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## 1 Motivation

The rise of multiplayer games has been occurring over the past 15 years. Even though more and more games are emerging within this multiplayer space, most fail to deliver a truly rich multiplayer experience with meaningful player interaction.

Some of the first multiplayer games that garnered large success early, such as Counter Strike, is the basic model used for all further multiplayer games within that same genre. This is because they managed to create meaningful interaction and copying that ensures that players are comfortable with the experience delivered. This has caused the success of games such as Call of Duty. The main differences between the two models, is that Call of Duty has built on the foundation of Counter Strike and added a moment-to-moment reward system based on kill streaks and progression.

These days many new genres are emerging within the multiplayer space, with new payment models and design philosophies, which makes copying an existing model or building upon an existing model very difficult.

Games such as Terraria (Re-Logic) or Minecraft (Mojang) made entirely for world exploration, creative building and creation also have multiplayer hashed onto it, but it does not offer anything meaningful to the experience except for the opportunity to socialize. The issue then occurs when these game systems that do not facilitate socialization. Both of these systems rely entirely on small text boxes with room for very few paragraphs, forcing players to use external chat programs and facilitate their own community sites. Not only this, but the game worlds often have to follow a number of rules and these are not possible to define in the game space either, which further pushes half of the game outside of the game space into online communities.



Figure 1.1 - Minecraft with improved chat functionality mod. Adds basic features such as copy/pasting, navigating the chat log and increasing text area size. Source:

<https://www.youtube.com/watch?v=TQxvaB5-UdU>

Essentially the lacking formula involves clearly defining a goal for player interaction as well as how to implement meaningful actions to players in these systems. The first problem that many games run into is not necessarily a bad multiplayer design, but forgetting that meaningful actions for players in multiplayer games do not only involve one player.

An example of this is the recently released game Hearthstone (Blizzard Entertainment). Hearthstone is a CCG (Collectible Card Game) by Blizzard. The game had issues with the class “mage” was able to play an entirely delay based game style that resulted in long games with close to no player interaction. The mage issue was later patched, but this just led into a long period of “OTK Warriors” (One-Turn-Kill) dominated the ladder of the game. The goal of the “OTK Warrior” was essentially to run armor, delay and removal to stack up as many cards as they could without actually doing anything to the opponent except reduce his potential to kill the warrior,



Figure 1.2 - Image of Hearthstone, a Collectibles Card Game by Blizzard. Source: <http://us.battle.net/hearthstone/en/>

until the warrior would a certain combination of cards to finish the match in one turn. The reason this is an issue is that even if the player manages to defeat the “OTK Warrior”, the match was not enjoyable to either player due to the lack of interaction between the players during the match.

The only formalized theory on this subject is Tom Cadwell’s “Counterplay and Teamplay”. This theory created from Tom Cadwell’s personal experience working on the previous most played game Blizzard’s World of Warcraft (Smith, 2011) and the currently most played game, Riot Games’ League of Legends (Smith, 2011). The theory works with the idea that in multiplayer games, player satisfaction is prompted if the design philosophy focuses on designing for teamplay and counterplay. Referring back to the Hearthstone example of the “OTK Warrior”, the opposing player does not have any counterplay because he is defeated in one round without any means of addressing what the warrior is attempting to do.

This being the only theory on the subject, leads to the approach of a grounded theory to create a framework for designing good multiplayer interaction by using the concepts of “Counterplay and Teamplay” as a basis for the theory.

## 2 Problem Space

The problem space is as the 1 Motivation section ends out with. The goal is to create a theory for designing good multiplayer interaction between players. This spans a very broad spectrum of general design theories as well as an attempt to find multiplayer specific ones.

The general way of getting to that point is using designers as an expert source and then using the theories of “Counterplay and Teamplay” from Tom Cadwell as the basic building blocks for data collection. This means that the goal of the data is to find general multiplayer information, however, using Tom Cadwell’s concept as a basic framework for how to addressing these concepts.

*What are the most important concepts and design considerations to address when designing a good multiplayer interaction theory?*

The method used to achieve this, is the grounded theory method as that will allow for basically starting from a corpus of data from expert game designers and building upon that to formulate a theory.

## 3 Method

The general research method used is Grounded Theory. This is because it aligns with two fundamental problems of the research problem. Firstly, that very little research exists in the field of multiplayer game design especially in “Counterplay and Teamplay” and even if a lot of research exists within general game design, very little of it was meant to be applied to this specific problem statement. Secondly, the goal is to come with a general theory in the end that applies directly, not to hypothesize something and end out with a one-fit product solution.

The Grounded Theory methodology does normally require the researcher not to do any research beforehand. This will not be the case for this project as I have already read almost all of the research already involved and based the entire research on the concept of “Counterplay and Teamplay” by Tom Cadwell. This means that this report will include a State of the Art section to bring the reader up to speed

on where current similar research is before gathering data. During the coding of the data, this added information will not be taken into consideration.

Grounded theory is an alternative to the general scientific method “hypothesis”, in which a test is performed to confirm or deny the hypothesis. Grounded theory is inductively generating a theory from a corpus of data (Borgatti, 2007). The advantage or goal of Grounded Theory ensures that the theory matches at least one set of data, whereas the normal hypothesis method may fit no data (Borgatti, 2007).

The general format of a Grounded Theory is to gather data, then use qualitative research methods on that data to generate codes. Then combine these codes into categories. Finally combine the categories into very few patterns from which the theory is derived, as seen on Figure 3.1.

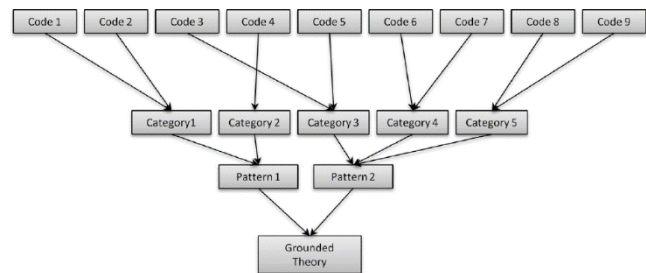


Figure 3.1 - An image showing the steps of Grounded Theory.  
Source: (Khandkar, 2009)

The Grounded Theory methodology used is the one advocated by Corbin and Strauss. Their methodology involves documenting and following a clear model and guideline, such that other researchers can follow the methodology and repeat the process. One usually implied step of doing grounded theory involves the creation of “memos”. The author’s format of working did not work well with the concept of having to stop whatever currently was being worked on to write memos, and as such it was scrapped midway through.

The methods of data gathering used is interviews, blogs and podcasts from designers and other experts in the field of multiplayer game design. This method of sampling is known as judgmental sampling. This means that there will be significantly less data, but the data should carry significantly more weight. The different types of data will analyzed as articles due to blogs and podcasts being a lot less focused than answers to questions directly related to the research area.

The method of qualitative data analysis used for interviews is called research denoted coding or open coding with a line-by-line method of analysis (Khandkar, 2009). Open coding means that in vivo codes will be used, which means that the data will contain the wording for codes (Lazar, Feng, & Hochheiser, 2010) (Khandkar, 2009). Line-by-line analysis is due to following Corbin and Strauss’ more strict method of analyzing as opposed to Glaser’s more freeform method that allows the researcher to sort the data at his discretion (Khandkar, 2009).

Finally, to help the coding process the method of finding key statements summarized in the book “Research Methods in Human-Computer Interaction” is used (Lazar, Feng, & Hochheiser, 2010). This method involves taking the line-by-line data and looking for statements in the form of “Objectives”, “Actions”, “Outcomes”, “Consequences”, “Causes”, “Contexts” and “Strategies” (Lazar, Feng, & Hochheiser, 2010). All lines of data get a statement added to sort the intention of that line of data.

Addressing the data from podcasts and blogs is done similarly to analyzing articles. This means that a brief overview of the author’s background and experience is highlighted and relevant data, terminology and concepts are drawn out and summarized.

This combined method of data gathering should include the expert’s data properly and allow for merging with the theoretic concepts found in the state of the art section, to get a broad theory that should generally apply to the concepts involved.

The 5 Data Collection section highlight the data and where the data comes from, with the code names written down. The 6 Categorizing Data section gives a proper explanation of the codes, with quotes from the sources of data, highlighting the qualification of what each code entails.

## 4 State of the Art

As stated, the subject explored has had no theoretic research put into it aside from the theory formalized by Tom Cadwell on “Counterplay and Teamplay”. This means this section will look into formal design books and philosophies and try to find related design concepts that appear similar in consequence or formulation, but were generally not considered in the scope of multiplayer game design.

The theories addressed are firstly the two only specific designers who has pitched in on the subject of Counterplay and Teamplay. Tom Cadwell himself and the game design video channel “Extra Credits” designer, James Portnow who sums up and expands on Tom Cadwells theory.

The other theories addressed are the general design books and theories well known, scoured through in an attempt to find concepts similar in consequence or in use, that could be considered in the general scheme of consideration for Counterplay and Teamplay. The sources used are mainly general design books such as Rules of Play, The Art of Game Design and Level Up!

These theories should give a starting point for a web of concepts related to the subject of meaningful player interaction, which used in conjunction with the grounded theory to give some insight into how to evaluate the scope of meaningful player interaction.

Note that the capitalized words “Counterplay” and “Teamplay” is when discussing a direct comparison to Tom Cadwell’s theory. Where “counter play” and “team play” is in places where other sources use those words to describe those concepts or similar concepts.

### 4.1.1 Formal Theories

### 4.1.2 Tom Cadwell’s Counterplay and Teamplay in Multiplayer Game Design

*This lecture discusses how single-player design approaches must be modified for multiplayer experiences by including the creation of counterplay (gameplay for the opponents of a player) and teamplay (gameplay for the teammates of a player). (Cadwell, 2013)*

Tom Cadwell is a game designer with a resume that spans over a few very large and very prominent games. He has worked as a designer on World of Warcraft (Blizzard) working with a number of key systems including the talent system. Later he worked on League of Legends (Riot Games) as the design lead, which is where he formalized this theory at GDC (Game Developers Conference) in 2013.

Tom Cadwell leads into his theory with a few assumptions based on his experience. The first assumption he starts with is a model for when a game

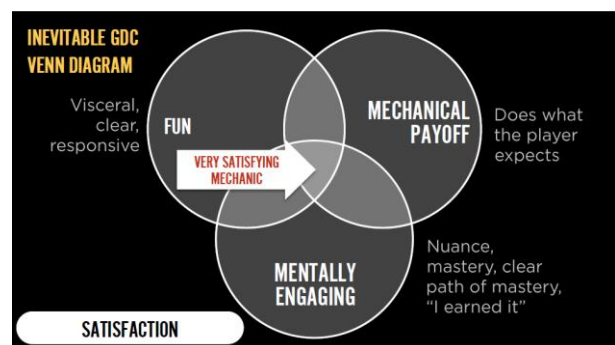


Figure 4.1 - Diagram from Tom Cadwell's GDC talk. Shows intersection point of when a mechanic becomes satisfying. Source: <http://gdcvault.com/play/1018158/Counterplay-and-Teamplay-in-Multiplayer>



mechanic is satisfying. He claims that reaching satisfaction from a mechanic is at a point where the mechanic is fun to use, it has a mechanical payoff and it is mentally engaging to use. Figure 4.1 also explains with a few words the meaning behind these concepts. It should be noted that the figure does not have any measure of importance of each of these aspects, just that all of them have to be present for a mechanic to be truly satisfying (Cadwell, 2013).

To reinforce this, he uses the example of the Fire Flower in Super Mario Bros that give Mario the ability to throw fireballs. He explains that it is fun because it has great SFX, art, controls and that it bounces merrily. It has mechanical payoff because it kills goombas and koopas as expected in the game. And finally it is mentally engaging because there are many approaches to using it and mastering it, such as complex bounces or even mastering the simple act of jumping and timing when to throw the fireball.

His next statement is that satisfaction is the key to good game design. From that, he moves into that “satisfaction of the player” is different from “satisfaction of the players” (Cadwell, 2013). The distinction sets it clear that he believes that when designing for several players adds a completely new type of design consideration. This is when he addresses the two concepts from the title of his talk. Counterplay and Teamplay, these are the two concepts that describe what is required for players to get satisfaction when more players are involved. On a basic level, these relate to the interaction between players, one in the cooperative fashion and the other in the competitive fashion.

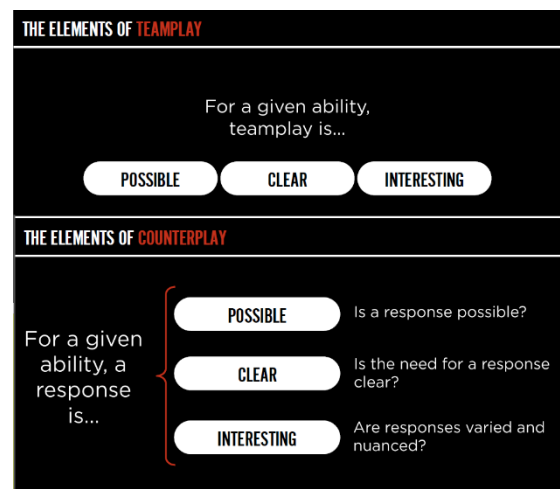


Figure 4.2 - Tom Cadwell's basic model for teamplay and counterplay. The same structure is used for both. Source: Counterplay-and-Teamplay-in-Multiplayer

Tom Cadwell uses the same model for each of these as illustrated in Figure 4.2. The goal is when designing a game mechanic, then passing that mechanic through the three questions for each and make sure that it passes on one or both of these two concepts.

