Visualising Ideas - Techniques for Improved Concept Art

Concepting the Elusive Mr. Darcy for Random Potion

Annika Aarnio

ABSTRACT

Tampereen ammattikorkeakoulu
Tampere University of Applied Sciences
Degree Programme in Media and Arts
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The purpose of this Bachelor's thesis was to collect information on concept art techniques used in video game design. The goal was to examine which things are important to create successful concept art works with a special emphasis on how to speed up the process with correct reference materials and techniques.

The theory section introduces key points of art theory, focusing on art, design, gestalt and composition principles, which are important in creating concept art and conveying the design and ideas as clearly as possible. There is also a section concentrating on how to use references, both 2D and 3D, in digital painting.

The practical part of the thesis shows these principles in practice through concepting the Elusive Mr. Darcy, a video game project for a game company called Random Potion Oy. For this thesis, different pieces of concept art were chosen during the various stages of the project for deeper study and analysis, where the idea, gathering the references, and the painting are discussed in detail. There are sections on both character and environment design.

As a result, novel approaches to designing video game concept art were learned by the author and the process became faster and more efficient with each piece. The idea of the Elusive Mr. Darcy was also refined through the concepting process, when the desired visual look of the game became clear, and the design document detailing the characters, story and gameplay was locked down to reflect that.

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Key words: concept art, game design, video games, digital art, reference.

CONTENTS

ABBREVIATIONS AND TERMS

3D	three dimensional
Blender	3D-modeling software
Drawing tablet	pressure sensitive device for digital drawing
Low-poly	3D-mesh with a small number of polygons
Matte painting	method of painting realistic backgrounds for e.g. films
Photo bashing	concept art method where photos are combined with painting
Photoshop	Adobe's photo editing and drawing software
Rogue-like	a game subgenre with aspects such as focus on dungeon crawl through random generated levels, permanent death of player character, tile based graphics and turn-based combat
Sci-fi	a genre of speculative fiction typically dealing with advanced science and technology
Thumbnail	a small sketch figuring out the final picture composition without concentrating too much on the details
Unity	game engine and editor for game development

1 INTRODUCTION

There is fascination in seeing the process of making a popular video game character, or an unimaginable game environment come to life, from a simple idea to a finished product in a game engine. There is an art of its own in designing something that will move, evolve and be interacted with – the artist must consider that their design will not stay as a flat image to be looked at from a fixed angle, but that it will have a life of its own.

The purpose of this thesis was to focus on the start of that designing process and concentrate on researching the intricacies of concept art. Especially, how making designs could be improved with the help of art principles and correct references was studied, and how what was learned could be applied to a practical project of concepting a sci-fi game called the Elusive Mr. Darcy for Random Potion Oy.

To understand concept art better, it is first best to take a look at what makes art and design in general work – for this reason, a collection of art theory is compiled in regards of successful design work and linked to effective concept art. The theory section involves research from basic art principles to composition guidelines, to get a handle on the building blocks of effective visual design.

In the practical part of this thesis, the research on powerful design is put to work in concepting both characters and environments for the Elusive Mr. Darcy. Newly learned techniques are used both in finding and creating references, and in the painting process itself in Photoshop – the concepting method for different pieces of art works is then broken down in the text. At the same time, the evolution of the game project itself can be seen, from a week-long challenge at the start to a full-fledged design for a playable demo.

2   ART THEORY

This section handles various art principles that are crucial in traditional art but also have an immense value in digitally made concept art. To better understand the process of creating useful concepts, first art and design principles are broken down and studied, from the elements every picture starts, like line, shape and colour, to their use to convey meaning and emotion. Next, gestalt principles will be introduced to understand the way human mind perceives visual things, and how it can be utilized in concept art. Lastly, to pull the whole theory section together, composition principles are presented, to explore how to create effective paintings as whole.

2.1   Principles of art and design

An artist uses visual tools such as colour, shape, space and line to bring their vision to life. These tools are called elements of art and by handling these elements, the artists are using principles of art and design to express their imagination. The principles of art and design that are covered in this thesis are balance, contrast, colour, movement, emphasis, pattern and rhythm. An artist may use all these principles in one work or choose just a few, but usually by handling one principle, they are also using another; for example, an artist can create movement around the painting by emphasizing certain aspects. (Marder 2017).

All of these principles are important in art and design, so it is good to discuss them regarding concept art as well. A successful painting uses these art principles efficiently to communicate the artist's vision to the audience: they are the building blocks for visual communication that allow you to "speak" to the viewer (Poulin 2012, 8). The following principles can also be applied to 3D art of course, but in this section, their application to 2D art will be discussed, especially regarding digital painting.

2.1.1 Balance

Balance refers to the distribution of visual weight in an artwork. When the work is balanced, the viewer's eye moves naturally through the piece; an unbalanced picture causes discomfort. There are different types of balance such as symmetric, asymmetric and radial balance. (Flye 2011; Poulin 2012, 113).

