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Karelia UAS
Laura Tiilikainen

Application of Creative Workflow to the Visual Concept Design of
Video Game Non-Player Characters

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Tikkarinne 9
FI-80220 JOENSUU
Tel. +358 13 260 600

Author
Laura Tiilikainen

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Abstract

This thesis explores how the technical process of the visual design of video game non-player characters can be adjusted into a smooth creative workflow. The theory portion examines the design aspects of a character ranging from readability to the use of symbols and visual cues to convey themes and ideas to the viewer, as well as the different stages of the design process itself from conception to displaying the design.

The practical portion of this thesis consists of the documentation of the creation process of three original character designs. The aim was to first record the author's usual workflow, then create an experimental workflow based on theory covered in this thesis, and lastly combine the best working methods from the two workflows to be tested in the final design.

The result of this thesis is the documentation and analysis of the workflow methods tested in the practical portion. While in this case the results reflect the author's personal preferences and art style, the documentation will give the reader examples of things to consider and methods to test when developing their own creative workflow.

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video games, character design, creative workflow



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Kaikki koulutukset

Tikkarinne 9
80220 JOENSUU
+358 13 260 600

Tekijä
Laura Tiilikainen

Nimeke
Luovan workflow'n hyödyntäminen videopelien NPC-hahmojen visuaalisessa suunnittelussa

Tiivistelmä

Tässä opinnäytetyössä tutkitaan, miten videopelien NPC-hahmojen visuaalisen konseptisuunnittelun työkulkua voi mukauttaa sujuvaksi prosessiksi. Opinnäytteen tietopohja käsittelee hahmosuunnitelmien osa-alueita luettavuudesta symbolien ja assosiaatioiden käyttöön sekä suunnitteluprosessin työvaiheita konseptoinnista valmiin suunnitelman visuaaliseen esittämiseen.

Työn teknisessä osuudessa dokumentoidaan kolmen alkuperäisen hahmosuunnitelman työprosessit. Ensimmäinen prosessi pohjautuu minun tavalliseen työprosessiini. Toisessa testaan tietopohjasta esiin nousseita menetelmiä ja kolmannessa yhdistän hyödyllisiksi todetut menetelmät kahdesta ensimmäisestä prosessista uudeksi workflow'ksi. Opinnäytteen tuloksissa dokumentoidaan ja analysoidaan teknisessä osuudessa käytettyjä metodeja. Työssä valikoituneet menetelmät pohjautuvat omiin mieltymyksiini ja tyyliini, joten dokumentaatio on jäsenneilty siten, että lukija voi käyttää sitä esimerkkinä huomioonotettavista asioista ja mahdollisista metodeista, joita kokeilla kehittäessään itselleen sopivaa workflow'ta.

Kieli
englanti

Sivuja 69
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Asiasanat
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1 Introduction

The world of a video game would not be complete without residents – non-player characters or NPCs, who aid and hinder the player, or spout one line of dialogue when interacted with. They can be encountered in various roles such as party members, antagonists, vendors and repairmen, medics and quest-givers. Some are only there to give the world a lived-in feeling and may not be interacted with in any way. They are one of the essential pieces for creating immersion, and responsible for keeping the player invested in the story and struggles presented to them (Sabbagh 2015).

The key difference between the main character and side characters tends to be in strength of personality. Main characters are meant to be the audience's contact point with the world and are therefore often created to be universally relatable, which can lead to them being bland and unremarkable in contrast with the side characters who have no such restrictions. In addition to a colourful personality, side characters are allowed to behave in less than heroic ways as well which tends to make them more memorable than the main characters. (Pekola 2012, 9.)

The visuals for each character are developed by a game artist. Depending on the scale and style of the project, the artist may be in charge of other visuals as well, be they concept artwork or finalised 3D assets (Study.com 2019). This thesis explores character design from the beginning of a concept through different ideation methods all the way to professionally presenting the finished design in a character sheet that can be used as the reference point for both 2-dimensional as well as 3-dimensional iterations of the character. It will not delve into the techniques of 3D modelling and animation of a character, nor the backstory, in-game functionality or sound design as they are not part of the visual design process. They can, however, affect the design in the form of project briefs and technical limitations, which is explored in the theory of this thesis.

While theses touching upon character design for video games have been done before in Karelia, including those by Kuisma Myller (2018), Joonas Paakkunainen (2016) and Simo Kovanen (2015), the design process is only a part of their overall work that is treated as one necessary step to get to the main topics which are Spine animation in Myller's case and 3D modelling and rigging in the cases of both Paakkunainen and Kovanen. By leaving those aspects out, my thesis will offer a more in-depth look at the overall design process, and how ideas for character designs are born. It will also offer insight into the importance of a functional workflow, and how such a workflow can be developed.

2 Purpose and Knowledge Base

The study mission for this practice-based thesis is to do research on the artistic process of character design and utilise that research in designing a workflow suitable for its user's tools and skillset. In this case the user will be me, the author, but the results of the thesis can hopefully be used as a base for others to find their preferred workflow as well. Should the thesis conclude with the finding of a reliable workflow, the result would be of use in my future career in the field of digital art.

The characters designed for this thesis are not currently set to be implemented in any game but they will be created with an authentic work process that would make their implementation possible at a later date. I have chosen to focus on NPC designs, as games will usually have far more NPCs than player characters, and these NPCs will become important tools in getting the player immersed into the game's world.

While I will not be designing anything as elaborate as character interactions or backstories for my three characters, I will give each of them a few personality traits that I will attempt to showcase in the artwork. I have chosen to design vendor-type NPCs for a fantasy game. In my experience, vendor NPCs are a recurring necessary part of the genre. With this in mind, my objective is to create characters that have their own unique personas aside from their professions. The occupations I have

chosen are blacksmith, baker and sundry seller. Sundries in this case would refer to fantastical miscellaneous items such as health and magic potions, herbs and crystals.

The reason I chose the number three in particular is to conduct a viable qualitative study of three experiments. The first, in which I use my usual workflow without applying any of the theory from this thesis, will serve as the control to compare the second workflow to. This experimental workflow will be based on both Mayer's (2018) theory as well as artistic advice from both Holmes (2016) and Crossley (2015). I will analyse both workflows for their weak points and strengths and design the third workflow to incorporate the strengths of both the first and the second.

I will be measuring both the quality of the workflow in the form of the applicability of the methodology to different creative styles, as well as the efficiency in the form of time consumption. I will be reporting on the work process for each workflow and compare the second and third experiments to their predecessors. While the results of this study will be highly personal, I seek to record my reasoning behind my choices in a manner that can be applied to other working methods as well.

My prior knowledge in the video game industry stems from my experiences as both a consumer and a worker. Throughout my life I have played many different games mostly from the role-playing genre, and consumed materials regarding the development process of some of those games. I also worked a total of eight months as a 2D video game art intern in a company that specialised in designing games for slot machines and gamifying online lotteries. During my time in the company I got to work closely with professionals in the field and learn about their work methods in the process of both designing assets and creating their final versions.

For my tools of choice I have chosen the drawing Program Paint Tool SAI Version 2. While Adobe Photoshop is the industry standard, I find SAI to be more suited for digital drawing as it was created for that explicit purpose while Photoshop includes functionality for graphic design and photomanipulation as well. I started using the first version of Paint Tool SAI in 2008, meaning that I have a total of over ten years of experience with it. My production preview of SAI version 2 is from January 29th, 2019, so I have accumulated a total of three months of experience with its new

features. I was first introduced to Adobe Photoshop around the year 2010 but did not start to explore its potential in creating visual effects such as glows and distortions in drawings until around 2013 and started using it for painting only in mid-2017 while applying for internships.

The central outer resources of this study will be Marc Taro Holmes's (2016) book *Designing Creatures & Characters: How to Build an Artist's Portfolio for Video Games, Film, Animation and More*, Kevin Crossley's (2014) *Character Design from the Ground up*, and Doron Mayer's (2018) book *Workflow – A Practical guide to the Creative Process*. Holmes and Crossley work in character design, while Mayer works in the creative field in general. His book references character design on occasion but is meant to be a general guide for all creative fields (Mayer 2018).

3 Character Design Fundamentals

3.1 Readability of a Design

The readability of a design refers to our ability to understand a character's design, be it how their anatomy works, what they are wearing and how the details contribute to the overall feel of a character. The silhouette, shape language and colour composition all play a part in making a design readable and recognisable. A readable design would also be easy to replicate. This is not to say that it should not have detail, but rather that even if it was simplified to the point that most of the detail would be lost, the character's shape would still remain recognisable to the viewer. By making characters replicable, the design can inspire fan works of the character.

The silhouette or outline of a character is what defines them even from a distance when textures and other details would be obscured (Tsai 2007, 80). They not only make the characters distinguishable from each other, but from the environment as well (Sabbagh 2015).

In order to make the silhouettes stand out, they need to have sufficient variation in shape (Crossley 2014). In an ideal situation, each character would have a unique build – height, weight, and body type. In addition, clothes, props and irregular body parts will contribute to either making the silhouettes unique from one another, or to give them a certain level of uniformity. If the characters in the game world have formed factions, giving each faction a distinct base shape that can be appended for role or rank will help players identify character allegiances.

The shape language of a character design affects the both silhouette as well as the design within the outline. Shapes in this case are two-dimensional in that they have a height and width and are comprised of lines. There are two types of shapes: geometric (rectangles, circles, triangles, cones etc.) as well as organic which are irregular or asymmetrical. The types of shapes used affect how a design is perceived. As geometrical shapes are comprised of clean and often straight lines, they tend to evoke the feeling of hardness, whereas organic irregular shapes have more flow to them and will therefore appear softer. (The J. Paul Getty Museum 2019.) The direction of the lines that make the shape can be used to simulate weight – vertical lines in a shape convey heaviness, while diagonal lines simulate the feeling of light material flowing with movement or the wind. Aside from that, geometrical shapes tend to give off a feeling of order, sharpness and rigidity. Organic shapes on the other hand can evoke the feeling of nature (The J. Paul Getty Museum 2019), playfulness and freedom or come across as unnerving or even grotesque.

A thing to note is that facial expressions play an essential part in human body language (Science of People 2019). The expressions used to convey fear, anger, sadness and happiness are universal and therefore easily understood throughout the world (Cherry 2019). Many early video game characters came to have short bodies and large heads in order to accommodate readable faces (Poole 2004, 246).

In order to make all the different elements in the design stand out, it requires sufficient contrast. This is achieved by using different values, or brightness levels of colour for adjoining elements. Contrasting values next to one another will also serve to make the image look interesting to the eye, and to give it a three-dimensional effect. It is also an efficient way to bring attention to the focal point of the design.

(Ash & Powell 2014, 12.) Some artists prefer to paint a greyscale value mapping of their design before beginning the colouring process. It is also common for artists to view their images in greyscale from time to time to make sure that any bordering colours are not too close to the same value and that the entirety of the image remains interesting to the eye.

3.2 Colour and Accessibility

In artistic terms, colour has three distinct attributes: hue, saturation and value. As mentioned in the previous chapter, the value refers to the brightness of the colour, for which the minimum is black, and maximum is white. The hue refers to the colour itself – red, blue, purple and so on, while the saturation refers to the purity of colour, or how close the colour is to a neutral grey or how close it is to its maximum intensity. Colour schemes are an integral part of art as they affect the readability of the character as well as how pleasant the character is to look at subjectively. They can also play a part in the accessibility of a product, as 8 % (1 in 12) of all men and 0.5 % (1 in 200) of all women are affected by colour blindness. Red-green colour blindness is an umbrella term that covers red-blindness and weakness (protanopia and protanomaly), and green-blindness and weakness (deutanopia and deuteranomaly). 99% of colour blind people fall under those categories. Other types of colour blindness include blue-blindness and monochromacy which is referred to as “true colour blindness”. (Colblindor 2019a.)

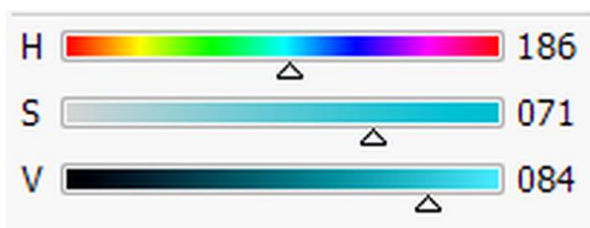


Image 1. Hue, saturation and value sliders on PaintTool SAI 2.

Much of artistic colour theory centres around the notion of primary colours; that is to say colours that when mixed together in the right proportions can be used to compose any colour on the visible spectrum. Scientifically there are two sets of

primary colours: red, green and blue for additive or light mixing and cyan, magenta and yellow for subtractive or pigment mixing. The RGB model can be found in all digital displays as well as many image-editing software. CMYK (in which K stands for black) is used for colour printers. (Juselius 2013.) As the two models use different types of mixing, they do not translate directly between one another. Digital images are usually in RGB colour mode by default and have to be converted to CMYK through software such as PhotoShop, or other converters in order to get an indication of how they would look when printed.

Historically artistic colour theory has been affected by the availability of pigments. Before pigments could be produced chemically, artists used a wide variety of minerals and animal parts to create colours sometimes even to deadly effects – green pigments were especially poisonous (Gottesman 2016). As pigments were limited, artists developed theories on how to mix them properly to create more colours. The most popular model is centred around the so called “painter’s” or “artist’s” primaries red, blue, and yellow (RBY), and their secondaries purple, orange and green. Artists have been making hue wheels centred around the relationship between these primaries and secondaries throughout the 18th and 19th centuries, but the reason the theory has prevailed to this day can be attributed to Johannes Itten’s (1888 – 1967) 1961 book *The Art of Colour* (Briggs 2013).