He uses a number of examples from League of Legends to illustrate his points. An example of his is the concept of “skill shots” (Figure 4.3). A “skill shot” in League of Legends is an ability that, when cast throws a projectile out at a certain speed. This projectile will usually hit the first thing in its path. This means that when an enemy uses such an ability on you, you can see the projectile travel towards you. This means that a variety of ways can be used to avoid this projectile and it makes sure the clarity of when it affects you is there. Moreover, on the point of how interestingness it allows for several ways of avoiding it, such as hiding behind other things that it could collide with before hitting you, or having another teammate intercept the ability to save you. This way it allows for both Counterplay and Teamplay. Tom Cadwell argues that it is often as interesting to a player to make an enemy player waste his “skill shot” as it is to hit your own skill shot (Cadwell, 2013).

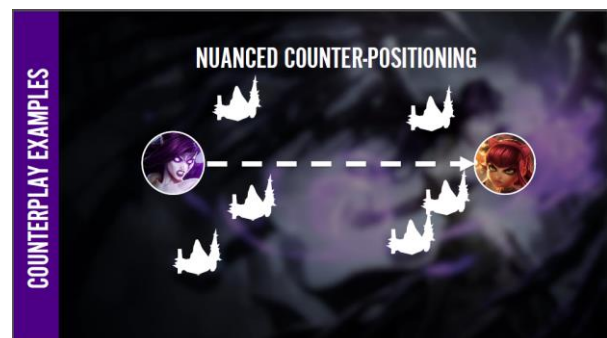


Figure 4.3 - Tom Cadwell's image showing nuanced positioning from the skill shot mechanic, by showing that hiding behind minions can make a skill shot harder to use. Source: <http://gdcvault.com/play/1018158/Counterplay-and-Teamplay-in-Multiplayer>



Another point of Tom Cadwell's is that "satisfaction is not zero-sum". It is an interesting statement because the game of League of Legends (Riot Games) is zero-sum in the definition of one team loses and the other wins. His point is the concept that not every moment-to-moment situation in the game is zero-sum and even when you lose a conflict exchange, you still manage to return some of that to your opponent (Cadwell, 2013).

In conclusion, Tom Cadwell firstly is addressing that actions in multiplayer games have to be meaningful. This is of course nothing new; many designers have stated that meaningful actions is at the core of games. However, Tom Cadwell extends this to mean that every action has to be meaningful to every player involved. This means that using an action should be as interesting as having an action used on you. If you have no responses or cannot understand what is happening around you, satisfaction is greatly reduced (Cadwell, 2013).

#### 4.1.3 Extra Credits: Counter Play

*"It actually creates more interesting actions for the players playing with these abilities and the players playing against it. It is this counter play that creates depth that helps players to differentiate by skill"* (Portnow, 2012)

Extra Credits is an online game design video blog written by the game designer James Portnow. The show has been published through a number of services, but is currently independent on Youtube. James Portnow is not the only voice on the show, but he is the industry expert who does most of the writing involved. James Portnow has experience from consulting on many games, but most prominently, he worked on two very big commercial successes, namely, Call of Duty and Farmville.

This episode of theirs on the subject of counter play was written from a discussion with Tom Cadwell around 3 months before Tom Cadwell had his talk at GDC. Even though it is written well before the material from Tom Cadwell it still uses some terminology that does fundamentally broaden the consequences of Tom Cadwell's theory.

As expected the episode starts by outlining the general concepts of the theory, that can be found in the section just above. The clear difference between Extra Credits take on the concept of counter play is not the general idea of how it works, but the consequences of it. The difference is that Tom Cadwell concludes that Counterplay and Teamplay leads to satisfaction (Cadwell, 2013). Extra Credits concludes that counter play leads to depth and more actions that are meaningful (Portnow, 2012).

This does not relate to the feeling of the player playing the game directly, but it is important because that allows for direct comparisons with formal theories on game design. Many designers (Schell, 2008) (Koster, 2013) (Juul, 2011) (Rogers, 2010) (Salen & Zimmerman, 2004) claim that some variation of "meaningful actions is the key to depth and good design", which also agrees with Tom Cadwell claiming, "Satisfaction is key to good design.

Extra Credits not only relate to the concept of meaningful actions, but also relate to Risk/Reward gameplay, flow and differentiation by skill. This means that these topics become easier to relate directly to normal design concepts even though their creation was for general design, usually involving just one player (Portnow, 2012).

Unfortunately, the episode is a mere five minutes and only prompts discussion without a lot of time to address the topic in depth. The general key point they summarize is that counter play if used in their definition will add more actions that are meaningful and thus give depth, longevity and allow for more skill differentiation (Portnow, 2012).

## 4.2 Related Theories

### 4.2.1 Jesse Schell – The Art of Game Design

*... The payoffs can be worth it, though – if the reason for having the multiplayer is clear and certain. If the reason to add it is “because multiplayer is cool,” you should probably think it through a little more. (Schell, 2008)*

This quote is from Jesse Schell’s book *The Art of Game Design* along with the following quote in the same chapter of the book.

*Now that more and more game platforms are going online and becoming connected, it is becoming the case that games featuring no multiplayer component are once again becoming the rare case. (Schell, 2008)*

Jesse Schell wrote these two sentences in his book, understanding the clear difference in designing a single player game and a multiplayer game and understanding that multiplayer games were and is on a steep rise. Yet he only writes three pages on the topic of multiplayer games. This is, in my opinion, done because all of the concepts on design in the book are on a high and abstract level with questions like “consider how the theme of the game reinforces the game mechanics”, which can be applied to multiplayer games in the exact same manner. However, this means that he does not mention any concepts specifically consider when designing multiplayer games.

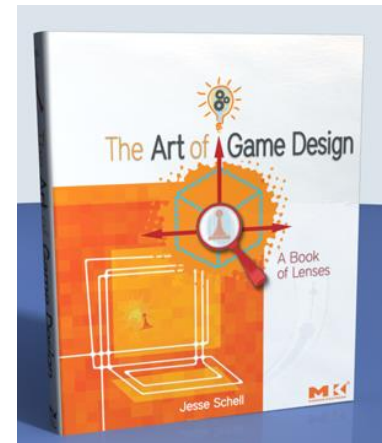


Figure 4.4 - Jesse Schell's book on game design. Source: <http://artofgamedesign.com/book/>

Moving into what he did actually write concerning multiplayer games. His chapter on multiplayer games focus on the reasons people play with other people. He mentions the following five reasons: “Competition”, “Collaboration”, “Meeting up”, “Exploring our friends” and “Exploring ourselves” (Schell, 2008). The meeting up and exploring parts will be mostly overlooked because those are mainly relevant for sociology, not game design from the perspective of this report. However, Schell qualifies competition as “allows for a balanced game on a level playing field”, “provides us with a worthy opponent” and “fulfills a deep inner desire to determine our skill level relative to someone else” (Schell, 2008). These relate to Counterplay if you follow by 4.1.3 Extra Credits definition. They claim that Counterplay expands the meaningful actions available to the players and allow players to differentiate by skill, exactly the same things Schell finds important. Schell then defines collaboration as “allow us to partake in game actions and employ strategies that are impossible with just one person” and “Let us enjoy the (presumably evolved) deep pleasures that come from group problem solving and being a part of a successful team” (Schell, 2008). These again align very well with Tom Cadwell’s Teamplay, claiming that being able to attribute success to teammates creates a really good feeling as well as attributing mistakes to them gets people more involved in the game and getting people to interact (Cadwell, 2013).

Moving into the design parts where Schell tangentially mentions multiplayer games in his general design chapters. When addressing the concept of Flow (Csikszentmihalyi, 1997), Schell mentions that especially in multiplayer games people will be easier to observe in flow as they will be much more focused than in single player games.

On the topic of balancing games, he mentions cooperation and competition. As for competition, he does not add a lot of consideration about the interaction between players, except that people of all skill levels should be able to compete but also allow a better player to win more often.

On the cooperation side, he does ask some interesting questions in terms of the interaction of players. “Cooperation requires communication. Do my players have the opportunity to communicate? How could communication be enhanced?” (Schell, 2008). This was one issue used as the motivation for this report as seen in the chapter 1 Motivation.

*“Is there synergy (2+2=5) or antergy (2+2=3) when the players work together? Why?”, “do all players have the same role or do they have special jobs?” and “Tasks that force communication inspire cooperation. Do any of my tasks force communication?”* (Schell, 2008) Are all quotes from the section of cooperation. These do come very close to defining the same considerations in Tom Cadwell’s model, except that Tom Cadwell has a slight more focus on how the mechanics specifically work in the framework of these theories and that they are communicated clearly to the players.

*“Sometimes these points are a gateway to another reward, but often, this measurement of your success is enough – particularly if others can see it on a high score list.”* (Schell, 2008)

This final short sentence relates to the interaction of other players, very tangentially. It is in the section of the book that deals with “rewards” as a balance type. I do not include it as much for Schell’s own direct involvement of this line in multiplayer games, but more because the whole section on “incremental” rewards seem to be a very important general design goal, especially when considering how Tom Cadwell talks about Counterplay and Teamplay moments create “rewarding moments”.

Overall Jesse Schell talks mainly about the high-level abstraction of designing these concepts, but he does not directly deal with multiplayer games in the same manner that Tom Cadwell does. They do arrive, however, at a very similar list of consequences and reasons for why these concepts, particularly teamplay is important.

#### 4.2.2 Jesper Juul

Jesper Juul is a Danish academic who has since his master’s thesis been working in the area of games. He is a ludologist, which means that he is an advocate of game mechanics and rules as opposed to story, plot and narrative. He admittedly has not done many articles on multiplayer game design, but he did bring up two interesting opinions that relates.

His only mention of multiplayer games is in relation to his point of replayability. He believes story driven games are invariably going to become “trash” after the story has been experienced once, effectively making story and narrative driven games lead to less times you will play the game (Juul, 1999).

On the polar opposite, he mentions that many multiplayer games that are essentially unfinishable will have a higher replayability and sense of enjoyability (Juul, 1999). He links this to the concept of adding challenges and the inherent incremental goal nature that most multiplayer games of the time had (Juul, 1999). These concepts do appear similar to some of the previous discussed concepts of multiplayer games.

#### 4.2.3 Rules of Play: Game Design Fundamentals

*Meaningful play requires that players choose actions from among a palette rich enough to support a large space of possibility but limited enough to properly structure their decisions.* (Salen & Zimmerman, 2004)

Rules of Play are one of those highly acclaimed books on the subject of game design. This book again deals with very high-level abstract terms with many examples of games. This means the book has large sections attributed to things like social interactions, but very few to mechanical examples of these types of games.

The quote at the top relates very much to the topic at hand and is used at the end of a section discussing information in games. This section is very relevant both because it relates strongly to the previous discussions on “meaningful actions”, but also because it is directly related to the fact that an action is only meaningful if a player knows he has that action available to him (Salen & Zimmerman, 2004).

Salen and Zimmerman also add the opposite end of the scale concern to the discussion when they say that games that are completely chaotic and beyond the player’s comprehension, cause the same problem as having too few options (Salen & Zimmerman, 2004).

Another concept discussed in Rules of Play slightly contradicts Tom Cadwell on a semantics level. Rules of Play say that all games have some conflict, not necessarily between players, but usually the conflict is zero-sum (Salen & Zimmerman, 2004). Tom Cadwell says, “Satisfaction is not zero-sum” (Cadwell, 2013). The reason this superficial contradiction appears is that Salen and Zimmerman discuss games on an abstract level where games usually have a winner and a loser, thus being zero-sum (Salen & Zimmerman, 2004). An example of this could be Chess, if you take an opponent’s pawn, you do not always gain something, it could be a trap that makes you lose a better piece and thus taking something from your opponent is not always zero-sum.

The distinction is that Tom Cadwell encourages distinction by skill by making options of these non-zero-sum situations where two players trade, one may win in one part of the game (kill the opponent) while the other may trade an objective (plant a bomb) before dying (Cadwell, 2013). Salen and Zimmerman’s discussion on conflict does not contradict this; they even say that the more possibilities of conflict cause more tension and variety (Salen & Zimmerman, 2004).

#### 4.2.4 Level Up!: The guide to Great Video Game Design

*As long as the conditions for gaining these special powers are clear to the player, there’s no reason why you can’t add this technique to your design arsenal.* (Rogers, 2010)

This book by Scott Rogers is a slightly different take on design of games. It is very direct and not abstract and philosophical at all. It will say things such as “that mechanic is boring” directly and try to generally avoid the large overarching questions (Rogers, 2010).

The book uses mainly platformers and singleplayer games as examples but has a section for multiplayer. This section does bring up a lot of terminology known to players of these games that relate to concepts of interaction. One such terminology is “buffing”, which is something that has been implicitly been discussed surrounding the topics of Teamplay. Buffing is when you to apply positive effects to your teammates in some manner, just as you apply negative effects to enemies (Rogers, 2010).

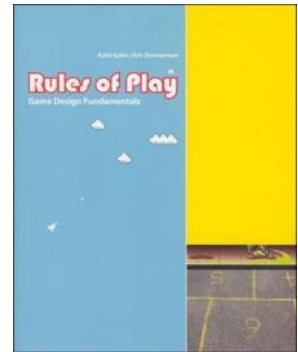


Figure 4.5 - The Book Rules of Play: Game Design Fundamentals. Source: <http://mitpress.mit.edu/books/rules-play>

Scott Rogers barely discusses the merits of these parts except give an overview of them existing. He explains the merit of one particular subject – when players are against each other. He claims that people love to show off how much better they are compared to other people (Rogers, 2010), the very subject of being able to differentiate by skill discussed earlier.

