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Creating a Video Game Character Design Workflow

A Literature Review on the Theories and Methods Used by Professionals in Video Game Character Design

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Abstract

With the increases in processing power and advancements to game engines, the developers designing video games have been presented with unparallel opportunities. To utilize these opportunities, character designers should have adequate research to base their character designs on. However, academic literature regarding the methodology used in character design is scarce. This research aimed to provide character designers with tools and methods to help them design more diverse, unique, and deep characters, in the process addressing prominent issues in the field.

Data was collected by performing a literature review via qualitative research. The goal was to find extensive and varied data regarding video game character design. Thus, previous research, literature by industry professionals, and online sources were researched. The resulting data consisted of theories from psychology, drawing and painting techniques, common conventions, as well as ideating methods. From the gathered data, the most prominent theories and science-based methods, techniques, tools, and useful concepts were selected. Selection of these tools was done based on the credibility of their source and their help-fulness in the character design process. How a tool supported the use of other selected tools was also considered. These tools were used to create a character design workflow. This workflow was split into three phases: the ideating phase, the background phase, and the visual phase. The selected tools were placed chronologically in these phases based what phase they could be utilized in.

The literature review also revealed several ethical problems in the video game industry. Gender stereotypes and sexualization of women continue to be prominent in the industry. These issues were addressed in the workflow by informing character designers of their possible negative effects. Character designers were also advised to base character designs on narrative rather than stereotypes or gender. Another prominent issue, the promotion of unhealthy and unrealistic body types, was also addressed by encouraging character designers to include diversity, varied body types, and varied genders into their character designs. Thus, the workflow was designed to promote progressivity in the field.

Keywords/tags (subjects)

Character design, video game, video game character, computer games, concept art, literature review, qualitative research

Miscellaneous (Confidential information)

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1   Introduction

The year the PlayStation 3 was released in 2006, Isbister (2006) wrote: "What was not possible 20 years ago … is now limited only by the designer's imagination and abilities." (p.172). Fast-forward to today, the PlayStation 5, has roughly 30 times the processing power the PlayStation 3 had (WhoDecidedThat, 2022). During this time, game engines have also evolved drastically, enabling incredible character detail. For example, Unreal Engine's Metahuman character models are almost indistinguishable from humans (Unreal Engine, n.d.). These advancements have granted character designers unprecedented opportunities for creating realistic, believable characters. However, a character does not need to be extremely detailed or realistic to be unique and memorable. It does, however, need to be deep and meaningful for players to truly connect with it (Schell, 2020).

Undertale (2015), developed by a single person, Toby Fox (Schilling, 2018), is a pixelated, story-focused 2D game. It features quirky characters, who the player befriends during the game. However, the player is eventually forced to either kill these characters or to suffer excruciatingly hard gameplay for sparing them. Undertale is an excellent example of how players can connect to even simple, pixelated 2D characters if they are well designed. The goal of this research is to help character designers design these types of unique, relatable, meaningful, and deep characters.

The motive for this research was a distinct lack of academic literature on character design. This prompted the research question: can science be utilized in a creative field such as video game character design? After conducting further preliminary research, the goal of the thesis became clear: to produce a workflow for designing video game characters. This research aimed to address the lack of academic literature on the creative side of video game development in hopes of sparking further research. Therefore, the research area was ambitiously defined to be used in video game character design.

This research was conducted by performing a literature review on video game character design. The discovered data (theories, methods, conventions, techniques, and tools) were analyzed based on their credibility and how useful they would be for the average character designer, while addressing any issues they might have. This data was combined into a theoretical character design workflow that could help workers in the field by structuring their character design process. Addi-

tionally, the workflow promotes the design of unique, diverse, and believable human-like charac-
ters, in the process addressing some of the prominent problems in the field, such as stereotypes
and promotion of harmful body images. Most importantly, this research will help the author in
their professional career as a game artist.

2   Character Design Fundamentals

The goal of this chapter is to find theories, methods and tools that could help character designers
define a character's personality and motivations. These include both theories from psychology as
well as practical methods and techniques. The topics discussed in this chapter are: goals of charac-
ter design, characters in video games, player character, character archetypes, stereotypes, high
concept, character functions and traits, personality, motivation, sex and gender, physiology, at-
tractiveness, culture, and non-human characters.

2.1   Goals of Character Design

Humans, being naturally curious, are often intrigued by a new character's background. Tillman
(2019) stressed the importance of character backstories: "The most important part of character
design is the story! … No matter what character you look at, you must try to figure out the story
behind that character" (p. 24). Schell (2020) stated that even though developers can get away with
action-based games that have a simple narrative and shallow characters, players often want
deeper, more meaningful characters and narrative. Ustyan (n.d.) defined the goal of video game
character design as creating an emotional bond between the player and the character. Thus, one
of the goals of a character designer is giving players that feeling of getting to truly know someone:
the character. This can be achieved by creating a deep background for the character. Therefore,
character designers can benefit from understanding human psychology. Applying psychological
theories to the characters they design will likely make them deeper, allowing players to connect
with them. This means that the psychology and background of the character and visual character
design should both be included in the character design process.

2.2 Characters in Video Games

While character design is a multidisciplinary concept, meaning video game, novel, movie, and TV show characters could all be created using the same principles, there are a few characteristics specific to video game characters. Schell (2020) analyzed the differences between these characters, stating that characters are defined by the type of media they are in: novel characters are involved in mental struggles (the reader can only read their thoughts), movie characters are involved in both emotional and physical struggles (the viewer can see their struggles and hear their thoughts), whereas video game characters are involved on almost exclusively physical struggles (the player can see their struggles), hence the player does the thinking for them. They also noted that due to the nature of their respective media, video game characters are almost exclusively fantasy, as opposed to novels and movies, where characters are either rooted in or based on reality. This grants video game character designers a certain freedom that character designers for TV shows or movies might not have, being limited by practical effects and human actors. Tillman (2019) stated that people often find fantasy-based characters, such as elves or superheroes more interesting than characters rooted in reality. Thus, video game characters have the advantage of not being limited by reality, allowing greater freedom in their creation compared to characters from other media.

2.3 Player Character

The ability to have full control of a character in a virtual game world is also unique to video games. This character that the player controls is called the *player character*, also referred to as the *main character* or *avatar* (Schell, 2020). The player character exists in all games and is often, but not always, *protagonist* of the game's story. However, some games, such as Bejeweled (2001), Tetris (1984), and the Gran Turismo series, can exist without any characters. In these games, the player can be considered the player character (Rogers 2014). Additionally, in games such as Grand Theft Auto 5 (2013), the player can experience the story through multiple player characters and can freely switch between them. Opposingly, games such as Dragon Age Inquisition (2014) allow the player to create and customize their own player character. Considering all games have a player character in some form, the player character must be important for a game. The next chapter explores how important the player character is and what should be considered when designing a player character specifically.

2.3.1 Psychology of Player Characters

Isbister (2006) explained that players assess their capabilities and actions in the game world based on the player character's physical form and limitations. They elaborated that players experience games based on the player character's physical powers and how it feels to control the character. So, the player experiences the game world through not only the eyes of the player character, but also through their body. The effects that events in the game world have on the player's vision, sound, and sometimes touch (controller vibration) are referred to as *visceral feedback* (Isbsiter, 2006). Schell (2020) suggested that players often find it easier to project themselves into the shoes of simple, non-threatening characters. However, Schell also demonstrated that this effect is not limited to living creatures, as players can put themselves into the shoes of almost anything they control. They used the example of driving a car: whether in real life or in a game, the driver thinks of the car as an extension of their body, often saying phrases such as "they hit me" when colliding with another car.

Cognitive immersion is achieved when the player starts actively making decisions based on information from the game world (Isbister, 2006). For example, when playing an agile assassin character, such as Ezio from Assassin's Creed 2 (2009), the player will likely assume they can jump and traverse the environment effortlessly. If the nimble Ezio was not able to jump, this would create a dissonance between the player character and the player. Isbister explained that cognitive immersion extends to social interactions and problem-solving skills as well. For example, trying to talk to a non-player character for instructions only to find out they cannot be interacted with would also cause dissonance. They argued that the player character should match the *visceral style* of the game's gameplay, meaning the player character and what they can do must make sense in the game world. Therefore, gameplay should be considered when designing a player character: what the player can do should be logical in relation to the player character. This should prevent dissonance between the two, allowing the player to cognitively immerse themselves into the player character. Visceral style is thus linked to how the player character moves and expresses themselves, as is explained in chapter 3.9.

2.4   Character Archetypes

Before moving on to character archetypes, the definitions of protagonist and antagonist should be clarified. Britannica Dictionary (n.d.) states that the word *protagonist* originates from ancient Greek drama, meaning *the first actor* or *leading actor*. In game design, the term protagonist is sometimes used interchangeably with player character, even though they technically have differing meanings. The Britannica dictionary defines *antagonist* as opponent or rival, also originating from ancient Greek (Britannica, n.d.). The antagonist's goals and motives oppose those of the protagonist. While the protagonist is often the player character in game narrative.

Character archetypes could be used as a base for a character's design. Tillman (2019) proposed that archetypes should be used to mold a specific type of character to fit the narrative role (or function) within game. Rogers (2014) categorized video game characters simply into three types: *humorous*, who says and does funny things, *heroic*, who is good at something and does *heroic* things, and *tough guy*, who isn't nice, is stoic and has the appearance of a "bad guy". These are, however, only surface level descriptions, and define mostly the character's personality. These surface level characters, as Tillman (2019) warned, would be at high risk of becoming oversimplified, stereotypical characters. Thus, Tillman proposed a differing categorization of character archetypes: *the hero, the shadow, the fool, the anima/animus, the mentor*, and *the trickster*. These archetypes focus on filling roles in narrative.

The hero is often the *protagonist* of the game. Therefore, the hero archetype is often used for the player characters in video games, for example, Link in The Legend of Zelda series. The hero archetypes are virtuous, brave, and want to help people (Tillman, 2019). This archetype clearly shares similarities with Rogers' (2014) heroic archetype.

The shadow is an evil and mysterious character, who is often the antagonist (Tillman, 2019). Doctor Neo Cortex from Crash Bandicoot (1996) is an example for the shadow archetype.