Itten’s early theory was largely based on the ideas of Adolf Hölzel (1853 – 1934), though by the time he wrote *The Art of Colour*, he had moved from a star-shaped diagram to the colour wheel known today in which the primaries and secondaries are joined by six intermediary colours (Briggs 2013). He bases the validity of his wheel on the finding that when the three primaries, or any complementary pair on his wheel, were mixed in the right proportions, the resulting hue would be black – the absence of colour (Itten 1961, 16). He also claimed that the same primaries could be used in light mixing to achieve white (Itten 1961, 16), which is somewhat incorrect as yellow light is in fact a mixture of green and red light (Juselius 2013).

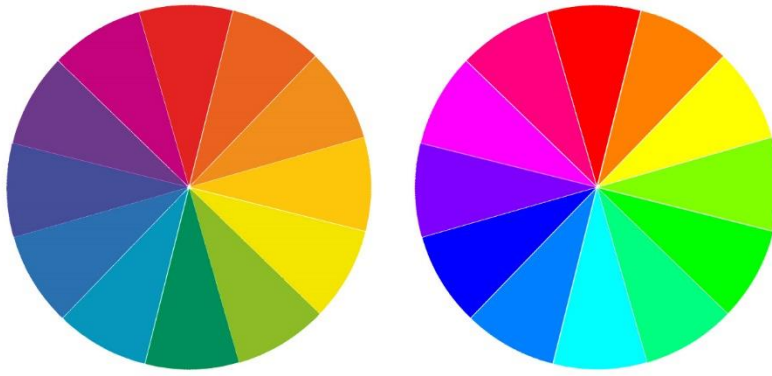


Image 2. RBY and RGB colour wheels. RBY hues copied from Itten's colour wheel (Wikipedia 2019), RGB hues simulated with Sessions College Colour Calculator (2019).

Artists use colour wheels, like the ones depicted in image 2 to easily visualise the harmonies between the hues when creating colour schemes. The left wheel showcases Itten's RBY model for pigment mixing while the right one showcases the RGB model for light mixing. While the colours on the RGB model are clean and vivid, they cannot be replicated in print in their full purity unlike the RBY wheel.

As a general rule, colours directly opposite one another on a colour wheel are called complementary, while colours right next to one another are called analogous. Aside from these two, another commonly used harmony is called split-complementary, in which the main hue is accompanied by the two hues adjacent to its complementary hue. (Sessions College 2019.) The idea of harmonies is based on the phenomenon with our colour perception, where the way we perceive a colour changes based on the attributes of the colour next to it (Itten 1961, 37).

This phenomenon was also studied by Itten and referred to as Itten's colour contrasts. These include the contrast between dark and light, the contrast of saturation, simultaneous contrast as well as the contrast of complements which is illustrated in image 3. (Itten 1961, 33). The right squares display this contrast as it would appear according to the RGB wheel, while the left ones simulate the RBY wheel.

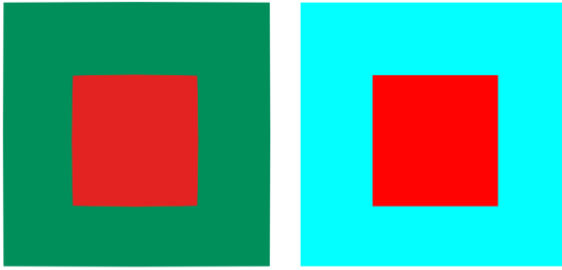


Image 3. Complementary red and green according to the RBY model and complementary red and cyan according to the RGB model with both colours at full saturation.

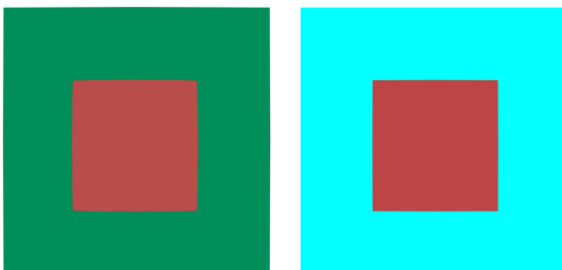


Image 4. Complementary red and green according to the RBY model and complementary red and cyan according to the RGB model with desaturated red.

The contrast of complements is highly useful for highlighting details, as complementary colours bring out the maximum vividness in one another (Itten 1961, 49). Itten (1961, 33) also explains that our perception of any given colour contrast is prone to change depending on what it is compared to, similarly to how our perception of a line on paper changes when comparing it to a longer line or shorter line. Because in image 3 both colours are already at their full saturation, or maximum intensity, the contrast between them creates a very vivid image to look at. In image 4 the intensity is brought down somewhat by desaturating the colour red. It brings out the maximum intensity of its complements but at the same time gives the viewer's eye a place to rest.

The red-green complementary pair is especially problematic in terms of accessibility. While the exact way a person suffering from colour blindness perceives each hue is highly dependent on the individual, image 5 showcases an example of how the complementary pairs red and green and red and cyan may appear to someone with red-blindness or green-blindness. The colours were

simulated with COBLIS, a colour blindness simulator developed by Matthew Wickline and the Human-Computer Interaction Resource Network (Colblindor 2019b). It was further enhanced by the contributions of GitHub user MaPePeR (Colblindor 2016). As demonstrated by image 5, differentiating between red and green can prove to be challenging especially for a person with red-green colour blindness,

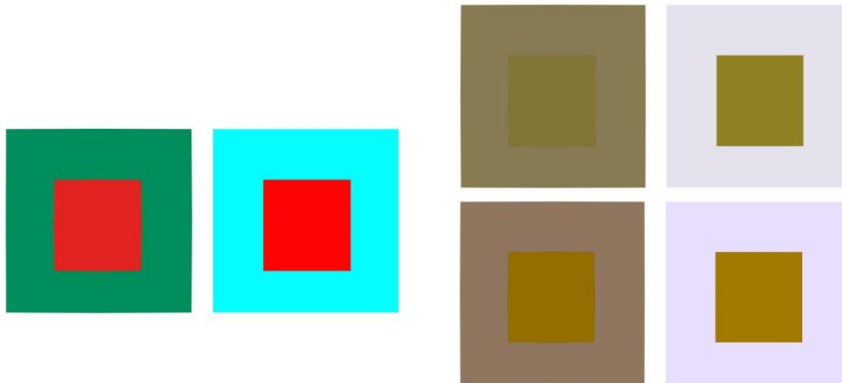


Image 5. The complementary pairs from image 3 simulated to red-blindness (above) and green-blindness (below) with Coblis Colour Blindness Simulator (2019) and compiled by Author.

This should be taken into consideration when designing characters, especially for products in which they are expected to be presented against backgrounds where either one of the two hues is prominently featured – forests and grassy areas, volcanic environments and so on. If red and green are for whatever reason absolutely integral for the design, making sure that the design has high enough contrast will be crucial for its readability.

3.3 Symbolism and Associations

Symbols have been in use since the ancient times. A symbol by definition is “something used for or regarded as representing something else” (Dictionary.com 2019). Ancient Egyptian hieroglyphs, Chinese Kanji as well as modern emoji are all a form of symbol, as are our Roman letters. In art, a symbol is something solid and recognisable, whether it be an animal, plant, object or even just a colour, that

stands in for an idea that is difficult to depict due to it being abstract or immaterial (Smithsonian Education 2019).

Symbolism also became its own art movement in the late 1800's. It started as a literary movement in France in the 1880's and was quickly adopted by artists who, like their literary counterparts, rejected the teachings of Realism and Impressionism in favour of subjective suggestion of ideas within their work. To achieve that, they utilised symbolic imagery and meanings behind lines, shapes, colours, form and composition. (The Art Story 2019.)

The meanings of symbols are heavily tied to culture, region and religion. The dragon for example was a malevolent monster to be slain in Christian European folklore, and therefore came to represent sin, wickedness and ferocity. In Asian cultures however, the dragon is seen as a benevolent guardian often associated with the element of water and its life-giving properties. Its common symbolisms are wisdom, longevity and regeneration, as well as power, strength and glory. Other mythologies also feature serpentine creatures, such as the Horned Serpent featured in the folklore of many Native American tribes, as well as the Feathered Serpent believed to have created the Earth according to some Mesoamerican cultures. (Ancient Symbols 2019.)

Similarly, colour symbolism varies drastically from culture to culture. Purple has been regarded as a symbol for royalty in both the west and Japan due to the high price of the pigment and production of the colour (Canva 2019). Ultramarine blue was similarly expensive and can be seen in the iconic blue lines of a pharaoh's headpiece in Egyptian funerary portraits as well as the main hue of Virgin Mary's robes in renaissance art (Gottesman 2016). In China the colour that symbolises royalty and is yellow due to the influence of the legendary Yellow Emperor, dubbed so for his army tribe's valuing of the "Yellow Earth" as well as the "Yellow River" (Nations Online 2019). Colour will also affect plant symbolism: some flowers have multiple meanings depending on their colour (Boeckmann 2018).

The meaning of symbols is also determined by the context in which they are presented. The colour red for example is often associated with positive ideas such as luxury, energy, love and happiness (Canva 2019), but is also present in traffic

signs signifying prohibition and danger and can be associated with aggression, anger, blood and war (Incredible Art Department 2019).

The advantage of using symbols in character design is the speed at which ideas can be conveyed to the viewer. In an ideal situation, the viewer would only have to see and recognise the symbol to get information about the character without ever having to witness them speak or act within the narrative. This only works however if the viewer is aware of what the symbol is there to represent. This is why symbols benefit from being accompanied by imagery that shares similar connotations. Humans have adept pattern recognition skills and can therefore easily form associations. This can be taken advantage of by applying well-known visual cues and ideas within the design. Similarly, pattern recognition is useful when defining character groups. By giving each group their defining colours, shapes and silhouettes, the consumer can easily recognise which group the character belongs to as soon as they see them. (Tsai 2007, 80).

Through association, we develop expectations about characters just from their looks. Their physique, for example, will make us gauge their physical prowess – thin and frail characters seem weak, while tall and muscular ones are obviously teemed strong (Sabbagh 2015). These expectations are often integral to how players will interact with certain characters from a gameplay perspective. For example, if the opposing character wears heavy armour and wields a longsword or an axe, the player would expect to receive high physical damage, but for the enemy's attack speed to be hindered by the heavy equipment. In contrast, a character with light equipment wielding small weapons or no weapons at all can be expected to deliver a number of attacks in swift succession for more combo-based damage.

In good design, the character's function would defy their form. This rule encompasses not only what they do, but where they do it – if the characters are meant to live or work in unusual conditions like underwater, deep underground or even in space, the believability of the design increases if the method with which the characters are able to survive is somehow incorporated. (Crossley 2014.) Likewise, accounting for the characters' physical limitations within the design is important and will not only serve to communicate the characters' capabilities, but something of the game world as well.

3.4 Issues to Consider

There has been much discussion in all media, not just video games, regarding the topic of diversity and representation. The article *Video Game Companies Leave Much More than Just Money on the Table if They Lack Diversity* (Hassan 2018) posits that the massive box office success of films like *Black Panther* (2018) and *Crazy Rich Asians* (2018) proves that diversity appeals to all demographics. This is no surprise, as according to Damon Packwood of Quartz (2018), of US teens African American teens rate the highest at 83%, with Caucasian teens coming in second at 71%. Ideally, an appealing video game world would consist of a diverse cast of characters of different ethnicities, genders and sexual orientations, but there are some pot holes to be avoided.

The greatest risk that stems from working with associations is the prevalence of stereotypes. This is especially relevant when designing characters belonging to cultures or minority groups foreign to the designer.

By definition, a stereotype is a generalised, often untrue assumption about a particular group of people or things that share a set of characteristics (Merriam-Webster 2019). Because the phenomenon is all about simplifying our social world to reduce the amount of thinking we have to do upon meeting a new person, stereotypes ignore all individuality in favour of assigning people into easy-to-understand categories. This categorisation is one of the reasons we experience prejudice, as we tend to develop an “us versus them” mentality when dealing with other groups. At worst, the stereotypes we have developed portray a negative image of the entire group. (McLeod 2015.)

Another prevalent issue that has to do with gender representation. Male characters are very common across all media, and while the number of female characters has been steadily increasing as video game companies realised women like to play as well, many female character designs still end up being overly sexualised (Lynch etc. 2016, 4).

A study titled *Sexy, Strong and Secondary: A Content Analysis in Video Games across 31 years* (Lynch, Tompkins, van Driel & Fritz 2016) examined female characters from 571 video game titles published between the early 1980s and 2014. According to the study, the sexualisation of female characters spiked in the 1990s with the advent of three-dimensional graphics and has recently begun to decline due to the increase in female audience as well as criticism towards the male hegemony present in the industry. This mostly applies to playable female characters though, whereas non-playable female characters – who appear in games more often than playable ones – are still objectified. It also found that female characters in games rated “Teen” (age 13-17) were no less sexualised than female characters in games rated “Mature” (age 18 and older).

Lead author of the study, Teresa Lynch, commented that those findings suggest that sexualised women have become the norm in video games to the point that people no longer see such portrayals as objectionable for young children. She also stated, that advertisements seem to exaggerate characters’ physical features in ways that may not correspond to how they appear within the game. (IU Bloomington Newsroom 2016.)