Symmetric or formal balance, according to Flye (2011), is when two halves of a piece mirror each other; this is called bilateral symmetry, and is what is usually meant when talking about symmetry. Some photographers for example, use a mirroring technique in editing software after shooting nature to get fascinating results (picture 1). Many art pieces do not utilize perfect symmetry as this can cause too much rigidity in the composition, but have what is called near symmetry, when two halves have slight differences to create a more interesting visual. (Flye 2011; Poulin 2012, 114; Marder 2017).

PICTURE 1 The photo of a cliff in a lake is mirrored both left to right and top to bottom (photo: Robert Berdan 2010)

When the two halves of an artwork have larger differences, we are talking about asymmetric or dynamic balance. The difference might be created by having size, colour, texture et cetera variations that balance each other out (Flye 2011). For example, in picture 2, there is a difference in size and colour with one big element dominating the right and the red colour balancing the yellow and blue of the rest of the picture. Dynamic balance is more difficult to achieve than formal balance, as it needs careful planning, but the result is often also more visually interesting (Poulin 2012, 117).

PICTURE 2 Red house in a field (photo: Glenn Sundeen)

Differing from symmetric and asymmetric balance, radial balance is created by distributing elements evenly around a central point in a picture, according to Shelley Esaak (2018). This same symmetry is also often seen in nature – like in petals of a sunflower or a spider web – and used in religious art. This can be observed for example in mandalas (picture 3), which are sacred symbols in Hindu and Buddhist tantrism (Encyclopaedia Britannica). Radial balance has a strong focal point that draws the eye, as everything is organized around the centre (Esaak 2018).

PICTURE 3 Watercolour painting of a Mandala diagram (Jo Thomas Blaine 2018)

2.1.2   Contrast

Contrast can be seen between two elements in a painting that have a visual difference and are made stronger when placed next to each other. Different types of contrast are born by exaggerating the differences in size, shape, colour or texture. This contrast draws the viewer's eye to the area; contrast can also be used in the whole work instead of just one place, making paintings with a strong contrast stand out. Examples of contrast are black and white, complementary colours and negative/positive space. (Poulin 2012, 190; Marder 2017).

Painting's atmosphere can also be changed with contrast; stark contrast appears more vigorous, lively and vibrant, while low contrast makes the mood more calm, quiet and soothing. (Flye 2011.). For example, a painting made with complimentary colours with a red flower in the middle surrounded by green leaves (picture 4) has a strong contrast and demands attention.

PICTURE 4 Painting of a red flower in a jar (Gretchen Hancock 2015)

2.1.3 Colour

Colour is one of the most powerful elements in art; it can be used to attract attention, group elements, enhance meaning and convey emotion. Using colour increases visual interest and it can reinforce the message and organization of different elements in a painting. There are three properties of colour: hue, saturation and value, but other terms, such as temperature, colour wheels with additive and subtractive colours, and colour schemes or harmonies will also be discussed in this section. (Flye 2011; Poulin 2012, 59-60).

Starting from the three properties of colour, hue, saturation and value, hue is simply colour in its purest, meaning the name of the colour such as yellow or red. It can only be identified when compared next to other colours. The colour grey has no visible hue, so it's a neutral colour. (Poulin 2012, 62).

Saturation is the intensity or dullness of colour, or the level of saturation it has. In other words, intensity depends on the amount of white, and saturation depends on the degree of grey in the colour. A highly saturated colour is intense and attracts attention, but a desaturated one is more restrained and can be used to seem more efficient and formal. (Poulin 2012, 62-63). The level of saturation can also depend on for example the genre of a game that the concept art is meant for; high saturation is used more in games for younger audiences like Nintendo's Mario franchise (picture 5, on top), and low saturation is often seen in games with more realistic graphics, especially if they are part of a survival or horror genre like for example Alan Wake (picture 5, below).

PICTURE 5 Screenshots of Super Mario 3D World (2013) and Alan Wake (2010) games

The third property, value, is the lightness or darkness of colour. By adding white, a lighter value is created and vice versa, by adding black, a darker value is born (Poulin 2012, 63). Form and shape can be shown by adding light or dark values to a colour. Shifting values so that lights or darks become the majority, is also an effective way to change or create atmosphere within art (Solarski 2012, 162). Usually, light values create a safe, positive feel, when darker values inspire a more dangerous, eerie atmosphere, like seen in picture 5 with Alan Wake.

Before we move on from the three properties of colour to colour temperature, we need to first talk about the colour wheel (picture 6). Organized around the wheel, the primary colours are red yellow and blue, and on the opposite of them, are the colours compliment-ing them, secondary colours green, violet and orange. Between them are six tertiary col-ours, which are made by combining one primary colour with one secondary colour. The importance of the primary colours is that all colours on the wheel can be made by mixing them, and by placing complimentary colours next to each other in a painting, they seem to intensify and stand out more. The colour wheel can also be split in terms of tempera-ture, in warm and cool colours. (Solarski 2012, 224-225; Poulin 2012, 65).