The fool is a character who tends to lead the hero into unpredictable situations (Tillman, 2019). These situations cause interesting interactions between characters while progressing the story This is consistent with God of War (2018)'s character dynamic: Atreus is an example of the fool, being naïve and spontaneous, thus leading Kratos to dangerous situations. The dynamic between

the two establishes interactions between them, displaying both of their personalities. These character dynamics are discussed in detail in chapter 2.9.2.

The anima or *animus* is an embodiment of the reader's, viewer's, or player's sexual desires (Tillman, 2019). The anima or animus tends to be the love interest of the hero or main character. Regardless of being a love interest of the characters, the anima or animus is consistently the love interest of the player (Tillman, 2019). Therefore, the attractiveness of characters from this archetype is important but also problematic (Martins & Tompkins, 2021), as is discussed later in chapter 2.12. Tillman explained that attracting the player to the anima or animus, then threatening their life ensures the player stays interested in the story. In The Witcher 3 (2015), Triss and Yennefer are examples of the animus.

The mentor is in the story to guide the hero, taking on many roles of a parent (Tillman, 2019). This *social role* that links them to the hero is important for reasons explained in chapter 2.10.1. Mentors are often portrayed as older than the hero, due to many cultures associating old age with wisdom (Tillman, 2019). The mentor shares similarities with *assistant* and *tutor* categories by Schell (2020) and therefore could fill those *functions*. Functions are discussed further in chapter 2.7. The Crystal Exarch in Final Fantasy XIV: Shadowbringers is a mentor archetype.

The trickster is someone who attempts to move the plot forward for their own benefit, whether it be for good or evil. The trickster manipulates other characters and often the hero must overcome the trickster's mental tests to overcome their goals (Tillman, 2019).

However, as was mentioned at the beginning of this chapter, none of these archetypes by themselves will result in deep, interesting, or unique characters that players desire. Therefore, after choosing a base archetype for a character, further development of the character utilizing Schell's (2020) character functions and Egri's (1972) bone structure is advised, as will be explained later in chapter 2.7.

2.5 Stereotypes

Character stereotypes are a problematic topic in video games. In his book, Tillman (2019) explained the difference between character archetypes and stereotypes:

> Once a designer tries to simplify an archetype, we start falling into the realm of stereotypes. … The issue when relying on stereotypes is one can fall into lazy character design. Designers will tend to use oversimplified character types, and thus the characters start to show a lack of originality and diversity. (p. 19).

Tillman (2019) stressed that the *gender role stereotype* is a debated, yet prominent stereotype in the video game industry. For example, the damsel in distress stereotype, such as Princess Peach in Super Mario Brothers (1983), implies that the person in distress must be female. This issue was also noted by Martins & Tompkins, (2021), who stated that this stereotype depicts women as subordinate to male characters and sexualized. They did, however, also note that "female characters [in videogames] have become more progressive, yet problematic traits remain" (Video Game Char. chapter, para.3. Tillman (2019) argued that the person in distress should not be limited to being female. Isbister (2006) opposed Tillman's (2019) statement, arguing that while character stereotypes are often boring, they can also serve a purpose in a game. They proposed that when the player notices a stereotypical villain, they will automatically assume the villain is not friendly. Therefore, stereotypes could be used to enhance gameplay, however, they should be used sparingly. Use of gender role stereotypes in character design is discouraged.

Cultural stereotypes are another issue character designers should be aware of. Isbister (2006) warned about cultural stereotypes, explaining that when designing characters from a culture other than one's own, it is easy to fall into making stereotypical characters. They continued to state that people who belong to a specific culture and consume media that originates from that culture will see through people from other cultures trying to mimic their culture's media. Thus, characters that are not seen as problematic in one culture could be seen as problematic in other cultures. Therefore, proper, extensive research should be done on a culture before incorporating aspects of it into a character design to avoid cultural stereotypes. Consulting members of a specific culture during the character design process could likely prevent this issue.

2.6   High Concept

Solarski defined high concept as a condensed sentence or paragraph that is often used to define design goals of a game; however, it can be utilized for individual characters as well. They used the example that high concept could be considered a sentence at the back of a video game box that

describes the game using only one sentence. A high concept is often defined at the start of development to ensure designers are designing with intent (Solarki, 2012). To summarize, a high concept should be defined at the start of the character design process to maintain the original vision of the character throughout.

An example of a high concept for a character could be: "Rocky is a creature whose jagged lines, rough shapes, and earthy colors mirror their habitat in the mountains. This creature is reclusive, gentle, and quiet if its territory is not contested by the aggressive mountain raiders."

Solarski (2012) advised including *keywords* in the high concept to describe the character. Keywords can be used to describe emotion, color, shape, texture, line, speed, and size, as well as *opposing keywords*. Solarski suggested that, keywords should be adjectives rather than nouns, as adjectives are less specific, therefore they should create more varied results. In the previous chapter's example, the words *rough*, *earthy*, *reclusive*, *gentle*, and *quiet* are the keywords. Including *opposing keywords* in the high concept will likely result in increased variety in character concepts (Solarski, 2012). Opposing keywords are keywords that oppose the original concept, often providing varied and unexpected results. In the previous chapter's example *aggressive* is an opposing keyword.

2.7   Character Functions

In narrative, characters often have roles they need to fill, such as the protagonist and the antagonist explained in chapter 2.4. However, in video games, certain gameplay roles need to be filled as well. Schell (2020) referred to these gameplay roles as *character functions.* For example, a character could have one (or sometimes multiple) of the following functions: *the hero*, a courageous character, *assistant*, who gives tips to the player, *tutor*, who teaches the player to play the game, *minions*, that are enemies, and *hostage*, someone the player needs to rescue. These character functions share multiple similarities with Tillman's (2019) character archetypes. However, as opposed to Tillman's (2012) character archetypes that focus on filling narrative roles, functions should be approached from a game design and gameplay perspective.

Depending on the structure of the development team, these character functions might come from another member of the development team, for example a gameplay designer. To fill functions,

Schell (2020) suggested first making a list of all character functions that are needed for a game, then comparing any finished characters to fill those character functions. Schell argued that while some character functions might seem fitting for certain characters, subverting player expectations could create more interesting narratives. For example, let us assume that a character designer has designed two characters: a human knight and a goblin child who is gifted with supernatural powers. They need to fill the character functions of the hero and the hostage. The human knight would be fitting to fill the role of the hero and the goblin child could seem fitting to fill the role of the hostage. However, by making the goblin child track and rescue the knight instead, a more unique story could be created.

2.8   Character Traits

Egri (1972) suggested a theory that can be utilized to provide characters with depth and personality: *bone structure* of a character. They explained that a character is a sum of three categories of traits. The first category is *physiology*, meaning sex, height, weight, and appearance. Notably, the trails in this category have a large influence on the visual representation of the character, discussed in chapter 3. The second category is *sociology*, meaning occupation, family status, social roles, and hobbies. The last category is *psychology*, meaning morals, goals, and intelligence. Egri emphasized that the three aspects are interconnected; hence the traits in other categories should limit or explain traits in other categories. Additionally, Schell (2020) argued that a character should only have a few traits that define the character's personality and stay with them throughout the narrative. As opposed to the descriptive adjectives used for Solarski's (2012) keywords in chapter 2.6, these traits can also be nouns. Schell (2020) explained that character traits should demonstrate how the character communicates, acts, and looks throughout the narrative of the game.

The author suggests that Egri's (1972) bone structure checklist and Schell's (2020) defining traits should be utilized in unison when defining character traits. This should result in a list of only a few select character traits that define the character and stay with the character throughout all encounters (Schell, 2020). Having only few select traits, as Schell suggested, could help the character designer focus on specific traits in the character design, rather than designing a convoluted character that is too complex for players to understand. These traits should be realistic in relation to each of the three categories (Egri, 1972), especially for games rooted in reality. For example, an elf who is

short, has an arched back, and small eyes (therefore having bad eyesight), would be less believable as a model and could instead be a librarian. The character's arched back would define how they move, and their height and bad eyesight would limit their actions.

However, defining traits that contradict each other could make the character more interesting by subverting player expectations. For example, the short elf character from the previous example being a model with traits that are traditionally seen as unattractive might make players more curious about their background. Therefore, experimentation with contradicting traits could result in more interesting character designs.

2.9   Personality

Isbister (2006) defined personality as "a person's typical patterns of behavior" (p.64). They explained that personality defines how a person interacts with others and how they engage in everyday activities. Thus, the characters they interact with in the game are important for presenting a character's personality. These interactions with other characters can happen, for example, during cutscenes or via chat boxes, depending on the game. In games, personality can also be expressed via character animations: both facial expressions and bodily animations (Isbister, 2006), as is discussed further in chapter 3.9. In the following two chapters, two leading theories from psychology of personalities are described. These theories should help define believable motivations for a character.

2.9.1   Personality Factors (OCEAN)

Personality factors can be used to define a character's personality. According to Isbister, (2006) while personality as a concept is too complex to pin down as humans act differently based on the environment and situation, scientists in psychology have developed a way to categorize personality traits into clusters: *openness*, *conscientiousness*, *extroversion*, *agreeableness*, and *neuroticism*, forming the acronym OCEAN. *Openness* means whether the person is broad-minded and open to new experiences, are they creative and daring. *Conscientiousness* means do they plan their action and follow through on their plans or are they impulsive. Notably, mentor archetypes mentioned in chapter 2.4 often have high conscientiousness. According to Dictionary.com (n.d), *extroversion* means how much one is interested in the external environment rather than their own thoughts.

Isbister (2006) explained *agreeableness* as whether a character socially receptive and friendly. *Neuroticism* means does the character have tendency to worry, are they self-conscious, and do they display emotional fluctuations. Personality factors could be used as non-binary metrics to form a personality for a character.

2.9.2   Interpersonal Circumplex

As both Tillman (2019) and Isbister (2006) stated, the personality of a character manifests in interactions with the other characters. Therefore, character designers should be aware of how the game's characters connect to each other. Intentionally designing characters with opposing personalities will likely result in more engaging interactions. Both Isbister (2006) and Schell (2020) proposed using the *interpersonal circumplex* to design interesting character dynamics. Based on their personality factors from the previous chapter, characters can be placed on the interpersonal circumplex in Figure 1. This allows visual comparisons to be made between characters' personalities.