Another topic that often arises when discussing female characters is the matter of body type, though this issue is by no means limited to them. While video games have developed to the point that the characters can be realistically detailed, more often than not their proportions still remain exaggerated to unrealistic degree in order to make them look appealing. For men this often means highly toned muscular bodies, while women get long necks and limbs, large chests, small waists and very little body fat. An article on Bulimia.com (2019), an American website dedicated to combatting eating disorders, criticises the video game industry for boasting new achievements in technology such as hyper-realistic lighting while being seemingly unable to portray an accurate representation of the female body. The article highlights that plus-sized women remain a rarity in video games and usually end up looking unusual if they do appear. The article expresses concern that idealising such unrealistic depictions of female bodies can lead female gamers to develop a skewed image of how an average body should look, and this in turn could lead to lower self-esteem and ultimately to dangerous eating disorders. (Bulimia.com 2019.) The study *Virtual Ideals: The Effect of Video Game Play on Male Body Image* (Sylvia,

King & Morse 2014) found a similar link to negative body image between overly muscular male video game characters and male gamers.

Lesbian, gay, bisexual and transgender (LGBT) representation in video games, though scant, has seen a gradual increase in recent years as society has grown more accepting of the community. Naughty Dog introduced downloadable content to *The Last of Us* (2013) called *The Last of Us: Left Behind* (2014) that revealed one of the main characters to have had a tragically brief same-sex relationship before the events of the main game. Game Grumps released a dating simulator game *Dream Daddy* (2017), in which the premise is that the player character, a single father, gets to date other single fathers. Transgender or gender-nonconforming characters are featured in games such as *The Legend of Zelda: The Ocarina of Time* (1998), *Dragon Age: Inquisition* (2014) and *Mass Effect: Andromeda* (2017), though BioWare, the developer of *Mass Effect: Andromeda* had to alter their portrayal of the character Abrams after complaints that her portrayal was awkward and unrealistic (Villarreal 2019). *The Legend of Zelda* franchise has also received criticism due to the portrayal of a minor transgender NPC in *The Legend of Zelda: Breath of the Wild* (2017), whose transgender reveal is treated as a joke.

Another group of people experiencing lack of representation are those with disabilities be they physical or mental. Existing disabled characters include Junkrat from *Overwatch* (2016), Joker from *Mass Effect 2* (2010), Big Boss from *Metal Gear Solid V: The Phantom Pain* (2015) and Lester Crest from *Grand Theft Auto V* (2013). These characters represent different types of physical disabilities, but there are also games that feature player-controlled characters with a mental disability, who are designed in a way that allow the players experience their condition with them. One such character is Senua from *Hellblade: Senua's Sacrifice* (2017), and she suffers from psychosis. In essence, she loses touch with reality by experiencing hallucinations or delusions, which the players will also witness as they control her. Extensive research went into portraying the condition accurately without adding to the stigma associated with mental illness. (Farner 2019.)

From a character design standpoint, it seems unusual that disabled characters do not feature more prominently in different types of narratives. One would assume that fantasy and sci-fi worlds would offer countless different ways to portray solutions to

make disabled characters' lives easier whether it be through magic or technology. A good example of this is Bentley, a paralysed turtle from the *Sly Cooper* (2002) series who modified his wheelchair to include things such as booster rockets and weapons – yes, he can fight.

3.5 Video Games as a Medium

Video games differ from other media in the sense that they are interactive. That power of interactivity has a strong influence on the game world's presentation. In novel and film, the viewer is given worlds and characters to look at from the outside, whereas in video games they get to experience everything first-hand and be an active influence on how the story plays out (Ferk 2018). Because of that, the stories told in video games revolve more around the actions of the characters rather than their thoughts and contemplations. The characters will often have very limited time to speak compared to their novel and film counterparts. Creating emotionally complex story arcs for video game characters is not impossible, but on the whole the conflicts they take part in are more likely to place primary focus on physical altercations and quests than introspective emotional turmoil. (Schell 2015, 347.)

Nowadays the advancement of technology has given developers the opportunity to provide the player with moral choices as well, though those tend to be centred around some physical conflict as well. A good example of a game that does a moral narrative extremely well is Toby Fox's game *Undertale* (2015). The game's protagonist falls in a hole that leads from the human world to the world of monsters and has to make their way through the monster world in order to find a way back. On the way, they will meet a colourful cast of characters, who challenge the player to battle... all but one of which can be won without a single attack if the player is skilled enough to survive until the end. The game became famous due to the fact that the player's actions affected not only the ending of the game, but the ability to achieve other endings as well. One of the characters was programmed to remember the player's previous clears of the game, and if there was even one clear file in which the player had chosen to kill an enemy instead of sparing them, the good ending would be out of their reach. This resulted in players making back-ups of their True

Pacifist Ending save file and trying to find ways to delete or alter their save files to get access to the ending again (Steam Community Discussion 2015). In this case, the players had fallen in love with the various characters they had met on their journey and wished to give them the happiest possible ending.

Technical limitations have also affected the characters' designs. In fact, Mario's iconic character design is a direct product of these limitations: he wears a hat because the technology could not enable animated hair and overalls in order to make his arms and legs stand out from his body (Poole 2004, 245).

Just as Mario could only be comprised of so many pixels, the 3D models commonly in use today often face restrictions on how many polygons they can consist of. The higher the polygon count, the more detail and texture a model can display. The limitations are generally set by the game engine and platform, though style has a part to play in these graphics as well. Low-poly models are easier for the consoles to render than high-poly ones and are therefore suitable for hand-held consoles and games that require a high number of assets to appear on the screen at any given time. (Unity 2018.) On consoles that have the power to accommodate them though, high-poly models are getting increasingly detailed, to the point that the faces of real-life actors can nowadays be mapped onto characters to produce a somewhat realistic result. This can be seen in titles like *Beyond: Two Souls* (2013) and *Until Dawn* (2015). The road to realism is not an easy one, however. Replicating realistic human faces is still difficult and mistakes can lead to the end result looking uncanny rather than convincing. This is not helped in the slightest by the often mechanical movements and expressions the characters produce. Despite much of the animation especially for key scenes being done by motion capture, organic human movement does not quite yet translate perfectly onto a digital model.

As polygon count is one of the key things that affects performance of games utilising 3D assets, it should be considered during the concepting of characters. This is where readable shape language becomes highly important. Designing details in a way that they can be unified into a simpler shape will make it easy to modify the character in case the original design would not work for the recommended polygon count.

Video games as a form of entertainment encompass a wide variety of types and genres from single-player arcade type games to massively multiplayer online adventure games. Therefore, video game characters too come in all shapes and sizes, and play a wide variety of roles depending on the type of game they are featured in. Many serve as faces for integral game mechanics: opponents, allies, vendors, or quest and reward givers to name a few. There are also characters who only exist to populate the world and make it look more organic. These NPCs will usually either stand in one spot delivering a line of dialogue when approached or interacted with, or perhaps walk from A to B time and time again on an errand they are doomed to repeat forever. In games with a linear narrative, these characters may even have their own little story arcs that advance as the player advances in the main story, and that can go completely unnoticed unless the player takes the time to interact with the characters throughout the game. A good example of this is *Atelier Iris 3: Grand Phantasm* (2006) in which the main city the player is based in evolves throughout the game as the player interacts with the world, completes side quests and meets new characters.

Due to the variety in game mechanics, the amount that characters feature in the final product varies drastically. In story-driven games the characters serve as agents moving the plot forward, as well as the connection point between the player and the game world. In essence, the characters shoulder the responsibility of drawing the player into the experience (Sabbagh 2015). The characters serve as the player's conduit to the world of the game, and therefore need to be compelling in order to keep the player invested. In a sense, the interactivity of the medium is both a blessing and a curse: being able to interact directly with the story, world and characters is what makes playing video games exciting, but at the same time doing that requires more effort than watching a movie for example, and the threshold for quitting out of boredom is lower. A dull story with dull characters may ruin a game with otherwise well thought-out and compelling mechanics, whereas a compelling story with compelling characters may save a game with badly thought-out mechanics.

Kevin Crossley describes the character designer as the person whose "role is to put a drawing on the table, and in doing so give the team something visual to discuss. Even if the design does not have everything about the character right, it is a starting

point to start the realization of the finished character. As feedback comes in, the designer will create further sketches, maybe hundreds of them over weeks or months, until the character is born. (Crossley 2015.)

Ayumi Namae, one of the character designers working on the massively-multiplayer online roleplaying game Final Fantasy XIV (relaunched 2013), appeared in a discussion panel at a fan festival held in March 2019 to celebrate the upcoming release of the game's third major expansion to shed light on her role in the game's production. She explains that her work begins relatively early on in the process as the designs are the basic requirement for any other work concerning the characters, such as sculpting and animation. The designers work under the art director whose job is to supervise the consistency in both the quality and aesthetic of all artwork produced for the project. Aside from the AD, the designer may also have to meet the requirements of those in charge of sculpting the character models, as well as the team working on the story. (Namae 2019.)

Typically, the character designers will receive text-based information on the characters from the producer of the game that they then have to visualise into multiple initial sketches. They have to adjust the designs so that they are suitable from a story and aesthetic standpoint, while being mindful of any technical restrictions. One notable restriction Namae mentions is the amount of bones each character has. They are used to move not only the character but their clothes as well. Namae states that she has wanted to design characters who wear capes, but so far it has proven to be technically difficult because the characters have no bones to create an accurate cape. In some cases they have been able to work around the restriction by utilising the bones meant to move the hems of skirts and cowls, and while the end result ended up looking stiff, Namae states that it is important to be able to adapt. (Namae 2019.)

4 Video Game Character Design Process

4.1 Beginning a Concept

Generally, any concept begins with a need for a character. This means that there is already some information on what the character needs to be. Depending on the situation, this may range from the character's mechanical role in the game, or the part they should play within the narrative. The character designer takes this information and begins the ideation process. This is of course not always the case. The Angry Birds franchise for example started with the characters, around whom the team built the game (Iisalo 2016).

Art does not exist in a vacuum; all creations borrow inspiration from somewhere (Ferk 2018). Research material is a necessary part for finding ideas to work with. This can come in many shapes and forms: books, magazines, movies and documentaries, animated features and even figurines and other toys (Crossley 2015). There are multiple channels on YouTube that delve into history topics, and while those videos as well as some document series may embellish historical facts for entertainment value, they can spark ideas that would otherwise have been left unexplored. Notable videos I found helpful during the production part of this thesis were BBC's (2016) documentary *Victorian Bakers*, in which four professional bakers experience first-hand how their profession evolved throughout the Victorian era from rural bakehouses to high-street shops. Lion Television's (2010) document series *Victorian Pharmacy* also proved useful, as it features modern-day pharmacists and chemists recreating old remedies (excluding dangerous substances) with historically accurate equipment.

In the company I worked at, the art team would also search the internet for images to put into initial mood boards to quickly showcase possible design styles, tone and possible individual design elements. Sites like Google and Pinterest are fast and easy to use for this purpose. A mood board is a collage of images ranging from works of art to photographs collected into a collage (Holmes 2016). Digital mood boards are usually presented as a single image file, and while this would be ideal

for analogue mood boards as well, sometimes the images added to them are too large to get all of them to fit on a single sheet of paper. A mood board should not be used as the main tool for concepting, but rather as the starting point for the overall process, as the imagery presented in them can be very generic in nature.

Mood-boarding is not utilised for designing the final concept, but rather to give a fast overall-look at possible directions to take the design. By introducing these mood-boards to the team leader first, the team can coordinate their perception of the type of result that is expected. Likewise, the team leader may provide the artist with visual references of their own. It is on top of these references that further brainstorming is conducted to determine possible directions the design can be taken. Sometimes the initial direction does not end up being the type of design that is approved but providing at least one concept adhering to the leader's vision is almost necessary if only to prove that it would not work as they had imagined it.

Alongside external references, the artist can also create their own research material in the form of research drawings. It is a good way for studying the subject matter more thoroughly and possibly discovering things that would have been difficult to notice otherwise. These discoveries in turn can lead to new and improved ideas. (Holmes 2016.) The research drawings on especially body type can be put to use in another way as well. They can be either printed out or copy-pasted into new files to use as quick templates to test new designs on. Doing so will save time during the sketching process and is therefore useful especially for projects that are on a tight schedule. (Crossley 2015.)

The concepting period is filled with brainstorming sessions that are meant for recording ideas into quick sketches. During this period, the concept of a "bad" idea should be ignored in favour of quantity. Most of what is conceived will end up being rejected, which is part of the overall process. (Holmes 2016.) The first ideas that come to mind tend to be the most cliché ones, which is why it is important to continue producing new ones without being overly critical of them. The human brain works through associations, and therefore one thought will connect to several new ones that will trigger new ideas in a chain reaction of sorts. This process becomes even more effective when other people are involved. (Mayer 2018.)

4.2 Refinement

Once the team has decided which concept should be developed into the finalised character design, the artist's next job is to create a cleaner version the rough concept with the correct anatomy and clear linework, hone the details and make sure the design has no inconsistencies or other issues.

Because the sketches from the conception phase were done quickly, they will have multiple issues in terms of anatomy and proportions. The body of the character should look like it would be capable of supporting its weight at the very least somewhat realistically, as Crossley (2015) points out when recalling how he refined the anatomy of a centipede-woman he designed. Cartoony characters often tend to have large heads, so in those cases it is important to make sure their neck is either thick or short enough to avoid looking like it should snap like a twig every time the character moves. Breaking down the character's body into simple shapes will give the artist a clear view of its structure (Mayer 2018, 28-29), and drawing each part on its own layer will make it easy to adjust the proportions of the character (Holmes 2016). This type of structural breakdown of the anatomy will be invaluable reference material later when creating the final drawings displaying the finished design.

The team who will be working with the character designs is going to need thorough depictions of all the details on the character as well as their equipment (Holmes 2016), so part of the refinement process will include partial drawings of the character to get clean renders of anything that would lose detail or be obscured in a full-body drawing.

