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How to Enhance Your Game with Visual Style Choices

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Tämä tutkielma käsittelee 3D-pelien taidetyylejä ja tutkii miten ne vaikuttavat pelien menestykseen. Lukija pääsee tutustumaan suunnitteluperiaatteisiin ja -käytäntöihin, jotka ovat jokaisen mieleenpainuvan visuaalisen tyylin takana. Käymme läpi modernien 3D-pelien yleisimmät visuaaliset tyyliluokat, jonka jälkeen tutkimme visuaalista identiteettiä, sekä tyylittelyä keinona luoda ainutlaatuisen ja vaikuttavan näköisiä pelejä.

Avainsanat: videopelit, taidetyylit, estetiikka, tyylittely

Abstract

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This thesis explores different ways in which a distinctive art style contributes to the success of a game and familiarizes the reader with the shared design principles and practices that are integral to the success of a video game art style. We go over the most common visual style categories that dominate modern 3D gaming before exploring visual identity and stylization as a way of achieving unique and impactful video game visuals.

Keywords: video games, art style, aesthetic, stylization

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1 Introduction

A video game is a cooperative project where writers, programmers, animators, 2D and 3D artists, gameplay, level, and sound designers all work together to create a complex piece of art. All these areas of development are important and if even one of them is underdeveloped the final product won't usually reach its full potential. That said, this thesis will focus on the visual part of video game development, and more specifically, the visual styles of 3D games.

Even if graphics and art style won't make or break a game by themselves, they are still key elements behind a successful game and should therefore never be overlooked or labelled as less important. Games are mainly a visual medium after all, and artistically eye-catching and graphically impressive games tend to grab the attention easier.

The goal of this thesis is to highlight the different ways in which a distinctive art style contributes to the success of a game, and to explore the shared design elements and practices that are integral to the success of a video game art style.

Due to personal interest as well as having to manage the scope of this thesis, I will leave out 2D graphics and art styles completely beyond a few mentions and instead focus solely on 3D game visuals.

In the first chapter my goal is to set the groundwork and to clarify the difference between a few concepts that are easy to mix up. The concepts in question are "graphics", "art style" and "aesthetics". It's hard to find a general consensus on the differences (and similarities) between these concepts but clarifying them will hopefully make the reading experience clearer. After this we explore how technological advancements have expanded the world of possibilities when it comes to creating unique and impressive visuals for games. Next, I will talk about the most common categories that game visual styles are usually placed into, like re-

alism and stylized. I will also discuss the problems and limits of such broad categories and why these categories aren't always enough. Lastly, I will explore the phenomenon of copying ideas and art styles and explain why you shouldn't settle for the safest or most obvious ideas when developing your game's art style.

The second chapter is dedicated to stylization. I will explore artistic choices that are common among all kinds of stylized visuals and go over universal art concepts like shape, composition and simple color theory. I will also touch on the relationship between visual style and gameplay and the importance of maintaining visual clarity. After this chapter the reader should have a basic understanding of what exactly goes into creating stylized game art of any kind.

2 Visual style overview

Before going into detail about the different visual styles in games and their backgrounds, it is important for the reader to understand the meaning of "visual style" and other phrases that are used when talking about video game visuals.

2.1 Graphics, art style, aesthetics

While doing research for this thesis, I noticed that a lot of different words and phrases were being thrown around when talking about video game visuals. Graphical style, visual style, art style, and aesthetics were all used by different people to describe very similar things. The thing is, these phrases are not interchangeable, so in order not to confuse the reader or myself I will attempt to describe the differences and overlap between the concepts of graphics, art style and aesthetics.

Graphics are the purely technical and mechanical aspects that contribute to a game's visuals (Extra Credits 2012). Graphics by themselves lack any artistic influence and can therefore be thought of as the technological framework which artists use as a base to display their artistic vision. Things like level of detail, resolution, lighting, shading style and rendering techniques like PBR (physically

based rendering) are all graphical aspects of a video game (Hölttä 2018). Graphics are defined by the current technology, which is always developing and improving. That's why games that put too much emphasis on good graphics instead of art style tend to age worse. So, when talking about graphics I'm referring to purely technical aspects of a game's visuals.

Figure 1. The Division 2 (Ubisoft 2019). Example of prioritizing graphics.

Art style is basically the way in which an artist expresses their style and portrays the subject matter. It's things like color, form, and composition. (McArdle n.d.) It's all the elements on top of graphics that an artist uses to create the final, distinct look of the game (see Figures 1 and 2 for comparison). Art style also refers to the grouping of styles into categories. If multiple works of art have enough visual similarities, they can be classified as belonging to the same art style (Wikipedia n.d.).

Figure 2. Borderlands 3 (2K Games 2019). Example of prioritizing art style.

Aesthetics can be quite hard to distinguish from art style since they mean the same thing to a certain extent. That is why they are often used interchangeably when discussing a game's visuals. However, there are some subtle differences between these two phrases. A game's aesthetic does not only describe how the game looks, but rather describes the overall emotional effect that the game has on the player (Hölttä 2018). Elements like music, story, themes, and mood are all part of a game's aesthetic. So, you could say that art style is just one part of a game's overall aesthetic.

Visual style and art style are used interchangeably in this thesis, while the term aesthetics is used as a more all-encompassing term that describes more than just the visuals of a game. I'm aware that these definitions aren't perfect, and some people may describe these concepts differently, but this is how I interpret them. I hope this clarifies my choices of words moving forward.

2.2 The most common visual style categories

Realizing your artistic vision for how a game looks has never been easier than today. There are still many challenges of course like budget constraints and hard-to-master software, but graphics technologies and hardware are now at such a level that almost anything that can be imagined, can be created (Towell

2015). Technology is not a hindrance for artists like it used to be, and so visual creativity has been able to flourish.

When it comes to the pursuit of realism in video game graphics, physically based rendering technology (PBR) has made it possible to simulate lighting that more accurately interacts with surfaces and textures in a true-to-life way. On top of helping achieve more realistic and complex visuals, PBR also helps artists by automating and calculating most of the difficult and time-consuming aspects like accounting for different and varying lighting conditions. Things that artists would previously had to have done manually. This has allowed artists to work faster and focus on creativity. (Burke 2015.)

PBR is not only useful for trying to achieve photorealism though and can aid in achieving all kinds of art styles. It is widely used today even when creating stylized art since physically accurate material values and lighting can make even cartoony visuals more impressive (Hope 2017). A good example would be a recent game like *Ratchet & Clank: Rift Apart (Insomniac, 2021)* that has a cartoony and exaggerated art style, while still having semi realistic materials and lighting (See Figure 3).

Figure 3. Ratchet & Clank: Rift Apart (Insomniac, 2021). PBR is also used to enhance visuals of stylized games. Notice how the materials reflect light.

Of course, PBR isn't an essential tool for creating stylized games like it is for realistic games, and even though it is widely used nowadays, a lot of stylized games achieve their look through different workflows and techniques.

Early in the era of 3D games, when the available technology was still more primitive and restrictive, games tended to look a lot more similar to each other even if it was unintentional. The difference between games that strived to look realistic vs. stylized was not always clear. Games often tried to look as realistic as the technology allowed, and stylization was often simply a side effect of technological limitations. A good way to find out what the artists intended the game to look like is to compare the gameplay to other aspects of the game like cutscenes and promotional art. (Anhut 2016.) In the example below (see Figure 4) Anhut (2016) points out that *Tomb Raider* was intended to have a more stylized art style compared to *Resident Evil,* but the differences are quite hard to spot.

Figure 4. Tomb Raider (1996, left) attempted stylized realism while Resident Evil (1996, right) attempted realism.

When comparing the two games' promotional material however, the artists' intentions become clearer. Tomb Raider retains the over-exaggerated stylized

look in its cover art and trailer, while Resident Evil's trailer is live action and uses real actors to give the game a more realistic tone. (Anhut 2016.)

The aforementioned *Ratchet & Clank* franchise has always managed to convey its cartoony style, even when the artists were limited by technology. The first games of the series that came out in the early 2000's used bright colors, exaggerated animations and proportions effectively to create a distinct and stylized art style (see Figure 5). Even today, these methods of developing an art style are still relevant. More on that later.

Figure 5. Ratchet & Clank 2: Going Commando (Insomniac Games, 2003). An older game with a cartoony art style.