Pairing characters with opposing traits, for example an extroverted character with an introverted character, will likely produce interesting interactions between the characters. The interactions between God of War's (2018) main characters are a result of characters that exist on opposing sides of the interpersonal circumplex. Atreus is friendly and extroverted, wanting to learn and explore, while his father, Kratos, is hostile and separated from the world. The friction caused by their differing personalities results in interesting interactions and arguments between the two.
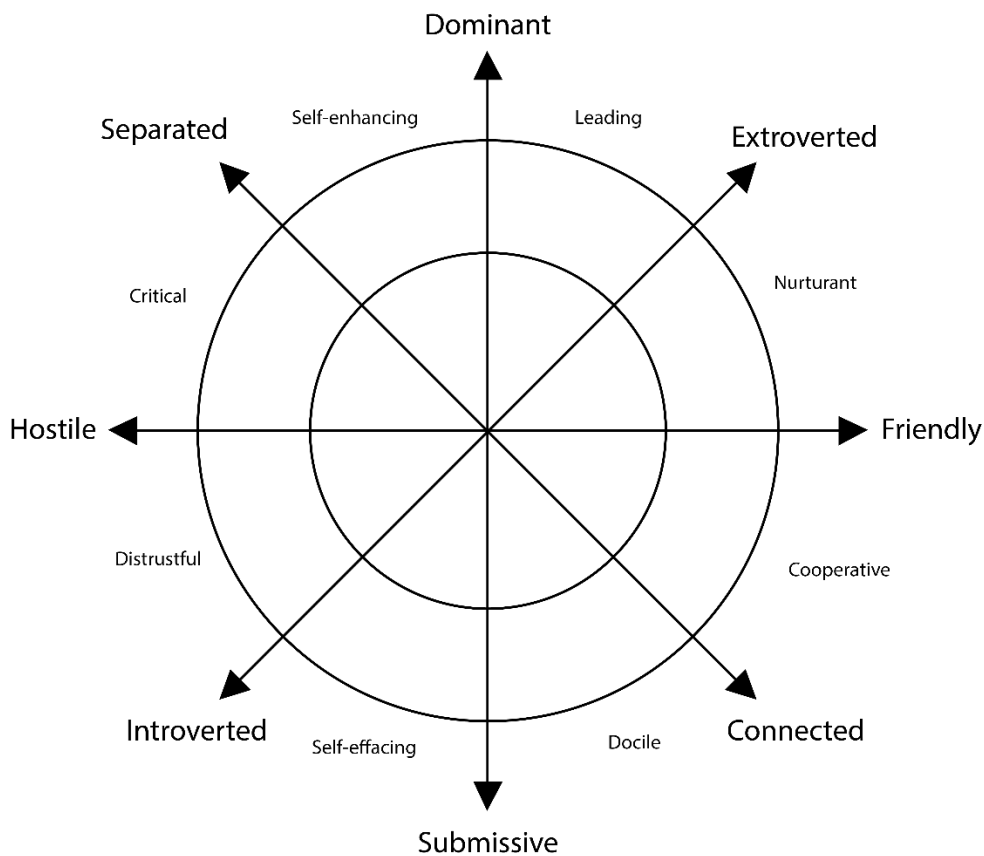
Dominant

Separated Self-enhancing Leading Extroverted

Critical Nurturant

Hostile ◄──────────────────► Friendly

Distrustful Cooperative

Introverted Connected
Self-effacing Docile

Submissive

Figure 1: Interpersonal Circumplex

2.10 Motivation

A character should have a motivation that guides their actions. American Psychological Association (n.d.) defines motivation as "the impetus that gives purpose or direction to behavior and operates in humans at a conscious or unconscious level" (para. 1). American Psychological Association states that motivations can be categorized into *physiological*, (food and sleep) and *personal* (affiliation, competition, interests, and goals) or into *intrinsic motivations*, such as desire to learn, and *external motivations*, such as rewards and fear of punishment. Every character, including non-player characters, should have a motivation for existing in a game. While motivations for background characters could be simple, for example a farmer wanting to provide for their family, motivations for main characters should likely be deeper so players can connect with them (Schell, 2020). To help character designers form these deeper motivations, three theories from psychology will be explained in the following three chapters.

2.10.1 Social Roles

One way of defining a character's motivation is their *social roles,* meaning social responsibilities and relationships they have (Isbister, 2006). A character can have multiple social roles, for example, a person can work as a soldier, be a father to a child, a brother to their sibling, and a friend to someone. Their motivation could be raising and providing for their son, but they might also be motivated by ensuring people's safety by serving their country in the military. Isbister (2006) stressed that while most social roles, such as being a father, are universal across different cultures, there are exceptions depending on differing value systems of cultures. Social roles are a straightforward way of not only defining motivations for characters but could also be utilized for establishing character connections for the interpersonal circumplex from chapter 2.9.2.

2.10.2 Maslow's Hierarchy of Needs

Another way to explain human behavior and motivations is *Maslow's Hierarchy of Needs* (Isbister, 2006). The theory involves a pyramid with five levels of needs as shown on Figure 2. The most primitive human needs at the bottom are *physiological* and *safety,* meaning food and shelter. The theory suggests that once the first need at the bottom is fulfilled, the person would then be motivated by the next step up the pyramid, respectively.

Actualization

Esteem

Love/Beloging
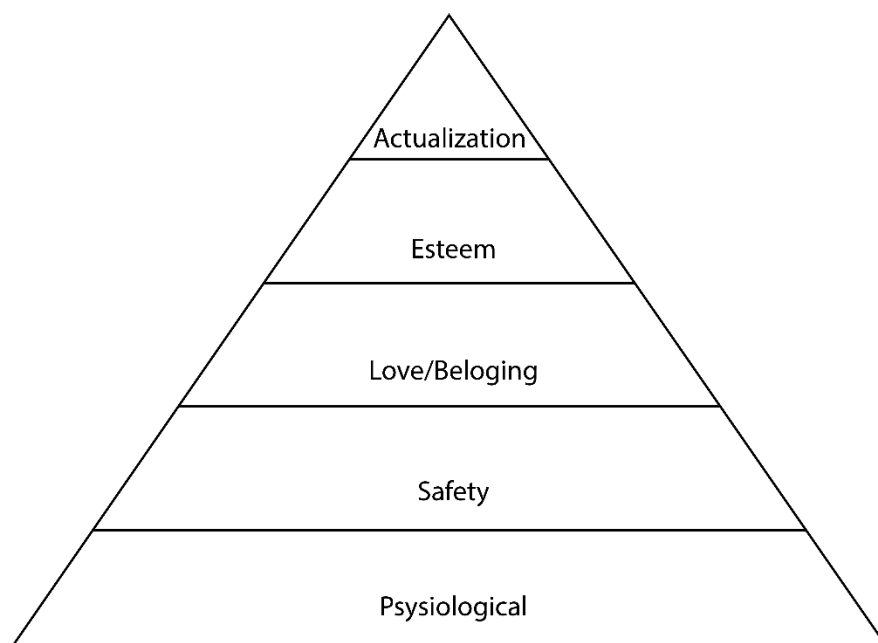
Safety

Psysiological

Figure 2: Maslow's Hierarchy of Needs

In character design, Maslow's Hierarchy of Needs could be used as a starting point to set motivations for the character. For example, a who is person trying to survive in a post-apocalyptic world could be motivated by physiological and safety needs: food and shelter, hence they would care less about esteem. While Maslow's Hierarchy of Needs is an easy way to define motivation, this also limits its usage, especially for creating more complex character motivations. For establishing deeper motivations, *the self-determination theory* could be more useful.

2.10.3 Self-Determination Theory

Self-determination theory is a newer theory used to explain human motivation, personality development, and well-being (Ryan, 2009). The theory includes three basic psychological needs: *autonomy*, the freedom to be in control of one's actions, *relatedness*, meaning how much they feel connected to other people, and *competence,* meaning how confident a person is in whatever they are doing. The theory suggests that if these basic needs are met, a human will experience more well-being, and if not, they will have less self-motivation and well-being.

Self-determination theory could be utilized in character design to set motivations for a character. For example, a character who does not feel competent would constantly seek validation by over-performing tasks. If they could not perform tasks to gain validation, they would feel less accomplished, resulting in them feeling less happy overall. These *behavioral patterns* determined by the three psychological needs could form the motivations of the character.

2.11 Sex and Gender

Sex and gender are debated topics and heavily tied to character design; therefore, they should be addressed. Older research tends to define gender as binary or tied to sex. Isbister (2006) defined sex and gender in their book: "*sex* is the biological aspect of being male or female, and *gender* is learned and adopted during an individual's life from culture and environment". Merrian-Webster Dictionary (n.d.) supports the distinction between sex and gender: "In this dichotomy, the terms male and female relate only to biological forms (sex), while the terms masculine/masculinity, feminine/femininity, woman/girl, and man/boy relate only to psychological and sociocultural traits (gender)" (Are gender and sex the same? section, para. 2). These definitions, however, fail to men-

tion gender minorities. Blanchard et al. (2019) defined gender as "the socially constructed processes and differences, often aligned with being feminine, masculine, blended elements of both, or neither" (Defining Sex and Gender Minorities section) and gender minorities as "a person whose gender identity does not exclusively align with masculine or feminine polarities" (Defining Sex and Gender Minorities section). Character designers should be mindful of this distinction. Character designers should conceptualize gender as a non-binary: it can explain why a character appears more masculine or feminine but does not define or limit the personality or identity of the character.

Another problematic topic in video games are gender role stereotypes (Martins & Tompkins, 2021), the most overused of which is the damsel in distress stereotype mentioned in chapter 2.5. Tillman (2019) suggested addressing this stereotype by basing character design on story instead of stereotypes. He explained that this allows designers to create strong female character, vulnerable male characters, and unique villains, thus promoting diversity. The author argues that this could be applied to gender as well: it could reduce the need to label characters with genders. This story-focused design mindset could likely reduce the usage gender role stereotypes.