PICTURE 6 Colour wheel showing primary and secondary colours, and the division to warm and cool colours

In addition to the distribution of colours to warm and cool hues, some colours are also called neutral colours. Warm colours, reds, oranges and yellows, are linked to sources of heat like fire and sun, which is why they are also very energetic and exciting colours. They seem to be more forward in space as well, unlike cool colours, blues, greens and violets, which are more calming and soothing in nature. Neutral colours are whites, blacks, browns, greys, tans and beiges, of which browns, tans and beiges are slightly warm; blacks, whites and greys can be either slightly warm or cool. These neutral colours don't clash with others, so they are often used in backgrounds and to help balance brighter colours. (Flye 2011).

However, when you open a digital photo editing software like Photoshop, there are colour modes like RGB – red, green and blue – and CMYK, meaning cyan, magenta, yellow and black instead of a mode around the primary colours red, blue and yellow mentioned before. A reason for this is that digital colours are made in different ways for different purposes; electronic displays like computer monitors use RGB and CMYK is used by the printing industry. RGB colours are additive colours, which means that the colours are made by starting with no light and adding colours to it, the more you add the brighter the colours become. CMYK on the other hand, is part of a subtractive system, where you start

with saturated light and take away colours; the more colours are mixed, the darker they become. In picture 7 you can see, that the additive primary colours red green and blue, secondary colours are actually yellow, cyan and magenta, which are the primary colours of the subtractive system.
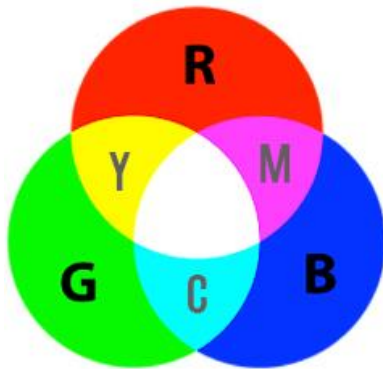
PICTURE 7 Illustration of the relationship between RGB and CMYK colours (Mike Horvath 2006)

After talking about different colour groups and modes, the relationships between colours will be discussed: they are called colour schemes or harmonies. A monochromatic colour scheme, as seen in picture 8's examples, is made by using only one colour and adding black or white to it, making it look very unified. An analogous colour scheme is also very unified, but using adjacent colours from the colour wheel that harmonize with each other, adds a bit more variety to it. A complementary colour scheme is created with colours that are on the opposite sides in the colour wheel, creating a strong contrast. (Flye 2011; Poulin 2012, 65).
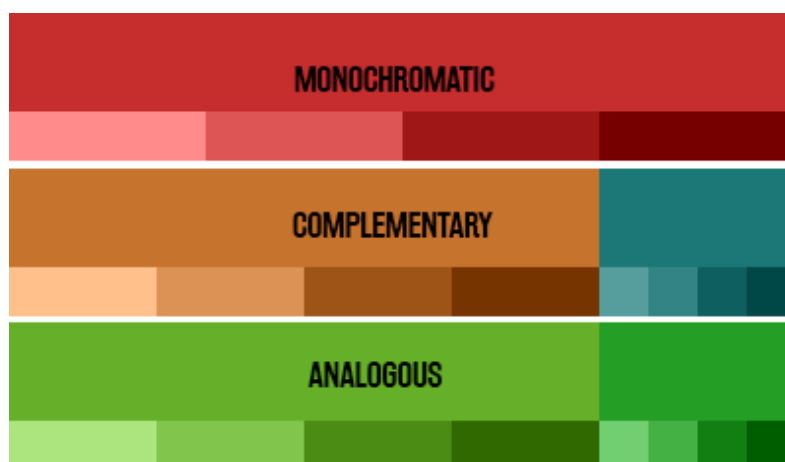
PICTURE 8 Different colour scheme examples made at Paletton.com

2.1.4 Movement

Creating an illusion of movement in a still painting can be difficult; there are however, several ways to add suggestion or representation of movement into a picture. It is also important to add elements that guide the viewer's eye around the image to the necessary places, to be able to tell the story you had in mind while painting the picture. Some strategies to use to suggest motion in a picture are lines – diagonal or curvy lines – blurring and motion blur, afterimages and placement and direction of elements. (Flye 2011; Marder 2017).

The feeling of motion in concept art is very important, especially in character design, as the subject is meant to be translated to a medium, where they will be moving. It is also important to be able to convey movement on a concept art clearly, so the animators can also understand your vision. In addition, action sequences in scene or shot design are also usually depicted in motion. In picture 9, the framing and placement of elements give a sense of hurry and motion. The dragon and the person in the distance are blurred, and there are motion lines in the foreground.