These days artists don't have to worry about matching the gameplay to the promotional art. Thanks to technological advancements like PBR, increased scene density, higher polycounts, more advanced particle effects, animations and lighting, artists can now explore a wider variety of different visual styles for their games.

So, what are the visual styles that are dominating today's gaming scene? No two games are visually completely identical of course, but if a game has enough similarities to others, it can be described as belonging to a specific style.

In the broadest sense, most games can be categorized as either realistic or stylized. Abstract is also regarded by many as one of the big categories (Keo 2017), but it applies almost exclusively to 2D games like *Tetris* that have a visual style consisting of mostly shapes and geometry. This style is most prevalent in old arcade games and modern phone games. Because this thesis focuses on 3D visuals, I will not dive further into abstract style, or for that matter other common 2D styles like pixel art.

Realism is the easiest style to recognize since there can't be that much variation. Realism is characterized by mimicking reality and lifelikeness. The subject matter of a game with realistic graphics doesn't have to really exist but is meant to give the impression that it is part of our world. (Aava & Tokarev 2017.) For example, fantasy and sci-fi games can have realistic graphics even though the subject matter is imaginary. Realism is hard and expensive to achieve though and is therefore mostly reserved for big budget games, made by large companies (referred to as triple A games).

Realism is most common in games with mature themes that are aimed at older audiences, as well as games that aim to simulate reality as closely as possible, such as sports games and simulators (see Figure 6). According to countless online forums, most people actually prefer stylized graphics over purely realistic ones, for reasons that I will get into later. Still, the main reason why realistic graphics have dominated the triple A gaming scene for so many years is mostly because it's a great way for companies to show off their graphical capabilities and new technology. (Quora.com 2016). The good thing about the pursuit of realism is that it is the best way to develop graphics technology, which in turn contributes to the possibilities of stylized game visuals as well.

Figure 6. Red Dead Redemption 2 (Rockstar Games, 2018). Realistic visuals dominate the AAA-gaming market.

“Stylized” is a very expansive category that is used to describe everything that isn’t realism. It’s an umbrella term that is used to describe various art styles that portray elements like characters and environments in a simplified or exaggerated manner. (Keating et al. 2017.) Stylized graphics are so popular among developers because of their adaptability. There is no ruleset for how a stylized game should look, and the style is so customizable that it can be made to fit almost any genre or type of gameplay. Stylized graphics are also usually less technically demanding than realistic ones and are therefore favored by smaller developers with less access to resources. (Keo 2017)

Any game that has a non-realistic art style can be considered stylized, so the word alone is never enough to fully describe a game’s art style, however, these are some of the most common and popular types of stylizations:

Cel-shaded (or toon-shaded) styles use the cel-shading technique to make the graphics appear hand drawn and more two-dimensional with the use of flat colors and shading, and sometimes object outlines (Keo 2017). Cel-shading is most common in Japanese games that are going for an anime-style look. *The Legend of Zelda: Breath of the Wild* (2017) and *Dragon Ball FighterZ* (2017) are

both recent games that have a cel-shaded art style (see Figure 7). *Breath of the Wild* is also an example of a game that benefits from PBR, even if it's not immediately obvious. The technology is used to reflect light more accurately off surfaces in the world even if the textures aren't otherwise realistic. (Zelda Wiki n.d.)

Figure 7. The Legend of Zelda: Breath of the Wild (Nintendo 2017). Cel-shading is a popular type of stylized visuals.

Hand-painting is a technique that is not as common as it used to be back when texture memory and polycount were more limited. The style is characterized by painting shadows, highlights, and surface details by hand onto a relatively low-poly model, to give the illusion of complexity while keeping the textures very light (Mozolevskaya 2020). *World of Warcraft (2004*) is one of the earliest examples of a game that uses this technique to great extent. The game is an MMO (massively multiplayer online game), where lightweight textures were necessary to achieve stable performance.

Nowadays, hand-painting is mostly used in conjunction with other techniques like PBR. Modern texturing software like *Substance Painter* allow artists to combine hand painting with procedural tools and advanced shaders (Denham n.d.). Hand-painted assets can be enhanced with things like normal- and roughness

maps. Newer games with a hand painted style like *Darksiders 2 (2012)* enhance their assets in this way (see Figure 8). (Swizzle 2014.) Hand-painting, when used alongside other texturing tools, is a great way to customize textures and give assets a more unique and handcrafted look.

Figure 8. Hand painted textures in Darksiders 2 (Vigil Games, 2012). Notice how the details on the cape are all painted onto a flat surface.

Today hand painting in its purest form (no advanced shaders, painted lighting information) is mostly used in mobile games, where memory limitations must still be considered due to the less powerful hardware. In this overview of hand-painted style, I focused on the technique of hand painting, but modern games can still achieve a hand painted look by “faking it” through procedural texturing and post-processing tools, without actually having to paint by hand. *The Legend of Zelda: Breath of the Wild* has an art style that could be described as painterly by some, but it uses different techniques than hand-painting to achieve its look.

Stylized realism (also called fantasy realism by some) is a hybrid style of realistic and stylized graphics that incorporates elements from both ends of the spectrum to varying degrees (Anhut 2016). This style is more widely used than pure realism or photorealism because there’s not as much of an expectation to adhere to the laws of reality, which in turn gives the artists more freedom to be creative (Hölttä 2018). Realistic games set in a fantastical world usually benefit from a more stylized form of realism because photorealism is even more difficult

to attain when the subject matter is imaginary. According to Anhut (2016), stylized realism is characterized by having exaggerated or stylized elements in the form of characters, objects, or spaces, while having strong photorealistic elements, often in the form of materials and lighting.

Stylized realism can lean heavily towards stylization, like in the case of the previously mentioned *Ratchet & Clank: Rift Apart* (see Figure 3) which incorporates realism mainly in its lighting and materials. It can also lean more towards realism, like in *Dishonored 2 (2016),* where the characters and textures are slightly stylized, while the environment, physics, lighting, and color palette are more realistic (see Figure 9).

Figure 9. Dishonored 2 (Arkane Studios, 2016) is an example of stylized realism.

So, in conclusion, any game with a deliberately non-realistic art style can be described as being stylized. There are endless stylized games with unique art styles that all look quite different, especially if you include 2D games that have almost exclusively stylized visuals. There are, however, some characteristics that almost all stylized games have in common. These are things that an artist should consider when developing a game's art style. I will get into what these things are in a later chapter about stylization.

2.3 Visual identity

Having introduced you to the most common visual style categories I now want to highlight the importance of visual identity. I will of course address the fact that stylization isn't necessarily always better than realism, but my point is to prove to the reader that a recognizable visual style can take you far.

So, what is the point of creating a unique art style for your game? The most obvious answer is a need to stand out and make your game instantly recognizable for its visuals alone. The fact is that it's extremely difficult to break through as a small developer in today's gaming market, especially if you have yet to build a brand image for your studio, or if you don't already have a successful game under your belt. There are currently over 30,000 games available on *Steam*, the largest and most popular digital game distribution platform as of 2021, with around 25 new games being released on the platform every day (Deyan 2021). This doesn't even include the massive number of mobile games released every year, or games on any other platform than pc for that matter, so it's clear to see that you can't blend in if you want your game to succeed and be remembered for years to come.

When seeing these absurd numbers of new games constantly being released, you might think that the best way to succeed would be to mimic what the most popular games are doing, but that isn't guaranteed to work in your favor. Taking inspiration from successful games and copying certain elements isn't a bad thing, and every game does this to a varying degree since it's usually safer to make choices that have already been proven to work. But what happens when the majority of your game's identity is borrowed from another game? Your game runs the risk of becoming secondary and quickly forgotten as it will never be able to leave the shadow of its inspiration. (Mozolevskaya 2020.)

The youtuber Iron Pineapple demonstrates this perfectly in his 2021 video about a game called *Lords of the Fallen* (2014). The game was ultimately a financial success thanks to borrowing heavily from the hugely popular *Dark Souls* that

came out just a few years earlier in 2011 but received lukewarm reviews and has since been forgotten while its inspiration has become an acclaimed, best-selling series. As Iron Pineapple (2021) concludes in his video, this happened because the game didn't do enough to differentiate itself from the game that inspired it. Both games even have a very similar gritty fantasy look (see Figure 10). *Dark Souls* didn't have a particularly unique visual style to begin with, so a slightly more generic version of the same style wasn't the best choice. If you're going to borrow so heavily from another game you have to do it better than they did, or remain a second-rate version of your inspiration, so why not try to do something different?