2.12 Physiology and Attractiveness

People tend to perceive attractive characters more positively. This is referred to as the *the halo effect* (Isbister, 2006; Martins & Tompkins, 2021). It could be used to trick players into perceiving some characters more positively, even if their actions might otherwise be perceived as harmful. Isbister encouraged designers to make all characters in a game attractive, as this could make the player perceive the entire game more positively. However, this might have problematic consequences. In their research about perceived attractiveness of body compositions, Briedley et al. (2016) concluded that people found women to be most attractive when they had a body fat percentage below the established healthy BMI (body mass index) range. This trend of overusing unhealthy and unrealistic women's body types is already prominent in the video game industry. Additionally, Martins & Tompkins (2021) theorized that while women can be designed to be powerful characters in video games, their power often comes from their physical attractiveness. If Isbister's (2006) advice about making and all characters in the game attractive (including unhealthily thin women) is followed blindly, it could result in character designers promoting unhealthy body images and sexualization of women.

In the same study, Buss et al. (2019) established that for men, healthy-looking body fat and muscle compositions were preferred. This is apparent in video games, as was discovered by in by Martins & Tompkins (2021), who interviewed game developers in their research. They found that most participants deemed male character design in video games as realistic. Buss et al. (2019) also concluded that out of all muscle groups, muscles in the upper body were found to be most important for men's attractiveness. Emphasizing muscularity could be used to indicate a character's strength and thus physical capabilities of a character. However, according to the research by Buss et al. (2019), excessive muscularity does not necessarily lead to them being perceived as more attractive. Therefore, emphasizing upper body muscles within the boundaries of a healthy appearance should make a male character appear more attractive.

The author suggests that attractiveness should be used sparingly on selecting characters, such as the anima or animus archetype, to promote healthy and realistic body images. As Tillman (2019) suggested, designing characters outside stereotypes (and therefore also outside stereotypical beauty standards) could result in more interesting, unique, characters. These characters could also be more relatable to the average player. Attracting players with deep, realtable characters instead of surface level beauty could result in a deeper connection between the player and the character. The target audience of the game should be considered if the attractiveness of a specific character is important, as there are major cultural differences in what people perceive as attractive or beautiful (Isbister, 2006).

2.13 Culture

Culture affects how people perceive and interpret one another. In video games, the culture of the player affects how players expect characters to act (Isbister, 2006). Isbister (2006) warned about the dangers of incorporating cultures into character design in their book. According to them, character designers need to be aware that their work will be encountered by players within their own media landscapes. Therefore, games, and to that degree, characters should be designed for the people that are playing (and viewing) them. Isbister (2006) used Japan as an example: Japanese people are expected to be mindful of their expressions, tone, and gestures, whereas in The United States people can be more vocal and expressive.

Carefully incorporating elements from other cultures into character designs could result in more variety and uniqueness. However, characters for a game should be designed with their specific audience in mind, and designers need to be wary of using cultural stereotypes as discussed in Chapter 2.5.

2.14 Non-Human Characters

One way to avoid using stereotypes is designing non-human characters. These characters possess enough facial features to express themselves but appear alien enough to not be perceived as human (Isbister, 2006). These characters, such as Pikachu from Pokémon games, avoid falling into cultural and racial stereotypes, and are often excused for behaving in odd ways. Designing mysterious and interesting characters, such as non-human characters, can also increase player's interest in a character (Tillman, 2019).

3 Visual Character Design

With the theory regarding character background covered, this chapter focuses on the visual aspect of character design. It presents concepts, methods, tools, and techniques related to drawing a visual representation of a character. This chapter discusses volumes and massing, the face and facial expressions, proportions, shapes, silhouettes, gravity, figure, and colors. The method presented can be utilized using pen and paper, traditional painting, or digital painting. These topics all help the character designer in their goal of producing *concept art*.

3.1 Concept Art

Concept art is used to present ideas to the development team. Lilly (2015) stressed that concept art is merely a byproduct of the game development process, thus it is not meant to be displayed in public. They described concept art as tool for communicating between several disciplines to present ideas, hence it should only be as precise as is needed to effectively convey a specific idea. To summarize, a clear distinction exists between concept art and finished artwork.

As concept art is meant to convey ideas, depending on the game and phase of production, the complexity of concept art might change. Especially early in development concept art is often

crude, but in some cases, more detailed concept art might be required. In Horizon: Zero Dawn (2017), the complex machines are not only highly detailed, but also have detachable parts. Thus, the concept art had to showcase both the outer armor of the robots and the underlying machinery in detail. Therefore, concept artists working on the game needed to possess advanced painting skills to produce adequate concept art. However, it is not always necessary to have these advanced painting skills, as the purpose of concept art is to convey ideas. Therefore, anyone could likely produce concept art.

3.2 Shapes

Solarski (2012) stated that communicating through shapes is a universal concept in all artistic fields, thus this theory also applies to character design. In character design shapes can be used to give the player information about the character's personality or affiliation. Solarski explained that the circle is often used to communicate fun and friendliness, the square to communicate confidence, stability and safety, and the triangle to communicate aggression and danger. Nikolaeva (2017) supported this, writing that strong and masculine characters often have square or rectangular physiques, circular characters are perceived as friendly, safe, and harmless, and triangular characters project danger, thus are are often villains. For example, a round character, such as Kirby from Kirby's Dream Land (1992, would likely be seen as a friendly and fun character, while a character with triangular spikes, for example Bowser from Super Mario Brothers (1985), would be perceived as aggressive and unfriendly.

Designing the same character but using different shapes can drastically alter how the character is perceived. Solarski (2012) used Mario and Wario from Super Mario games as an example of this: Mario and Wario are essentially the same character design, but use different shapes to convey their differing personalities. They also have different colors and expressions to further emphasize this. Their differing shapes, colors, and expressions result in Mario being perceived as friendly and Wario being perceived as evil.

Figure 3: Mario and Wario (Nintendo)

Shapes can be combined to increase variety (Solarski, 2017). For example, adding rounded corners to a triangular and aggressive enemy can make them look less threatening. Goombas in Super Mario games are a great example of this. Their rounded shapes make them more suitable for a game that is targeted for all audiences, while still using a triangular body shape to inform the player of danger.

Figure 4: Goomba (Nintendo)

Solarski (2012) further explained that shapes can also be used to subvert player expectations. For example, a player can be tricked into a false sense of security by presenting them with a circular

character that is in fact aggressive and dangerous. Additionally, they noted that the relationship between shapes of a character and the shapes of the game world can also be used to alter how the player feels. For example, inserting a circular player character into a triangular world will create dissonance, making the player feel vulnerable, while placing a triangular player character in a round environment will make the player feel empowered. Solarski (2013) tested this theory by releasing a game called Morf (2011), a minimalistic 2D game that features two levels: one with round obstacles and one with triangular obstacles. However, the players did not realize the levels were identical in level design and placement of obstacles. They found that especially inexperienced players tried to carefully avoid the obstacles in the triangular level, while carelessly breezing through the round level. This small-scale experiment proved that shapes can have a large impact on the mood of the game.

As was demonstrated in this chapter, shapes can be used in many ways to alter the player's perception of a character of the entire game world. Competent character designers can use these theories to their advantage.

3.3   Volumes and Massing

Massing is an extremely common and useful tool for any visual artist. It has been utilized by both Solarski (2006) and Boicheva (2021) among many other artists in the field. *Massing* means simplifying a complex three-dimensional shape into one or more basic shapes: spheres, cylinders, cubes, or cones (Solarski, 2012). These shapes are referred to as *volumes*. For example, a tree could be split into two volumes: the tree trunk (cylinder) and the leaves at the top (a sphere). This process can be applied to any object but is especially useful for modeling complex human anatomy, as it can be utilized in character design to quickly sketch possible shapes for a character's body or individual body parts. For example, a human arm could be massed into the shoulder (sphere), the upper arm (cylinder), the elbow (sphere), the lower arm (cylinder), and a clenched fist (cube). This allows any modifications to the overall shape and proportions of the character to be done efficiently. As the detail requirements of concept art change during production, massing could be expanded to include more anatomy: specific smaller muscles, joints, and *skeletal landmarks* (bony protrusions of the body) to include more detail. More extensive material on drawing human anatomy is provided in Drawing Basics and Video Game Art by Solarki (2012). Due to its versatility and ease of use, massing is an excellent tool for character design.
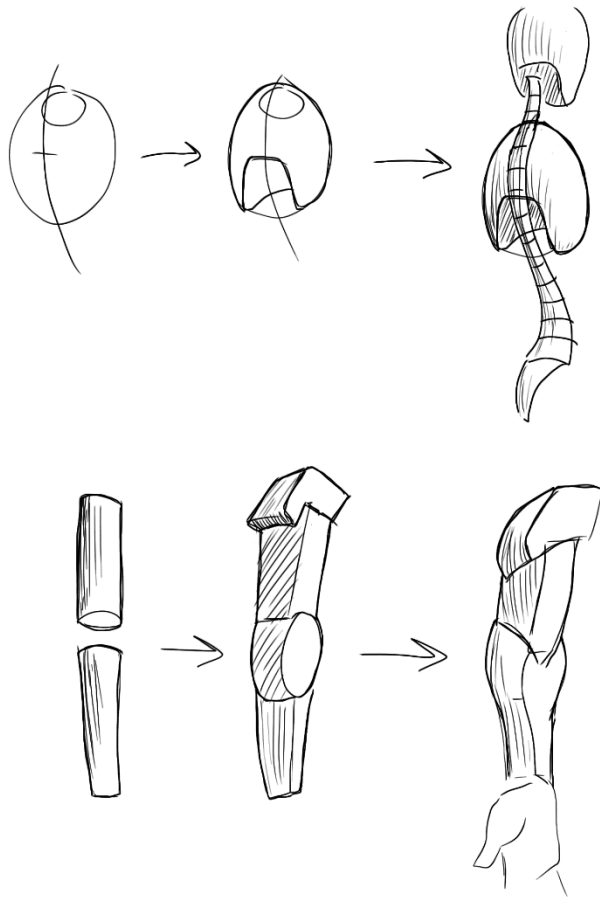
Figure 5: Massing a character (Jesse Voimala, 2023)

3.4 Face

The face is likely the most important visual tool for expressing a character's emotion and personality, but coincidentally is often the most difficult to depict correctly. Thus, massing could be helpful in perceiving the anatomy of the human face. In his book, Solarski (2012) defined the four specific areas of the face that affect the ability to display emotion: the forehead, the eyebrows, the eyes, and the mouth. They mentioned that these four areas of the face should be designed in a way that the character can express emotions and personality. To test this, the face should be drawn in multiple different moods to identify issues in the design of the face. Including these different facial expressions in concept art could help convey the character's personality. Additionally, Solarski suggested that exaggerating these four areas could enhance the character's ability to express themselves. Some characters, notably non-human characters such as Sackboy from Little Big Planet (2008), lack some of these areas entirely, however, are still able to express themselves. The absence of other areas could be compensated for by emphasizing the existing areas.