PICTURE 9 An action sequence concept from season 7 of the TV-series Game of Thrones (Karakter Design Studio and HBO, 2016)

2.1.5 Emphasis

Emphasis is created by visually reinforcing something we want the viewer to see first; this area of emphasis is also called a focal point, and it is usually the most important element of the painting. Emphasis can be achieved through different strategies such as: isolation, contrast, convergence, anomaly, size, framing, placement and focus or depth of field; though emphasis is most often done with contrast. (Flye 2011: Mardel 2017).

As the topic of contrast has already been covered in the section 2.1.2, I'll briefly go through the rest of the strategies. Isolation is done by, as its name suggests, placing a single element against a plain background, with no other distracting elements near it, so all the attention is drawn to the isolated point. Next, with convergence, there can be leading lines or arrows pointing towards a certain point; the more elements there are converging in a single direction, the stronger the pull is – for example railroad tracks disappearing into the distance. In anomaly, a single thing is breaking away from a pattern, or otherwise standing out from a uniform element. It can be for example a triangle in a pattern made of squares, or a scratch on an otherwise pristine table.

Emphasis can also be created with size; by changing something in size enough, it requires attention – the larger something is, more noticeable it becomes. Placing things in the centre gets them noticed quickly as well, as does framing the important element: for example, the character in picture 10 is framed by the magical flames and the falling corpses, and so standing out even more from the centre. Last, depth of field can be used in art the same way the human eye focuses on what the viewer sees, by blurring unimportant elements and making the focal point sharp; the foreground in picture 10 is blurred to keep the attention in the middle. (Flye 2011).

PICTURE 10 "Chodala's Treachery" concept for The Elder Scrolls: Legends (Vu Nguyen, ZeniMax Media Inc. and Saigon Dragon Studios, 2018)

2.1.6 Pattern and rhythm

Pattern is a group of elements that are organized in a predictable manner, the same shapes repeating over and over without a change (Flye 2011). Recurring patterns in architecture and fine art can also be called motifs (Poulin 2012). Pattern is closely related to geometry, as the shapes are rarely organic; instead they are usually more mechanical and synthetic, consisting of points, lines, shapes, forms and colours (Poulin 2012, 241-242). For example, many of the country flags have a stripe pattern with alternating colours. There are countless types of different patterns; a web site Artlandia.com specializes in patterns listing hundreds of them from A to Z, but some examples of the most classic patterns are spirals, waves, mosaics, plaid, pinstripes and polka dots (Artlandia.com 2018). In picture 11 on the left side, there is a geometric floral pattern which can be repeated endlessly.
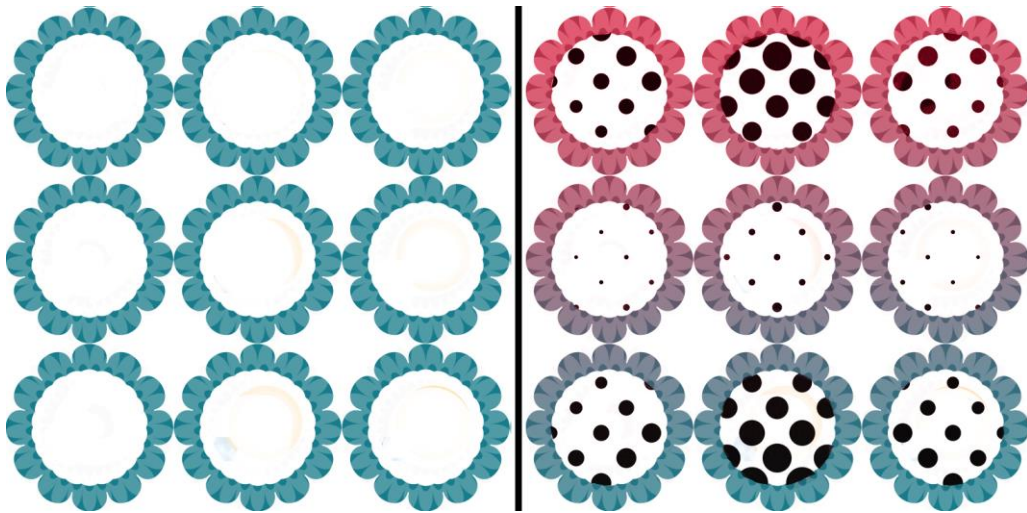
PICTURE 11 Examples of a normal floral pattern (left) and progressive rhythm (right) in a similar pattern

Rhythm differs from pattern, as it is not always consistent but instead there is variety: the compositional elements can be repeated or alternated with certain intervals, creating a sense of movement in a painting. There are different types of rhythms: regular, flowing and progressive being the most typical, though rhythms can also be random or alternating. (Flye 2011; Poulin 2012, 99-100).