Figure 10. Left: Dark Souls (From Software, 2011) Right: Lords of the Fallen (Deck 13 Interactive & CI Games, 2014).

The hugely successful and culturally significant *Fortnite* (2017) tells a different story. The game came out the same year as *PlayerUnknown's Battlegrounds* which was already very popular. Both games belonged to the same very specific genre, not unlike *Lords of the Fallen* and *Dark Souls*, but the difference this time was that *Fortnite* looked completely visually distinct from its competitor. *PlayerUnknown's Battlegrounds* had a grounded, realistic visual style, while *Fortnite* went with an eye-catching cartoony look (see Figure 11). The stylized visual approach worked in *Fortnite's* favor since the art style was a lot more approachable and recognizable than its competitor's bland realism and appealed to a much wider audience. In the end *Fortnite* surpassed *PlayerUnknown's Battlegrounds* in popularity. (Hölttä 2018.) There were certainly other aspects of the game that contributed to this, like being free-to-play, but its art style definitely contributed to its success. The choice to go with a distinct visual art style helped

the game stand out from its competitors and successfully created a visual identity for the game that is instantly recognizable.

Figure 11. Left: PlayerUnknown's Battlegrounds (Bluehole, PUBG Corporation, 2017) Right: Fortnite (Epic Games, 2017). Which one is more instantly recognizable by its visual style alone?

If you are lucky and your game becomes successful, it would be wise to identify the elements of your game that resonated the most with your audience and stick to them in your future projects. This is a great way to build a brand identity: the unifying secret behind all studios that continue to release one successful game after another. I will explain brand identity further by using a few successful studios as examples, of course focusing on the visual side of branding.

Nintendo continues to be one of the strongest brands in the games industry. Their games are so easily recognizable thanks to the strength of their brand identity. Nintendo games have always been known for being colorful, playful, and family-friendly (see Figure 12), and they stick to those principles with every new game they release. The benefit of this consistency is that consumers will feel a familiarity towards your brand and know what to expect from your game. The familiarity in turn creates loyalty. Loyal consumers will see your brand as reliable and even nostalgic, which will lead to longtime support. (Betteridge, Van De Velde & Alcasas 2020.)

Figure 12. Mario Kart 8 Deluxe (Nintendo, 2017). Nintendo has built a strong and consistent brand identity. Having an iconic mascot like Mario certainly helps.

What about smaller developers then, can brand identity benefit them too? Nintendo is such a massive and established company after all, and their brand has been carefully perfected over the decades. The small indie studio **Supergiant Games**, while not making strictly 3D games, has already developed an instantly recognizable visual style, even after having released only four games. This is thanks to artist Jen Zee, who has been the art director of all their games so far (2022). Always working with the same art director has enabled Supergiant to unify the look of their games (see Figure 13). This recognizable look has then made them known for making visually striking games, which has helped them stand out from many other indie game developers.

Figure 13. Hades (2018) and Transistor (2014), both by Supergiant Games. Example of an indie studio with a strong visual identity.

Both Nintendo and Supergiant create games with very stylized visuals that are easily recognizable as their own, but can a studio primarily focused on realism have such a strong visual identity?

Naughty Dog is a studio that managed to completely change its visual identity. They started off creating very stylized games like *Crash Bandicoot* (1996) and the *Jak* trilogy in the early 2000's, but later switched to creating increasingly photorealistic games. For *Uncharted* (2007) they decided to go with a visual style that aimed to be as realistic as possible. This is still the case today, as their latest game *The Last of Us Part II* (2020) was the pinnacle of gaming realism when it released (see Figure 14).

A very important part of what has made realism work for Naughty Dog, is that they don't choose realism for their games randomly, or just because it is the cool thing to do, but because it was the right visual style for the type of game they were making. *Uncharted* was like a video game version of an action movie, so a realistic visual style made the similarities to live-action movies more apparent. Likewise, visual realism enhanced *The Last of Us* because the story of the game was serious and depicted the harsh reality of trying to survive in the post-apocalypse.

Figure 14. Jak II: Renegade (2003) and The Last of Us Part II (2020). Naughty Dog went from creating stylized visuals to near photorealism.

The studio has succeeded in making cutting-edge realism it's signature style even if realism lacks the visual uniqueness that other styles might provide. This is because they have, through consistency, managed to build a reputation for always delivering increasingly impressive realism in their games, which in turn has given them a stronger brand identity. Still, we must remember that Naughty Dog is a triple-A studio with massive budgets and hundreds of employees, which helps a lot when you're expected to deliver cutting-edge realistic visuals. For a small indie developer, stylized art usually remains the safer option.

So, we've learned that building and maintaining a visual identity is one of the most important things that will make you stand out in the gaming market and will help develop a recognizable brand. The important part is to be consistent between projects, and to choose a style that works for your game. Visual identity becomes increasingly important if many other aspects of your game, such gameplay systems, are borrowed.

3 Stylization

In this chapter we will dive deeper into the topic of stylization, and the theory behind it. As we previously learned, the word “stylized” can describe countless different video game art styles, but there are some shared principles behind all of these different styles. We will explore things like shape, composition, and color and explain what goes into designing stylized game art. In the later part of the chapter, I will discuss how even realism can benefit from stylization and exaggeration. Lastly, I will explain the importance of maintaining visual clarity, to make sure that the art style doesn’t interfere with the gameplay. The purpose of this chapter is to teach you the basics of stylization that can help make any art style more impactful.

3.1 Shape

Stylization is usually characterized by portraying elements like characters and environments in a simplified or exaggerated way (Keating et al. 2017). How to simplify objects and characters while still conveying to the player what they are becomes one of the biggest challenges for artists (Aava & Tokarev 2017). Aava (2017) uses a birch tree as an example. Everyone might know what a birch tree looks like in real life, but what a stylized birch tree might look like completely depends on the artist’s interpretation and imagination. What elements are needed to convey what the object is, and what elements can be left out? That’s the question we will explore next.

One way to approach stylization is to categorize your approach as either over-exaggerated stylization or minimalistic stylization. Over-exaggerated stylization aims to leave out unnecessary details from objects, such as micro-surface details, while making other aspects of the object, like its shape, more pronounced. (Aava & Tokarev 2017.) As an example, when modeling a tree in this way, you wouldn’t necessarily include countless individual leaves, but would instead combine the leaves into larger shapes that emphasize the silhouette of the tree.

Aava (2017) uses an electrical line as an example to better explain the thought process of choosing what elements to emphasize and what elements to remove when stylizing an object. The wooden or metallic beams and power cables of the electrical line are the most prominent features that make the object recognizable. On top of these features there are a lot of smaller details too (see Figure 15). The artist should decide what elements are necessary for the viewer to understand the function and story of the object, and what elements are insignificant and can be left out. (Aava & Tokarev 2017.)

Figure 15. What features should be emphasized, and which ones should be removed when stylizing an object?

When deciding how to best simplify an object you should also think about how far away it will be from the player. This is a good way to test what parts of the object are needed to make it readable even from a distance. Objects that are closer to the player can include more minor details since they will be under closer inspection. (Aava & Tokarev 2017.)

Minimalistic stylization aims for simplicity and visual clarity. The image is often flatter than in over-exaggerated stylization, with less complicated shapes and simpler color palettes. All unnecessary details are left out. This applies to all aspects including characters, objects, environments, and textures. When texturing in this minimalistic way, the importance of color is heightened, while things like

normal maps should be left out or used sparingly and with purpose. An important thing to remember is to be consistent with your choices so that all elements of the scene fit together as part of the same world. The games *Journey* (2012) and *Inside* (2016) are great examples of minimalistic stylization where color and composition are in focus (see Figure 16). (Aava & Tokarev 2017.)

The minimalistic visuals of these two games serve another purpose as well. One that I will get into later.

Figure 16. Journey (thatgamecompany, 2012) and Inside (Playdead, 2016). Minimalistic stylization. The importance of composition and color is heightened.