Boicheva (2021) described a technique for inventing unique face shapes for characters. It involves first drawing outlines for multiple random shapes, then filling those shapes with drawings of a character's head. The results are several uniquely shaped character heads that should have more distinction than realistic head shapes. A slight disadvantage of this method is that it requires the artist to have an idea for a head design ready to utilize.

Babyface bias is a useful theory, especially when a designing character from the fool archetype or a non-human character. The theory suggests that a character that possesses facial features that resemble those of a newborn baby are likely perceived as warm, cute, and less responsible (Isbister, 2006). These facial features include large eyes, small chin, high eyebrows, small nose, full lips, and cheeks. This theory could be used to alter player's perception of the character, for example making the players forgive foolish characters for leading other characters to danger.

3.5 Proportions

Solarski (2012) demonstrated a commonly used and simple way to measure a character's height and proportions: the head. They proposed that the average human adult is 7.5 heads tall, the human torso is slightly under three heads tall, and the legs are approximately 3.5 heads tall. Cute characters tend to have bigger heads and childlike proportions, such as Sackboy from Little Big Planet (2008), while heroic and strong characters tend to be over the average of 7.5 heads tall, such as Markus Fenix from Gears of War (2006). The effects of different proportions are demonstrated in Figure 6.
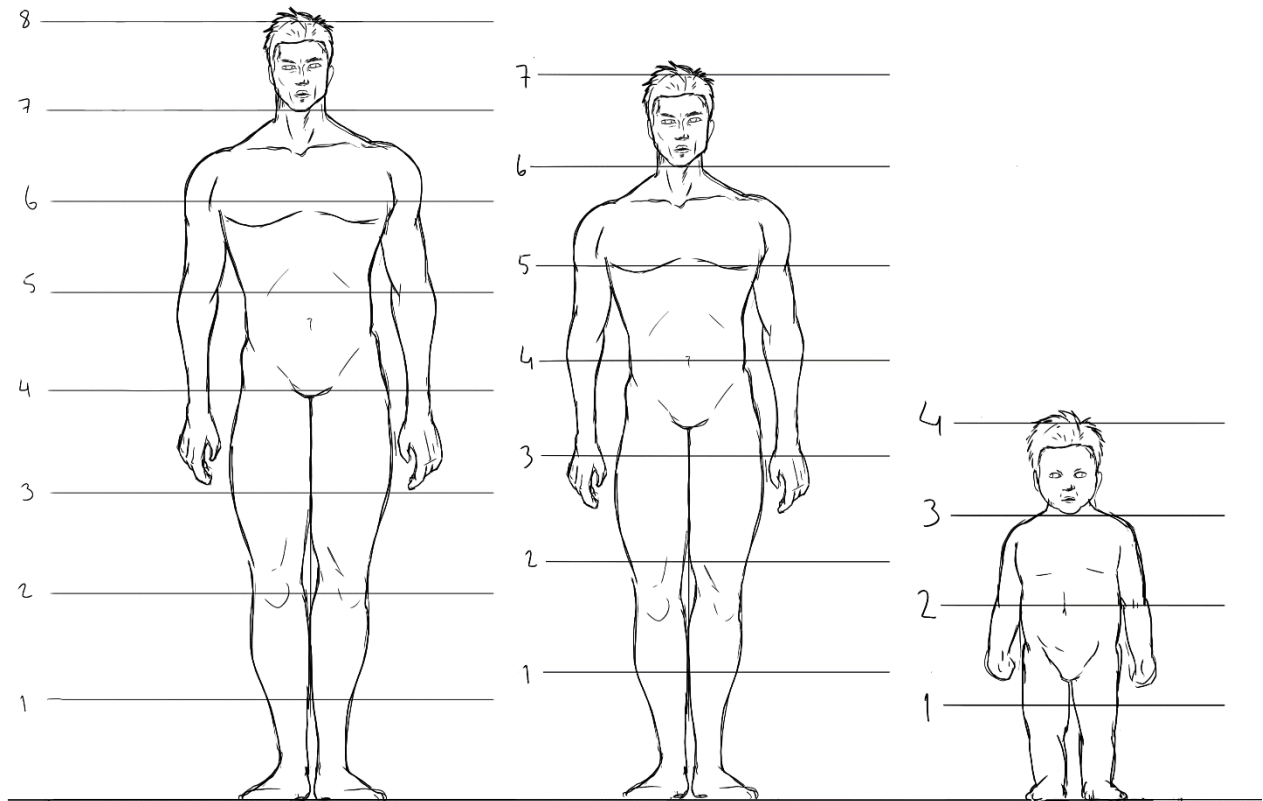
Figure 6: Proportions (Jesse Voimala, 2023)

Another method for experimenting with proportions was described by Nikolaeva (2017). It involves first drawing a character with realistic proportions, then splitting it into the head, the torso, and the lower body. The proportions of these parts are then adjusted independently of each often to find the desired proportions for the character. This method can be easily utilized with digital tools, such as Adobe Photoshop. Nikolaeva's method might be more suitable for adjusting proportions of finished characters, especially if using digital tools.

3.5.1   Visual Measuring Tools

Solarski (2012) listed ten visual measuring tools in his book. First, *squinting* one's eyes can be used to shift the focus from the details of a painting or a drawing to the larger shapes and proportions of the subject. Second, *framing* can be used to ignore the subject of the image and to focus on the width-to-height ratio for the four-sided frame. Fourth*, measuring unit* is similar to the head measuring tool discussed in the previous chapter, taking one part of the subject, commonly the head, and comparing other parts of the body to that specific unit. Fifth, *alignment* is used to check the

relation of the elements to one another on a vertical and horizontal axis. For example, in a portrait, it can be used to check the alignment of an eyebrow in relation to the ear. Sixth, *triangulation* is used to check imaginary points in the subject to create larger shapes, that can then be used to check the proportions of the subject. Seventh, *envelope* means enveloping the subject in a shape along the most outer points of the silhouette. Eighth, *simplified lines* can be used to create outlines for the larger shapes of the subject. Ninth, *negative shapes* mean creating an empty space around the subject from basic shapes, being especially useful for defining the silhouette of a character. And finally, p*ositive shapes* mean drawing your character using only basic shapes.

These ten tools provide a varied selection of tools that character designers can choose from based on use case. For example, for a facial portrait of a character, which requires precise positioning, alignment would be most useful, while for determining full body proportions, squinting one's eyes could be a better and faster option, as it can quickly force the artist's attention from details to the overall shapes. For silhouettes discussed in chapter 3.7, negative shapes are especially useful.

3.6   Thumbnail Development

Solarski (2012) described another tool for experimenting with different body shapes, called *thumbnail development.* The technique involves using basic shapes (circles, squares, and triangles) to represent the body parts of the character. Those shapes can be combined with other shapes, for example shapes from nature or man-made objects, to create new designs. Solarski advised performing a *silhouette test* (described in chapter 3.7) for the character after each iteration of the thumbnail development process to assess the resulting design.

The benefit of this tool is that it keeps the drawings as simple as possible for multiple quick and easy iterations of a character design. It could be used in conjunction with the measuring tools from the previous chapter to achieve desired proportions or to experiment with new shapes quickly. The images from *research* and *moodboard* (explained in chapter 3.11) could be used as inspiration for new shapes. The next tool provides an alternative way for discovering new shapes. For example, in Figure 7, the shapes of bat-like wings were combined with a human, creating three possible shapes for a winged character.

Figure 7: Thumbnail development (Jesse Voimala, 2023)

A method that can be used in conjunction with thumbnail development was introduced by Solarski (2012): "Metaphors such as 'icy stare' and 'beaming smile' are used to imbue objects or actions with greater emotional significance. Visual artists can use metaphors in much the same way, sometimes taking inspiration from the most unlikely places" (p.97). When encountering these interesting visuals in everyday life, Solarski suggested drawing a quick sketch or mental image of the subject. These can later be included in character designs to create interesting new combinations. For example, a uniquely shaped leaf could be turned into *a silhouette* and included as the shape of a character's body via thumbnailing.

3.7 Silhouette

Dictionary.com (n.d.) defines *silhouette* as "a two-dimensional representation of the outline of an object, … uniformly filled in with black" (noun section, para. 1). Many iconic cartoon characters such as Walt Disney's Mickey Mouse and Donald Duck have distinct silhouettes that are instantly recognizable (Boicheva, 2021). In video games, a character's silhouette can also be used to help the player: a distinct silhouette could allow the player to distinguish characters from each other during gameplay or to help identify friendly or unfriendly characters (Rogers, 2014). Thus, a good character silhouette will not only make the character more unique by making them more recognizable, but could also positively affect gameplay,

The *silhouette test* is a technique commonly used in character design to test whether a character is distinct and recognizable. Walt Disney Museum (n.d.) explained that reducing a character to its

silhouette forces the character designer to emphasize certain traits, features, or visual elements of the character design. Solarski (2012) agreed, explaining that certain features of a character might disappear when observed from a distance, so exaggerating some parts of the character retain these features when viewed from afar. These parts could be overlapping elements, such as clothing overlapping a body part or long hair overlapping with the torso. Additionally, *posing* a character could help emphasize identifying features.

For example, in Team Fortress 2 (2007) the character designs of each character are easily distinguishable from their proportions, posture, clothing, and weapons, as can be seen in Figure 8. They are also posed so that they all hold their weapons (a distinct element) slightly to their side, making it clearly visible on the silhouette. This is an example of how character designers can pose their characters to make them more distinguishable.