He does make points about how things need to be clear and how the player needs information to be able to act out properly on the mechanics of the game (Rogers, 2010). The quote added to the start of this section stated that on the subject of power-ups. Another thing he talks about is how rewards and curiosity can incentivize players to perform certain actions (Rogers, 2010). This added to the concept of Counterplay and Teamplay could perhaps incentivize more satisfaction for the players.

#### 4.2.5 Summary

Many different topics has been included in the state of the art, however, most of them have been scavenged from different parts of the respective books and papers and has not really been mentioned in this direct subject. It is easy to see how all of these people connect many similar motivations to the same consequences even though they are not covering the exact same topic.

Tom Cadwell talked about the direct relevant topic of how mechanics needs to be interesting to use. He connects this to Counterplay and Teamplay because he has observed that this gives player satisfaction. To check if mechanics work under this concept he essentially has the checklist of if Counterplay or Teamplay is: “Possible”, “Clear” and “Interesting”.

Extra Credits expanded on the counter play part by addressing that firstly they agree that a mechanic has to be interesting for not only the person using it, but also the players having mechanics used on them. They also expanded on this with making the direct vocabulary link from “satisfaction” to “meaningful actions” and that it allows players to differentiate by skill, through Risk/Reward and Flow based gameplay.

Jesse Schell in The Art of Game Design links the motivations for playing multiplayer as being able to solve cooperative problems that would not be possible alone and the ability to differentiate by skill. These two definitions as well as the others listed in the section very clearly sets the same precedents for why people enjoy multiplayer and that these aspects should be enhanced. He also addresses the basics of meaningful actions, flow, player information and moment-to-moment rewards during gameplay.

Jesper Juul adds to the discussion that multiplayer games with small incremental goals adds high incentives to replayability and is generally a proponent of keeping information available to players, such they can make informed decisions during gameplay.

Salen and Zimmerman in the book Rules of Play put a lot of emphasis on meaningful actions and qualitative outcomes. They talk about zero-sum conflict games but do include that meaningful actions during conflict increases tension and variety and will create situations in a zero-sum game that is not zero-sum, allowing for satisfaction on both sides. They also emphasize the importance of having clear information to make informed decisions.

Finally the book Level Up! includes main points of being able discern your surroundings and that rewards and curiosity is excellent motivators in gameplay. He also includes the specific point on multiplayer that showing that a player is better than another player is something many people enjoy.

Some of the key terminology used is:

- Meaningful actions
- Counterplay and Teamplay increases said meaningful actions
- Clarity concerning what is happening around/to you
- Information available to make informed decisions about game-state situations
- Ability to differentiate by skill
- Attributing positive experiences to teammates is awesome
- Small incremental goals are positive (Counterplay and Teamplay could be under this)
- Satisfaction is not zero-sum even if the end state of the game is zero-sum
- Multiplayer games incentivize replayability (mastery of gameplay)

These concepts or terminology taken from the theorists may be considered when combining the qualitative codes into categories or later, not in the actual coding process itself.

## 5 Data Collection

This section will involve two sets of data collection each with their own coding scheme. This is due to the issue with the first set of data being significantly smaller than intended. The first set of data includes interview data, where the second set of data is from blogs and podcasts.

The general method of sampling is judgmental sampling. This means that sources of data is included based on the knowledge and expertise within the field of game design.

### 5.1 Data Gathering First Round

The first set of data intended to use Tom Cadwell's model as a guiding tool to create an open-ended questionnaire (interview form) to send to designers. The questionnaire uses the three steps of Tom Cadwell's model: "Possible", "Clear" and "Interesting" to lead into the designer's opinion and examples explaining their opinion.

The open-ended questionnaire had the following four questions:

1. Within the area of multiplayer game design, shortly outline your background (Academic? Developer? Player?). Based on this what do you feel are the concepts (Word and define in any manner you find fitting) of main importance in multiplayer games?
2. Do you consider it important to add anticipatory and reactionary gameplay when dealing with multiplayer games? Is it essential that players have a "possible reaction" to anything that can affect them either positively or negatively? Please use examples of this done well and not so well.
3. Considering this anticipatory and reactionary gameplay, is the number of possible reactions to any one effect an important aspect? Please use examples of this done well and not so well.
4. How about the clarity of player interactions? Is it important that players can immediately ascertain the effect of any interaction be it positive or negative? Please use examples of this done well and not so well.



Full questionnaire with introduction description and everything as it was send can be found in 13.1 Open-Ended Questionnaire (Interview) in the appendix.

The goal of the first question was to outline the base of the people's experience. This was mainly to have a mild form of demographics. The idea being that academics would use certain terminology compared to people who just plays games. Then the following three questions affects the concepts of Counterplay and Teamplay. The first addresses whether the players have a possible response to the game state, and then the second is on the point of interestingness, having more than one response to a given situation is important. Finally, the third is a question on the importance of clarity, information and feedback for the players.

These questions were first send to two people from campus to ascertain if the type of responses would be useful for an analysis. The responses did return useful responses and was then send to twelve different individual designers or small companies depending on the e-mail available. All of these companies and designers have been involved in multiplayer titles of different scales, though all of the companies are small companies below 20 employees.

This returned one response from an individual designer. Due to the low number of responses, the two initial questionnaire responses from the campus will be included to increase the data, mainly because the questions were not changed and the responses were quite different and did not appear affected by any type of bias, nor did they have any real information about the topic before answering.

This means the data used comes from three people. The first two are currently both studying the Medialogy (Games) master and have experience in the academic, development and playing of multiplayer games. They do have a different bachelor background and a different general taste in types of games they enjoy, making their responses very different.

The third response is from the designer Soren Johnson. Soren is a huge industry name being production lead and lead designer on Civilizations IV (Firaxis). He has also worked on a number of other big titles such as Spore (EA Maxis). He is a developer and avid player of multiplayer games himself, having just announced a heavily multiplayer focused title under his newly founded company Mohawk Games.

The interview responses is in the appendix in section 13.2 Interview responses and coding.

#### 5.1.1 Coding Data Set

The coding as explained in the Method section is using line-by-line sentence analysis and then trying to sort the sentences into some of the statements explained in the Method section, which should then give an easier time assigning a code to the relevant sentences.

An example of this is the following taken from the interview answers of Soren Johnson.

<b>3. Considering this anticipatory and reactionary gameplay, is the number of possible reactions to any one effect an important aspect? Please use examples of this done well and not so well.</b>		
One reaction: Negative/Lack of Diversity: Boredom	Strategy	Certainly, you don't want to have one specific reaction against any strategy
One reaction: Negative	Consequence	as that would lead to a rather boring game.

The first line highlights that he feels that having one specific reactions against any strategy is bad, thus being under the statement "Strategy". Then the statement "Consequence" is highlighted in the next part of

the line, highlighting that the result of that strategy would be boring. This leads to the two codes “One Reaction: Negative” and “Lack of Diversity: Boredom”.

The rest of the coding process is in section 13.2 Interview responses and coding in the appendix. Hopefully a clear procedure can be observed from the coding process, even though the codes will likely be very subjective to the author, a similar set of codes should be found from anyone attempting to code the same thing.

The final codes with some metric information regarding how many occurrences they had in the in the interviews and how many interviews they were found in, is found in the following table:

Code Number	Code name	Number of occurrences	Number of interviews found in
1	Diversity	5	2
2	Uniqueness	1	1
3	Lack of diversity: Boredom	2	2
4	Common End-goal	2	1
5	Cooperation	2	2
6	Flow	5	1
7	Designer Goals	3	2
8	Challenge	1	1
9	Balance	4	3
10	Genre Turn-Based: Can work, different definition of reactions	2	1
11	Player Strategies	3	2
12	Temporality of Reactions	1	1
13	Reactions: “Not for all multiplayer games”	1	1
14	Knowledge of Effects	4	2
15	Learning/Mastery of Effects	3	2
16	Fairness	2	2
17	Interaction between players	2	2
18	Communication	2	1
19	Inability to respond: Can still be a success	1	1
20	Inability to respond: Not fun to experience	1	1
21	“Reactionary preferred, not a necessity”	1	1
22	One Reaction: Negative	3	2
23	Multiple Reactions: Positive	1	1
24	Clarity of effects	1	1
25	Personal Relationships	1	1
26	Feedback on actions	1	1
27	Pre-emptive Feedback: Even better	1	1
28	Comfort derived from information tools	1	1
29	Empowerment from information	1	1

*Figure 5.1 - Table over established codes from interview data.*

As can be read, 29 different codes developed from the three interviews. There is a rather large problem in the fact that only about one third of the codes actually repeat in more than one interview. Nevertheless, the metrics part is mostly impossible to use with so few interview responses. From adding the third

interview to the two first, only five new concepts emerged, meaning that a lot of convergence would likely have happened from more interviews.

Due to the lack of data to verify these codes, the second data gathering round to broaden and confirm the current codes will be required. Due to a pressuring time limit awaiting responses from mails that may not even be responded, another approach will be used. This approach inspired by Soren Johnson's interview is to use game designer and developer podcasts and blogs as a source of information on the topic.

## 5.2 Data Gathering Second Round

The data gathering method used was to find relevant blogs and podcasts discussing the topic of player interaction in multiplayer games. The way these were found was a variation of the "cited by" function of google scholar. Discussion forums surrounding the blogs and podcasts already used (Extra Credits and the two linked by Soren Johnson), would be searched through to see if the discussion linked to other similar blogs and podcasts. This method yielded the data found in this section.

As stated in the Method section, the method for analyzing these sources will be more in the vein of analyzing articles, looking for relevant concepts and terminology. The goal is to use this terminology to expand the number of sources backing the already exist codes derived from the interviews.

An actual qualitative method similar to line-by-line has been performed, however, not in a meticulous documented fashion like the interview were. The method was essentially to take each paragraph and assign the same "statements" attempting to look for the goals of each paragraph leading to the codes found.

### 5.2.1 Sirlin's Rock Paper Scissors and Yomi

David Sirlin has degrees within math and business; he is a competitive player, designer and academic author of multiplayer games. The reason he was not brought up or even found is the state of the art was mainly that his terminology is very "balance" related and generally did not appear in any of my searches or related sources.

#### Rock Paper Scissors

He wrote an article on the concept of RPS (Rock, Paper and Scissors) (Sirlin, 2008). He does a clear example of two players playing 10 rounds of RPS with 1 dollar betting in each round. In this case it would make no difference if you chose rock, paper or scissors because you have no basis to expect your opponent will do any of them (unless he repeats the same move every time) (Sirlin, 2008). If you, however, change the premise to giving different payoffs to each of those actions. Rock will give a 10 dollar return, scissors will give a 3 dollar return and paper a 1 dollar return. Now the lowest payoff is safe move because it counters the highest payoff move. Scissors essentially gets to be a free move because avoiding the 10 dollar payoff from rock would be important to be able to actually win as recuperating 10 dollar in this game would be difficult (Sirlin, 2008).

This simple premise change of different actions having different **known** risks and rewards completely change the attitude towards the game (Sirlin, 2008). This simple example of course has the downside of being easy to mathematically find the optimal moves, but even then, human psychology is not good with following the mathematical directions (Sirlin, 2008).

Finally, he claims that human psychology has a hard time dealing with unequal payoff, feeling it may not be balanced or fair. This factor is addressed as players evolve a skill Sirlin calls “Valuation” (Sirlin, 2008). Nevertheless, problems of uneven payoff may cause small issues, but unclear payoff make players unable to make informed decisions and thus relegated to guessing, which is not conducive to the enjoyment of the players (Sirlin, 2008).

## Yomi

Sirlin then wrote an article on the concept of Yomi in 2012. Yomi is Japanese for “reading” and is his terminology used for reading your opponent (Sirlin, 2012). The easiest way to explain Yomi is to recite Sirlin’s own example. Consider a fighting game with two players playing against each other. The first player will start out by using a move “m”. He will continue to use this move “m” until the opponent will find a move that counters move “m”, which we will call “c1” (yomi layer 1). Now the first player will have to find a move “c2” (yomi layer 2) to counter “c1”, because that allows him to switch in some “m” moves to confuse the opponent. Finally, the second player will have to find a move “c3” to counter the move “c2” (Sirlin, 2012). You could imagine this continuing on forever and requiring infinite moves, but the idea is that the original move “m” will counter “c3”, thus making a circle similar to RPS, but with uneven payoff, with a clear set of considerations concerning reading your opponent and evaluation (valuation skill) the payoffs of doing each move (Sirlin, 2012).

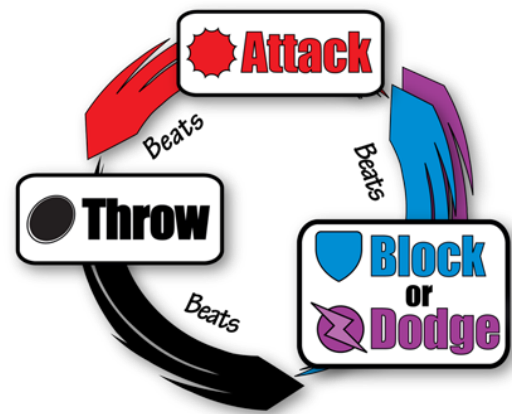


Figure 5.2 - A picture of the basic countering system of the game Yomi. Source:

[http://img1.wikia.nocookie.net/\\_\\_cb20110219180411/yomicg/images/9/9f/Yomi\\_diagram.png](http://img1.wikia.nocookie.net/__cb20110219180411/yomicg/images/9/9f/Yomi_diagram.png)

The result of these two concepts of uneven payoffs in RPS combined with the yomi layers of reading your opponent, a deep interaction derives that causes forth and back interactions and the more meaningful actions available, the deeper the system becomes.