To summarize the difference between an over-exaggerated and minimalistic stylized approach, imagine the trunk and bark of a tree. An over-exaggerated approach would emphasize the curves and unique features of the trunk, while simplifying the bark by merging smaller details together and smoothing out the textures. A minimalistic approach on the other hand would make the shape of the trunk as streamlined as possible, while reducing the bark to a simple color gradient or some subtle color variations to give the impression of texture (see Figure 17).

Figure 17. Over-exaggerated stylization (by NuFrame at turbosquid.com) and minimalistic stylization (Animal Crossing: New Horizons, Nintendo 2020) compared to the real tree on the left.

Photorealistic games obviously have to follow the laws of reality pretty closely. Characters need to have realistic proportions and animations, textures have to mimic real materials etc. Stylization has no such constraints. Realistic games usually approach visual design in a similar way to live-action movies, say, when designing characters and environments, while stylized games are influenced more by cartoons, animated movies, and even traditional art (Reddit.com n.d). Because of this, stylized games can take advantage of the same design tactics that have already been used for ages in animated movies and by painters.

Shape language is the age-old idea that we associate different shapes with different feelings and sensations. This concept has been a consistent part of art history and can be useful in any sort of design work (Solarski 2013.) The shapes are circle, square, and triangle which are, according to Solarski (2013), usually associated with these concepts:

- Circle: innocence, youth, energy, femininity.
- Square: maturity, stability, balance, stubbornness.
- Triangle: aggression, masculinity, force.

These associations stem from our childhoods, when our sense of touch helped us learn about the world around us. Through touch we have learned that round objects are smooth and safe, while triangular shapes are sharp and dangerous. These associations are useful when designing everything from characters and objects to environments and even text. The associations of circular, spherical,

and triangular shapes can also be achieved with lines. A curved line gives a circular impression, while straight lines are associated with squares and triangles. Basically, almost everything around us can be traced back to these three primitive shapes (see Figure 18). The use of these concepts in our art is often intuitive since all of us already have these subconscious associations, but it is still good to at least be aware of why we make these choices. (Solarski 2013.)

Figure 18. (Source: Solarski 2013) The three primary shapes are used in all kinds of design work.

When you know to look for these shapes in designs you will begin to see them everywhere. Let's look at some characters from Nintendo's Mario universe (see Figure 19). The games are aimed more towards children so most of the characters are pretty rounded to give off a feeling of safety, playfulness, and innocence. Notice how the "evil" characters all have triangular, sharp elements integrated into their designs, while still mixing in round shapes to make them less threatening and more kid friendly. Characters like Donkey Kong are more square-shaped to make them look stronger and heavier.

Figure 19. Shape language in Nintendo's character designs.

Shape language is also an effective way to enhance the mood of a game environment. On top of using round, rectangular, and triangular shapes to convey certain feelings to the player, one should also pay attention to the relationship between these shapes. Because humans think in patterns, arranging similar shapes in an orderly and symmetrical manner will make their overall effect more pleasant. We experience this order as understandable, recallable, and comforting. Breaking the symmetry and order between shapes and mixing different shapes together will make the overall impression more chaotic. This chaos will reduce the players ability to focus on all things collectively, which can heighten feelings of uncertainty and stress. (Orosz 2020.)

The environments of the game *Immortals Fenyx Rising* (2020) are a great example of using shape language and even the relationship between order and chaos to enhance the mood of different environments (see Figures 20 and 21). The "Valley of Eternal Spring" makes heavy use of soft and rounded shapes in its environment to make the area seem inviting and peaceful, while the late-game area "Gates of Tartaros" is very spiky and angular by comparison.

Figure 20. The Valley of Eternal Spring from Immortals Fenyx Rising (Ubisoft, 2020). Round and soft shapes make the landscape look calming and inviting.

Figure 21. The Gates of Tartaros from the same game. Sharp triangular shapes make the environment feel threatening.

It is important to remember that these particular ways to use shapes aren't rules you have to follow, but rather should simply be seen as knowledge to help you make better choices and identify possible problem areas in your designs (Solarski 2013). You can even choose to subvert the player's expectations by using shapes in a way that differs from their typical use (Mellott & Tokarev 2019). You

could for example choose to make a round character the secret villain of your story, since players could have a harder time predicting this.

Shape language is of course not the only way to enhance the effectiveness of your designs. In the examples above from *Immortals Fenyx Rising*, the intentional use of color is particularly effective. I will talk more about color choices in a moment, but first I want to mention the importance of silhouettes and gradients.

The silhouette technique goes hand-in-hand with shape language and is most relevant when designing stylized characters but can also be a useful tool when designing objects. The silhouette technique simply means that you make a fully black version of your character or object to focus solely on its outline (see Figure 22). This is a useful way to test if the character or object is readable from a distance, and to ensure that the player can recognize it at a glance. (Mellott & Tokarev 2019.)

Figure 22. These animated characters are instantly recognizable thanks to their distinctive silhouettes.

The *Dota 2 Workshop's* Character Art Guide by Valve Corporation details the use of value gradients in their character designs: A value gradient is a greyscale version of an object that is used to highlight its value, which is the range of lightness and darkness within the object regardless of color. Value is useful for cre-

ating focal points and highlighting three-dimensionality when creating characters or complex objects (see Figure 23). The important areas of the object or character are usually lighter while less important areas are darker. Gradients can also be useful for creating variation and focus for objects that have large areas of the same color. Value patterning is another method that can be used alongside gradients. It simply means that the different pieces of a character or object are given different values to create clearer separation between them (see the arms of the character in Figure 23). (Dota 2 Workshop – Character Art Guide n.d.)

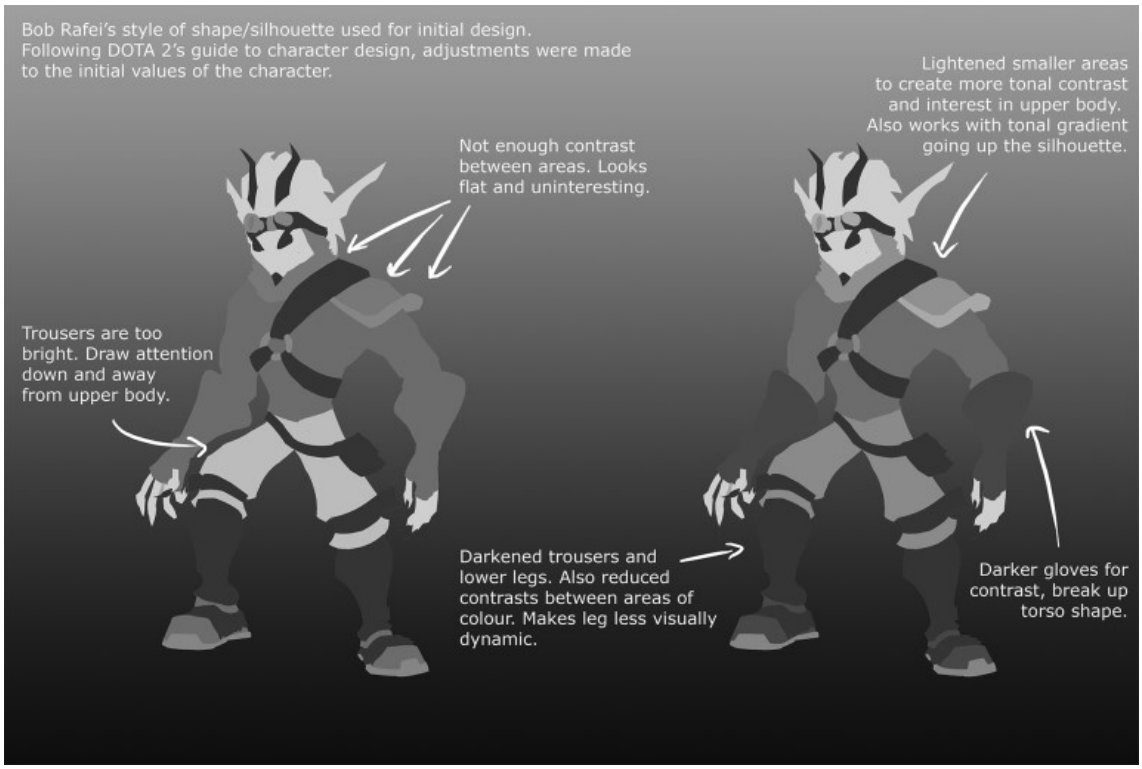


Figure 23. Value gradient and patterning used to highlight important areas and to create depth (image by fentlegen, 2014).