Figure 8: Team Fortress 2 silhouettes (Team Fortess 2, Valve)

3.8   Posture and Gravity

Posture means how a character stands and carries their weight. It could be an indicator of their personality: Solarski (2012) explained that a heroic archetype could stand tall and confident with their chest puffed forward, while a lazy character might stand with their pelvis forward. They explained that straight vertical lines in posture can be used to communicate strength, which could be fitting for the hero archetypes. Additionally, Isbister (2006) explained that posture can also be used to convey intention, for example a receptive person will likely have a relaxed posture, while a hostile person would appear tense and lean forward.

How gravity affects a character could be an indicator of their personality and how they move: Solarski (2012) established that increasing a character's contact to the ground will likely make them

appear heavier, while a character with little contact to the ground could appear light-weight and graceful. The effect of gravity and figure is demonstrated in Figure 9. An excellent example of using contact with the ground to demonstrate the character's movement is Journey (2012), in which the character's legs do not have feet and barely contact the ground, emphasizing their graceful, light-weight movement style.
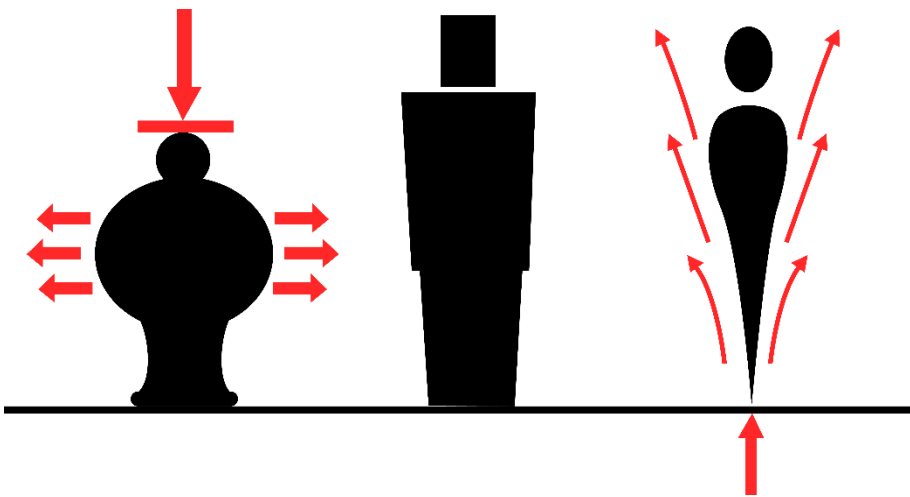

Figure 9: Posture and Gravity (Jesse Voimala, 2023)

Solarski (2012) explained that *opposing curves* can be used to make a character feel more lifelike. For example, if a character's weight rests on one leg, the line of the opposing leg should curve opposingly, as illustrated in Figure 8. Additionally, the shoulders tilt to oppose the pelvis. This theory of how gravity affects the human body applies whether the character is standing still or expressing themselves through movement.
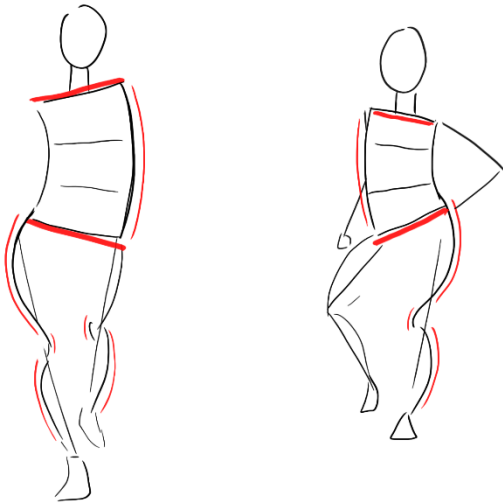
Figure 10: Opposing curves (Jesse Voimala, 2023)

3.9 Expression and Movement

As was established in chapters 2.9 and 3.4, the face is an important visual tool for expressing a character's emotion and personality via *facial expressions.* The face can also be used to telegraph the intention of a character, to inspire or control the player's emotion, or even give the player clues to what is in the environment (Isbister, 2006). This is apparent in The Legend of Zelda: The Windwaker, in which the player character occasionally guides the player with his eyes. Notably, his eyes have been emphasized by making them larger, supporting Solarki's theory of emphasizing eyes, discussed in chapter 3.4. Isbister (2006) also noted that a character reacting strongly to events in the game, for example a cheerful reaction to winning a race, will invoke the same emotions in the player. The face can be used to not only convey the personality of the character via facial expressions but can also be used as a tool for setting the player's mood, directly affecting how

the player perceives the game. The fact that the player characters facial expressions can guide the player means that the player character could theoretically fill the tutor function.

Figure 11: Facial Expressions of Link (The Legend of Zelda: Windwaker, Nintendo)

Gallaher (1992) researched the way movement is perceived and categorized the movement qualities as follows: *expressiveness*, meaning how much one uses gestures and expressions when moving, *animation*, meaning how much energy is present in the movement, *expansiveness*, meaning how much space one takes when moving, and *coordination*, meaning how gracefully one moves. They found that these qualities are linked to personal qualities: heavier people tended to be less animated, taller people tended to be more expansive, and muscular people tended to be more animated and coordinated. These four metrics could be used in video game character design to define a movement style for the character to reflect their personality. For example, Genji from Overwatch (2016) who is an agile ninja character, could be defined as: moderate expressiveness, moderate animation, low expansiveness, and very high coordination.

These metrics in combination with posture and gravity from the previous chapter, should create an overview of how the character moves and presents themself in the game. If these all match the character's personality, the result will likely be a more a more believable character. When designing a player character, Isbister's (2006) theories of cognitive immersion and visceral feedback

should be considered: the player will assess what they can do on a character based on how the player character moves in the game world, so the two should match. Lastly, facial expressions and bodily expressions have different implications in different cultures (Isbister, 2006). Character designers should be aware of this when designing a character for a game that is meant for international markets.

3.10 Colors

The final addition to any character design are colors. Solarski (2012) explained colors using the *color wheel*. The colors on the color wheel can be categorized in two ways: into *primary* and *secondary colors* or into *warm* and *cold* colors, as indicated on the right in figure 8: Color Wheel.
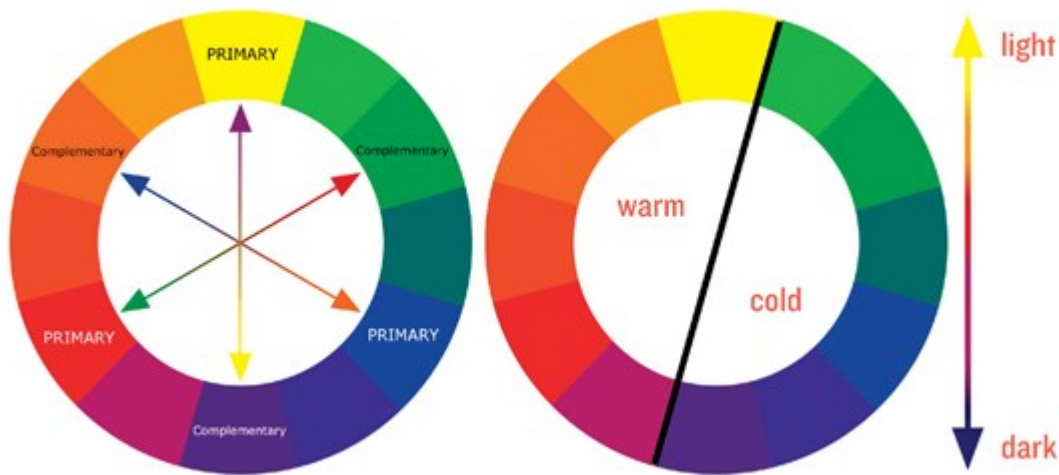
Figure 12: Color Wheel (Solarski, 2012)

Red, yellow, and blue are the *primary colors*. All existing colors can be mixed from these three colors. Secondary colors, orange, green, and purple reside in between the primary colors.

Complimentary colors are the remaining colors on the wheel. Solarki (2012) advised using these colors to emphasize specific parts of a character, piece of clothing, or any other object. They explained that colors close to each other on the color wheel will create a feeling of harmony, whereas using color from opposite sides of the color wheel will create a feeling of unease and dissonance. This is demonstrated in Journey (2012), in which the first level of the game is orange,

which harmonizes with the orange/red player character. When the player is being hunted by enemies in a later level, it is colored blue, opposing the orange/red player character, as can be seen in Figure 11.

Figure 13: Colors in Journey (thatgamecompany, 2012)

3.10.1 Colors in Video Games

Understanding the perception of colors could be useful in character design. It their literature review on the psychological effects of colors, Elliot & Maier (2013) concluded that while colors can have an influence on behavior and thought process, but psychological context affects how people affiliate colors. For example, Ilie et al. (2008) found that in the context of competitive gameplay, people playing on a red team had a 54.9% win percentage. This was highly significant, implying that in the case of online competition, red could be perceived as positive. This was contradicted by Elliot & Maier (2013), who argued that in the red is often hypothesized to have a correlation to failure. This is apparent in user interfaces, where red is often used as the color for declining (negative) and green is used for accepting (positive). So, while there are trends and common conventions for color use in video games, there are contextual differences in how specific colors are perceived in video games.

3.10.2 Color in Character Design

Academic literature on the psychology of colors in character design is scarce. Patteri (2020) did a small-scale survey to research how people would perceive the same character with different color

variations. Out of six color variations (grey, black/red, orange, purple, pink, and green) they found that the black/red knight was perceived as the most evil, whereas the grey and pink knights were considered the least threatening. This is apparent in Kirby, who is round and pink; both the color and shape of the character create a sense of safety. Solarski (2012) advocated this, promoting the use of color and shape combinations that harmonize with each other. The trend of dark being perceived as evil is apparent in some popular video game villains. A quick analysis of iconic video game villains such as The Lich King from Warcraft III: Reign of Chaos (2006) and Sephiroth from Final Fantasy VII (1997) reveals that they share a dark aesthetic. However, villains with brighter color schemes also exist. Therefore, darker color scheme on a character design will likely be perceived as more evil, but an evil character does not need to have a dark color scheme.