Even if the character designer will not be in charge of animating the character, it is important to be aware of the range of motion the character should have. Creating motion studies and drawing the character in action will ensure that all of their equipment is suitable for what they need to be able to do (Holmes 2016). For example, extremely large pauldrons may appear intimidating on a fantasy knight, but they will quickly lose their flare if they look like they should hit the character in the face every time he raises his weapon.

Different stages of the refinement may raise the need to make notable alterations to the original concept. Running all these adjustments by the higher-ups in a timely manner is very important, as having to go back and adjust something can lead to a chain reaction of corrections. The designer may also need to be in contact with the animation and 3D modelling departments throughout the refinement process to make sure that the design remains within the team's technical capabilities. At the end of the refinement phase, the details and colour will all be finalised, and the only thing left is to compile the finished reference images into a cohesive reference sheet.

4.3 Displaying a Design

Properly displaying the finished design is integral to keeping the character consistent in the various interpretations it will go through in both the game itself as well as the marketing material. The standardised way of doing this is by creating a character or model sheet. The character should be in a standard standing pose, so no part of the design is unnecessarily obscured. If the character has multiple layers of clothing, the character sheet benefits from showing how they would look with the top layers removed. (Holmes 2016.)

A standard character sheet includes front, back and at least one side views of the character. These images are referred to as orthographic drawings and they are important not only for the purpose of consistency, but also due to it being the final check to see all the elements are properly scaled and aligned. They are also important for the people responsible for sculpting the 3D models for the characters. The best type of pose from a 3D sculpting standpoint is either a T-pose. While not natural, the extended limbs will not cover any detail unnecessarily and have no distortion to them. These drawings are meant to be clear and precise in order to communicate as much information and detail as possible to anyone who will work with the character in the future. For this purpose, at times humanoid characters may require a side view in which the arms are cut off at the shoulders so as to display elements of the design that would otherwise be obscured. (Holmes 2016.)

Depending on the type of design and project, it may be necessary to make extra illustrations of certain character details and angles. This may include things like accessories, cloth patterns and tattoos. Some concept artists will also add an expression sheet displaying the character's face portraying various emotions.

Orthographic drawings are boring. They are meant to be blueprints, not emotionally compelling works of art after all (Holmes 2016). Because of this, they do not work for the purpose of introducing the character personality-wise. Instead, artists produce a separate piece, referred to by Crossley (2015) as the "final render" and Holmes (2016) as the "illustration".

Crossley, who has done a lot of work for comics, prefers to make his final renders completely traditionally and may use only a single colour pencil on them. Holmes on the other hand paints digitally and takes care to describe the surface textures of his characters and how they are affected by the lighting and the environment. In either case, the artists set to pose the character in order to communicate the design to the audience. (Holmes 2016; Crossley 2015.)

This type of artwork is often utilised as marketing material (Holmes 2016), so it is a prime opportunity for the artist to showcase not only the characters abilities but their personality as well. Posing the character with appropriate props, such as weapons, vehicles or animal companions, will serve both as a design statement and also communicate what the character does and how they do it. Giving them an action pose specific to their character and skillsets will achieve a similar result. (Tsai 2007, 81-82.)

For less action-oriented characters, an illustration can communicate their personality through body language. According to Kendra Cherry (2019) from Verywell Mind, the term body language encompasses all the nonverbal signs we use to communicate, ranging from our facial expressions to our body movements. Science of People also adds ornaments to the list: according to them, everything ranging from clothing, jewellery to hairstyles and how we interact with them (e.g. fidgeting with jewellery when nervous) are extensions of our body language.

5 Tools for Concepting

5.1 Traditional Media

Traditional media refers to any non-digital method for creating art. This includes painting and drawing as well as methods such as sculpting, moulding and carving. In character design, the most commonly used tools are pen and paper, as well as coloured pencils, water colours or markers.

The amount of tools even for one specific area of traditional art can be quite overwhelming and there are no clear instructions of what to look for as much of it comes down to personal preference. Sometimes it can take months of experimentation to find the right toolset, right until a better one comes along by chance. However, owning too many different types of tools and papers can be detrimental to creativity, as more time will be spent deciding on which tools to use for any given job. (Crossley 2015.)

With traditional media, there is also the matter of paper to consider. For simple pencil and pen sketches, any sort of sketchbook will do, but paints and markers tend to require special paper to get the best result. These materials can end up being costly, so they are usually reserved for the final renders only.

Aside from the main toolsets, once the use of traditional media moves past just sketches, other supplementary tools and materials come to play. People who work with paints may also have an easel to keep the canvas or paper upright, as well as a palette to mix colours on. Copic (2019) offers an airbrush accessory for their Sketch markers, and the use of that will also require the use of a stencil to isolate the area that is to be airbrushed.

The clearest advantage of using traditional media for sketching purposes is that pen and paper are easy to carry around and are usually the first thing on hand to record and test ideas, though nowadays digital variants exist for mobile devices. Sketchbooks are also harder to lose than digital files as they cannot be accidentally deleted (Crossley 2015).

While electronic devices will run out of battery if charged, traditional media is not without its disadvantages either. Pens, pencils and water colours run out eventually, markers can dry out and paper only has so much space on it. Some materials can also be costly or difficult to obtain, and the artist's colour range is limited to the ones that can be mixed with the pens, markers or pigments they own.

5.2 Paint Tool SAI Ver.2

Paint Tool SAI Ver.2 (2008), or SAI 2, is a digital art software for the Windows Operating System currently in development by SYSTEMAX Software Development. Its predecessor Paint Tool SAI was released in 2008 and updated until 2016. While SAI 2 is still in development, its technical previews have been available for use since 2013 with new features and bug fixes being implemented multiple times per year. The software is also affordable. It has a 31-day trial period after which using the save and load functions are disabled until a licence is registered. The price of the lifetime licence is 5400 JPY, which roughly converts to 50 €. Any user who has previously purchased the licence for SAI Ver.1 may also reissue their information to obtain a licence for SAI Ver.2 free of charge due to discontinued support of Ver.1. Doing so does not negate the licence on Ver.1, so both versions can be used simultaneously. (SYSTEMAX Software Development 2019.) The technical preview used for the purpose of this thesis is the 2019.01.29 version, which is the most recent version at this time.

The most notable improvements in Ver.2 are the raise in maximum brush size from 500 pixels to 5000 pixels, the raise in maximum canvas size from 10,000 x 10,000 pixels to 100,000 x 100,000 pixels and the raise of maximum number of layers from 256 to 8190. It also added more layer blending options, simple text- and shape tools, Gaussian Blur filter, a gradient bucket as well as a smudge tool, and perspective and grid rulers.

Both versions of SAI are lightweight and designed specifically for the purpose of digital art. They have fewer functions than software such as PhotoShop, but their render speed is fast even for large brush strokes, and they feature versatile brush

blending settings. The brush tool in particular can be used both for painting as well as blending colours. The program allows for duplicate brushes to be present on the toolbar, so saving different blending settings is easy. In addition, each brush can be set to paint “transparent”, or effectively work as an eraser with the blending settings intact.

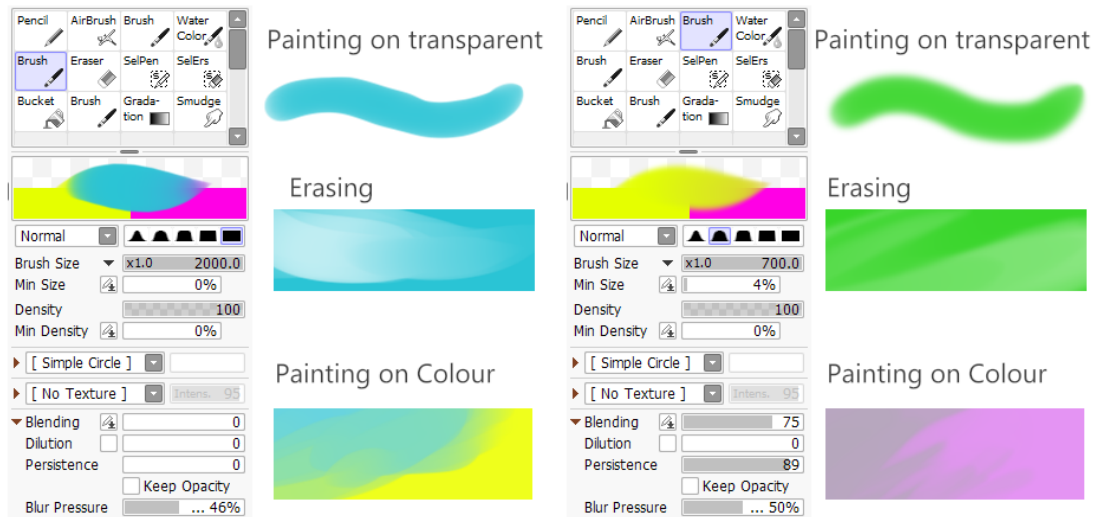


Image 6. Paint Tool SAI Ver.2 blending settings example. Screenshot and compiled by the author. Permission to use received 08.05.2019.

What the brushes lack at the moment is a way to customise the tip shape and textures. Both versions of SAI come with built-in brush shapes and textures but creating custom ones would require modification of the brush configuration files. The same applies for canvas textures as well. The brushes also lack any scattering settings, so they are not ideal for creating special effects and skin textures especially.

The greatest advantage presented by both versions of SAI is the pen stabiliser with 23 available sensitivities. It eliminates the natural shake of the hand when drawing curves and is therefore highly beneficial especially for artwork that requires line art. They also have the option of simultaneously opening multiple views of a single work, which update in real time per finished action. The views can also be mirrored by the press of a single button, so during the sketching process it is possible to view both the normal image as well as its mirrored version in tandem.

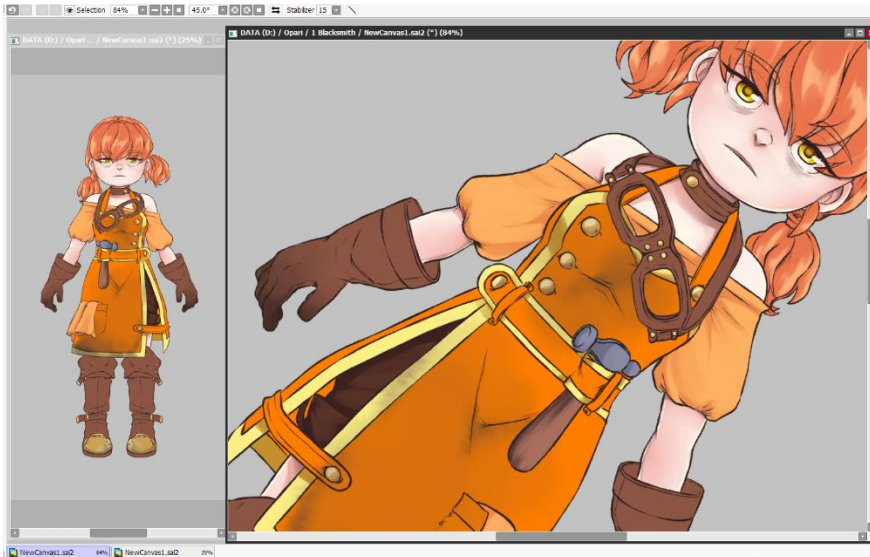


Image 7. Parallel Views on Paint Tool SAI Ver.2. Screenshot by the author. Permission to use received 08.05.2019.

The selection tools received a slight improvement in SAI2 with the adding of the polygonal lasso option to the freeform lasso tool. Aside from those, it retained the rectangular selection tool as well as the selection and deselection brushes that work with the same intuition as the pen tool does – not like Photoshop’s predictive selection brush. Pressing Ctrl while left-clicking on a layer’s, group’s or layer mask’s thumbnail to select all non-transparent pixels within those parameters is also supported.

While the pen stabiliser and perspective rulers make it easy to free-hand line art in SAI2, it also comes equipped with a specific layer type for vector paths. The Linework layer type allows the user to draw paths with either curved or sharp Curve Points (referred to in the software by the abbreviation CP). The position of the points can be adjusted once the path is finished, however their level of curvature cannot be adjusted other than toggling between a sharp and curved angle. The only way to change the curvature of a line is by adding more curve points and adjusting the position of existing ones. What can be adjusted to great effect, however, is the weight of the line at any specific curve point. The pressure tool allows the user to adjust the weight of the line by left-clicking on a curve point and dragging the mouse to the left or right while holding down the left mouse button.