Codes derived from Sirlin’s articles are the following:

- Temporality of Effect
- Knowledge of Effect
- Learning/Mastery of Effect
- Balance
- Player Interaction
- Clarity of Effect
- Multiple Reactions: Positive
- Fairness
- Balance

### 5.2.2 Soren Johnson – A Study in Transparency

Soren Johnson was introduced in the first data gathering round. Shortly, he has been a designer on large titles such as Civilization IV and Spore.

His talk at GDC (Game Developers Conference) in 2014 on transparency in game is essentially a zoom on the concepts of how “Clear” and how “Interesting” a mechanic is from Tom Cadwell’s theory. The concept of transparency uses examples of board games of how they clearly show the players their available actions and the outcomes of those actions before taking them (Johnson, 2014).

An example is the transparency behind the supply and demand resource track in the board game Power Grid as seen in Figure 5.3. In the game a number of different resources, coal, oil, trash and uranium. When bought, they get increasingly more expensive as the resources has to be bought from the more expensive boxes and then each round a number of resources are put back, independent of how many was bought (Johnson, 2014). This system allows for people to think ahead in terms of resources and allow for many possible actions of buying up resources just to drive the price up for other players to buy power sources that require the least sought after resource (Johnson, 2014).



Figure 5.3 - Picture depicting the resource track in the board game Powergrid. Source: (Johnson, 2014)

This method of allowing people to clearly know their possibilities and give them an indication of the outcome of those possibilities increase player comfort and satisfaction from the mechanics in play (Johnson, 2014). Soren Johnson also claims that when a game does not have clear transparent rules, mechanics and actions, that game can only be consumed, not understood (Johnson, 2014).

The ways of adding transparency to the game is through a variety of ways. Soren highlights four main points: Interface, Systems, Theme and Help. Interface and help is through direct information found in the game either in the GUI or in tooltips, in-game wiki’s and such. Systems is clarification of game rules and mechanics. Theme is about using a theme that aligns with the mechanic, such as plants in “Plants Versus Zombies” do not move because they are rooted (Johnson, 2014).

The codes found in this align a lot with the answers from his questionnaire as would be expected. The derived codes from this study in transparency presented at GDC are:

- Clarity of Effects
- Knowledge of Effects
- Learning/Mastery of Effects
- Feedback on actions
- Pre-emptive Feedback: Even Better
- Empowerment from information

### 5.2.3 The Game Design Roundtable #40: Multiplayer

The Game Design Roundtable is a podcast on game design with guests and hosts varying between episodes. The hosts of this episode are Dirk Knemeyer, a board game designer who owns the company [www.CQGames.com](http://www.CQGames.com), Jon Shafer, a game designer who has worked on Civilizations V and now runs his own

company Conifer Games and David Heron, a designer at Blammo! Games working mainly with the mobile platform.

This talk revolves around multiplayer as a grand concept of when it helps a game and when it does not. One of the topics is asynchronous multiplayer (Knemeyer, Shafer, & Heron, 2013). Asynchronous multiplayer occurs in games such as Wordfeud (Team Wordfeud), where one player does his move, and then the other player has one to three days to respond with his move. This manner of playing is very popular on mobile platforms and on a few large games such as Civilization, but overall not a very popular model outside of the mobile platform (Knemeyer, Shafer, & Heron, 2013).

During this topic, they discuss the merits of this asynchronicity such as the time you have to evaluate your options, such as making spreadsheets or simply discussing the possible available options (Knemeyer, Shafer, & Heron, 2013). They put a lot of emphasis on the timing of events and interactions during multiplayer games and how that effects the player interaction (Knemeyer, Shafer, & Heron, 2013).

They also give specific examples of differences between single- and multiplayer models, such as the Civilization multiplayer is very harsh due to the possibility of being eliminated within less than an hour of gameplay when 6-8 hours of time was set aside for the game (Knemeyer, Shafer, & Heron, 2013). This causes a serious disconnect in satisfaction compared to single player where an earlier save can be loaded or a new game can be started immediately (Knemeyer, Shafer, & Heron, 2013).

The codes derived from this podcast are the following:

- Temporality of actions
- Knowledge of Effects
- Interaction of Players
- Comfort from information tools
- Empowerment from information
- Inability to respond: Not fun to experience
- Communication

#### 5.2.4 Alexander Brazie

Alexander Brazie is a designer who has prominently worked as a content and encounter designer in World of Warcraft. Most of his experience seem to be working with the creation of bosses, even though he comes from a technical programming background, which has now landed him a job at Riot Games.

This is a blog post called “learning from my past” essentially outlining what experiences has caused his current style of design philosophy (Brazie, 2012). This blog is structured very directly to deal with a lot of the concepts involved in player interaction.

The format discusses points of how the designer Alexander Brazie would make gameplay, mechanics and interaction fun in general. He discusses the following points:



### Make it clear

Make sure there is a correlation between the visuals and the effects and make sure the player is aware of what happens (Brazie, 2012). He uses an example of “Heroic Strike” from World of Warcraft (Blizzard) being a bad example because it is simply a sword swing that has no visuals but adds a little extra damage. He then uses a good example from the same game of the Fireball. This has clear problems, payoffs and considerations as you have to stand still when casting it and being attacked will increase the cast time. (Brazie, 2012). This results in a lot of clarity in using the ability because everything about it is telegraphed in the player’s mind of “channeling to cast a spell” and then finally releasing the spell (Brazie, 2012).



*Figure 5.4 - A picture of a mage in World of Warcraft using the Fireball spell. Source: <http://www.blogcdn.com/wow.joystiq.com/media/2009/12/sarabande-casting-fireball-resized.jpg>*

### Make it important

This whole section relates to making a player care about the actions going on around him. He uses an example of making a mechanic incredibly powerful always makes players care about that mechanic, however, in a negative way. Using power is only one tool for making people care about the mechanics, which Alexander Brazie puts under the term “Tuning”, which is essentially a form of balancing (Brazie, 2012). The other way of making people care is emotion (Brazie, 2012). This method involves using mainly visuals but also effects in a way that empowers the player. For example setting an opponent on fire, even if the effect is not as strong as something else, the visual power of that is so appealing to players (Brazie, 2012). This whole section links very much with theoretic concept of meaningful actions, that when players feel they have choices and the choices are relevant to them because of either power or visuals, it increases the satisfaction of the game (Brazie, 2012).

### Give players a response

Sounds familiar by now does it not. This is simply the idea of giving players responses to deal with game-state situations. The interesting divergence is that Alexander splits responses into three groups of responses: reaction, preparation and recovery (Brazie, 2012).

Reactive responses is the responses required in a timely manner. If someone is casting a spell at you, you need to be able to react immediately (Brazie, 2012). To this end reactive responses exist, such as moving out of “Line of Sight” or using another spell such as “counterspell” from World of Warcraft (Brazie, 2012). Alexander Brazie observes that abilities such as “counterspell” is unsatisfying for the opponent as he cannot predict or react to this, where if the player used Line of Sight to avoid the spell, that could be taken into account beforehand (Brazie, 2012).

*"You can't move to avoid most spells once you're in close, ducking around a corner only works in buildings. Hiding behind a hill flat out doesn't work. The fact that most spells are targeted takes a lot of the counter fun out of the game." (Brazie, 2012).*

In the quote above Brazie even directly mentions that a lot of the “counter fun” is taken out of the game, essentially addressing the issue of Counterplay.



*Figure 5.5 - An image of the Magic the Gathering "Counterspell" card. Source: (Brazie, 2012)*

The two next points of responses are preparation and recovery. Preparation is when a burden of knowledge is required to prepare something before going into a situation. This is something like reading tactics online before engaging a boss in World of Warcraft (Brazie, 2012). Generally, Alexander's opinion is that designing for preparation is good in theory but is a flawed concept because it relies on an unprepared player to fail before overcoming the burden of knowledge (Brazie, 2012).

Recovery is when a player actually does fail, the game needs to allow for some sort of recovery and not be instantly punishing. Also recovery is based on the assumption that the game afford opportunities for recovery (Brazie, 2012). Recovery feels good and overcoming a failure is an excellent feeling according to Alexander (Brazie, 2012).

### **Make it Satisfying**

The fourth term he uses is satisfaction. He believe that satisfaction is more fun than winning and as such making things feel and look cool in the game will go a long way (Brazie, 2012). He emphasizes using rewards and punishments to guide a player towards a fun experience. This means rewarding things that may not always be the most effective choice available, but the choice that feels better for the player (Brazie, 2012).

Another emphasis is pacing. A game that moves too slowly with too little action or consequence, the player will quickly become bored with it (Brazie, 2012). On the other hand, if the game moves too quickly the game quickly gets out hand and the players will not feel like they have any choices because too much information appears at once (Brazie, 2012).

### **Make it appropriate for your game**

This final point is mainly included to have every part of the blog post mentioned. This section adds that making sure the game follows the overall theme, target group and game consistency; the player will have more clarity to make choices in the world (Brazie, 2012). They will also learn the rules of the world over time such that they overall feel more comfortable (Brazie, 2012).

The codes derived from Alexander Brazie's blog post are the following:

- Clarity of Effect
- Knowledge of Effect
- Learning/Mastery of Effect
- Balance
- Fairness
- Player Interaction
- Personal relationships
- Multiple Reactions: Positive
- Temporality of Reactions
- Uniqueness
- Challenge
- Inability to respond: Not fun to experience
- Designer Goals

### 5.2.5 Three Moves Ahead: The War in Europa

*I was really surprised with how much depth and how many interesting choices that are within that system [Europe Universalis 4's Monarch system], I was sort of caught off guard I have to admit. – Rob Zacny (Johansson, Robinson, & Zacny, 2013).*

This is a podcast essentially discussing the event of Paradox Studios inviting the podcast hosts to play a 20 player LAN (local) multiplayer game of Europa Universalis IV (Paradox Studios), also called EU IV. Then discussing the game and its merits with the lead designer of the game.

Generally a lot of play-by-play is addressed but a few clear examples are used. The reason I specifically used this podcast was because they addressed player interaction in a very different way. EU IV is a large game that is very complex and confusing to understand, and they clarified how decisions were long term and non-punishing but moment-to-moment gameplay could be punishing but easy to recoup from (Johansson, Robinson, & Zacny, 2013).

This allows people to do long term strategies without being punished too hard, even if parts of it fail along the way. The amount of meaningful actions combined with diplomacy allows for a lot of interaction forth and back (Johansson, Robinson, & Zacny, 2013).

The codes derived from the Podcasts were:

- Clarity of Effects
- Temporality of Reactions
- Learning/Mastery of Effect
- Feedback

## 5.3 Final Codes

The codes found at the end of each subsection in 5.2 Data Gathering Second Round is now added to the table containing the codes. This means that the fourth column will be renamed from “number of interviews found in” to “number of sources found in”.

There are a few consequences from this. The codes from the second data gathering round are already existing codes from the interviews, but sources that expand on those concepts in some meaningful way. This does mean that the emphasis shifts to responding to the mannerism of the questions to highlighting the positives. This means the codes carrying a negative denotation ends up with fewer points of data.

The ordering of codes is by sources, such that the codes seen in most different sources will be at the top. Eight total sources have been taken from, three interviews and five blogs and podcasts.

Code Number	Code name	Number of occurrences	Number of sources found in
1	Knowledge of Effects	8	6
2	Learning/Mastery of Effects	7	6
3	Balance	7	6
4	Interaction between players	5	5
5	Temporality of Reactions	5	5
6	Clarity of effects	5	5
7	Fairness	4	4

8	Designer Goals	4	3
9	Empowerment from information	3	3
10	Feedback	3	3
11	Multiple Reactions: Positive	3	3
12	Inability to respond: Not fun to experience	3	3
13	Diversity	5	2
14	Player Strategies	3	2
15	Communication	3	2
16	One Reaction: Negative	3	2
17	Personal Relationships	2	2
18	Pre-emptive Feedback: Even better	2	2
19	Comfort derived from information tools	2	2
20	Uniqueness	2	2
21	Lack of diversity: Boredom	2	2
22	Cooperation	2	2
23	Challenge	2	2
24	Flow	5	1
25	Common End-goal	2	1
26	Genre Turn-Based: Can work, different definition of reactions	2	1
27	Inability to respond: Can still be a success	1	1
28	"Reactionary preferred, not a necessity"	1	1
29	Reactions: "Not for all multiplayer games"	1	1

*Figure 5.6 - Table over final established codes with the blogs and podcasts data included*

The actually depth and context of the codes will be included in the categories and patterns section. This is where the comparison and the meaning behind them the codes are. The codes are derived from the qualitative analysis.

The following section will expand the codes into categories as described in the section 1 Motivation.

## 6 Categorizing Data

The way of categorizing the codes is to find codes that fill a certain block of the theory discussed. This was done looking for similar terminology and look for parts of a game effected by the code in question. Some examples of this was all codes affecting game design and creation, other examples were all codes affecting how players were able to interact and some examples were all codes that had a common theme such as information or diversity. This lead to the following eight categories.

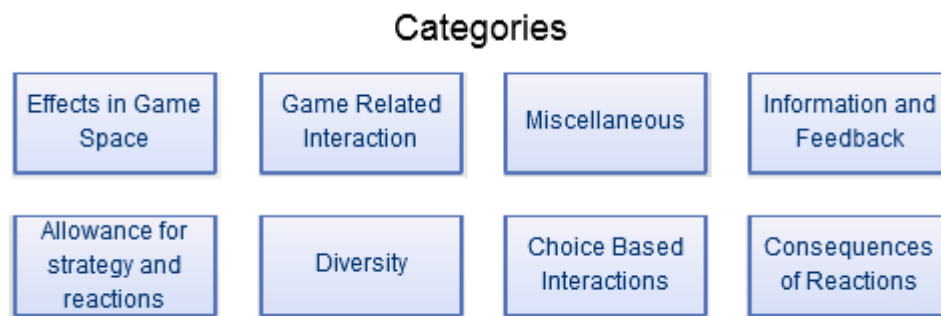


Figure 6.1 - Picture showing the categories derived from the codes. Created in Creately.com

The categories in the image is explained below along with qualifying what codes are collected in each of these categories. The Miscellaneous category was added due to a few codes all related to design and effects of design, but did not fit into the other categories too well.