3.11 Ideating Tools

Depending on the type of character being designed, research into the subjects might be needed to get inspiration. For example, if designing a humanoid character that is a combination of a cat and a human, reference images, videos, or documentaries of cats should be studied to find out how they act and move (Boicheva, 2021).

While researching, images for a *moodboard* should be collected. *A moodboard* is a fast and effortless way to get inspiration. It involves pictures of the subject, related subjects, or even opposing subjects displayed on one large canvas. Solarski's (2012) suggestion of opposing keywords could also be applied to the images on a moodboard: including images that oppose the subject could result in more varied character concepts.

Brainstorming can be used to quickly establish a lot of initial ideas. According to Nijstad & Paulus (2019) brainstorming is a tool best used in groups, where ideas can be assessed by each other. They suggested that brainstorming can be conducted *verbally* in face-to-face groups, *electronically*, for example through computer video chat or voice chat, or through *brainwriting*, meaning writing ideas on pieces of paper.

Solarski (2012) suggested that in character design, a *mind-map* could visually represent ideas and keywords related to the character's design. They elaborated that while the high concept uses adjectives to describe the character, a mind-map should use nouns, such as: people, place, culture, architecture, clothing, historic reference, and things from nature.

4 Character Design Workflow

The previous chapters presented theories, techniques, and methods for creating a character's background and for drawing a visual representation of the character. As in the previous chapters, this distinction between character background and character design is kept for the workflow. For easier readability, these theories, techniques, and methods will be referred to collectively as *tools*. In this chapter, a suggested workflow for utilizing these tools is formed.

4.1 Methodology

Based on the data gathered from the literature review, the most suitable tools for character background design and visual character design were selected. The tools were selected based on how many sources recommended the tool and the credibility of these sources, as well as how they supported the other selected tools. To help distinguish the relationships between the tools, mind-map style tools was created using Diagrams.net (https://app.diagrams.net/).

For character background, the following tools were chosen: Solarski's (2012) high concept, Tillman's (2019) character archetypes, Schell's (2020) character functions, a combination of Schell's (2020) character traits and Egri's (1972) bone structure, OCEAN personality factors and the interpersonal circumplex (Isbister, 2006; Schell, 2020), Isbister's (2006) social roles and Maslow's Hierarchy of Human Needs. These tools will provide a character with a comprehensive background that is based on research and psychological theories.

To support the background tools, several drawing and painting tools were selected based on how useful they could be in producing video game concept art along with the previously mentioned criteria. The selected tools are: Solarki's (2012) thumbnailing and visual metaphors, the silhouette test (Solarski, 2012; Walt Disney Museum, n.d), massing and volumes, Solarski's (2012) visual measuring tools, Solarski's (2012) opposing curves, Gallaher's (1992) body expression qualities, as

well as complementary and opposing colors (Solarsk, 2012). Boicheva's (2021) random face shapes technique was excluded due to the limited use of the tool.

To organize the tools chronologically for the workflow, the author listed all the tools visually to represent a timeline of the proposed character design process workflow. This timeline is split into two categories, referred to as *phases* in the workflow. The first phase, the *background phase*, is intended for designing the background and psychology of the character. The second phase, the *visual phase*, focuses on drawing a visual representation of the character based on the foundations established in the background phase. This visual representation of the character is concept art that is used to convey the idea of the character to the development team (Lilly, 2015). Additionally, a pre-production *ideating* phase was added before the first phase to provide ideating tools. These tools are brainstorming, visual metaphors (Solarski, 2012), and the moodboard.

Several theories that cannot be used as direct tools were included as *helpful concepts*. Acknowledging these concepts should provide better and more diverse character designs. These concepts are psychology of shapes (Solarski, 2012), gravity (Solarski, 2012), facial expressions, four expression areas of the face (forehead, eyebrows, eyes, and mouth) (Solarski, 2012), babyface bias (Isbister, 2006), diversity, non-human characters (Isbister, 2006), and Isbister's (2006) visceral style. Additionally, three *problematic concepts* that could have negative effects were included to warn character designers of their problematic nature. These concepts are attractiveness, character stereotypes, cultural stereotypes, and gender role stereotypes.

4.2   Ideating Phase

The character design process should be started with *ideating*. The goal of this phase is to produce a variety of ideas, then filter those ideas to find the best ones. Ideating could be done by *brainstorming,* which is most useful for groups in groups *(*Nijstad & Paulus, 2019*)*, or by finding *visual metaphors* from existing objects (Solarski, 2012). Once a lot of ideas have been conjured, the best of them should be chosen for further *research*. During research, the goal is to produce a moodboard of the idea or subject. The moodboard presents images of the subject, related subjects, or opposing subjects on one large canvas to spark inspiration. An overview of this phase can be seen in figure 11.
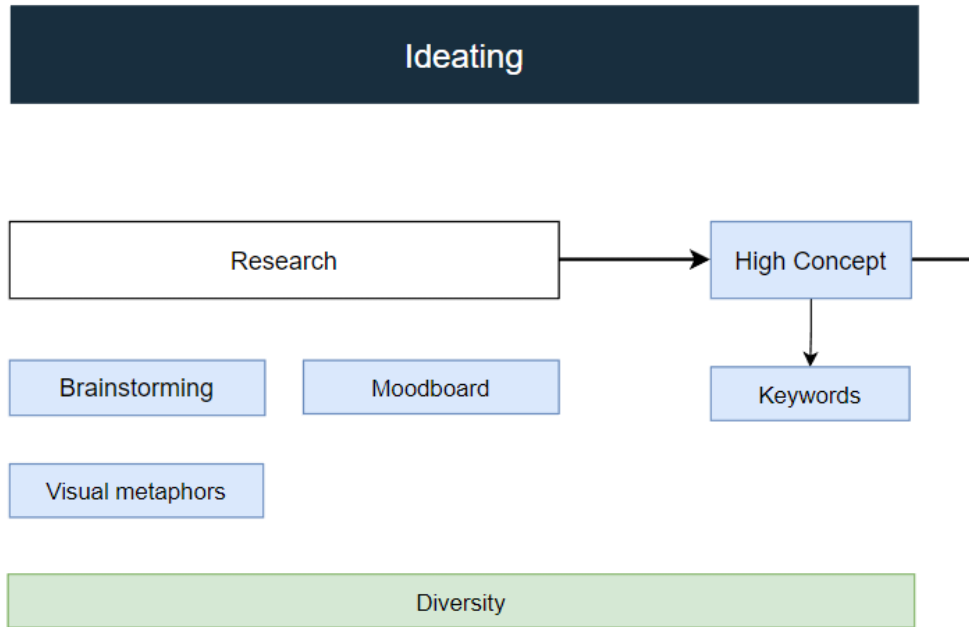
Figure 14: Ideating Phase (Jesse Voimala, 2023)

Before moving to the next phase, a high concept for the character should be defined (Solarski, 2012). The high concept is a sentence or paragraph that condenses the design goal precisely using adjectives: keywords that describe the character. It is important to define the high concept at the beginning to ensure the character will be designed with intent throughout the workflow (Solarski, 2012).

4.3 Background Phase

Guided by the vision set by the high concept, the designer can move to the background phase. The goal of this phase is to establish the personality and motivations for the character. Personality means how the character interacts with others (Isbister, 2006) and motivation is what drives them forward (American Psychological Association, n.d.). Figure 12 demonstrates how the workflow continues from the ideating phase to the background phase in addition to presenting an overview of the tools and concepts as well as their connections.
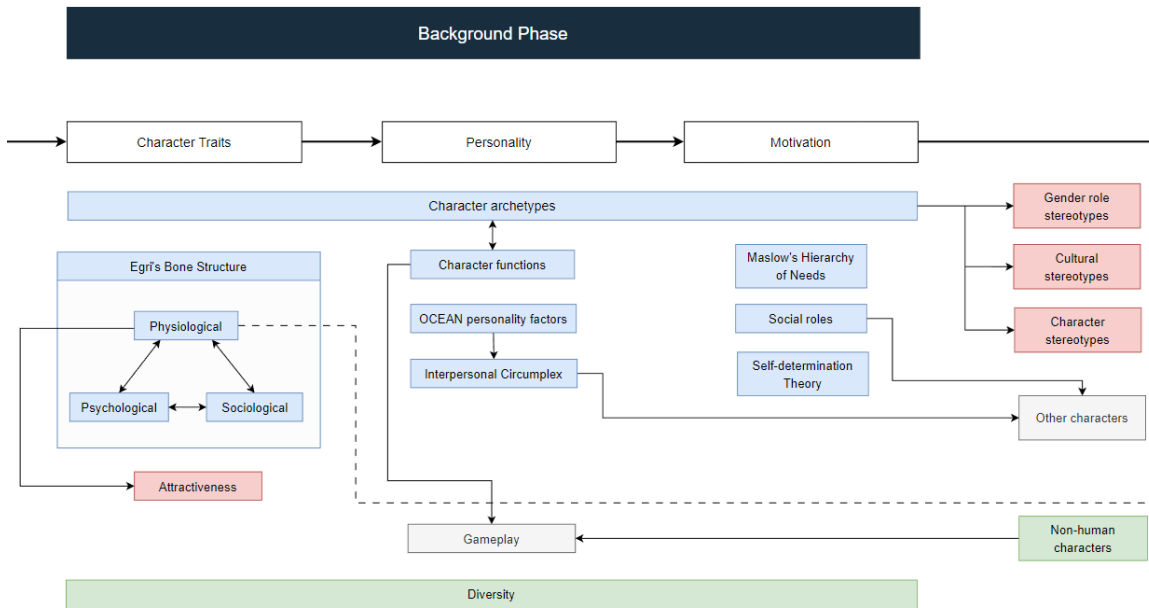
Figure 15: Background Phase (Jesse Voimala, 2023)

First, character archetypes can be used to create a "mold" for a character (Tillman, 2019) to fit the narrative or a gameplay function. However, archetypes by themselves are at risk of becoming boring, stereotypical characters (Tillman, 2019), hence further development of a character is highly recommended. OCEAN Personality Factors and the Interpersonal Circumplex (Isbister, 2006; Schell, 2020) are great tools for this. OCEAN Personality Factors are five separate personality metrics that can be used to create varied or even opposing personalities. Characters can be placed on the Interpersonal Circumplex to create other characters with opposing personalities, likely resulting interesting interactions that display the character's personalities. The character's personality should be logical in relation to their motivations. Maslow's Hierarchy of Needs and social roles (Isbister, 2006) could be used to establish a character's basic motivations. More advanced motivations can be defined by defining utilizing the self-determination theory.