In regular rhythm, the visual intervals between the art elements are similar, and repeat the same way (Poulin 2012, 99). This is seen for example in grids; but too much regularity can however, become too monotonous in concept art, for which reason there are often contrasting elements to create interest. Flowing rhythm is more organic, as it can also be seen in nature for example in waterways and sand dunes – this flow can also create a sense of movement in a painting (Flye 2011). Progressive rhythm is always changing, little by little progressing towards something different than what it started from; in picture 11 on the right side, the dots in the middle of the flower and its colour change gradually in size and tone.

2.2 Gestalt principles

Gestalt is a German word that means 'shape' or 'form'. The term is also used in psychology, where it has a meaning 'unified whole'. Gestalt principles or gestalt theory as it is sometimes referred to, was developed by German psychologists in 1920's, when they got interested in how visual perception works in seeing an entire group of objects before we

see the individual objects and their even smaller parts. The research lead to a set of principles: similarity, continuation, closure and figure-ground, which will be introduced in this section. (Todorovic 2008; Bradley 2014; Hampton-Smith 2017).

Gestalt principles are tools with which the artist can create unity; they are also important in concept art, where there is a need to strike a balance between unity and variety to create an interesting design. Human mind has interesting ways to deal with all the visual information it receives, so it is crucial to understand how it works to be able to convey the concepts in a such a manner that they are understood universally.

2.2.1 Similarity

When several objects share similar features, we tend to group them together. The similarity can be due colour, shape, size, texture or value – but the more the objects have in common, the more we perceive them belonging together. This effect can be used in concept art, making the similar elements work together in one picture, or to draw attention to something when one element stands out from the rest and becomes an anomaly, an emphasis in the art work. The perception of different groups due similarity can be seen for example in picture 12, where we see a group of polygons framed by circles. The similarity is caused by the same colour and shape. (Bradley 2014; Hampton-Smith 2017).
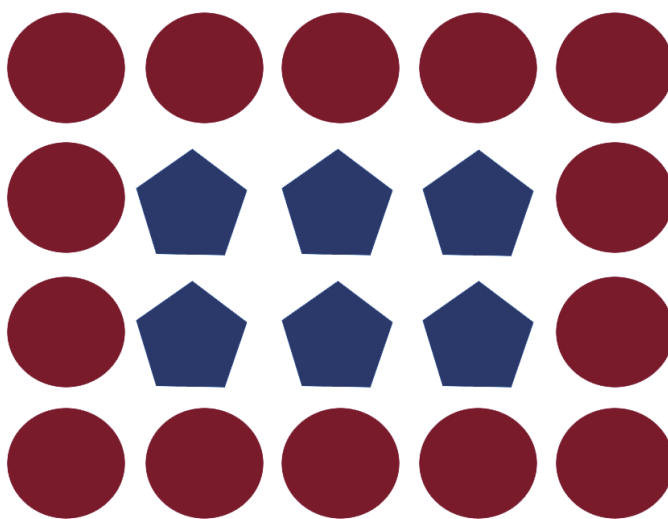
PICTURE 12 Red circles around blue polygons

2.2.2 Continuation

We are naturally drawn to follow a line, a fence, a river or a road. Continuation is a principle where our eye is following a path, line or a curve, even beyond their ending points until there is something significant to see or we deem there is nothing. We prefer continuous lines instead of separate ones, for which reason for example in picture 13, we see two continuing paths instead of four separate lines. While continuation can be used to guide the viewer within the composition, it can also be used to emphasize something, if for example a line ends abruptly creating a disruption in the flow. (Bradley 2014; Hampton-Smith 2017).
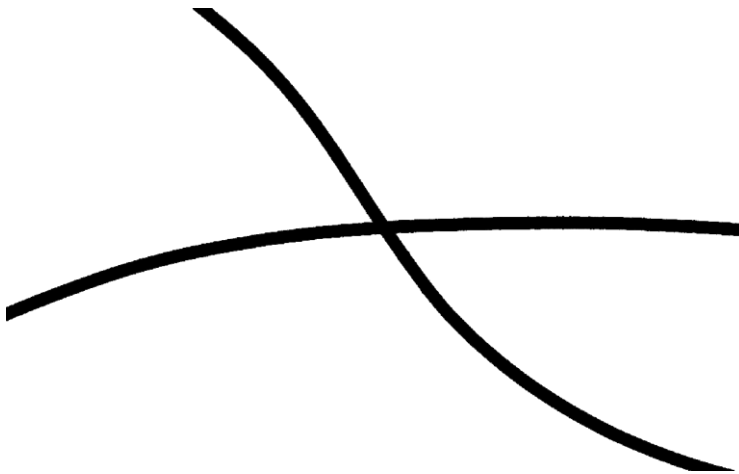
PICTURE 13 Intersecting lines

2.2.3 Closure

According to Hampton-Smith (2017), our eye tends to see closed shapes even when there actually isn't one. Closure is used when a shape or object is not completely closed, but the viewer completes the image by seeing the missing information. This is often used in logos, but it can be also utilized in paintings, especially if the artist wants to leave some hidden images in different parts, or if the meaning of the overall elements changes if perceived differently; the painting "Murder of Crows" by Eric Montoya (picture 14), is normally an image of tree branches and birds, but our brain can see a human face among the elements because of the illusion of a closed shape.