Not all the codes will be completely fleshed out in the report as gathering several quotes containing the same information from different sources would serve to take up more space than add information. The section will sample the codes and give qualifying quotes to show the reason for the code being contained within that category.

### 6.1 Effects in the game-space

- Knowledge of Effect (1)
- Mastery/Learning of Effect (2)
- Temporality of effect (5)
- Clarity of Effect (6)

Effects in the game-space are all codes that related to game effects such as abilities that has varying effects usually with visuals and sound effects. The general gist of what this whole category is about is the design space Tom Cadwell's Counterplay and Teamplay theory surrounds.

#### Qualification

Interview person 1 as highlights the importance of knowledge of effects in his question answer:

*I would say that is somewhat important since nothing is more frustrating than dying in a game without any knowledge of what killed you. So a clear indication on what killed you is important. – Interview Person 1*

Sirlin in his article on Rock, Paper and Scissors write the following line on the importance of knowing what the possible payoffs are when using different mechanics in game and how that is interesting:

*Finally, notice how hard it is to determine the actual payoffs in StarCraft. If your correct guess results in a battle between a few enemy Zealots and several of your Marines, what is the payoff? How many Marines will you lose? It depends on the micromanagement skill of both players, the terrain, and whether each player even focuses on the battle at all. (Sirlin, 2008)*

All of the statements found the in articles regarding knowledge follow the same two sentiments: Not knowing what is happening to you is simply frustrating and unsatisfactory. And the skill Sirlin call "valuation", being able to learn how to determine complex outcomes in a game is very satisfactory.

Interview person 1's continuation of his quote on knowledge of effect sums up the importance of master and learning effects:

*How to counter that should be learned from experience however. So if an enemy uses a specific attack and I first try to jump back and die I know jumping back wasn't the right reaction. Next time I'll jump left and if that works I will do that forwards on. – Interview Person 1*

Interview person 1 explains that it is satisfying to learn from experience, get better by learning mechanical effects, and have mastery over them. Alexander Brazie expands on this point by using an example of the “freeze ray” in Metroid for the NES.

*The Freeze ray let you do some very cool things - stun enemies and use enemies as platforms, weaken Metroids for the killing, etc. In fact, the final act of the game is highly dependent on your ability to use the Freeze ray correctly. So what did Nintendo do - wait until the final act where you needed it? No, they gave you access to it early in the game, so you knew what it was, played with it for a while, used it to solve a few puzzles, then moved on to more powerful upgrades. When you eventually came to a place where going further isn't possible, the memory of that tool kicks in and you pick it up again when you need it. (Brazie, 2012)*

This whole section Alexander is praising how Metroid allowed you to get the freeze ray early, learn to use it in simple puzzles and then slowly over time make it more and more important as the player would have gotten more used to it. This is an example of depth of mechanic in how it interacts with the world, where another example is depth in the weapon itself, such as having more fire modes with different outcomes.

There is also a lot of agreement towards the clarity of effects, mechanics and visuals in general. Interview person 2 states.

*Heck yeah! Most multiplayer games I play are competitive and you need immediate response time, so knowing what just happened to you is important. Not just if it was positive or negative, but the exact thing (or effect if 'exact thing' is too hard). A game like HoN [Heroes of Newerth] for example, have alternative skins for their champions, but each skin was tested on beta to see if the spells were still recognizable in order to avoid any confusion. – Interview person 2*

Interview person 2 makes the argument that both the clarity of effects but also the information needs to be available to be able to play the game properly.

Soren Johnson also clearly agrees that clarity is prime importance. He created “a study in transparency” that he took the GDC to expand on the importance. An example of his is in the card game Innovation.

*The rules on the cards are communicated as text, thus each card can have a completely unique power. And in a four player game, if you're talking about five active technologies, that means you can have twenty unique rules in play at any one time, which can also change from turn to turn. Now the cognitive load of trying to understand the state of the board here is immense. [if] A new player wants to be competitive he has to essentially slow the game to a crawl to make sure each card has been read and understood, and often the social cost of that is simply too high. (Johnson, 2014)*

This is one of Soren Johnson's highlights of a bad example, where if there is no clarity and there is too many things going on, the entire thing will fall apart. He moves on to give a good example of Race for the Galaxy, which is a similar card game, but a clear iconographic set of rules are present such that the player can just peek at the symbol and refer to a short concise reference sheet in front of him.



## Summary

Effects in the game space is essentially the category with some of the most represented codes in the sources used. Every source found, including the State of the Art agrees that giving the players knowledge about the game and clear information (mainly visual), such that they can take informed decisions and learn from every failure in the game will lead to a heightened satisfaction.

This category is something intrinsic to the design of a game. The game is easier to understand if it has a clear theme where people can understand the causality of actions, such as “fire hurts” and the game, itself needs a visual style and GUI that allows for information to easily reach the player.

## 6.2 Game-related interaction

- Balance (3)
- Fairness (7)
- Challenge (23)
- Flow (24)

This who category is the most discussed topics within multiplayer game design that I could find the sources. Jesse Schell has an entire chapter on balancing with 11 subsections, where one of them is “12 types of balance”. Sirlin’s entire design career also started from researching into and balancing fighting games.

### Qualification

So on the points of balance and fairness, interview person 2 added balance as his very first point of important concepts in multiplayer games. He sums it up as.

*1.a) Balance. A multiplayer game needs to be balanced obviously, or it won't seem fair in any way and the interest in the game will drop. - Interview person 2*

He claims that balance is required for people to feel treated fair by the game and be able to enjoy the competition. Alexander Brazie, David Sirlin and Jesse Schell mirror this point. Jesse Schells example from the book The Art of Game Design.

*One simple way to balance elements for fairness is to make sure that whenever something in your game has an advantage over something else, yet another thing has an advantage over that! ... None of the elements can be supreme, because there is always, another that can defeat it. It is a simple way to ensure that every game elements has both strengths and weaknesses. (Schell, 2008)*

On the following page in the book, Jesse Schell has the title “Challenge vs. Success”, wherein he addresses challenge and flow, the two remaining codes of this category. This should highlight how interconnected these topics are and that they are the basic parts of multiplayer design that is a requirement for success.

Interview person 1 has Flow as one of his three main concepts for multiplayer game design in the following statement.

*Good flow for all players: This is by far the hardest goal, which attains to the goal that all players should be challenged without feeling, the end goal is impossible. Interview person 1*

## Summary

Balance, fairness, challenge and flow are all basic parts of game design that always have to exist to ensure players enjoyment. This point just shines through even more in multiplayer games, because if a game is very hard, you can struggle to overcome it. If an opposing player is too good or has something that simply invalidates your presence in the game, you will not have any enjoyment from that game.

The hard part designing these game-related interactions is that players will often not be able to give feedback to developers on when something is too good or not good enough, as humans have a psychological bias towards remembering bad situations compared to good ones. As such, even if it is one of the most important parts of multiplayer design, it is something that takes a lot of time to get right.

### 6.3 Information and feedback

- Empowerment from information (9)
- Feedback (10)
- Pre-emptive feedback: Even better (18)
- Comfort Derived from Information Tools (19)

These four codes were mainly derived from Soren Johnson's interview answers and then repeated over and over again by the blog and podcast sources. This could mean that these are deeper parts of design that takes experience and time to understand the importance of these.

They all relate to the information available to the player. This has a very clear correlation to the "clarity of effects" code, but is much more related to the interactions and meaningful actions available the players. The clarity of effects part is mainly discussed as in being able to understand the game-state surroundings in a specific moment, where these information codes is just general information about everything about the game to make informed decisions in both moment-to-moment gameplay but also in long term strategies.

#### Qualification

There is a lot of different forms the discussion on information and feedback takes. Soren Johnson in his interview answered the following, which is also a part of his GDC talk.

*This is hugely important, and - in fact - I usually try to give players feedback on their actions before they actually take it. In Civ4, this could mean showing how the borders will appear if you found a city in a specific location or what are the percent odds of winning a specific battle. It is important to give players these tools so that they have a higher degree of comfort with the games systems, so that they feel empowered by the game. – Interview person 3*

The wording used in the codes is his words "feedback", "tools", "empowered" and "comfort" taken directly from this answer. These directly relate to a very important aspect of allowing players to understand everything they do and the consequence of what they do it, even before they do it if possible.

In the podcast The Design Round Table does on multiplayer games, Jon Shafer shares a story of how he would play Civilization 3 in multiplayer.

*We used to play these things called "democracy games" [In Civilization III], where a group of people would all run a single civ [a Civilization in the game] and then it would be a play by e-mail game so we'd mail on the save. And obviously this is another level on top, even beyond asynchronous play. And it was just a lot of fun because you had as much time as you wanted to make these decisions, you could evaluate the*

*situations, you could come up with plans, you could make charts and dossiers and spreadsheets and all these crazy things. – Jon Shafer (Knemeyer, Shafer, & Heron, 2013).*

He ends out by saying that he loves this type of play and the way to read the quote is essentially that Civilization 3 allowed for so much depth by giving the player so much information that it was possible to create charts, dossiers and player profiles of the opponents to make optimal decisions.

### Summary

Having information is having power to make choices within a game. The only times you want to not give players access to information is when a game design choice requires a player to not know something, such as a horror or puzzle game.

While Jon Shafer's example of "democracy games" are completely extreme, giving players a lot of information is usually always better than neglecting to give information to the players. Not having information means players are neglected to guessing, as Sirlin also points out in his article on Rock, Paper and Scissors (Sirlin, 2008).

## 6.4 Allowance for strategy and reactions

- Multiple Reactions: Positive (11)
- Player Strategies (14)
- One Reaction: Negative (16)

All of these codes had the same theme of relating to allowing the player to respond to actions and plan for a strategy. This ties in closely with information, but information is not the only thing that the sources recommended to allow for player strategies.

### Qualification

Interview person 1 comments on the idea of player strategies by saying that it is ok for people to not always have a reaction, if it is because they have had some strategy going up to that, that they can refer back to, to realize their mistake.

*Sometimes a player just haven't built a strategy where any reaction can give a positive outcome (a card-game like Hearthstone). So it can be important but is not all and all for all multi-player games. – Interview person 1*

Where Interview person 3, Soren Johnson says that every path or strategy must have a counter.

*It is certainly important that every path or strategy has a potential counter, so that a player also feels like there is a valid option. – Interview person 3*

I believe the keyword in here is "potential" to align the two statements intention. Players must be able to create strategies and there cannot exist a dominant strategy. Dominant strategies is a strategy that basically beats everything else (Juul, 2011).

Furthermore on the topic of diversity and multiple reactions there is also a general consensus among sources that this is highly important. Interview person 3 states.

*Certainly, you don't want to have one specific reaction against any strategy as that would lead to a rather boring game. – Interview person 3*

Interview person 1 further expands that it increases flow and challenge and that it encourages people to learn and get better at the game.

*The more reactions there are the easier I would say it is to keep up with my third requirement [flow] and therefore I think it is a good aspect. (If one reaction is really great but a player is not able to perform that, he might be able to find some other good reaction that can keep the fight on a decent flow for him.) – Interview person 1*

Having multiple reactions and possibilities is also a requirement for Sirlin's statement from his Rock, Paper and Scissors article, where he wrote.

*It is a real skill (I call it valuation) and a very valid skill to test. If you can make payoffs unequal AND unclear, then you've already gone a long way toward making a good strategy game. (Sirlin, 2008).*

## Summary

Generally having options available to you in a multiplayer game is half of the reason why multiplayer games have so high replayability. The fact that real players (non-AI) can go into a situation of reading and guessing each other's moves, while using the "valuation" skill in real time creates the infinitely fun game, with a lot of skill, depth and ability to differentiate by skill.

## 6.5 Choice based interactions

- Interaction between players (4)
- Communication (15)
- Personal Relationships (17)
- Cooperation (22)

Choice based interactions are a category of usually optional multiplayer components. Even in cooperative games, it is not always a requirement to cooperate. The team deathmatch mode in most first person shooters usually never involves any teamwork, even though they are two teams against each other. The same goes for tools for communication. When such a tool exists, it is usually optional using it and just as it is optional playing with people, you have a personal relationship to.

Interaction with other players is a code that is usually also appears when a mechanic allows for interaction in a different way than is usually possible within the game-space discussed, or it is sometimes used when an interview answer simply states, "interacting with other players is important in multiplayer games".

## Qualifications

Interview person 2 answered, as one of his main points concerning multiplayer design is communication.

*1.c) Communication. How should players communicate? With teammates? With enemies? Chat/push-to-talk/gesture with game avatar?*

Generally, communication, cooperation, interaction between players and personal relationships are mentioned a little everywhere, but mainly the State of the Art. It was also one of the main flaws mentioned in the 1 Motivation.

Generally Jesse Schell sums up why adding all of these parts to a game is important in the following quote.

*Man is a social animal. Humans generally avoid being alone whenever possible. In most cases, we don't like to eat alone, sleep alone, work alone, or play alone. Prisoners who behave badly are put in solitary confinement. Because although being trapped in a cage with a dangerous criminal is bad, being alone is worse.* (Schell, 2008)

## Summary

Several earlier quotes have included parts of these codes in them, such as Soren Johnson saying that interaction against other players makes a game fresh infinitely and that playing against other people you might know in real life can have a significant effect on how much a game is enjoyed.