Additionally, physiological, sociological, and psychological character traits should be defined for the character. These few select traits should both make sense in relation to each other (Egri, 1972) and stay with the character through the narrative (Schell, 2020). Notably, the physiological traits define or limit many of the qualities that will be designed in the next phase, the visual phase. The physiological traits include attractiveness of the character, which can be used to trick players into perceiving a character more positively (Isbister, 2006), but could also be problematic. During the

design process, character designers should be aware of the character's possible gameplay functions. For some functions, a non-human character might be more fitting than a human-like character, as players will likely be more forgiving towards non-human characters. Additionally, babyface bias can be used to alter player's perception of a character.

During this phase, as well as in the following visual phase, diversity should be considered. Adding diversity to characters, for example by incorporating gender minorities and cultural elements into their designs, will likely result in more varied character designs. Gender should not define or limit the personality or identity of the character. Thus, it was excluded as a concept from this section to shift the character designer's focus to more meaningful aspects of character design. Finally, character designers should be mindful of character, gender role and cultural stereotypes (Isbister, 2006; Tillman, 2019; Martins & Tompkins, 2021).

4.4 Visual Phase

After building the foundations for the character in the background phase, this phase focuses on creating concept art of the character. Concept art is used to convey the idea of the character to the development team (Lilly, 2015). The author stresses that concept art is not meant to be viewed in public, and effort into creating it should be invested accordingly. In this phase, the shapes and proportions, posture, face, expression, animation, and colors of the character are designed. The tools provided in this phase can be used whether the designer is using pen and paper, traditional painting, or digital painting. Figure 13 shows this final phase of the workflow, including the relevant tools and concepts and their connections.
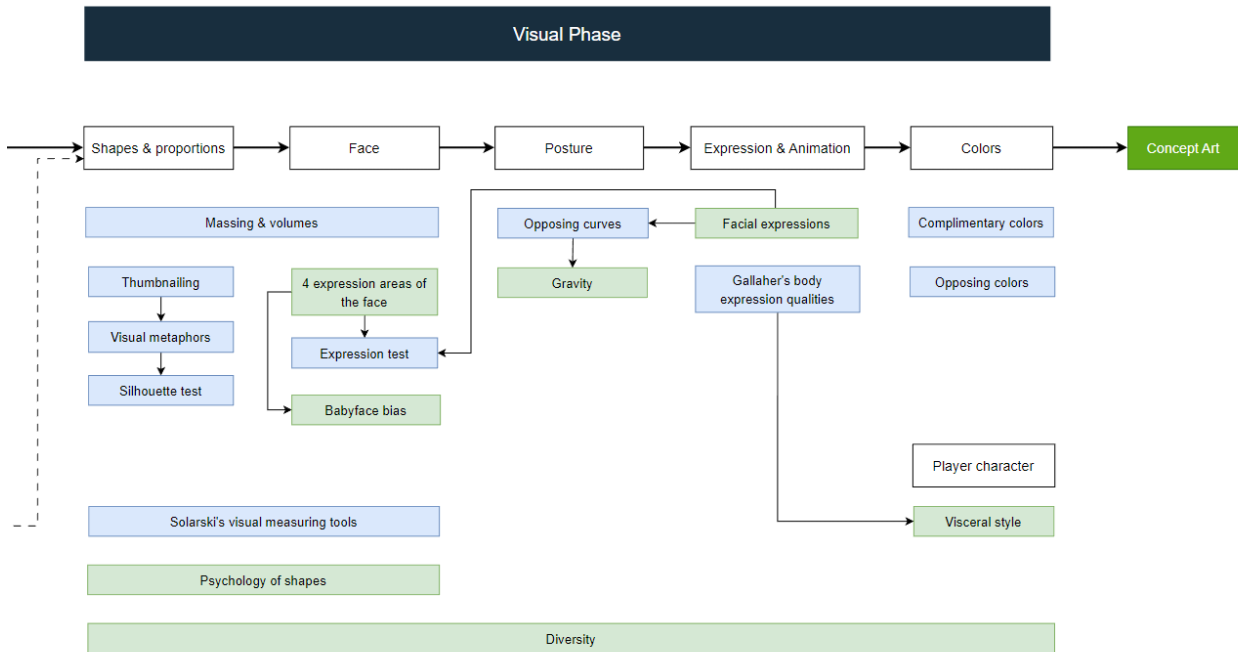
Figure 16: Visual Phase (Jesse Voimala, 2023)

Arguably the most important concept in character design are shapes, as they can be used to alter the player's perception of the character. The first tool, meant for perceiving and drawing shapes, is massing (Solarski, 2012). By massing the character into volume*s*, the designer can quickly and effortlessly experiment with different body shapes and proportions. Solarski's visual measuring tools could be helpful in defining proportions for the character. Thumbnailing is a tool that is especially useful for creating new shapes for the character's body (Solarski, 2012). It involves combining shapes from nature or objects with the character's body, likely resulting in unique designs. Visual metaphors from the ideating phase could be used as thumbnailing shapes. The character's finished body should be tested with the silhouette test (Solarski, 2012; Walt Disney Museum, n.d) to ensure the character has a distinct, instantly recognizable shape. How the character is perceived can be altered with different postures and by altering the amount of contact the character has with the ground (Solarski's, 2012). Additionally, opposing curves can be used to make the character's posture feel more like-like. Gallaher's (1992) four expression qualities can be used to define how a character moves its body. When designing a player character, the movement of the character should match the *visceral style* of the game (Isbister, 2006). An expressive face should be designed to match the body. The expressiveness of a face design can be tested by drawing the

face in various moods. These moods and the character's expressions can be exaggerated by emphasizing the forehead, the eyebrows, the eyes, and the mouth (Solarski, 2012). Finally, a color scheme should be designed for the character. The concept art does not need to be fully colored, however it should include the basic color scheme. Attention can be drawn to specific parts of the character by using opposing and complimentary colors (Solarski, 2012). Using these tools character designers should be able to produce adequate concept art to effectively convey their ideas to the rest of the development team. As can be seen on figures 14, 15, and 16, several links exist in the workflow to the earlier phases of character design. This demonstrates the iterative nature of this workflow: sometime sit might be necessary to go back and make alterations to the design or specific traits of the character to ensure the character's personality, motivations, and visual representation stay logical.

4.5   Alternative Workflow

While this workflow suggests designing the background of a character before drawing concept art, some examples exist of character designers doing these phases in reversing order. For example, during development of Overwatch (2016), the concept art for many characters had already been produced for another game project (PlayOverwatch, 2018). When the idea for Overwatch was created, the personalities and backgrounds of the characters were designed fit their gameplay functions based on the reused concept art. Therefore, the order of the two phases could be reversed: first designing the visuals of a character, then producing an interesting background and personality for the character. Testing this reversed workflow is suggested for future research.

5   Discussion

The objective of the research was to produce a workflow for video game character design. The research yielded a character design workflow that is based on theories from psychology and video games, design methods used by industry professionals, and painting techniques that can be utilized in video game character design. The workflow will likely be helpful to video game character designers, especially those early in their careers. It, however, is designed to be a theoretical framework rather than a set of strict guidelines. Hypothetically, it could help character designers structure their character design process, which could result in saved time and resources. Most importantly, this workflow will likely produce unique, deep, and diverse character designs.

The tools included in the workflow were chosen based on a large amount of data from varying sources and appropriate source criticism was conducted to ensure the data is reliable. Therefore, the suggested workflow should, in theory, include reliable tools for all the phases of the character design process. However, as each company and character designer have their own character design process, producing an all-encompassing workflow fitting for everyone is likely impossible. Therefore, more research, especially in co-operation with game companies and industry professionals, is suggested to document their workflows, methods, and techniques.

Researching every part of the character design proved to be the biggest flaw of the research: the research question was too broad for the time allocated. This resulted in only brief research on many of the topics, thus limiting the depth of the research. Due to the time required to research the entire theory base, testing the workflow was not possible. Therefore, testing of the workflow is suggested. Alternatively, further iterations based on this workflow could be produced.

The distinct lack of academic literature on character design that was discovered during preliminary research proved to be another challenge. Therefore, some of the data that was used for this research came from the opinions, methods, and suggestions of industry professionals, as opposed to peer-reviewed studies. Katherine Isbister, along with a select few researchers, has done excellent research on the psychology of the character's background, personality, and motivations. However, the lack of research is even more apparent in the visual side of character design. As a result, the research that was done on the visual side was limited, mostly revolving around Chris Solarski's literature, possibly resulting in biased results. Therefore, further research into visual character design and concept art, and techniques used by other professional character designers is suggested.

Two major problems in game development, the gender role stereotype and sexualization of female characters, were addressed. This was done by advising character designers to design diverse characters based on narrative, rather than stereotypes or gender. Additionally, character designers were advised to utilize attractiveness as a tool sparingly. Another gender-related problem discovered was the lacking presence of gender minorities in reviewed literature. Thus, further research regarding gender minorities in video games is suggested. Cultural stereotypes, another problem in the field, were also addressed by advising proper research into cultures before incor-

porating cultural elements into their games. Another problematic concept in the field is the possible promotion of unhealthy body compositions via character design. Attention was brought to the possible issues of promoting underweight body compositions for female characters. This could have a positive effect on body positivity. However, this problem was only briefly addressed, thus further research possible promotion of unhealthy body compositions in video games is suggested.

5.1   Research Ethics

Source criticism was applied to every source. For any sources that were not academic research, a background of the authors was conducted to ensure their credibility. Primary sources were used when possible and secondary sources were used sparingly. The literature was reviewed as widely as was possible in the time allocated to the research. Thus, the author acknowledges that more sources, especially opposing opinions, could have been included in the research. All sources researched were considered equally. Multiple sources were retrieved for topics that were deemed important and opposing opinions on topics were also included when found.

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Appendices

Appendix 1. Character Design Workflow