement? How?

The interaction mechanics of a game has huge implications on immersion, how do you as a developer construct the amount of interaction that the player can have without giving them too much control and without them feeling restricted?

Do you think it's important to give players the option to customize the avatar in a game?

Motivation

It's important for a player to learn how to play the game without feeling overwhelmed, how do you deal with this aspect of game design? Tutorials? In-game hints?

How do you work in keeping goals/desire/purpose that the player want to achieve on a proper difficulty level?

- Do you think it is important that the player don't get it right away?
- If they don't achieve how do to keep them motivated to achieve this goal?

Who (Developer or player) creates desire within the game?

What are your thoughts on using achievements as motivation for gameplay?

What do you think is important to consider for keeping player engaged and motivated during the game experience?

- And how do your work to achieve that?

How do you deal with different level of competence between individuals?

Do you think dying in game has a purely negative effect on the player?

- What are your thoughts on tasks (puzzles/bosses/enemies) that the player struggles a lot with? i.e. dies a lot from...
- Important for motivation and the rewarding feeling when they conquer it?

How do you think that experienced vs. new players manage failure?

Frustration

Do you believe that frustration can have both positive and negative effects on the game experience? If so, give some examples of good and bad types of frustration.

Do you ever intentionally design with frustration in mind? (or is it something you would consider?)

- How do you manage to keep a good amount of frustration so immersion doesn't break or motivation is lost?

What are some frustrating elements in games that ruin immersion? How do you think developers can avoid them?

Do you perform any sort of testing when it comes to frustration, difficulty level etc? How do you balance these factors to deliver an immersive and motivated game experience?

What do you think is the main factor for giving up and quit the game? How do you work to prevent it?

Misc

During game development do you consider research methods etc? For example, the flow theory.

Is there such a thing as the optimal game experience?