PICTURE 14 Murder of Crows (Eric Montoya 2004)

2.2.4 Figure-ground

This principle focuses on the relationship between background and foreground or nega-
tive space and positive elements in a composition (Poulin 2012, 199; Bradley 2014). Our
eyes want to perceive objects separate from their background; everything that is not a
shape or object belongs to the background, which is why you can also create visual tricks
with the figure-ground principle (Hampton-Smith 2017). When the distinction between
figure and ground is easy, their relationship is stable, if it's unclear which is which, the
relationship becomes unstable (Bradley 2014). The classic example of this is the picture
15, which is also known as Rubin's vase due to its development by the psychologist Edgar
Rubin, where you can see either a vase or two faces, depending which colour is decided
to be the background (New World Encyclopedia, 2015).
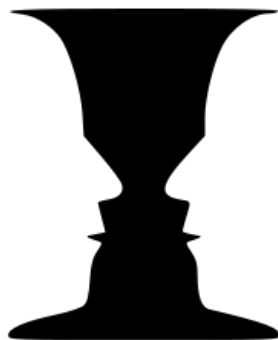
PICTURE 15 Rubin's vase (Wikimedia Commons 2007)

2.3 Composition principles

After talking about art and design principles, and briefly discussing gestalt theory, it's time to wrap up the theory section by talking about composition, especially some of the most prominent rules concerned with it. We have covered the different elements creating an image, like line, colour and shape, so now we can combine them into a working composition (Präkel 2006, 14).

Composition principles are more like guidelines however, so it is not wise to strictly just adhere to them when making concept art, but they are good tools to use with the other principles of art when you are working towards a powerful composition for your image. Sometimes the most effective way is to modify these rules or use several at the same time. The principles introduced here are some of the most known and used especially in classical paintings, but their usefulness has not diminished to this day.

2.3.1 Golden Ratio

Golden ratio is in its simplest, is the ratio of 1:phi, phi being a letter from the Greek alphabet and its numeric value being approximately 1.618. The decimal, much like π or pi, stretches on forever and never repeats. This ratio has also many other names such as golden section, golden mean and divine proportion, but they are all just synonyms for the same thing. Usually golden ratio is used in art in the shapes of rectangles and squares that divide the picture according to the ratio of 1:1.618 and the division can be repeated infinitely (picture 16). The ratio can also be applied to other geometric shapes as well like triangles, circles and pyramids. (Esaak 2017; Präkel 2006, 21).
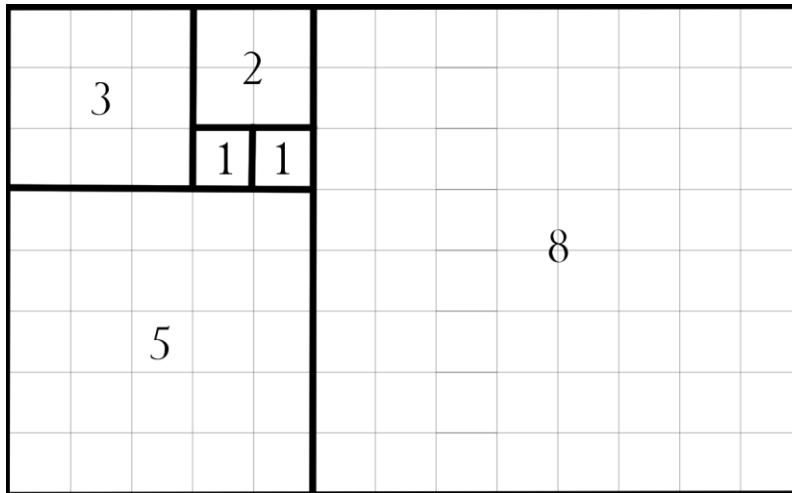
PICTURE 16 A diagram of a rectangle built of squares using the Fibonacci numbers

In addition to the numeric value of phi, the sequence of numbers known as the Fibonacci numbers – named after the 12th century mathematician Leonardo Fibonacci who discovered them – must be mentioned. It is a series of numbers that when adding the previous two numbers together, forms the next number: 0, 1, 1, 2, 3, 5, 8, 13 etc. This can also be applied to the picture 16, where the size of the previous squares added together is the size of the next square. The golden ratio comes from the ratio of each successive pair of numbers in the sequence like for example 8 divided by 5 is 1.6 and 13 divided by 8 is 1.625, which both approach the approximate value of phi. The Fibonacci series can also be viewed in biological settings in nature, for example in branching of trees. (Esaak 2017; Präkel 2006, 21).