In general, these choice based interactions can and should be used in any case where it makes sense and they will usually add positive connotations to the game. The quote of Jesse Schell really puts into focus how important these can be if they make sense in the game.

## 6.6 Diversity

- Diversity (13)
- Uniqueness (20)
- Lack of diversity: Boring (21)
- Common End-goal (25)

Diversity is in the vein of “multiple reactions” a general consensus that repeating the same action over and over again is not enjoyable. This is also something that is usually an added part to design, adding diversity such as mini games or smaller goals to get people to do different things during a play session.

This is also one of those very general design concepts that is shown a lot, that having diversity, especially in a multiplayer session where players will usually compete for the same thing, having multiple ways of getting there simply makes it more enjoyable.

## Qualifications

A number of quotes have already highlighted the importance of diversity. Soren Johnson's quote on how an opposing real player will cause the game to have infinite replayability because the opponent adapts and compensates better than an AI can.

Diversity was also the first mentioned point in interview person 1's three points of important multiplayer concepts with the following answer.

*Diversity in roles: If I play with 4 other guys the jobs we have to do shouldn't all be the same, in that case you quickly become bored in my opinion. – Interview person 1*

He essentially thinks that having multiple roles and doing different things are key aspects of multiplayer games. In Alexander Brazie's words, the thing to avoid is “ennui”. Ennui is the act of repetition to boredom as explained in the following quote.

*Did you ever play the sequel of a game you absolutely loved, found that it had all of the same mechanics, was perhaps even of superior quality, yet still put it down after a few days, never to play it again? That's ennui. Ennui is a common affliction across humanity. It affects relationships, careers and even politics. The*

*same repetitive stimulus becomes less effective each time it occurs. This dissatisfaction is a powerful force - one that drives us to break up, change jobs or vote for the opposite team. In fact, ennui is such an important factor that humanity would quickly become stagnant without it. (Brazie, 2012)*

Essentially, he sums up that human nature is prone to boredom if repeating the same actions repeatedly. Thus avoiding ennui by adding diversity a game will keep players interested for much longer.

## Summary

In general, this is a game design consideration that almost everyone knows, but still is done wrong in countless of games. Some games, like Jetpack Joyride, (Halfbrick Studios) one of those side scrolling endless runners that a lot of exist on the appstore, does this really well by adding different vehicles that appear and adding many different obstacles, where other endless runners essentially repeat the same 10 or 20 things without any changes.

## 6.7 Consequences of Reactions

- Inability to respond: Not fun to experience (12)
- Inability to respond: Can still be a success (27)
- “Reactionary preferred, not a necessity” (28)
- Reactions: Not for all multiplayer games (29)

Similarly, to diversity being points mainly about the consequences of having diversity, these codes are about the consequences of not having possible reactions. Essentially all of these were single mentions in the interviews except for the point of inability to respond is not fun.

## Qualifications

*I'm not sure. I mean, in a game like World of Warcraft, you could be stunned from a stealthy rogue, without the chance to respond, and I would dare say that game was a success. On the other hand, it sucked to be the one stuck in the same spot for 10seconds straight without being able to respond. I would dare say it is important and preferred in my opinion, but not a necessity. – Interview person 2*

Interview person 2 answers that some successful games has had situations where you cannot respond, such as World of Warcraft. This makes him conclude that it is not a necessity, but he does say that it is important and preferred. Sirlin expands on the concept with the following statement.

*RPS [Rock, Paper and Scissors] is not limited purely to units countering each other though. Real-time strategy games also have the concept of trading off powerful units now for a strong economy now, which leads to even more powerful units later. So on one extreme, a Zerg player in StarCraft might sacrifice his entire economy to get a quick attack force ("6 pool" is the term). This will likely beat a player who chose the other extreme of playing for pure economy and no immediate attack force (by building double oven triple hatcheries). A moderate build (pool on 9th peon, one sunken colony) will likely defend against the early attacker's rush, though. Surviving the rush, the moderate build will have a much superior economy and win in the end. However, this moderate build will produce an inferior economy to the player who built 2 or 3 hatcheries and went for pure economy. (Sirlin, 2008)*

Essentially the point is that if the fairly weak “6 pool” strategy did not exist, there would be no reason to ever go anything but the full economy build. It is very important to note that this is a real time strategy



game where decisions have longer-term effect, whereas the severity of this issue would be exasperated on multiple levels in say a fighting game where a dominant move would completely destroy the game.

### Summary

The idea of having a response is something that has to be in video games. The whole idea that they are interactive would disappear if the designers do not respect that the most important aspect of participating in an interactive experience: the fact that it is interactive.

Thus especially in multiplayer games if you cannot respond, the level of fairness and enjoy ability will quickly fade if your options are limited or not there.

## 6.8 Miscellaneous

- Designer Goals (8)
- Genre Turn-Based: Can work different definition of reactions (26)

This category ended up being the category that contained the two codes that did not really fit into other categories. “Designer goals” had quite a few instances, whereas the second code did not.

### Qualification

The first code designer goals were essentially when statements either posed an unclear or optional statement such as “can be used to make players more interested” or in a situation where statements implied a game design goal, such as “having good communication between players is a design goal”.

An example of this is Soren Johnson’s statement from the interview.

*I think the importance of multiplayer in games is that it can both keep a game fresh indefinitely (because humans can always adapt and counter-adapt to each other) and that player against people you might know in real life can give an extra level of meaning to a game. – Interview person 3*

The first part is coded as “interaction between players”, then the part about playing against people in real life “**can** give an extra level of meaning to the game”. These kind of statements that do not directly qualify a cause or effect but can be used in a specific manner are all coded as designer goals.

The second code had one instance and was essentially a specific genre elaboration. Interview person 1 answered the following:

*That depends, what you mean by reactionary. A turn-based game can work well as a multi-player game even though the reactionary aspect might be quite different than the normal term. – Interview person 1*

This is an elaboration on a specific genre and as no other interview answers was specifically set on one genre, this code ended up not being too important.

### Summary

There was a lot of “can be”, “is possible to” and similar statements in all of the sources. A future goal could be to flesh this code out into smaller codes. Generally, this code is something that is a part of general design considerations.

## 7 Patterns

After adding the codes into categories and defined them, the categories have to be put into a few discernable patterns. The patterns to look for is game design patterns, and how these parts interact and how they have been discussed by the different sources.

The patterns found are the following three: Game Space Interactions, Allowed Player Actions and Bonus Satisfaction. Figure 7.1 below shows how the categories fit into these.

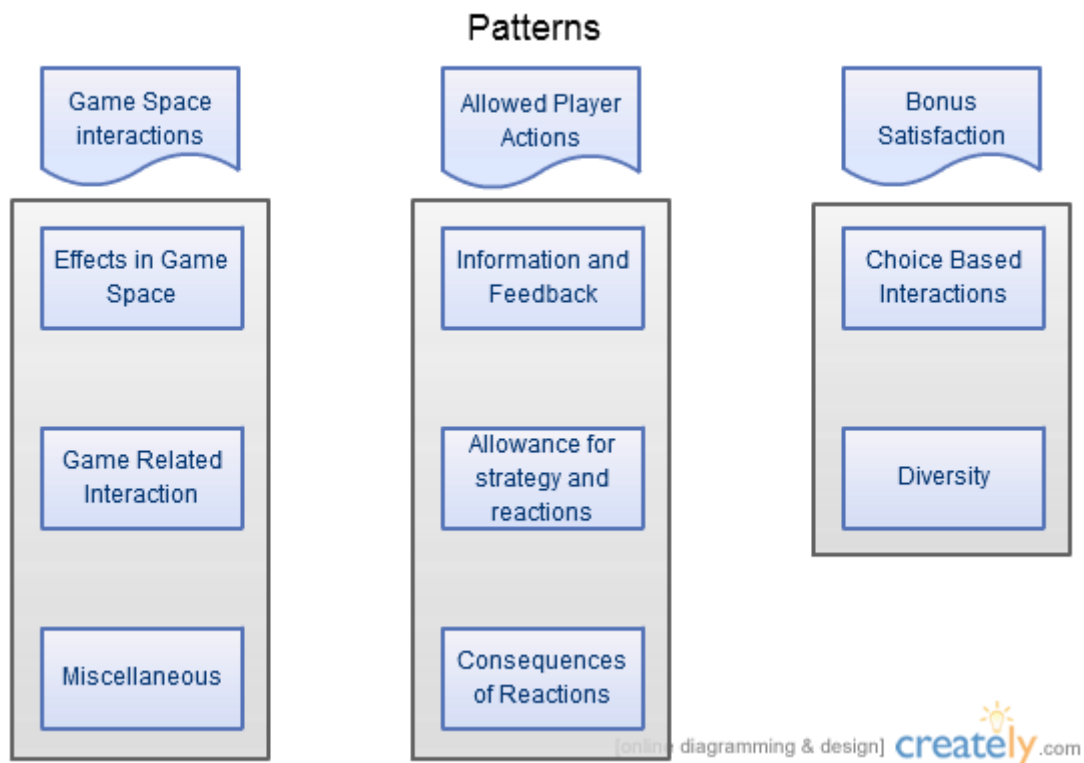


Figure 7.1 - A picture of the patterns found from the categories. Created in Creately.com

These three patterns obviously contain codes that affect similar parts of game design, but more importantly, they each fulfill an order of importance for multiplayer design.

The first pattern "Game Space Interactions" is the basic design that all games need to do well. In the case of multiplayer game the priorities within this pattern may change towards balance instead of reinforcing world rules, but all statement contained within the first patterns must all be considered.

The second pattern "Allowed Player Actions" is something that requires a lot more thought put into it in multiplayer games as opposed to single player games. A person having a "failure" experience in a single player game will not be as inclined to blame the situations as opposed to a multiplayer game where the same experience cannot be replayed exactly. The one main topic of contention for players in multiplayer games is when they "fail" and cannot realize why, or find out that they are left without enough options to retaliate.

The third and final pattern is named "Bonus Satisfaction". This pattern is all of the design elements that cannot alone carry any measure of satisfaction, but when added in the right game framework, makes players enjoy that framework tenfold more. This is where all of the choice based interactions such as

cooperation, communication is, and it is where diversity is. It of course has to be noted that some games would not work without basic communication and all games have some sort of diversity, but this pattern includes many of the extra things that can be used to take a game from good to great.

## 7.1 Game Space Interactions

As can be seen, “Effects in Game Space”, “Game Related Interaction” and “Miscellaneous” are all a part of Game Space Interactions. The pattern that these fulfill is that they are the patterns that relate directly to how players can interact in the game space and the considerations that exist within the game space.

This pattern includes how the game space provides clarity, knowledge and the opportunity to learn and master it, as well as providing balance, fairness and overall challenge.

This pattern makes League of Legends shown in Figure 7.2, such a stand out game. Most everything in the game space is polished to a tee. Players have full clarity of what happens around them as everything is telegraphed clearly through visuals and sound in the game. The internal aspects of balance and fairness is also parts the game continually updates and keeps interesting.



Figure 7.2 - A image of the game League of Legends.

Source:

<http://na.leagueoflegends.com/en/media/art/summoners-rift>

## 7.2 Allowed Player Interactions

This pattern is all about meaningful actions as described in 4 State of the Art. All of the codes contained here relates to expanding player information and choices. This allows players to involve themselves into a game on a much deeper level.

The pattern circles around player empowerment. Firstly giving players information and feedback to know what their possible actions are and what the results of their possible actions might be. Then actually allow for deep strategies and countless actions and reactions to everything. Then finally have reactions themselves be as deep as the possible choices given at the start. Let players develop their “valuation” skill (Sirlin, 2008) and be empowered by the possibilities of the game.

A good example of this is the fighting game Super Street Fighter 2 HD Remix. This fighting game requires a lot of information, knowing which of your moves counter which of your opponents and the other way around. Then there is the simple fact that there are enough moves available to avoid stagnation and even if stagnation on one character occurs, there are 15 others to play. This game contains enough player choice to feel like an empowering experience, largely because of this pattern.



Figure 7.3 - Image of the game Super Street Fighter 2 HD Remix. Source:

<http://img683.imageshack.us/img683/2870/guilestage.jpg>

### 7.3 Bonus Satisfaction

Bonus satisfaction has two components: choice based interactions and diversity. In terms of choice based interactions, if the game is built around any of the parts in that category it can quickly become a large pull for the game. A game such as World of Warcraft may garner a large audience because of the RPG (role-playing game) of leveling, gearing and evolving your character. But there is little question that some of the largest pull in that game is cooperation, communication and the personal relationships people gain through raiding in the game.

Games that build on the social interaction can garner large audiences if the designers is careful enough to allow the game to include the tools required to facilitate that interaction. Even though including multiplayer just for the sake of having multiplayer seems like an idea most AAA quality games do these days, they usually fail to draw people in with that feature, because they do not design this pattern properly.

As for diversity, the actual consequence is very similar. If you want to design an experience that keeps people playing and gives players things to do while they are waiting for friends or jumping in, in the lunch break, diversity is the way to go. Diversity is the act of giving multiple flavors and choices when playing a game, allowing players to play the game is a slightly different way. MMORPG's (Massive multiplayer online role-playing games) have been using features such as "Crafting" simply for this reason.

An excellent example of a game that did diversity in the best possible manner is Terraria Figure 7.5. This game has everything from world exploration, dungeon exploration, RPG progression, boss fights, building, crafting and tons more. This game is built on a very simple 2d base game and just adds diversity in every direction, which allows everyone to enjoy the game and has countless and countless of hours of content.

If the goal is to create an experience that relies heavily on the parts of this pattern, it is important to mention that this pattern does not stand well on its own merit. This pattern is an addition to an already good core game of the two other patterns.