Gradients help with visual clarity especially in isometric and top-down games where it would otherwise be harder to distinguish important characters and objects from the environment (Mellott & Tokarev 2019). They are less crucial in games where the camera can be moved around freely but can still be useful for creating visual interest and contrast in objects.

Shape language, silhouettes, and gradients when used together can take your designs to the next level and their usefulness shouldn't be forgotten, but color is still arguably the most important aspect of a game's visuals. We will now get into why that is the case.

3.2 Color

Color as a subject is very expansive and one could dedicate entire books to it, but my goal is to explain the use of color in games in a more general way while still giving you the necessary information.

The importance of color as a part of a game's visuals can't be overstated. Color can be used to enhance the emotional effects and mood of the game's story and environments, to facilitate gameplay and emphasize the function of gameplay elements, and to give a game a unique visual identity or brand (Tulleken 2015). Colors are an important aspect of both realistic and stylized visuals, but stylized games can use them more freely and creatively since realistic games usually try to replicate how colors behave in real life.

Our color vision is mainly meant for identifying objects around us. Making things in a game the same color as in reality can make them easier for the player to recognize and understand (Tulleken 2015.) Say, for example making blood red or making water blue. But you are not forced to mimic reality, so making unconventional color choices can be a great way to make your visuals more unique. Colors can also be used more freely if your game is set in an imaginary world.

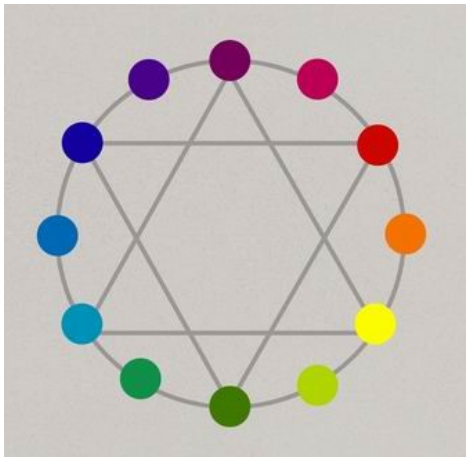
The mood of a scene can be drastically altered with different color combinations. By trying out different color palettes on the same scene you can quickly see what palette works best for the intended mood (see Figure 24). (Tulleken 2015.) You can also build either visual harmony or dissonance in your scene with the colors you choose (DVNC Interactive n.d). Harmonic color combinations produce a calmer image and will make similarly colored elements blend together. This is why harmonic colors are often used for background elements that aren't related to gameplay. By combining clashing colors, we can create

visual dissonance which is an effective way to highlight gameplay elements and make them distinguishable from the background and can also make the overall image feel more energetic and aggressive.

Figure 24. (Tulleken 2015) Swapping out the colors of a scene can have a drastic effect on the mood.

The relationships and interactions between colors are based on basic color theory that is used in all artforms. It is important to understand how to correctly make use of color schemes, even if you plan to mix things up, and that's why we will go over some basic theory. I will be lifting this part pretty heavily from *Dota 2 Workshop's* Character Art Guide since they explain it so clearly and concisely. The guide is focused on character art but this theory about color schemes can be applied to all aspects of a game.

The color wheel is the most basic and useful tool that artists can use to create pleasing color combinations. Using the color wheel will let you make choices that are based on science and have been proven to work, so you can avoid wasting time on trial and error. The primary colors of the additive (RGB) color wheel are red, green and blue. Secondary colors are created by mixing these three primary colors (see Figure 25). (Simplified.co 2021.)



The color wheel is a geometric representation of the relationships between colors and makes it easy to visualize the relationship between primary, secondary, and tertiary colors. Tertiary colors are created by mixing primary and secondary colors. In fact, all colors are mixes of the three primary colors of the RGB color wheel: red, green and blue.

Figure 25. The additive color wheel (Dota 2 Workshop – Character Art Guide n.d.).

Complementary colors are on opposite sides of the color wheel. By combining two complementary colors you get a vibrant, high-contrast combination (see Figure 26) (Anas 2020a).

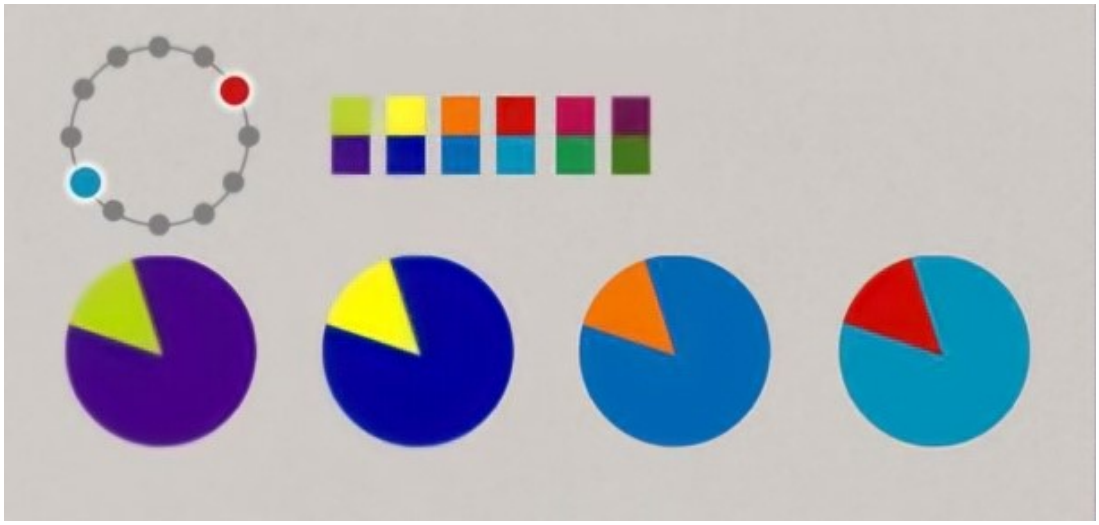


Figure 26. Complementary color schemes (Dota 2 Workshop – Character Art Guide n.d.).

A **split complementary color scheme** is achieved by introducing a third color. One color is the base while the other two colors are adjacent to its complement (see Figure 27). This type of color scheme produces a less intense version of complementary colors (Anas 2020a).

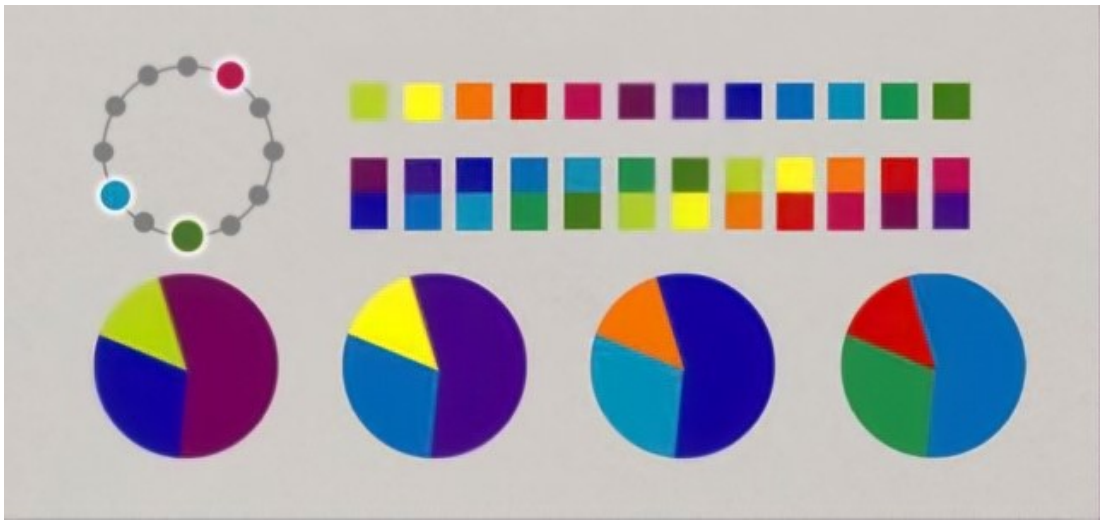


Figure 27. Split complementary colors (Dota 2 Workshop – Character Art Guide n.d.).