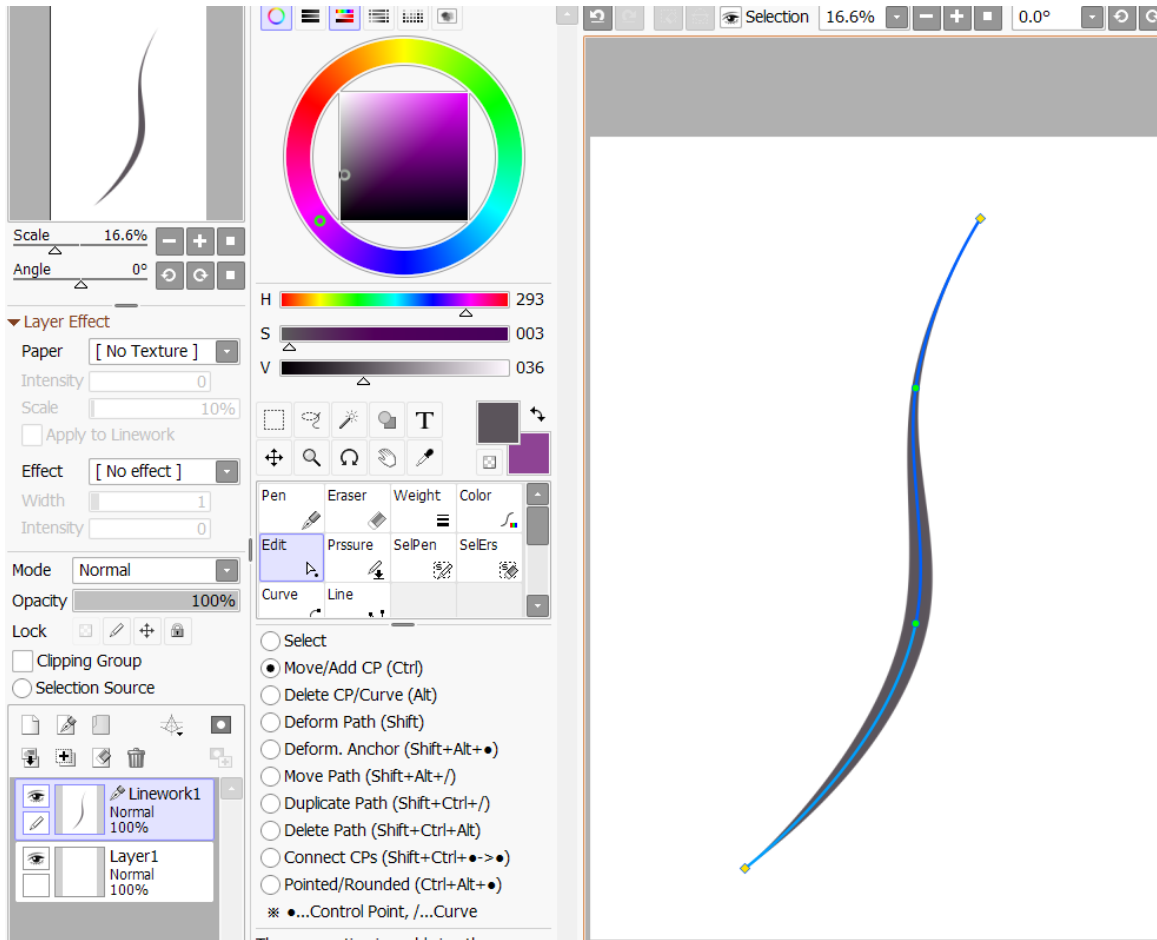


Image 8. Curve with alternating pressure levels on a Linework Layer in PaintTool SAI Ver.2. Screenshot by the author. Permission to use received 08.05.2019.

The shape layers work with the same toolset as linework, and currently only support filled shapes. As the curve points at the end of a line on the linework layer cannot be joined together to create a shape, it is currently impossible to get only the line art of a shape using these two layer types unless a shape is traced over with a line. The only other way to achieve that would be to create a shape, rasterise it, select it and erode the selection to the desired line width, and use either the eraser tool or Erase Layer function on the remaining selection. Due to these limitations, SAI2 is not the best tool to be used for creating vector graphics.

5.3 Adobe Photoshop

Adobe Photoshop is the industry standard software due to its versatile functionality and Creative Cloud ease of sharing files between Adobe Software. After the launch of Creative Cloud Adobe adopted subscription type payment models for all its software, so nowadays Photoshop CC (2019) is available at the cheapest for 12.39 € per month or 147.91 € per year (Adobe 2019). This package also includes Lightroom (2018), which is Adobe's software for editing photographs, as well as 20 gigabytes of cloud space – this is the storage that is the Creative Cloud part of the new adobe system. As all Adobe software are tied to an Adobe account, anything from a software's clipboard can be saved to the Creative Cloud and accessed on another software registered to the account as long as the target software supports the file type. A standard subscription of Photoshop or another Creative Cloud software includes 100 gigabytes of cloud space and costs 24.70 € per month (Adobe 2019).

Unlike Paint Tool SAI, Photoshop was not created for only digital art, but has features for photo manipulation and special effects as well. It also offers a multitude of filters ranging from different blurs to generating textures, crystallising, pixelating and stylising and image, as well as creating distortion effects. Layer blending options go far beyond just the blending modes that are also offered by SAI. Layers can be set to have a coloured stroke, inner or outer glow, or be overlaid by a colour or a pattern – both options of which also support blending modes. The transform tool has all the same options as the one on SAI with the addition of a three-by-three warp mesh that makes it easy to apply patterns onto round surfaces.

What Photoshop is missing compared to SAI are the various brushes to blend colours with. Instead, colours are blended manually in stages. After blocking in a shadow or highlight, the brush opacity is lowered to an appropriate degree, one of the colours is picked as the starter colour and painted on top of the other one with the lowered opacity to get the first blending colour. The process is repeated by selecting colours resulting from previous blends until the desired result is achieved. Some artists prefer to then raise their brush opacity back to 100 % and repeat the process until they achieve the desired effect, while others keep the percentage

below 100 % and pick new blending colours more often from the ones that are created as they paint.

Where PhotoShop excels is with painting textures. It is incredibly easy to create custom brush tip shapes in the program. All that has to be done is to draw the desired shape on an empty layer with black, select it and then choose “Define Brush Preset” from the Edit drop-down menu. With this, the brush will be created and ready to use. Every brush created in this manner will have a maximum diameter of 5000 pixels regardless of the pre-set size. However, the brush quality will deteriorate if the tip size that is used is substantially larger than the pre-set size. For this reason it is recommended to make the pre-set size as large as possible. The brushes also support partial transparency. In the example below, the pre-set is fully black and will therefore create a solid brush. Should parts of it be grey, they would appear as lower opacity on the finished brush.

On the downside, Photoshop is a very heavy-duty software due to the image quality it can render and may therefore run slowly depending on the hardware. Even on high-end hardware strokes with large brush tips may take a while to render completely especially on specialised tools such as smudge. It is also not the best tool for creating vector graphics. While Photoshop does have the basic tools for creating and editing paths and shapes, they do not match the ones supported by Adobe Illustrator and can be frustrating to deal with.

6 Developing the Workflow

6.1 The Blacksmith: The Control

For the purpose of this thesis, I sought to find a workflow for character design that would not only make the ideation process smooth and rewarding, but that would also bring efficacy to the technical side. For this purpose, I ended up abandoning my original plan of creating five-day schedules for each design, and instead opted to set one 8-hour work day for conceiving each design, another for the refinement, and then measure the amount of time it would take me to complete the orthographic

views and final illustration of each character. I will not go into detail regarding drawing techniques, anatomy rules and so on unless they are relevant to the workflow specifically.

Because I am working alone on this project, I decided to forgo colour schemes during the concepting stage in favour of selecting them once the other aspects of the character's design were finalised and I could choose their colours based on their characteristics. The final reference sheets were compiled from merged PNG files in Photoshop mostly because it is easier to make aesthetically pleasing graphics composition with access to layer strokes and an opacity slider that supports number inputs.

For my usual workflow for concepting which I developed during my internship, I begin by collecting reference images online in order to get a starting point for the design. I then begin more in-depth research, in this case into the trade of blacksmithing, with which I begin to sketch out characters.

My prior experience concerning the trade of blacksmithing is derived almost entirely from television shows and movies. My impression of smithing prior to doing any research was that it is a male-dominant field involving hard physical labour which usually resulted in its practitioners being muscular. I remembered nearly every blacksmith I had seen at work wear some form of leather apron to protect themselves from the fire. I decided the apron would become the centrepiece of my design, something the character would absolutely need to have.

For my initial research I decided to look at real life blacksmiths rather than characters in order to get an idea of what types of clothes aside from the apron they usually wore and what sorts of tools they used. Once I had a small list made with things including safety goggles, hammers and pliers and a tool belt, I began sketching out the initial concepts. As the character had no backstory nor description beforehand, I was free to explore different types of personalities and body types. Image 9 showcases four of those preliminary concepts from before I had settled on the gender for the character.



Image 9. Character: Blacksmith preliminary concepts.

In this case though, the concept I liked the most was not born from exploring the personality, but rather from exploring the environment. As I was researching the tools for a blacksmith, I saw pictures of the bellows, the tool used to feed oxygenated air into a fire. I vaguely remember seeing them in cartoons, some being so large that they had to have some sort of winch type system to operate. That in turn led to the thought of a character, small in stature, heaving their entire body onto a bellow in an effort to bring it down. I began sketching based on the preliminary concept of the girl with twin tails, and as the character began to take shape, I decided I wanted to explore her potential further and made another, more detailed preliminary sketch.



Image 10. Character: Blacksmith preliminary concept.



Image 11. Character: Blacksmith final preliminary concept.

In the end I settled for a simple design with few ornaments for practical reason. This is a character who does physical labour in high temperatures and deals with fire on a daily basis, so her work clothes would be covered in sweat and soot at the end of each day and may even get slightly burned from time to time. With that in mind, it seemed unlikely she would care much about her appearance while at work or wish to wear anything that would be considered fancy. In order to highlight this aspect and to make her silhouette interesting, I decided to give her lopsided pigtails for a hairstyle. I did want to give her some aspect of femininity however, which I achieved by making her work apron a wrap-around and thus having its shape mirror that of a skirt. As for personality, I drew her looking extremely tired with clear shadows under her eyes initially as a joke. I did test other more serious expressions but ended up thinking that one had the most potential after all and used it in the final design.

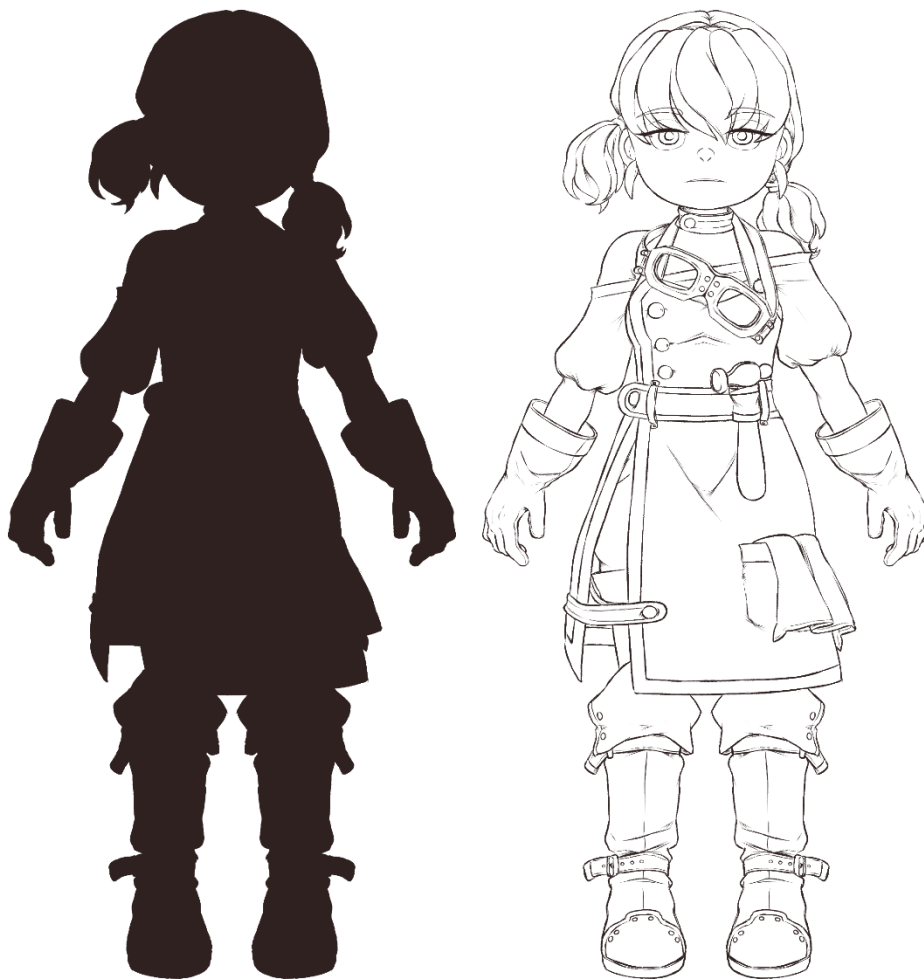


Image 12. Character: Blacksmith. Silhouette and Sketch.

The character works with fire, so I wanted to make her main colour warm. I started out with orange as the main colour and added brown and warm yellow to create an analogous palette. I also debated using the complementary shade of blue from the RGB wheel in image 2 for the character's eyes and shirt but disliked the choice due to blue being associated to water and ice.



Image 13. Character: Blacksmith palette.

Even though I had relatively good reference materials from the refinement day, it still took me roughly 8 hours and 30 minutes to create the orthographic views of the character. Even though I had references of the character's anatomy and facial features, replicating them to the larger size was surprisingly time-consuming. I also had trouble replicating the twin tails from the way I had designed them from the day before. The side view is something I will have to practice more in the future, as it proved challenging to get all the elements to line up and scale properly. Overall it would seem beneficial to do repetitions of some of the complex design elements before moving on to the orthographic views. I finished the workday by making the thumbnail sketch for the character illustration.

The thumbnail was extremely crude and was only meant to record my thoughts on the pose and composition of the overall image, so the next step was to sketch out the proper anatomy. Like with the orthographic drawings, I sketch on multiple layers so the body parts can be easily moved and resized. In this case I also added the goggles and the pliers to the anatomy sketch because the character's hands were interacting with them. Once all the body parts were roughly in the right place and proportions, I made a new layer set and sketched out the character's outfit, hair and facial features while adjusting the anatomy when needed. I used more layers for this sketch than usual due to overlapping elements in the hair and legs. Overall the sketching process took 3 hours 35 minutes.



Image 14. Character: Blacksmith final illustration thumbnail, anatomy sketch and detailed sketch.