## 8 Grounded Theory

The problem space was the following:

*What are the most important concepts and design considerations to address when designing a good multiplayer interaction theory?*



Figure 7.4 - A World of Warcraft raid. Source: <http://wow.joystiq.com/2012/02/23/tipster-unearths-treasure-chest-of-classic-wow-raiding-memories/>



Figure 7.5 - The game Terraria, an action adventure game. Source: <http://www.onrpgblog.com/wp-content/uploads/2011/06/TerrariaWorms.jpg>

Essentially the most important concepts are the categories in general, generally ordered by the priority of codes, as can be found in the 6 Categorizing Data section. The most important design considerations are essentially the three patterns.

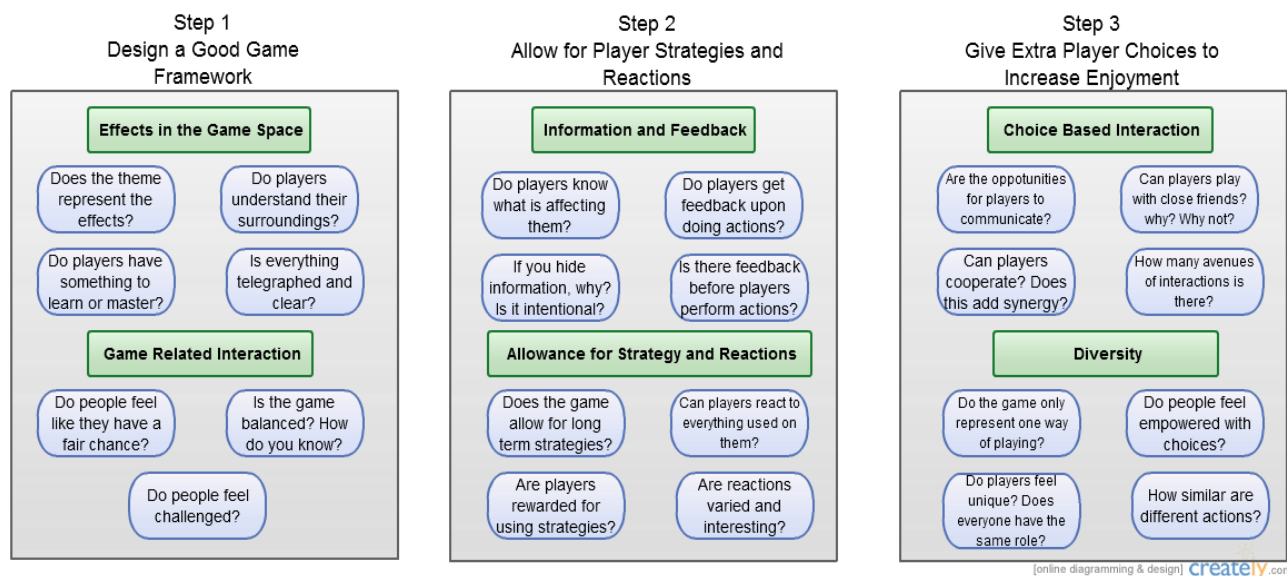


Figure 8.1 - Image outlining the grand theory in broad strokes. Created at Creately.com

I created an image essentially showing the important design considerations. The image only shows a few highlights of each category, where the rest is found in the categories and patterns. The first goal of creating a game is to create a good game framework. This is essentially achieved by following the basic advices of design books such as Rules of Play, The Art of Game Design and Level Up!. The theory does have a few questions to answer that should help a person achieve this, but generally following game design advice should suffice.

The second step is to particularly focus on the player interactions and information in the game. Most of the designers addressed put focus on information and how to present it to players in multiplayer games. At the same time, most designers agree that being able to react to something another player does to you, is just as important as having actions. Thus, the general idea of meaningful actions that all designers mentioned in some form applies to both the possible space of actions a player can take, but also the possible space of reactions a player has to opponent's actions.

The final step is the icing on the cake of game design. This is where additional design time spend can be used to take a game from a good game to an amazing game. Imagine if World of Warcraft never had raiding (endgame player versus environment content), but only had leveling progression and PvP (player versus player). That part of the game took these "choice based interactions" to a new level, adding reasons to communicate, reasons to cooperate and tying it up in the story in a compact interesting way.

## Summary

All games requires some design considerations within all of these three steps, but balancing them out as explained here should take a game a long way towards being a good successful multiplayer title. The goal is to make a player care, by making the surroundings interesting, making the actions and reactions interesting and engaging the player in a diverse and interesting set of challenges. This model should help bring a designer to that point.



## 9 Discussion

So firstly, to re-iterate, the goal was to find the most important concepts and design considerations to address when designing multiplayer interaction. At least from the vast set of different theories and designers addressed, this appears in my opinion to have been accomplished. The main points of criticism towards this is the method used to getting there and the amount of data gathered.

Firstly, the codes used ended up being gathered from a mere three interview. Even considering it is a qualitative interview relying on expert opinions; this set of interviews is too little to properly define codes, which meant some outlying badly named codes ended up getting through. Even considering this, I do feel the codes combined into very competent categories that clearly set some patterns that made it easy to explain the final theory it ended out in.

Secondly, the time spend analyzing the second set of data, even though a lot of time was spend, very little documentation towards how the codes were extracted exists. I was essentially doing a similar thing to the codes, but instead of line-by-line, I did paragraph-by-paragraph and looked for clear consequences, causes and strategies. This process was not documented well enough unfortunately, making it hard for a reader to realize and reproduce how the codes were extrapolated.

Finally on the subject of the Grounded Theory methodology is where I feel this project may have done the worst. The whole process was very unknown, which meant that the whole part of Grounded Theory related to writing “memos” ended up failing due to the method of doing those contradicted with the very work process applied.

I do feel that the end result of the grounded theory was very good and considering both the interviews and the sources of blogs and podcasts, combined with the state of the art essentially was a huge set of data to work with, which also meant that the final theory appears to be quite successful.

The next step of this theory would essentially be to do case studies to see if this theory applies to existing popular “good” multiplayer games. Then perhaps do a case study attempting to use this theory to further expand on a multiplayer title or design a game with this theory as a basis.

## 10 Conclusion

To conclude on the entire process, there are some questionable parts of the project, such as documentation of codes from the second data round and some uses of the grounded theory that may not align one hundred percent with formal theories on that form of methodology.

However, a lot of time was put into the process and even if the codes may have appeared a little chaotic and unhinged, the whole theory from the point of defining categories forth to the final theory followed a very clear and easy to follow methodology and ended out with a clear theory.

To the problem space of following a clear methodology to generate a theory on multiplayer game design that encompasses all of the most important concepts and design considerations, appears to have been an **overall success**.

The whole process could be made clearer with the inclusion of more interview responses to properly flesh out the codes and an expansion of documentation on some of the data gathering. More experience with the model of grounded theory would also have led to a more “scientific model” actually including the finer parts of the grounded theory methodology such as memos.

## 11 Future Perspectives

In terms of the actual theory, the main future perspectives would be to increase the number of interviews and perhaps do several rounds of interviews expanding the expert’s opinions as well as the responding to this theories analysis of their theories.

This would create a much more direct line of causality towards the goal of the theory, instead of having the cannibalize a variety of blogs and podcasts from designers, of which most was only indirectly pointed at multiplayer games. As opposed to being directly responses to the questions required within the problem space.

I do not believe the theory would change all that much, but the method getting there would be significantly clearer and smoother.

As for the current theory, the future perspective would be to apply the theory and test how well it holds up when it comes to different genres, different games and overall holds up to use. These applications could be to check it against existing games to see if they followed that general format or if they would have ended up at the same or a better state if they followed it.

The other way of testing could be to create a design idea from scratch to take advantage of the theory. It would be hard to find a method for testing this, as getting the game finished and designed would take a lot of years.



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## 13 Appendix

### 13.1 Open-Ended Questionnaire (Interview)

These questions relate to the design of multiplayer games, specifically how the multiplayer design decisions conform to player interaction and satisfaction.

These questions are very broad to address your opinion in any tangent or manner you find important. They are intended to facilitate your experience and opinion on the topic and is merely guiding the subject at hand. As such, feel free to go on any tangent that you feel is relevant for the topic at hand.

The questions start out general and specify later. Answer them at any length you feel necessary and mail the responses back to me at the following mail:

cfha09@student.aau.dk

1. Within the area of multiplayer game design, shortly outline your background (Academic? Developer? Player?). Based on this what do you feel are the concepts (Word and define in any manner you find fitting) of main importance in multiplayer games?
2. Do you consider it important to add anticipatory and reactionary gameplay when dealing with multiplayer games? Is it essential that players have a “possible reaction” to anything that can affect them either positively or negatively? Please use examples of this done well and not so well.
3. Considering this anticipatory and reactionary gameplay, is the number of possible reactions to any one effect an important aspect? Please use examples of this done well and not so well.
4. How about the clarity of player interactions? Is it important that players can immediately ascertain the effect of any interaction be it positive or negative? Please use examples of this done well and not so well.
5. Would you be interested in another round of questions more specified towards the specific topic?

## 13.2 Interview responses and coding

### Content:

Interviews from each person

Coding framework

Coding on responses from each person

Codes derived

### Person 1

This person is another student from campus who has a bachelor at ITU and is now writing his master at AAU Medialogy.

**1. Within the area of multiplayer game design, shortly outline your background (Academic? Developer? Player?). Based on this what do you feel are the concepts (Word and define in any manner you find fitting) of main importance in multiplayer games?**

I'm academic in the regards that i made several research projects about multi-player gaming in general. Furthermore iv'e created games for those projects so lets call it a "small-time developer". And last but not least i'm a gamer with years of World of Warcraft raiding experience, a couple of years of league of legends gaming experience and other smaller gaming experiences within those.

3 points would be

Diversity in roles: If i play with 4 other guys the jobs we have to do shouldn't all be the same, in that case you quickly become bored in my opinion.

Common end-goals: If im playing with someone we should have some common goal even though we have different roles, or there is no reason to join each other.

Good flow for all players: This is by far the hardest goal which attains to the goal that all players should be challenged without feeling the end goal is impossible.

**2. Do you consider it important to add anticipatory and reactionary gameplay when dealing with multiplayer games? Is it essential that players have a "possible reaction" to anything that can affect them either positively or negatively?**

That depends, what you mean by reactionary. A turn-based game can work well as a multi-player game even though the reactionary aspect might be quite different than the normal term. Sometimes a player just havent built a strategy where any reaction can give a positive outcome (a card-game like Hearthstone). So it can be important but is not all and all for all multi-player games.

**3. If this anticipatory and reactionary is important, is the number of possible reactions to any one effect an important aspect?**

The more reactions there are the easier i would say it is to keep up with my third requirement and therefore i think it is a good aspect. (If one reaction is really great but a player is not able to perform that, he might

be able to find some other good reaction that can keep the fight on a decent flow for him.)

**4. How about the clarity of player interactions? Is it important that players can immediately ascertain the effect of any interaction be it positive or negative?**

I would say that is somewhat important since nothing is more frustrating than dying in a game without any knowledge of what killed you. So a clear indication on what killed you is important. How to counter that should be learned from experience however. So if an enemy uses a specific attack and i first try to jump back and die i know jumping back wasn't the right reaction. Next time ill jump left and if that works i will do that forwards on.

**5. Would you be interested in another round of questions more specified towards the specific topic?**

Sure ;)

## **Person 2**

This person is another student from campus. He has a bachelor in Medialogy at AAU and is writing his master currently.

**1. Within the area of multiplayer game design, shortly outline your background (Academic? Developer? Player?). Based on this what do you feel are the concepts (Word and define in any manner you find fitting) of main importance in multiplayer games?**

my background is a bachelor in medialogy, and an avid multiplayer player. the main concepts in my opinion are.

1.a) balance.

a multiplayer game needs to be balanced obviously, or it won't seem fair in any way and the interest in the game will drop.

1.b) interaction with other players

the whole point of multiplayer games is interacting with other players, so this is a obvious design concept. this relates to both your enemies and teammates.

1.c) communication

how should players communicate? with teammates? with enemies? chat/push-to-talk/gesture with game avatar?

**2. Do you consider it important to add anticipatory and reactionary gameplay when dealing with multiplayer games? Is it essential that players have a "possible reaction" to anything that can affect them either positively or negatively?**

i'm not sure. i mean, in a game like world of warcraft, you could be stunned from a stealthy rogue, without the chance to respond, and i would dare say that game was a success. on the other hand, it sucked to be the one stuck in the same spot for 10seconds straight without being able to respond. i would dare say it is

important and preferred in my opinion, but not a necessity.

**3. If this anticipatory and reactionary is important, is the number of possible reactions to any one effect an important aspect?**

i don't think so, but it would be nice. if there is only one response, it makes the prediction of that a tad too easy. rather have multiple responses so a 'mind battle' can take place between the players.

**4. How about the clarity of player interactions? Is it important that players can immediately ascertain the effect of any interaction be it positive or negative?**

heck yeah! most multiplayer games i play are competitive and you need immediate response time, so knowing what just happened to you is important. not just if it was positive or negative, but the exact thing (or effect if 'exact thing' is too hard).

a game like HoN for example, have alternative skins for their champions, but each skin was tested on beta to see if the spells were still recognizable in order to avoid any confusion.

**5. Would you be interested in another round of questions more specified towards the specific topic?**  
sure.

### **Person 3**

Note: You will notice a very small difference in questions asked. The line of "Please use examples of this done well and not so well". This is due to hoping for more concrete examples, however, it did not appear to change anything regarding the answers. And a second thing, the fifth question regarding another round of questions, was removed due to some of the people being asked later in the process than other where enough time to analyze them would be insufficient to ask more.