Analogous color schemes are 3-5 colors that are next to each other on the color wheel. These combinations give a more subdued, natural, and harmonious effect (see Figure 28). Analogous color schemes can be exclusionary to people with color blindness or color vision deficiency since they lack contrast. (Anas 2020b.) This is why it's better to avoid using these color schemes in crucial gameplay related elements. However, other visual cues like shape, text, and texture can be used to make analogous color schemes more accessible (Tulleken 2015).

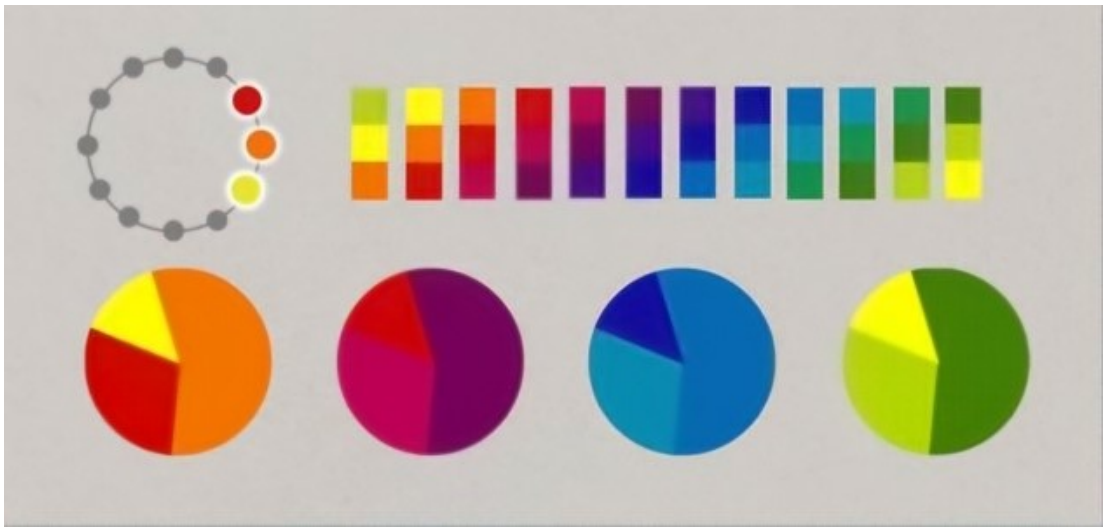


Figure 28. Analogous color schemes (Dota 2 Workshop – Character Art Guide n.d.).

A **triadic color scheme** is achieved by combining three equally spaced colors from the wheel in the shape of a triangle (see Figure 29). These vibrant combinations are harmonious, while being less monochromatic than analogous combinations (Fleming 2021).

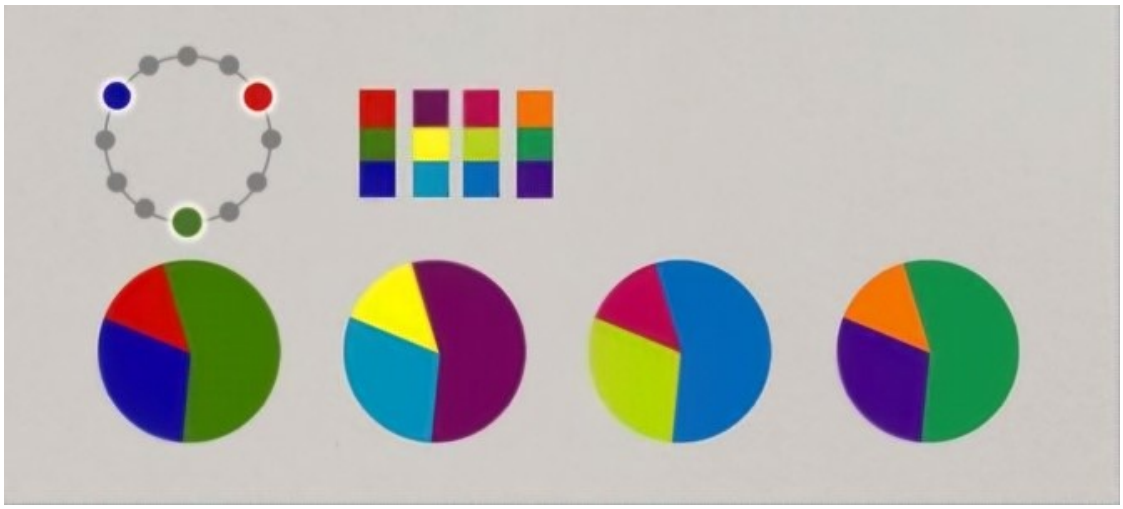


Figure 29. Triadic color scheme (Dota 2 Workshop – Character Art Guide n.d.).

After picking your base colors following one of the above examples, you can mix them together to create your full palette (see Figure 30). Another way to add variation to your palette is to modify a color's brightness and darkness values. By adding white for tint, you can make a lighter, pastel version of a color, while adding black for shade will make a color darker and duller (see Figure 30) (Anas 2020a).

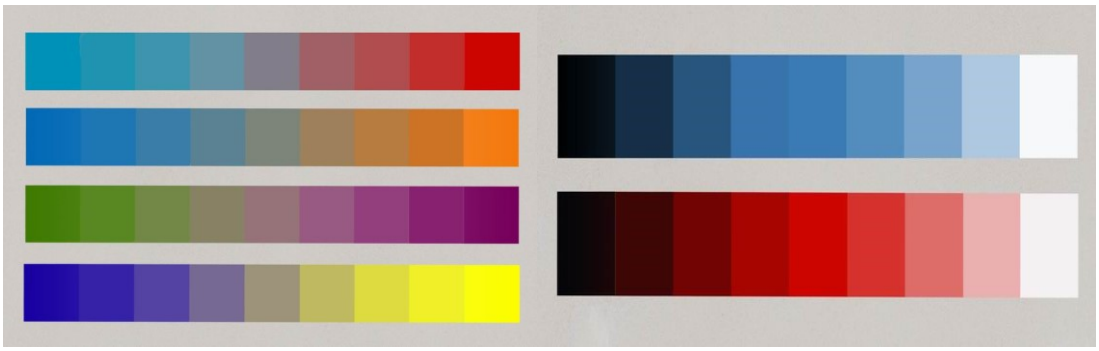


Figure 30. Left: Muted colors created by mixing two complementary colors. Right: Adjusting the value of a color using black shade and white tint. (Dota 2 Workshop – Character Art Guide n.d.)

Understanding how to pick pleasing color combinations with the color wheel will help you make smarter choices. Knowing the relationships between colors will

not only help you create a harmonious palette but will also help you choose unconventional combinations that can surprise players and even aid the gameplay.

So, how should you go about choosing colors for your characters or environments? A good approach is to start by choosing one primary color, after which you should choose a secondary and tertiary color using the color wheel in one of the aforementioned ways (complementary, split complementary, analogous, triadic). The type of combination you choose should depend on the desired effect you want it to have. Complementary colors create clarity, vibrancy, and contrast, while analogous colors create a calm and simple effect. Saturation draws the eye, so high saturation should be reserved for the most important areas of your design. Too much saturation can be distracting and overwhelm the viewer (which you can use to your advantage if used in a smart way). If you want to keep the color palette harmonious, you should only introduce new colors using blends of your primary, secondary, and tertiary colors. An accent color outside of your default palette is useful for highlighting important elements of your scene or character, especially gameplay related elements. (Dota 2 Workshop – Character Art Guide n.d.)

Let’s go over the most important functions that color has in a game, starting with setting the mood. As we saw in the first example image of the chapter (see Figure 24), a change of color palette can drastically alter the mood of a scene. This is based on color psychology, the way in which colors can affect us mentally and emotionally. While some parts of color psychology are generally accepted, a lot of it is completely subjective or anecdotal. (arttherapyblog.com n.d.) Feelings attached to certain colors are usually personal and stem from our life experiences and the culture we’re a part of. Colors can have wildly different associations and meanings in different parts of the world. The color white for example is associated with purity in many Western countries, while being a symbol of mourning in many Eastern parts of the world. (Cherry 2020.) Color associations that are more universal usually originate from the natural world. Take warm and

cool tones for example. Warm tones are warm because they remind us of sunlight and fire, while cool tones are cool because they remind us of nighttime and water. Warm tones are also sometimes linked with anger and aggression, while cool tones can evoke feelings of sadness. (arttherapyblog.com n.d.) It can all depend on the context. When choosing colors to evoke certain feelings in your art it's important to realize that the emotional associations you might have could be completely subjective. It's also good to keep in mind that some color associations that might feel natural are completely cultural, like pink and blue being gendered, or pastels being associated with youth and innocence.