Lining the illustration was relatively quick, it only took a little over two hours. I tend to have a perfectionist streak when it comes to line art but considering how little it usually shows in the finished piece. I have recently begun to teach myself to be more lenient when it comes to little mistakes. The only thing I am careful about is not leaving holes in it to make the filling of the flat colours easy. Like with the sketch, I also make sure to draw the lines of different elements on separate layers to make them easy to edit later if necessary. The reason I prefer to paint flat colours underneath a line art is that with that system, the different coloured areas are clearly defined as the shading process starts, and the entire process tends to be fairly straightforward with a minimal amount of corrections required. A style more reminiscent of traditional painting, on the other hand, has a more correct-as-you-go type of method, in which the final outlook of the image can be very different from the initial sketch. I am the type of artist who likes to have a clear representation of how the final image will be shaped early on in the process.



Image 15. Character: Blacksmith line art and layer composition. Permission to use received 08.05.2019.

Painting the flat colours took me roughly 40 minutes in total. My usual method is to create a layer mask around the outer rim of the line art and then start painting from the top elements towards the bottom ones. A layer mask is a digital stencil that can be applied to either layer groups or singular layers. As long as it is active, everything that falls under it in the layer hierarchy will display within its bounds. The advantage of this method is that less and less care has to be given to colouring within the lines, but the image remains clean to view. In addition by painting different colours on different layers, the shading can be set to remain within the parameters of those layers and therefore even if the shadow happens to extend to the area of a different flat colour it will not show in the final result. I also tend to make corrections to the layer mask as I apply the flat colours. I also collect a colour palette on its own layer

next to the image to have quick access to the base colours when I inevitably find holes in the areas during the shading process.



Image 16. Character: Blacksmith flat colours with the layer mask hidden (left) and in use (right). Permission to use received 08.05.2019.

Colouring and texturing the character took roughly 5 hours and 40 minutes. Image 17 demonstrates the layer hierarchy I tend to use: at least three additional layers per area to paint two sets of shadows and one set of highlights to any given material. The layers above the flat colour can be either clipped to the flat, in which case they only display within its bounds, or restricted by another layer mask.



Image 17. Layer hierarchy.

In this case, I also elected to split the flat colour of the brown leather into two separate layers, one for the goggles and one for the rest of the items. While the flat colours of the yellow and orange areas on the apron were on separate layers, I painted both shadows and highlights on a single layer while hiding the yellow colour to ensure a smooth transition between the areas. To adjust the colour of the shadows, I selected the yellow area, locked transparency on the shading layers and filled the selection with the appropriate colours.

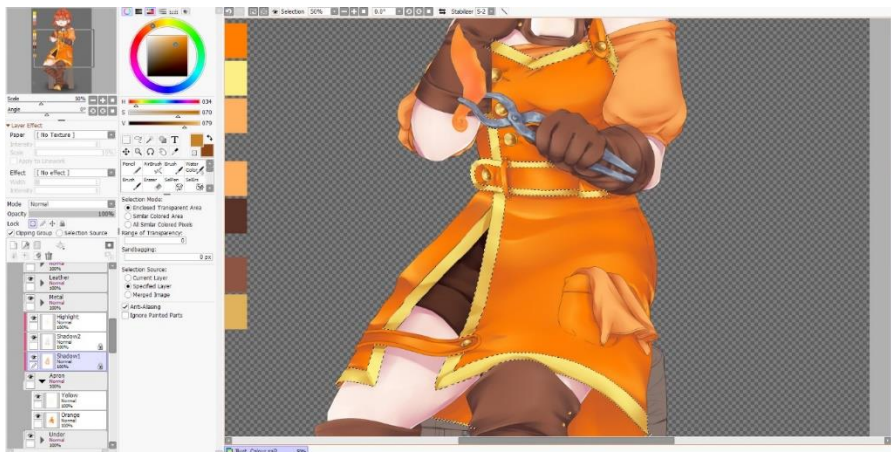


Image 18. Character: Blacksmith Colouring Progress. Permission to use received 08.05.2019.

This particular illustration required special texturing and effects for the soot on the character's clothes and face, as well as the metal she holds in her pliers. I elected

to create both of these effects on SAI2 rather than transferring the image to Photoshop. Using a special effect brush on the soot may have resulted in a more realistic texture but going through the process of finding the right brush settings for that seemed like a waste of time. I also wanted to test the capabilities of the Smudge tool on SAI2, as I rarely have use for it. Creating the glow for the piece of metal was possible due to the addition of Gaussian Blur and Linear Dodge blending mode to SAI2. If Gaussian Blur had not been available, I would have had to use Photoshop to create the desired effect. Finally I adjusted the contrast and colour depth of the character.

6.2 The Baker: The Experiment

In order to improve my concepting workflow, I consulted Doron Mayer's (2018, 49-50) book *Workflow: A Practical Guide to the Creative Process*. Mayer makes an important distinction between an idea versus a concept: oftentimes creatives will seek out a complete concept right at the start of the ideation process instead of first conceiving and recording singular, detached ideas to build a concept out of. This distinction is important when reading Holmes's (2016) advice on brainstorming as well. Holmes, like Mayer, emphasises the importance of recording as many ideas as possible without worrying about refinement, though Holmes places far more emphasis on the importance of drawing each idea. According to Holmes, a character designer's first priority should always be to record their ideas in visual form in order to identify things that sound good in writing but will not translate well visually. As Crossley (2015) states, every person on the development team has great ideas, but the character designer is the one whose job it is to visualise them.

According to Mayer (2018, 49), the process of generating ideas takes advantage of the human brain's tendency to work through associations. In his words, everything we hear, think about, imagine, dream or learn is stored in our mind like data, and as those scraps of data move around, they bump into each other, react to each other and connect. Ideas generated during the concepting process work in a similar fashion, with one idea connecting to another and slowly building them into a solid concept. This type of reaction is why both Mayer (2018, 59) and Holmes (2016)

encourage involving other people to the brainstorming process. Different people will make differing connections and generate different ideas from the same core idea (Mayer 2018, 59).

There is one aspect in Mayer's (2018, 69) concepting advice that does not apply to character design, and that is limiting the number of concepts to choose from to only two or three. This is in direct contradiction to accounts from Crossley (2015), Holmes (2016) and Namae (2019) alike. While Mayer is aiming his advice to creative fields in general, the three character designers speak from experience in working with creative teams, in which a large number of applicable concepts tends to be an asset rather than a hindrance.

The greatest takeaway I got from the advice by Mayer and Holmes was that I should seek the opinions of other people during my concepting process. Since during this project I have no team nor a set consumer base, I decided I would be in contact with my friends as well. I would also place greater importance on sketching out fragments of ideas rather than wait until I have a full character in my mind like I did with the blacksmith.

Early on into my search for reference images for the baker character, I stumbled upon an old photograph of baking company employees captioned with the text "BBC's Victorian Bakers". I searched YouTube hoping to find clips of the series, but as it happened the full episodes had been uploaded there. What I found most relevant for my design were the differences in the job brought on by technological advancement. Prior to the industrial revolution and machinery being employed to bakeries, a baker had to be physically fit to be able to carry their bags of flour and knead their dough by hand (Victorian Bakers 2016 episode 1). On the other hand, once machines were doing the hard work, bakers became the faces of their stores and would begin to take great care of their appearances and hygiene to appease their customers (Victorian Bakers 2016 episode 3).

Instead of sketching out ready characters as I had during the ideation process of the blacksmith, this time I sketched out the different types of outfits I saw the bakers wear in the series as well as the various equipment that was showcased and began to apply them to fledgling character designs of different genders and body types.



Image 19. Character: Baker preliminary concepts.

In this case the final concept I decided to use was born from Mayer's (2018, 56) advice to come up with completely silly or weird ideas. I started thinking "what if the character was a gruff-looking older male who was covered in scars but also wearing light pastel coloured clothing?", and when I sketched out the idea it worked for me. I wanted to know more about this character, so I made a more detailed concept sketch and moved on to refining it.



Image 20. Character: Baker final preliminary concept.

The final concept sketch was still very cartoony in nature and ended up clashing with the concept of the blacksmith, so my first step was to adjust the character's anatomy to slightly more realistic proportions without losing too much of his original silhouette. I also gave his facial features more definition and decided to remove the moustache as they seemed too cliché to me after looking back at the design the next day.

I wanted to give the character something other than his scars to allude to his past as a soldier and began experimenting around different ways he could be carrying his equipment. The end result was two bags of frosting hanging from his side akin to daggers in a sheath or guns in a holster. The solution was not the most hygienic one but given the fantasy nature of the setting I decided it would work fine. I also wanted him to have a medal of some sort on him, but his vest had quite a few details already with the buttons, seams and pockets. I experimented around and found the rim of his hat was the best place for it with the justification that from there it would stand out to the viewer, which would serve to highlight his pride in his achievements.

Finally, I wanted to give him some type of eyewear to soften the impact of the scar on his left eye. While I did like the design element and wanted to keep it, I felt that within the game's world the character would be considered intimidating and I thought glasses would soften the impact. I experimented around with different types of ideas of even magical glasses that would somehow fix his vision until I consulted a friend with my ideas and was met with "Wouldn't a monocle do just fine though?" in response. She was right, the monocle was by far the best option and completed the character.

This time I decided to mix Holmes's (2016) advice on research drawings with Mayer's (2018, 87) advice of studying the concept before moving on to the final work. Mayer identifies two types of studies: the dry study and the wet study. I was mostly interested in dry study, which according to Mayer (2018, 90) consists of collecting or creating as much helpful information about the subject as possible, because this advice seemed very reminiscent of Holmes's reference drawings. I had already collected much of my external references as part of the ideation process, so what I felt I needed more than those was reference material of the character himself. I spent around two hours drawing singular pieces of the design, like his clothes, face, hair and simplified anatomy to train my hand to recognise the character's shape. By the end of the study session, I felt confident I could move on to the orthographic views.



Image 21. Character: Baker study examples.



Image 22. Character: Baker Silhouette and sketch.

I wanted the character's colour scheme to be playful, so I picked green as the main colour for the vest and paired it with its complementary from the RGB wheel in image 2. I lightened and desaturated both colours to appear more pastel in tone to resemble colourful frostings I have seen on cakes and cupcakes. I also used quite a bit of white on his outfit, so I gave the character darker skin to provide contrast with the clothing.



Image 23. Character: Baker palette.

The completion of the orthographic views took me roughly 8 hours. The study session was a great help in reducing the struggle I had to go through to get the character's face and body to look the way I wanted them to, though a large contributing factor is also that I was far less meticulous with lining the side and back views of this character as opposed to the blacksmith.

When it comes to the work process for the final illustration, many of both Mayer and Holmes's advice are very style-specific. Holmes (2016) favours a technique in which he draws a sketch and then paints over it in increasing detail. This is the type of workflow he introduces at the start of his book, though he does describe a possible workflow for a line-and-flat type of image as well. Mayer (2018, 124) is of a similar mind and introduces a workflow model that involves working in what he calls "passes". By his model, a pass involves what he calls the artist role doing a pre-set task, and then the critic role looking over the entire piece and deciding what the next pre-set task will be. The core idea in Mayer's (2018, 148) workflow is that the level of completion for each element of the production remain the same throughout, which is achieved by increasing the zoom level with each pass. While I think such an approach would be beneficial for an art style like Holmes's (2016), applying it to my style right from the get-go seems highly impractical. My style relies heavily on the line art, which has to have all the accurate details on it before I can proceed to the colouring.

My sketching process technically already adheres to Mayer's pass system with the thumbnail being first, then the refining of the anatomy followed by the facial features, hair, clothing and details. The sketching surprisingly only took two hours, which I did not expect. I have very little experience drawing older characters, so I assumed it would take me longer to draw the character's face in particular. The line art was similarly fast, only clocking in at 1 hour 45 minutes, which is also an improvement from the previous design.



Image 24. Character: Baker illustration progress from thumbnail to line art.

I painted the flat colours in a similar fashion with the blacksmith by starting with hair as the top layer and having to pay less and less attention to colouring in between the lines. I saw no particular need to attempt a different method as the line art was in place regardless, so there was not much I could have changed about this process. In this artwork, the oven mitts will work similarly to the blacksmith's two-coloured apron, so in preparation for the shading I painted the entire area lavender first and then added the white checkers pattern. The line art for the pattern is very faint and filled with holes, so I could not use the bucket tool as is and had to line each square by hand. Due to this added task, the flat colours took exactly an hour to paint.

During the colouring process I was finally able to begin testing new workflow methods. From Holmes's (2016) line-and-flat workflow I borrowed his technique for creating quick shadows and highlights with the multiply and colour dodge blending modes. Unlike in his case though, this was by no means going to be my final shading and highlight, but rather a guideline upon which I would build the final ones with the correct tones. I calculated that it would be beneficial not only for more efficiently picturing how the shadows would work, but for the end result as well as I tend to be very haphazard about the direction from which light should shine in my illustrations.

As for Mayer (2018, 141), I definitely saw the benefit in working on the entire image rather than one element at a time, but I was extremely apprehensive about the critic's part in his workflow. His method emphasises the importance to stop working after each pass and while I could see the logic behind taking a step back and looking at the work objectively, I also had concerns about how that would affect the so-called "flow" state many artists myself included enter when working on a piece. Line-and-flat type illustrations tend to be very straightforward in their process because the detail is already present within the line art. The only thing left during the colouring phase is to give the image depth and texture, so Mayer's (2018, 132) key question of "What few and specific improvements would advance my work farthest toward my vision?" tend to boil down to "add shading to area X", or "blend the colours of area Y", which do not really seem like they warrant the sort of attention Mayer recommends in his step-by-step guide spanning both pages 138 and 139. The only point at which I could see this sort of approach come in handy is at the very end after all the shadows and highlights have been blended and it is time to check whether any corrections need to be made. For the purpose of this experiment though, I kept within Mayer's pass-based workflow if only to see how frustrating it will be in action.