2.3.2 Rule of thirds

The rule of thirds can be thought as a form of simplification of the golden ratio. It is more used by photographers than artists nowadays, as some deem it too rigid to use in their composition. With rule of thirds, two equally spaced vertical lines and two equally spaced horizontal lines are drawn to form a grid. The elements of interest can be placed in the four intersections of the lines which are called focal points or as some in the industry say, "sweet spots". (Präkel 2006, 24; McNee 2009).

The rule of thirds is however, more valuable in concept art when it is used as more of a guideline than a strict rule. In picture 17, Joon Ahn has painted a concept art where the use of rule of thirds can be seen, when the grid is placed on top of the picture: the most

important element, the character with the reddish cloak is placed in the intersection of the lines. Some other elements are also loosely arranged near the intersections, such as the lone sword in the right side of the picture, and the big sword behind the main character on the left side. This way, the points of interest in the painting are following the rule of thirds.
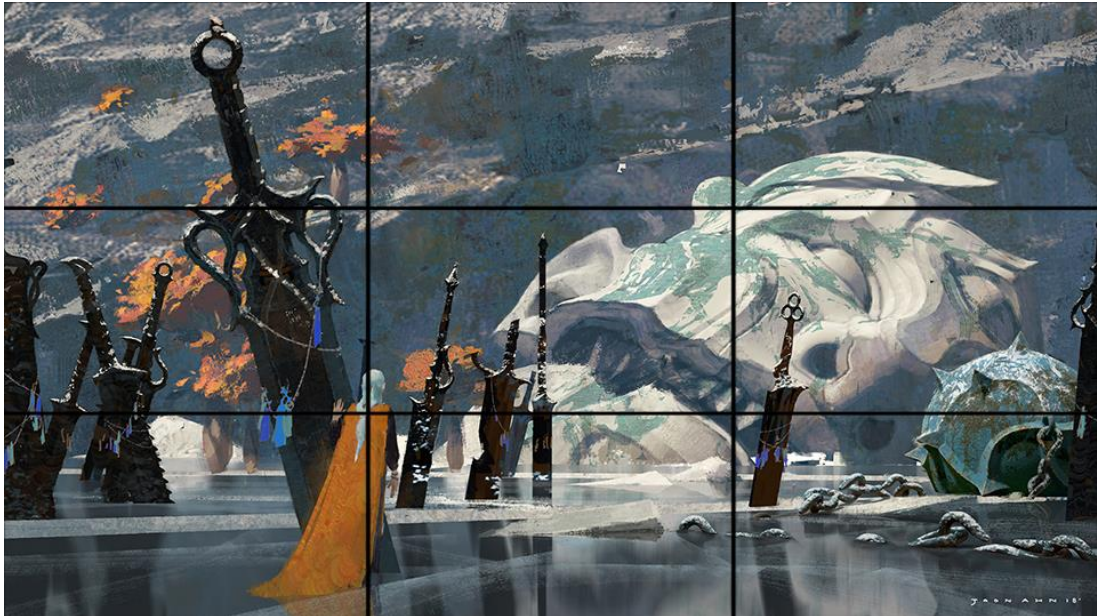
PICTURE 17 Ionia (Joon Ahn 2018)

2.3.3 Implied lines

Many classical painters used implied lines in their paintings to create a path for the viewer where their eye would travel. The shape of the lines could also indicate emotion or mood, like for example calm with curved, gentle lines or aggression with straight, angular lines. Classical artists usually tried to hide these implied lines in their paintings, so the emotional effect would be subconscious and greater in that way.
(Solarski 2012, 164).

In picture 18, the digital artist Maciej Wojtala has painted a scene where the environment is full of leading lines to the most important elements. Red lines were drawn on top of the picture to better show the compositional structure. The foreground has trees and rocks curving towards the person looking at the sky, and even the river is flowing towards him. The flying spaceship is also framed by the forest and the bird flying towards it; of course, the colours and the contrast are also things that are drawing the eye in this painting.

PICTURE 18 Encounter (Maciej Wojtala 2016)

Unlike in classical paintings, concept art is often a plan for an interactive environment. The scene design might for instance, be a concept for a game level, so there is a path in 3D-environment that the player will be going through. This is important to consider when making concept art, to think about how the picture might convert into 3D space, and how the implied lines might guide the player towards new objectives in the game world. (Solarski 2012, 165).

2.3.4 Dynamic symmetry

Another way of organizing different elements in a composition is dynamic symmetry. It is also based in the proportions of golden ratio, but uses diagonals instead of a grid. The picture is first divided with a diagonal line from a corner to corner and then a line that runs at a right-angle to the first. The same is done again with another diagonal line from the opposite corners and so on. The focal points are in the sections where the diagonal lines and the lines at a right-angle meet. (Präkel 2006, 24).