Colors are not only useful for creating different moods but are also an effective way to increase variation in your game. A common way to increase content variation is to give each area of a game world a different color scheme or dominant color. Sticking to one color palette throughout the whole game might be good for enhancing the visual identity of your game but can make the game feel stale and monotonous. Color variation can give the player a sense of progression through the story. Take the game *Journey* for example, where the emotional progression of the story is mirrored by the game's changing color palette (see Figure 31). (Tulleken 2015.)

Figure 31. The color palette changes with the story in *Journey* (thatgamecompany, 2012) (image: Tulleken 2015).

Gameplay is another area where colors are used for various purposes. Colors can be used as **Identifiers** to group and separate game elements like different factions. For example, making enemy characters a specific color will make it

easier for the player to separate them from friendly characters and the environment. It's important that colors used as identifiers aren't present in the game environment since this will make it harder to spot the important elements. To ensure this, colors used as identifiers are often very saturated. (Tulleken 2015.)

Signifiers are used to communicate to the player what the function of an object is and if it can be interacted with. Similarly to identifiers, signifiers can help to separate key objects from their surroundings. The use of signifiers is very apparent in the parkour game *Mirror's Edge* (2008) where the color red is used to guide the player through the environment. The color is never used anywhere else in order not to confuse the player (see Figure 32). (Tulleken 2015.)

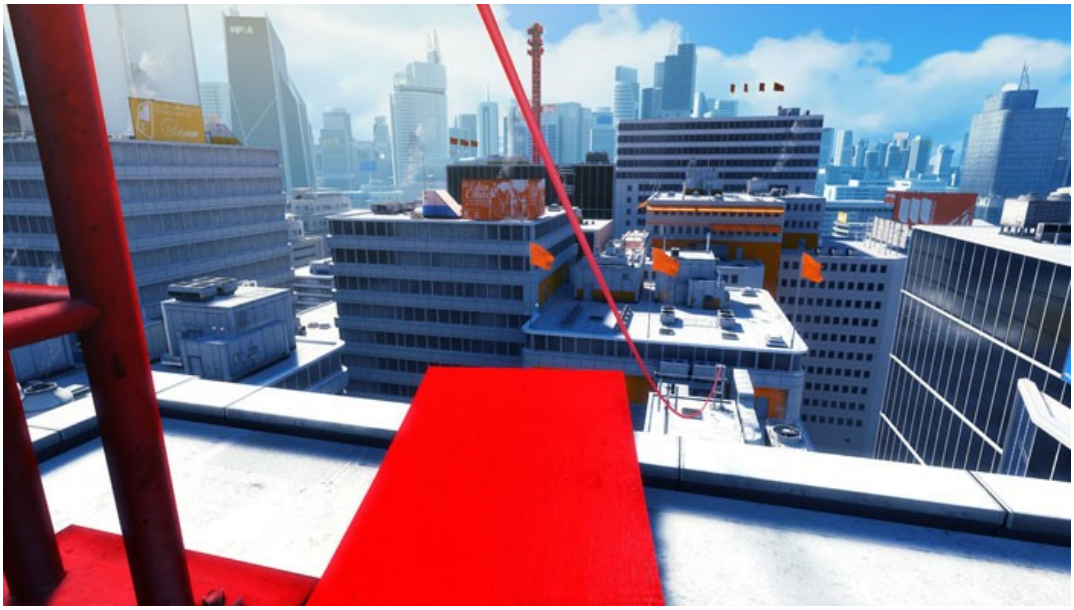


Figure 32. Mirror's Edge (DICE, 2008). Red is used as a signifier.

Interestingly the game switches off the guiding red color in some puzzle sections where the player is meant to find their way forward more organically. Choosing not to color code important game elements is a great way to add difficulty and to make the player feel more skillful. In both *Mirror's Edge* and *Shadow of the Tomb Raider* (Square Enix, 2018) the player is given the option to turn off signifiers in the environment to make traversal and climbing feel more organic and dangerous.

Color coding is also often used to categorize game elements that have different uses (Tulleken 2015), like differentiating between health, stamina and magicka potions in *The Elder Scrolls V: Skyrim* (2011) or to signify the quality or rarity of loot and gear.

When using colors in a way that affects gameplay (identifiers, signifiers, color coding) it's important to consider people with color vision deficiency or color blindness. Accessibility in games has become increasingly important over the years and today many games provide accessibility options for players. The easiest way to consider people with color vision deficiency is to provide visual cues other than color, such as shapes, patterns and text. (Tulleken 2015.)

And lastly, let's not forget about the importance of color in branding and marketing (Tulleken 2015). This goes back to visual- and brand identity which I covered earlier. Featuring the most dominant colors of your game in its marketing material such as cover art and posters will make it easier for people to recognize and remember your game by its colors alone (see Figure 33).

Figure 33. Colors used in branding of Mirror's Edge (DICE, 2008) (image: Tulleken 2015).

3.3 Ways to stylize realism

As previously mentioned, visual realism and stylization aren't mutually exclusive and even photorealistic games can benefit from a degree of stylization. Many visually realistic games are stylized in a more subtle way that's not immediately apparent.

Naughty Dog's *The Last of Us Part II* (2020) could be described as photorealistic by today's standards and its world and tone are very grounded, but even

here some stylization can be found mainly in the form of intentional use of color. The game uses color to set the mood of a scene and to highlight moments of emotional intensity and significance (see Figure 34), not unlike the aforementioned, highly stylized game *Journey* (see Figure 31). In the example below one of the scenes is bathed in red to symbolize the violence and aggression of that moment in the story, while also highlighting that moment as a sort of climax that stands apart from the rest of the game. Most of the game has a very cold, blueish color palette that fits the somber tone of the story, which also makes the warmer, happier moments stand out more.

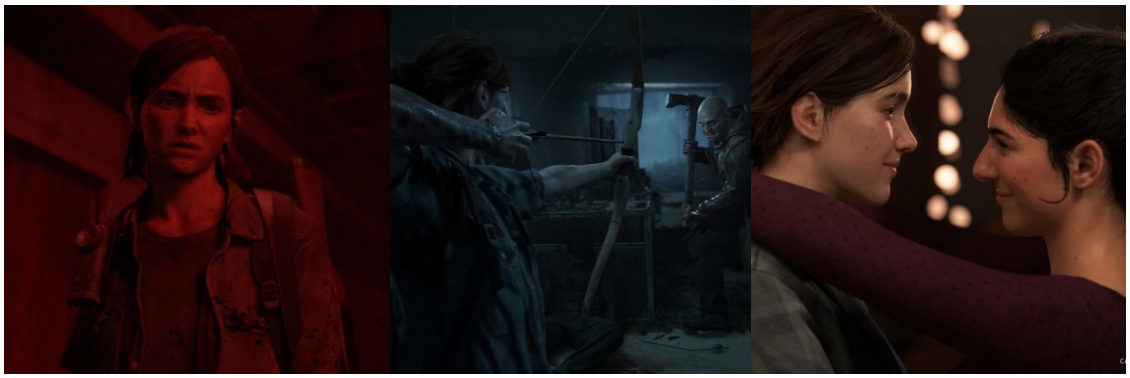


Figure 34. The Last of Us Part II (Naughty Dog 2020). Stylization in the form of colors and lighting in an otherwise photorealistic game.

An important thing to note here is that the stylized color choices are always grounded in the game's world to not break the realism. The color palette is cool when the weather is rainy for example, and red only when the color emanates from a source in the game world, such as a flare or a fire. The use of color becomes less constrained if the game is set in a fantasy world since color choices don't necessarily have to be rationalized. *The Witcher 3: Wild Hunt* (2015) is fairly visually realistic and grounded, but its fantasy setting allows for colors to be used more freely. The game's art style could be described as enhanced realism, meaning that things such as colors and lighting appear more vibrant and exaggerated than what you would normally see in real life (Aava & Tokarev 2017) (see Figure 35). This also applies to the aforementioned *Mirror's Edge* (see Figure 32).