This person is Soren Johnson a highly acclaimed designer, who was project lead and lead designer on Civilization IV. Worked on EA Maxis game Spore and has now founded his own company Mohawk Games and just revealed his new multiplayer game.

**1. Within the area of multiplayer game design, shortly outline your background (Academic? Developer? Player?). Based on this what do you feel are the concepts (Word and define in any manner you find fitting) of main importance in multiplayer games?**

I am a developer and a player of multiplayer games. I think the importance of multiplayer in games is that it can both keep a game fresh indefinitely (because humans can always adapt and counter-adapt to each other) and that player against people you might know in real life can give an extra level of meaning to a game.

**2. Do you consider it important to add anticipatory and reactionary gameplay when dealing with multiplayer games? Is it essential that players have a "possible reaction" to anything that can affect them either positively or negatively? Please use examples of this done well and not so well.**

It is certainly important that every path or strategy has a potential counter, so that a player also feels like there is a valid option. The Age of Empires games always did a good job of this. Spearmen were a good counter for knights, knights were a good counter for archers, archers were a good counter for melee units. Importantly, however, the relationships were more interesting than a strict rock, paper, scissor relationship. Knights were really the strongest unit, but they had a cheap counter. Swordsmen didn't counter another type of unit, but - then again - they were simply weak against ranged based on their speed, not a special game rule.

**3. Considering this anticipatory and reactionary gameplay, is the number of possible reactions to any one effect an important aspect? Please use examples of this done well and not so well.**

Certainly, you don't want to have one specific reaction against any strategy as that would lead to a rather boring game. I would point you to Sirlin's excellent article on the problems with a basic RPS arrangement as he sums it up better than I could: <http://www.sirlin.net/articles/rock-paper-scissors-in-strategy-games.html>

**4. How about the clarity of player interactions? Is it important that players can immediately ascertain the effect of any interaction be it positive or negative? Please use examples of this done well and not so well.**

I assume you mean giving players feedback on their actions? This is hugely important, and - in fact - I usually try to give players feedback on their actions *before* they actually take it. In Civ4, this could mean showing how the borders will appear if you found a city in a specific location or what are the percent odds of winning a specific battle. It is important to give players these tools so that they have a higher degree of comfort with the games systems, so that they feel empowered by the game. For more info, see my talk on transparency in game design: <http://www.designer-notes.com/?p=793>

## Coding framework

Currently the coding method used is research denoted coding. This type of coding is generating codes from a sampling of the data (in this case, the entire test set). An alternative method generating codes from related research. This would take some time and may be more prudent in actual coding of real data, but this is to validate the usefulness of the responses.

The coding is done is mainly sentence based coding. The format will be as in the table below. A code name, a key item and the sentence.

Note that demographics will be written in the "code" slot, even though it is not considered a code.

Code name	Key item	Sentence
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The keywords are based on the "Research Methods – In human-computer interaction". In this book they mention the key items to look for are the following:

Objectives – Use computers for educational purposes

Actions – Enter a password, chat online

Outcomes – Success or failure; whether the objective is achieved

Consequences – Files unintentionally deleted, a specific application abandoned

Causes – Limited memory, dated equipment

Contexts – User is computer savy, user works with classified information

Strategies – Avoid specific task, multimodal interaction

These examples are notably related specifically to human-computer interaction, but the general terminology will help define interesting and important parts of the answers.

## Coding

### Person 1

<b>1. Within the area of multiplayer game design, shortly outline your background (Academic? Developer? Player?). Based on this what do you feel are the concepts (Word and define in any manner you find fitting) of main importance in multiplayer games?</b>		
Demographics – Academia	Context	I'm academic in the regards that i made several research projects about multi-player gaming in general.
Demographics – Developer	Context	Furthermore iv'e created games for those projects so lets call it a "small-time developer".
Demographics – Player	Context	And last but not least i'm a gamer with years
Demographics - Cooperative games	Context	of World of Warcraft raiding experience,
Demographics - Competitive games	Context	a couple of years of league of legends gaming experience and other smaller gaming experiences within those.
Diversity	Strategy	Diversity in roles:
Uniqueness; Diversity	Context	If i play with 4 other guys the jobs we have to do shouldn't all be the same,
Lack of diversity: Boredom	Outcome	in that case you quickly become bored in my opinion.
Common End-goal	Strategy	Common end-goals:
Diversity; Common End-Goal	Context	If im playing with someone we should have some common goal even though we have different roles,
Cooperation	Outcome	or there is no reason to join each other.
Flow	Strategy	Good flow for all players:
Designer Goal	Context	This is by far the hardest goal
Challenge; Flow	Objective	which attains to the goal that all players should be challenged
Flow; Balance	Outcome	without feeling the end goal is impossible.
<b>2. Do you consider it important to add anticipatory and reactionary gameplay when dealing with multiplayer games? Is it essential that players have a “possible reaction” to anything that can affect them either positively or negatively?</b>		
	Context	That depends, what you mean by reactionary.



Genre Turn-Based: Can work, different definition of reactions	Outcome	A turn-based game can work well as a multi-player game
Genre Turn-Based: Can work, different definition of reactions	Context	even though the reactionary aspect might be quite different than the normal term.
Player Strategies	Action	Sometimes a player just haven't built a strategy
Player Strategies; Temporality of Reactions	Consequence	where any reaction can give a positive outcome (a card-game like Hearthstone).
Reactions: "Not for all multiplayer games"	Objective	So it can be important but is not all and all for all multi-player games.
<b>3. If this anticipatory and reactionary is important, is the number of possible reactions to any one effect an important aspect?</b>		
Flow; Balance	Strategy	The more reactions there are the easier i would say it is to keep up with my third requirement
	Consequence	and therefore i think it is a good aspect.
	Context	(If one reaction is really great but a player is not able to perform that, he might be able to find some other good reaction
Flow	Outcome	that can keep the fight on a decent flow for him.)
<b>4. How about the clarity of player interactions? Is it important that players can immediately ascertain the effect of any interaction be it positive or negative?</b>		
	Strategy	I would say that is somewhat important
Knowledge of Effect	Context	since nothing is more frustrating than dying in a game without any knowledge of what killed you.
Knowledge of Effect	Outcome	So a clear indication on what killed you is important.
Learning/Mastery of Effects	Objective	How to counter that should be learned from experience however.
	Context	So if an enemy uses a specific attack and i first try to jump back and die i know jumping back wasn't the right reaction. Next time ill jump left
Learning/Mastery of Effect	Outcome	and if that works i will do that forwards on.
<b>5. Would you be interested in another round of questions more specified towards the specific topic?</b>		
	Context	Sure ;)

## Person 2

<b>1. Within the area of multiplayer game design, shortly outline your background (Academic? Developer? Player?). Based on this what do you feel are the concepts (Word and define in any manner you find fitting) of main importance in multiplayer games?</b>
---

Demographics – Academic/Player	Context	my background is a bachelor in medialogy, and an avid multiplayer player.
	Context	the main concepts in my opinion are.
Balance	Strategy	1.a) balance.
	Context	a multiplayer game needs to be balanced obviously,
Fairness	Outcome	or it won't seem fair in any way and the interest in the game will drop.
Interaction between players	Strategy	1.b) interaction with other players
	Context	the whole point of multiplayer games is interacting with other players, so this is a obvious design concept.
Cooperation; Competition	Strategy	this relates to both your enemies and teammates.
Communication	Strategy	1.c) communication
Communication	Strategy	how should players communicate? with teammates? with enemies? chat/push-to-talk/gesture with game avatar?
<b>2. Do you consider it important to add anticipatory and reactionary gameplay when dealing with multiplayer games? Is it essential that players have a “possible reaction” to anything that can affect them either positively or negatively?</b>		
	Context	i'm not sure. i mean, in a game like world of warcraft,
Inability to Respond: Can still be a success	Consequence	you could be stunned from a stealthy rogue, without the chance to respond,
	Context	and i would dare say that game was a success.
Inability to Respond: Not fun to experience	Consequence	on the other hand, it sucked to be the one stuck in the same spot for 10seconds straight without being able to respond.
“Reactionary preferred, not necessary”	Strategy	i would dare say it is important and prefered in my opinion, but not a neccessity.
<b>3. If this anticipatory and reactionary is important, is the number of possible reactions to any one effect an important aspect?</b>		
	Context	i don't think so, but it would be nice.
	Context	if there is only one response,
One Reaction: Negative	Consequence	it makes the prediction of that a tad too easy.
	Strategy	rather have multiple responses
Multiple Reactions: Positive	Outcome	so a 'mind battle' can take place between the players.
<b>4. How about the clarity of player interactions? Is it important that players can immediately ascertain the effect of any interaction be it positive or negative?</b>		
	Context	heck yeah! most multiplayer games i play are competitive and you need immediate response time,
Knowledge of Effect	Strategy	so knowing what just happened to you is important.

Knowledge of Effect	Strategy	not just if it was positive or negative, but the exact thing (or effect if 'exact thing' is too hard).
	Context	a game like HoN for example, have alternative skins for their champions,
Clarity of Effects	Strategy	but each skin was tested on beta to see if the spells were still recognizable in order to avoid any confusion.
<b>5. Would you be interested in another round of questions more specified towards the specific topic?</b>		
	Context	sure.

### Person 3

<b>1. Within the area of multiplayer game design, shortly outline your background (Academic? Developer? Player?). Based on this what do you feel are the concepts (Word and define in any manner you find fitting) of main importance in multiplayer games?</b>		
Demographics – Player/Developer	Context	I am a developer and a player of multiplayer games.
	Context	I think the importance of multiplayer in games is
Diversity	Consequence	that it can both keep a game fresh indefinitely
Interaction between players	Causes	(because humans can always adapt and counter-adapt to each other)
Personal relationships	Context	and that player against people you might know in real life
Designer Goals	Consequence	can give an extra level of meaning to a game.
<b>2. Do you consider it important to add anticipatory and reactionary gameplay when dealing with multiplayer games? Is it essential that players have a “possible reaction” to anything that can affect them either positively or negatively? Please use examples of this done well and not so well.</b>		
Fairness	Consequence	It is certainly important that every path or strategy has a potential counter,
Player Strategy	Outcome	so that a player also feels like there is a valid option.
	Context	The Age of Empires games always did a good job of this.
	Context	Spearmen were a good counter for knights, knights were a good counter for archers, archers were a good counter for melee units.
Learning/Mastery of Effects	Strategy	Importantly, however, the relationships were more interesting than a strict rock, paper, scissor relationship.
	Strategy	Knights were really the strongest unit, but they had a cheap counter.
Designer Goals	Strategy	Swordsmen didn't counter another type of unit, but - then again - they were simply weak against ranged based on their speed, not a special game rule.
<b>3. Considering this anticipatory and reactionary gameplay, is the number of possible reactions to any one effect an important aspect? Please use examples of this done well and not so well.</b>		

One reaction: Negative	Strategy	Certainly, you don't want to have one specific reaction against any strategy
One reaction: Negative/Lack of Diversity: Boredom	Consequence	as that would lead to a rather boring game.
Balance	Strategy	I would point you to Sirlin's excellent article on the problems with a basic RPS arrangement as he sums it up better than I could: <a href="http://www.sirlin.net/articles/rock-paper-scissors-in-strategy-games.html">http://www.sirlin.net/articles/rock-paper-scissors-in-strategy-games.html</a>
<b>4. How about the clarity of player interactions? Is it important that players can immediately ascertain the effect of any interaction be it positive or negative? Please use examples of this done well and not so well.</b>		
	Context	I assume you mean giving players feedback on their actions?
Feedback on actions	Context	This is hugely important, and - in fact -
Pre-emptive Feedback: Even better	Strategy	I usually try to give players feedback on their actions <i>before</i> they actually take it.
	Context	In Civ4, this could mean
	Strategy	showing how the borders will appear if you found a city in a specific location
	Strategy	or what are the percent odds of winning a specific battle.
Comfort derived from information tools	Strategy	It is important to give players these tools so that they have a higher degree of comfort with the games systems,
Empowerment from information	Consequence	so that they feel empowered by the game.
	Strategy	For more info, see my talk on transparency in game design: <a href="http://www.designer-notes.com/?p=793">http://www.designer-notes.com/?p=793</a>

## Codes Established

Firstly Demographics will not be considered before more data is found.

The codes are considered as positive statements. As such the code "Diversity" simply means that the person considered diversity positive. This is only overwritten in cases such as "Lack of diversity: Boredom", where the connotation "Lack of diversity" is attributed with "boredom".

Code Number	Code name	Number of occurrences	Number of interviews found in
1	Diversity	5	2
2	Uniqueness	1	1
3	Lack of diversity: Boredom	2	2
4	Common End-goal	2	1
5	Cooperation	2	2
6	Flow	5	1
7	Designer Goals	3	2
8	Challenge	1	1
9	Balance	4	3
10	Genre Turn-Based: Can work, different definition of reactions	2	1
11	Player Strategies	3	2
12	Temporality of Reactions	1	1
13	Reactions: "Not for all multiplayer games"	1	1
14	Knowledge of Effects	4	2
15	Learning/Mastery of Effects	3	2
16	Fairness	2	2
17	Interaction between players	2	2
18	Communication	2	1
19	Inability to respond: Can still be a success	1	1
20	Inability to respond: Not fun to experience	1	1
21	"Reactionary preferred, not a necessity"	1	1
22	One Reaction: Negative	3	2
23	Multiple Reactions: Positive	1	1
24	Clarity of effects	1	1
25	Personal Relationships	1	1
26	Feedback on actions	1	1
27	Pre-emptive Feedback: Even better	1	1
28	Comfort derived from information tools	1	1
29	Empowerment from information	1	1