I divided the process into seven passes. First, I painted in the rough shadows and highlights that served as the baseline for the actual shadows. I spent four passes in total on ambient shading, the first two blocking out shadows on the entire image and the other two to blend the two sets. The sixth pass was for highlights, which I drew and blended in a single pass due to there being less of them than the shadows. Finally I added in environmental shadows, bounce lights and special effects.



Image 25. Character: Baker colouring process.

What I was essentially left with was a step-by-step guide to how I colour my art. This is by no means a universal workflow though, someone else with a similar art style might design a completely different set of passes. I did my best to critically scan the piece after every pass to come up with emotional reactions or a more thought-provoking “shopping list” (Mayer 2018, 138-139) but the fact of the matter is that the very reason I prefer to paint with a line art is that it gives me solid boundaries to work within. Mayer’s ideas may very well prove extremely useful for a different art-style, but for something as straightforward as mine his critic’s methods become little more than a hindrance.

Despite that, this colouring process was inarguably more effective than my regular workflow. All in all it took me only four hours to complete. Much of that had to do with how Mayer based his pass system on explosive process, that is to say the entire

image getting more and more refined as opposed to completing one element at a time (Mayer 2018, 148). I found that by blocking in the rough shadows all at once before moving on to blending, I was more aware of the overall shape of the character and therefore did not need to go back and adjust things nearly as much as I had with the blacksmith. I think that using the pass list from this experiment as a simple universal step-by-step process will help improve both the quality and time consumption of the next illustration.

6.3 The Sundry Seller: The Compilation

The concepting process of the Sundry Seller is the culmination of my workflow experiments, in which I bring together the best methods from both my original as well as the experimental workflows. As a starting point, I used the ideation progress from the experimental workflow, and sketched out pieces of ideas as I searched for reference material. I prefer to do this work digitally, as the medium makes it possible to twist, turn, resize, duplicate and combine the actual drawings, which in my opinion makes the process of allowing the ideas interact with each other much more fun and rewarding.

I tend to browse YouTube channels that cover historical topics on my free time and happened to find a docuseries similar in nature to *Victorian Bakers* called *Victorian Pharmacy* (2010). From watching the series, my first impressions for the Sundry Seller were that of either a witch or an alchemist type character, but my ideas evolved into something completely different as they kept interacting with one another and I got input from my friends.

One of my chemist-type concepts ended up resembling the Madame from *The Aristocats* (1970), so I wanted to try a noble lady type character and justified it with the thought that healing potions would most likely be a lucrative business.



Image 26. Character: Sundry Seller preliminary concepts.

The idea for the wheelchair came from a conversation we were having about the final season of *Game of Thrones* (2011), which features a wheelchair-bound character who is both mysterious and exudes authority as he quietly watches everyone around him. I wanted to try giving my character a similar aura and made a test concept with a fairly simple chair. When I brought up the idea of designing it to be more ornamental like a throne, my friend encouraged me to go along with the plan, and thus I chose the least witch- or chemist-like concept as the one to develop further.



Image 27. Character: Sundry Seller final preliminary concept.

I continued to the refinement with the experimental workflow. In this case my first priority was the design of the chair, as it was by far the most complex element of the entire design. I created lotus flower ornaments on the back rest to tie into the character's lotus hair pin and moved the bags from the arm rests to the back of the chair. The character would have more difficulty accessing their contents, but in their original spots they would have blocked her from being able to spin the wheels and actually move herself anywhere. The side table was almost an afterthought, which I added when I realised that with a wheelchair, the character could potentially make her crafts anywhere as long as I gave her a portable flat surface to work on. These details might have gone unnoticed until it would have been too late had it not been for Holmes's (2016) advice on considering the character's movement and environment when refining the design.

The character herself is a more ornamental version of the initial concept. I gave more definition to her face, hair and skirt and added jewellery. I gave her gloves to account for her profession, which involves handling different types of liquids and plant-life. Her main colour is blue with added purple and pink details, while the chair consists of a desaturated yellowish brown and golden yellow materials. According

to the RGB colour wheel, yellow and blue are complementary colours, so this type of colour scheme should make the character stand out well.



Image 28. Character: Sundry Seller palette.

The benefit of taking time to study the design were undeniable, so I again set aside two hours for that purpose. I spent most of it on the wheelchair, which turned out to be a difficult object to tackle perspective-wise. It had depth that got distorted by perspective in the front and back views making it difficult to gauge how it should look from either. Even after the two hours were up, I was struggling with it, which shows in the orthographic drawings. Completing them took nine hours and fifteen minutes in total and there are still minor distortions in the perspective. Honing them even further would have been an option, but I concluded that they sufficiently fulfilled their purpose for this thesis and fine-tuning them further could possibly escalate into hours spent on inconsequential mistakes as they would come to my attention one after another.



Image 29. Character: Sundry Seller silhouette and sketch.

Up until this point I had forgotten about the perspective rulers in SAI2 when I was struggling with the wheelchair in the orthographic drawings. After rediscovering their existence, recreating the chair for the illustration was easy, though it did still take a fair amount of preparation work. One thing I had noticed during the orthographic drawings was that the circular shape tool was extremely useful for building the base for the wheels. In this case I used the circles as they were as the sketch, and most likely line art as well to save time, by selecting the area of the circle, eroding the selection to the appropriate width and erasing the inside to create a smooth, circular line. This would of course have been far simpler in Photoshop which supports strokes for its shapes, but the other benefits of SAI far outweigh this minor inconvenience.

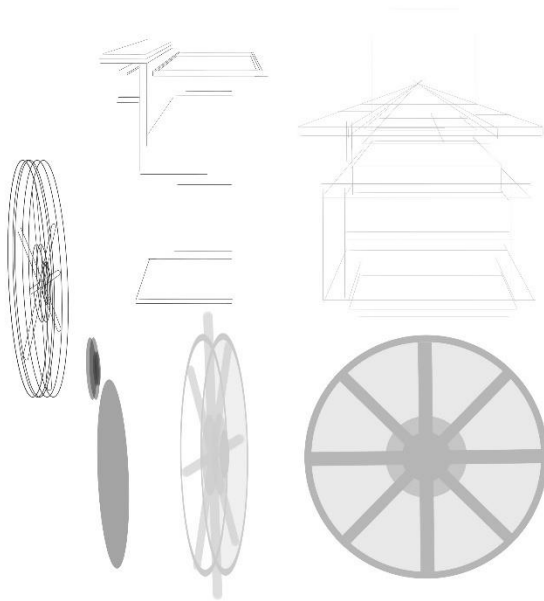


Image 30. Chair components.

Overall, the process from the thumbnail to the detailed sketch took 3 hours to complete with the line art clocking in at 1 hour 45 minutes, which was surprisingly fast, considering the trouble I had with the orthographic sketches. The two-hour study session of course plays a part in the result, but this time the greatest contributing factor was the toolset SAI2 offers.

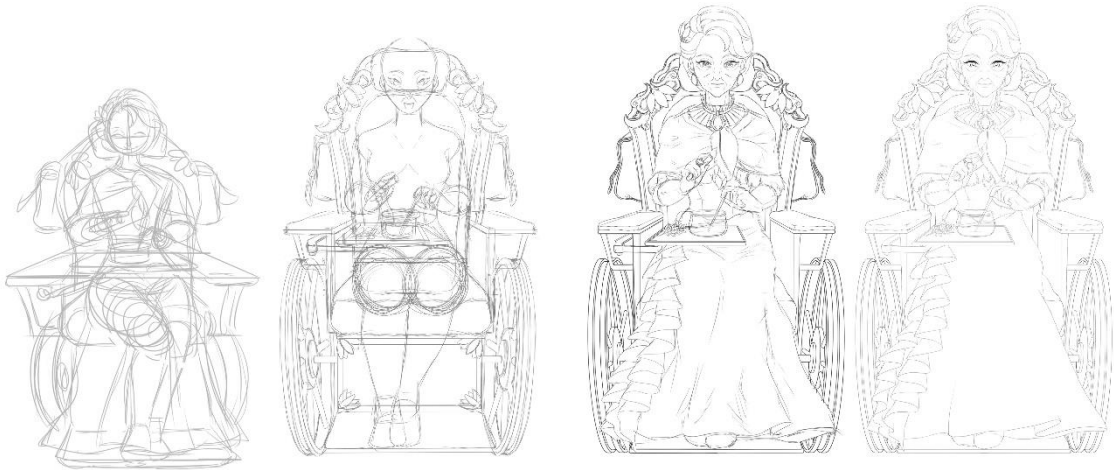


Image 31. Character: Sundry Seller thumbnail to line art progress.

The colouring process was very straightforward. I had split the image into three separate sets during the lining with the topmost one encompassing the table and the props, the middle one containing the character herself and the bottom one containing the wheelchair. With this setup, it was possible to paint ambient lighting to each individual element without the elements on top blocking the view, and the layer display remained orderly despite the large quantity of layers this work required.

I proceeded with the colouring in six stages: flat colours, shape baseline, rough ambient shadows, blending of the ambient shadows, painting and blending highlights, and finally environmental shadows and special effects. The flatting took 30 minutes in total, while the rest of the colouring process took 5 hours 35 minutes. Having an illustration with this much detail clock in at roughly the same amount of time as the much simpler blacksmith speaks volumes of this workflow's benefits.



Image 32. Character: Sundry Seller colouring process.

In conclusion, my workflow was as follows: one day of conceiving during which I sought ideas for the character by researching their profession, possible tools they could use and the type of environment they worked in. If I began to run out of ideas, I would try to think of wild “what if” scenarios to see if I could spark further inspiration that way. In this case I utilised online images, a docuseries and characters from animated films, a live-action film and a live-action television show. I created fast sketches of individual ideas into a digital canvas, where I could freely move, transform and combine them. For example, I might create a head for a character, then attach it to different shaped bodies I had drawn along the way, then equip clothing and props onto those bodies to explore different silhouette options. The whole process reminded me very much of playing with paper dolls. Similarly, personality could be explored by sketching out different types of expressions and applying them on the early concepts. I also utilised second party input, in this case in the form of a friend.

Once I had decided on a good concept to move forward with, I created a more detailed sketch of it and moved on to the refinement stage. During this stage, I finalised the character's body type, personality, outfit and colour scheme. At this stage it was important to make sure that the character design was believable; that there were no design elements that could potentially prevent them from doing the things they were supposed to be capable of, and that all the elements lined up properly from different angles. When working in a team, colour schemes can possibly be decided in the concepting stage if for example certain colours are integral to the overall visual presentation of the game, but as I was working alone for this design I decided to wait until I had settled on a personality for the character so that I could select colours that matched it. The Sessions College (2019) colour calculator is an excellent tool for this process, as it employs the use of a colour picker with a similar range to SAI and can accurately calculate multiple different harmonies by inputting the base colour. I personally used it in RGB mode, but it does support RBY as well. After I had the design finalised, I spent two hours drawing studies of it to familiarise myself with the elements before moving on to creating the orthographic drawings.

For the illustration, my workflow begins with a quick thumbnail sketch of the overall composition of the image, which I then refine into an anatomy sketch. On top of that, I apply a detailed sketch containing all the design elements. Depending on the complexity of each element, I may draw rough sketches of them first before getting the shape right, though that is not always the case. Once all details are accounted for, I proceed to the line art and flat colour. Each flat is painted onto its own layer, which I enclose in layer sets based on shades or which character elements they represent, so for example every layer containing facial features goes into the same set, or every layer with a shade of blue on it goes into the same set. I always start from the topmost set and move downwards when shading, blending, highlighting and adding the effects. At this point the work is routine so I only stop for breaks when I feel I required them, though I do try to heed Mayer's advice to complete each task in one sitting in order to stay focused and not miss any details. I also save the file with a different name each time I move to a new stage so that I have back-ups to refer to if necessary.

6.4 Results

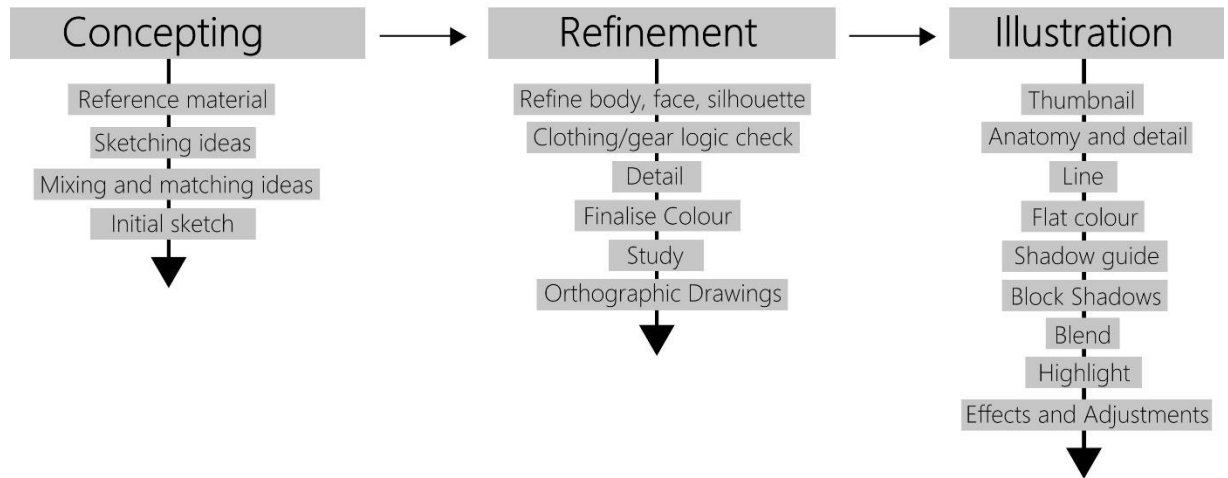


Image 33. Final workflow.