Figure 35. The Witcher 3: Wild Hunt (CD Project RED, 2015). Enhanced realism. Colors and weather conditions are exaggerated.

So, even games with mostly realistic graphics can benefit from some degree of stylization, mainly in the form of color use and enhanced weathers and lighting. Playing with shapes is more restricted compared to heavily stylized art but can still be an effective tool for things such as scene composition where shape language can be used to guide the player through the environment for example.

3.4 Visual clarity and hierarchy

When developing the visual style of your game it's important to consider the effects that visual choices could have on other aspects of the game, like gameplay and story. The visuals of a game should never get in the way of the gameplay, but instead compliment it. Visual clarity is important for the player to always understand what's going on in the game, like being able to clearly see where you are, where you're supposed to go and what elements of the game you're supposed to interact with. A visual hierarchy on the other hand is a way of achieving clarity by making sure that the most important information is easy to distinguish from background elements. The player is usually on top of the visual hierarchy, followed by enemies and interactable objects, while the background should be at the bottom. Intentional color choices are a great way to make this hierarchy clearer to the player. (Mehrafrooz n.d.)

Visual clarity and hierarchy become more important in certain types of games. Competitive and fast-paced games for example need to make all the important information clearly and instantly visible to the player. These days a lot of players can be found on internet forums complaining about poor visual clarity, especially in competitive shooters (see Figure 36). This is usually a side effect of increasingly complex and detailed game environments of recent years, where dense foliage and impressive visual effects have a tendency of getting in the way of the action. This is where previously mentioned things like identifier and signifier colors become necessary. Most competitive or fast-paced games that have good visual clarity have clearly color-coded players and items that are easily distinguishable from the environment.

Figure 36. Visual design choices leading to poor visual clarity in gameplay (Battleborn, 2K Games 2016), (Picture: Mehrafrooz n.d.)

The importance of the user interface (UI), including the heads-up display (HUD), can't be overstated when it comes to providing visual clarity in some games. The UI becomes increasingly important if the game's art style is very grounded and realistic with muted colors as it would otherwise be too hard for the player to separate important elements like enemy players from the environment. I'm not going to delve any deeper into UI-design in this thesis, but it's important to mention when talking about visual clarity in games.

Failing to take visual clarity into account during the design process of the game's visuals will lead to an overreliance on the UI to provide guidance for the player. This has become more common in the modern day where game environments have become so busy and detailed that the player has a harder time separating important elements from the scene. When *Batman: Arkham Asylum* popularized "detective vision" in 2009, other developers started to implement their own versions of this gameplay mechanic into their games until it became overused. "Detective vision" is a secondary viewing mode that players can switch on to highlight enemies and important objects in the scene (see Figure 37). (Pooley 2019.)

Figure 37. A common form of "Detective vision" (Marvel's Guardians of the Galaxy, Eidos-Montréal 2021).

The problem with this mechanic is that games are often designed around its use, which makes them almost impossible to play without it. Players are therefore encouraged to play with detective vision turned on, which undermines all the hard work poured into the game's art style. (Pooley 2019.) Take *The Witcher 3: Wild Hunt* for example, which has a sort of detective vision called "the Witcher sense" that is used to spot footprints and other clues in the environment. The problem is that the footprints aren't visible to the player otherwise, and the game relies so heavily on the "Witcher sense" that the game becomes

unplayable if you don't have it turned on. Detective vision isn't all bad though since it makes games more accessible and can also enable artists to work more freely on the game's art style without having to worry as much about visual clarity. Detective vision only becomes a problem if the player is forced to have it turned on to be able to progress in the game. Games that have managed to include a form of detective vision without undermining the game's aesthetic have either found a way to limit its use or made it visually cohesive with the game world. *Horizon Forbidden West* (2022) manages this very well (see Figure 38). The detective vision in this game is integrated into the game's world and lore, it's not visually intrusive and using it even slows down your movement to discourage the player from using it excessively.

Figure 38. Well implemented "detective vision" that's cohesive with the game's world and aesthetic. (Horizon Forbidden West, Guerrilla Games 2022).

Completely wordless and textless games like *Journey* and *Inside* are another type of game where visual clarity becomes essential. We went over these games earlier while talking about minimalistic stylization (page 21). The minimalism of these games' art styles ensures that the player will always find their way forward even without any text or UI/ HUD to guide them. Completely wordless games are very rare, but in general, the more a game relies on its visuals

alone to convey necessary information, the more important visual clarity becomes (see Figure 39). It could also be said that the cleaner the art style of your game is, the less you'll have to rely on HUD-elements and visual "detective modes" to guide the player.

Figure 39. Minimalistic stylization provides visual clarity in games with minimal to no UI or text (Inside, Playdead 2016).

This concludes the chapter about the basics of stylization. There are some important aspects of stylization that I will not cover due to the amount of time it would take to properly do so. I have completely left out texturing, animation, cinematics, visual effects and UI-design to limit the scope of this thesis. If you wish to gain a deeper understanding about stylization, I encourage you to read up on these topics, since they're all important aspects of a game's overall aesthetic.

4 Conclusion

After introducing the reader to the variety of 3D video game art styles and their different use cases, we went over the importance of visual and brand identity and explored the concept of stylization. Lastly, we went over how video game visuals affect gameplay and vice versa through visual clarity.

Even though this thesis focused mainly on 3D game art, most of the theory about stylization (color theory, visual clarity et cetera) and visual identity is applicable to 2D game art as well, so all kinds of game artists should hopefully have learned something useful.

The reason I chose to focus my thesis on stylization and video game visuals was because I wanted to gather all the nuggets of wisdom about the subject that I could find into one place. As a consumer of video games I had come to the realization that all the games that had stuck with me the most were united by strong visual design and aesthetic, and I wanted to learn more about the visual design process.

So, what conclusions did I come to? How do you enhance a game with visual style choices? At first it would be wise to choose an appropriate visual style for your game by considering budget and hardware limitations and even target audience. It would for example not be the best idea to aim for photorealism if you're working on a tight budget and with a small team. If you feel like realism would be the best choice but you don't have the necessary means to achieve it, you could always turn towards stylized realism for increased flexibility.

You should also have certain games in mind that serve as the inspiration or frame of reference for what you want the final game to look like. Borrowing ideas from other games is not a bad idea and is done by everyone. However, you should not limit yourself to one source of inspiration, but instead try to blend your inspirations into something new and unique.

Basic art theory about shape and color is a very useful frame of reference during the design process. You can always return to the color wheel to come up with interesting and effective palettes for example. Paying attention to shape language is an effective way to create impactful stylized characters and environments.

The importance of color in the promotional and marketing material of your game can't be overstated if you want people to notice your game and give it a chance.

Having a strong main color or color scheme that you stick to will go a long way. Also think about what the key visual identifiers of your game are and try to feature those in posters and other marketing material.

Pay attention to the interaction and harmony between the visual elements of your game such as environments, characters, UI, animations and visual effects. The overall aesthetic of the game is formed by the combined effect of all its visual elements after all.

Consistency is another key factor. Both consistency between the visual elements within the game and between games. A designated art director can help strengthen the consistency of your game's art style, and even make your next games look visually cohesive with the first one. Visual cohesion between games will help strengthen your brand identity.

One should not forget about the effects that visual design choices could have on other areas of a game including gameplay and story. Visual clarity should be ensured one way or another. Either by stylizing the visuals of your game to be clearly readable, or by instead providing clarity with the help of external elements like HUD and text. If a HUD becomes crucial for providing visual clarity for the player, it should be designed to be aesthetically cohesive with the rest of the game.

The reader should leave with a sense of familiarity with video game art styles and methods of stylization and hopefully a thirst for further knowledge as well. After all, this thesis was meant to serve as a way of introducing the reader to the subject matter and to give them the tools to continue learning. The topic of stylization is especially expansive. Whole areas of video game stylization like texturing, animation and user interface design remain unexplored. These are good places to start if the reader wishes to continue learning about stylization. I have learned a lot of valuable things about video game visuals during this process and hopefully the reader will too.

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