Image 33 illustrates the workflow I adopted as a result of this thesis. I divided the workflow into three parts. The first part consists of the initial concepting of the character from ideation to a rough sketch. This step always starts with **references**, be they from documentaries, art books, movies and television or toys and figurines.

The second step, as per Mayer (2018) and Holmes's (2016) advice is to sketch out **individual ideas**. I combined this with Crossley's (2015) advice about creating character bases to create a fast-paced concepting method which I came to refer to as paper dolls. In this method, the artist sketches out a variety of character components consisting of different shaped bodies and body parts, heads, hairstyles, clothing, accessories and expressions onto separate layers. These layers can then be **mixed and matched** to illustrate a variety of characters with little extra work. In a digital setting, each layer can be easily duplicated, moved and stretched or squished to fit onto the varying bases and therefore saves the designer time that would usually have gone to manually sketching each character variation. The method can also potentially be used in a group setting with the help of a projector so the entire team can offer suggestions for different components on different bases. A similar method can be utilised when picking out a colour scheme. By filling out the shapes of a character on separate layers and then applying different colours onto

them via layer masks or layer clipping, the original information stays intact, and it will be easy to toggle between combination varieties.

Having the opinions of other people in general is an important part of the concepting stage. In my case I only had access to people close to me, but in a professional setting it is more than likely that multiple people will consult on the design. This will greatly benefit the end result, as each person has a unique way to approach each idea.

The concepting stage ends with sketched out **initial concepts**. These sketches will be presented to the production team. The team evaluates each design and the person or people in charge choose the one that in their mind best fits the character.

In the second part the initial design is **refined** by finalising the body type, facial features, silhouette, colour and details of the character. I began the refinement while keeping in mind Holmes's (2016) advice on paying attention to the **internal logic** of the design. This includes not only their personality, but their environment, their abilities and toolsets (in this case their profession), and what their necessary range of movement needs to be when taking the two preceding points into consideration. I also added more **detail** onto the characters to flesh out their silhouettes and decided on a colour scheme. For the main colours I selected ones that held symbolic meanings or associations that reflected either the character's personality or what I associated their occupation with, copied the hex code from the SAI2 colour picker and moved it to the Sessions College (2019) colour calculator. In this case I decided to use the RGB colour model because I had not tried it before, and because it would easily help me avoid the red-green issue. By selecting a type of colour scheme I wished to use, the calculator would provide me with the palette's hex code(s) which I could then copy and paste into the SAI2 colour picker. I then used layer clipping to test different saturations and values as well as overall colour combinations. I also picked out additional colours to use as accents on smaller details.

Once the design was finalised, I set aside time for myself to simply **study** the character as Mayer (2018, 87) suggested. I found during the experimental design that giving myself time to draw the character from various angles and zoom levels helped me identify which parts of the design would be challenging to draw and allowed me time to practice those before moving forward to the orthographic

drawings. With this addition to the workflow, I had an easier time replicating the design for the **orthographic drawings** and the **illustration**.

The technical workflow for the character illustration developed as a result of this thesis is tailored for my personal style, which revolves around a detailed line art under which colours are painted. In order to create said line art, I begin with three stages of sketches.

The first is the **thumbnail**, a fast and crude sketch meant to visualise the overall composition of the illustration. In some cases I draw multiple thumbnails in order to test composition options.

Next comes the **anatomy**. In this sketch I focus on getting the character's proportions and pose right. I may also make a crude sketch of their facial features to help me visualise the angle of their head overall. I stick to splitting the character's body into simple shapes in this sketch, as it is only meant to serve as the base of the character.

The final **detailed sketch** includes the hair, clothing and refined anatomy. I split the elements of this sketch onto separate layers so they can be adjusted when necessary. I use a similar method for the **line art** for that exact reason. Oftentimes problems in the illustration become visible during the colouring phase, so being able to go back and easily edit the line art has proven to be extremely important.

While I found Mayer's (2018) method of maintaining a consistent completion level throughout the entire image significantly helpful in keeping me constantly aware of the shape of the character, my own methods are so straightforward that I found no benefit in using his artist and critic roles during the illustration process. My worry when I first read about them was that they would interrupt the artistic flow state I usually enter when creating illustrations, and while that turned out to be the case, it was not the main reason I decided not to incorporate them. They could prove incredibly useful for a different art style, but in my case the passes as Mayer calls them are as good as pre-determined before I even begin the illustration process. I start with a three-stage sketch, the first being the thumbnail, the second the underlying anatomy of the character and the third the character's face, hair, clothes and detail. I then proceed to create a line art of the character based on the detailed

sketch. By creating a line art to paint by, I get to be constantly aware of the shape the finished illustration will take, but this also requires all the detail to be in place before even the flat colours are painted, which is why Mayer's critic's role ultimately did not work with my style.

During the colouring process, on the other hand, maintaining the same completion level proved highly useful and ended up saving me time I would usually use for correcting shadows and highlights. I start the colouring by creating a **layer mask** around the outline of the character. This way the shape will stay defined without me having to put conscious effort into colouring within the outline.

I paint the **flats** on separate layers utilising both the pen and the bucket tool and moving from top to bottom in the layer hierarchy. By doing so the image will look clean throughout while I am required to pay less and less attention to which areas the colour is allowed to hit.

I borrowed Holmes's (2016) technique of using the Multiply blending mode to paint **shadows**, but only used them as the baseline upon which I drew my actual two sets of ambient shadows. I then blended them and repeated the process with the **highlights**. Lastly, I applied environmental shading, bounce lights and other **special effects**.

As an artist I am the type of person who prefers to use a high number of layers as opposed to painting on a single layer mostly because I like being able to edit individual aspects of an image without having to be careful about accidentally painting over or erasing bits that are finished. With this in mind, the next step to improving my workflow further would be to come up with a clear and concise naming convention for the multitude of layers so that I would have an easier time navigating the image and utilising SAI's ability to switch layers by holding down Ctrl and Shift and clicking on the layers' active pixels.

7 Reflections

I have been interested in character design for a long time now but have not really had an incentive to properly study it until recently. I had dabbled in designing characters for fun or creating alternate forms for people's original characters before, but it was not until I was tasked with designing a character in a professional setting that I realised I was completely clueless to how it should actually be done. I am by nature a very detail oriented person so I would always approach a design by thinking of what types of details should I put on them and how instead of focusing on the basics. As I studied the theory on this, it seemed so obvious to think about the silhouette and the simple shapes first rather than focus what fits inside them.

The interesting takeaway I got from going through the reference material was that the ideation process seems to be relatively similar between different creative minds even if the methods they use for practical work are drastically different. It is truly fascinating how ideas are gradually developed into a concept by utilising our tendency to form associations without even realising it, and I found myself enjoying the sessions. I can only imagine how much more fun it would be working with an entire team of creative people throwing out new ideas one after the other and building upon them. In my case of course I consulted with a friend whenever I thought I needed a different perspective, but the experience is not quite the same via the internet as it would be in a brainstorming session at a workplace. Another professional will have a much easier time to notice flaws in the design logic that the artist themselves can easily become blind to. In my case, when designing the blacksmith my central thought-process was that the workplace would be uncomfortably hot, and so I decided to have her wear shorts underneath her apron. It was later pointed out to me that there was no scenario in which a blacksmith would actually wear such clothing considering the sparks that her work causes, and that it could also be seen as making her unnecessarily sexy.

I think the thing that contributed the most in bringing out that enjoyment is what both Mayer (2018, 50) and Holmes (2016) state about brainstorming: there are no bad ideas. Obviously, you would have to apply general good taste to that notion, but aside from that I think it is a very important statement to make, and something every

creative team should take into consideration when setting up a brainstorming session. Atmosphere plays a very large role in how much people speak up when in groups, so with an uninviting atmosphere many great ideas may be left unsaid.

When it comes to the practical work in the form of sketches and illustrations, I think every artist can benefit from examining their workflows from time to time to see if there are things that can be improved upon. The interesting thing about creative fields is that there is no “right” approach to any sort of artistic work, everyone has their own styles with their own quirks. There is always a benefit of trying someone else’s workflow as-is, but that may not give the best results for personal growth. Being aware of that is especially important today, because while learning new techniques is easier than ever by just looking for tutorials online, be they in written or in video form, the workflows presented there are ultimately meant for someone else’s unique style. I myself mentioned that the final workflow I ended up with was basically a step-by-step guide on how I tend to approach character illustrations, and have to reiterate here that it is by no means the only solution to approaching a similar art style, it is simply the approach that works the best for me. And even it is ultimately built upon multiple other people’s workflows whose art I have looked up to and attempted to replicate. My art without a doubt improved as a result of that, but I also picked up the very practices I realised were ineffective during the course of writing this thesis.

Character design is a vast subject, and this thesis only touched upon one aspect of it. While the visual design for a character is important, so are the writing, sound and animation. What sorts of challenges does the video game medium offer when it comes to writing nuanced characters with compelling story arcs? Are archetypes inherently lazy design, or can they be employed in the creation of memorable characters? In what ways can characters end up breaking a player’s immersion? And what about the other areas of game design? What is the concepting process of game mechanics and world-building like?

Resources

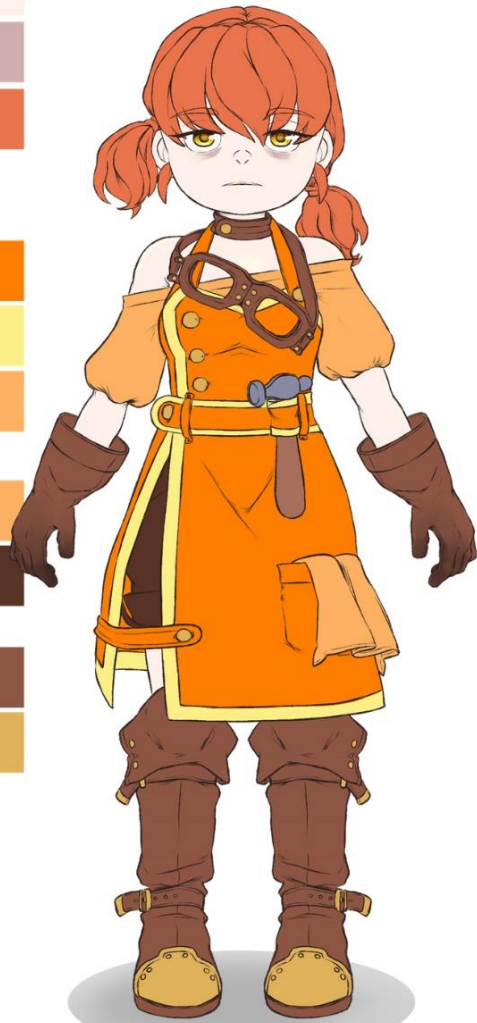
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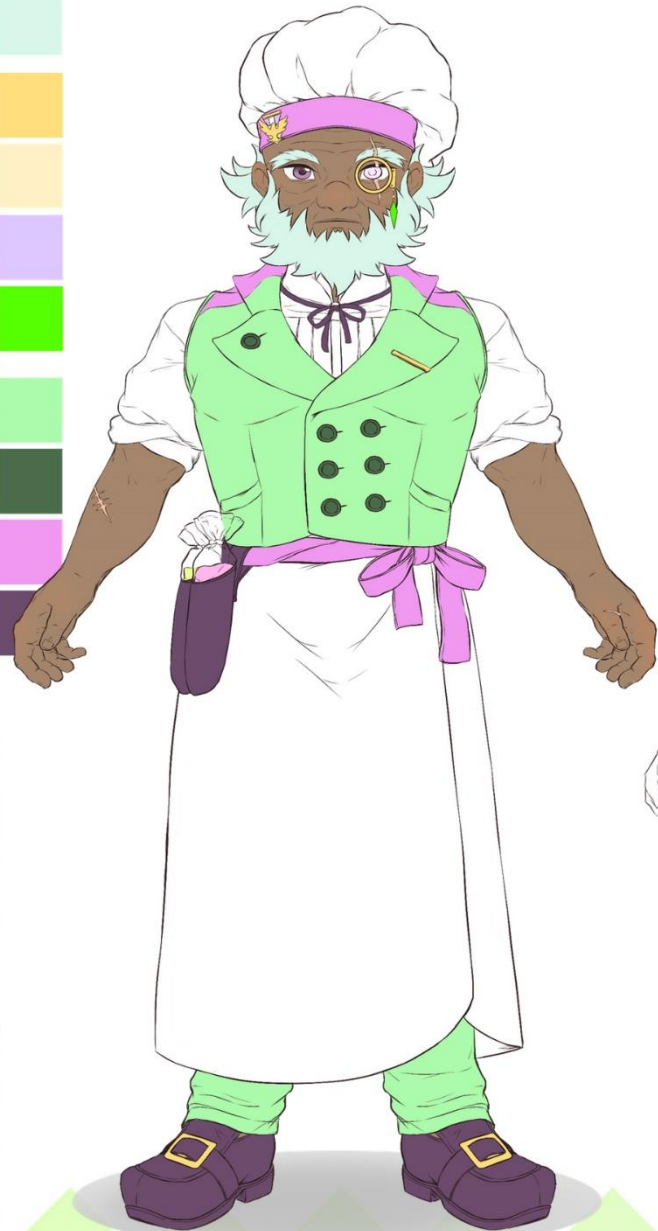
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1. The Blacksmith



2. The Baker



3. The Sundry Seller