As an example, there is a dynamic symmetry grid drawn on top of the classical painting The Judgement of Solomon (1649) by Nicolas Poussin in picture 19. There are, in addition to the diagonal lines, two vertical and two horizontal lines drawn to better visualise the four focal points. The painting tells the story from Bible, where two women are brought before King Solomon, over an argument over two children, one dead and one living, to decide who was the parent of the living child. In this painting, the grid shows

the use of dynamic symmetry in the composition: Poussin has painted King Solomon in the centre framed by two pillars, and the middle point is in his chair. The surrounding characters, especially the two mothers at the front have their poses following the grid, the one on the left reaching for the living child and one of the focal points falls on the body of the dead child the other woman is carrying.

PICTURE 19 The Judgment of Solomon (Nicolas Poussin 1649)

3   REFERENCE TECHNIQUES

One of the definitions of reference according to Oxford dictionaries, is that it's a source of information to accomplish something. In art, reference is used to improve the painting or drawing, whether the goal is to make the subject look more accurate, interesting or just to gather inspiration.

In this section various painting techniques will be discussed, using a Wacom drawing tablet and Adobe Photoshop, and Blender with 3D-modeling. Working from references will be the focus instead of introducing the complete process of painting; that will be more discussed in the practical part of the thesis regarding my paintings for the project.

3.1   Reference from photographs

There are several ways to use photographs in art; as a reference to draw and study from, to straight up including them in your painting with photo bashing or matte painting to speed up your work. In this part I will introduce some of the most used techniques of utilizing photos in concept art and talk about the advantages and disadvantages of photo references.

3.1.1   Painting from reference

Perhaps the most obvious and widely used way to use photos in art is simply studying the subject via photographs to better understand for example an animal's anatomy, or see how colour changes in clouds depending on the weather. Studying a subject with photos and drawing from them is the modern way – before camera was invented, artists often had models to study from or went outside to paint nature. Now it is much easier to find reference even for more exotic subjects, as there are millions of photos to be found via Internet. (Nyström 2016).

The advantages of using reference photos are various, not limited to an added realism to your work, but it can also be a way to boost your creativity. In the character volume of

digital painting book series from 3D Total.com, Benita Winckler writes how creating a mood board of reference images before painting can make concepts more interesting, and save time when there already is an idea, what kind of mood and look is the goal. A mood board can be a life saver especially if you have to paint something that must look accurate, for example historical clothes for a character, or a tough perspective for a city scape painting. It is especially helpful, if you have managed to find references from various sides and angles of the subject you are drawing. (3D Total.com Ltd 2015, 21).

Despite it being very helpful to use reference photos in art, there are also some disadvantages, which are important to keep in mind. James Gurney (2009) warns about painting too strictly from reference, as for example anatomy can look warped due the distortion caused by the camera lens. The artist must also learn to know what they are looking for in the reference, and not trust the image blindly. For this reason, it is better to think of a photo reference just as the starting point, where you get the inspiration and important details to improve your painting. (Gurney 2009, 64; Lilly 2015, 65, 67).

In addition to not taking your reference too literally, there might also be copyright concerns if you use a photo reference. It is always the safest way to take photos yourself if it's possible, but if, for example, reference of scenery from the other side of the world is needed that might be difficult. To avoid copyright issues, it is important to first note the definition of using a photo as reference: is the subject being studied from the image, for example to see how to wings of a seagull fold after flying, or are you just straight up copying the photo in your painting. If the photo is clearly copied in the art work, permission from the photographer is needed to create derivative work from their photograph, or there might be some legal issues. There are many ways however, to find photos that are legally free to use; some websites collect images under fair-use licenses, such as Wikimedia Commons or Morguefile that have thousands of images with permissions to use even in commercial work. (Boddy-Evans 2018).

3.1.2   Using photos in the painting

Photo bashing is a widely used technique to speed up your workflow or add texture and details; it is usually done digitally on computer, with Photoshop or another photo editing software, where several photos are combined or "mashed" together. The same technique

is for this reason sometimes also called photo mashing, or photo-texturing. This way ideas can be cycled through quickly; for example, you can take pictures of a busy street and tall buildings, and put them together to concept a new city without having used hours to paint all the details. Of course, this technique is not just photomanipulation of photographs; usually the images are just the starting point, and the artist paints over them altering the mood, look and style and bringing new elements to the painting. Even though photo bashing can be a useful tool, Eliott Lilly (2015) cautions not to rely too heavily in the photos: it is very easy to get a disorganized image with inconsistent perspective, lighting and values, if the artist is not careful. (Lilly 2015, 62-64).

Matte painting is another technique of creating photorealistic paintings with the help of photos, an art form that was once purely traditional but is now a digital practice. This skill is more often used in relation to visual effects in film, especially creating believable virtual environments to replace or enhance the existing ones. For example, in picture 20 the artists at VFX studio Whiskytree created the look of the world of Asgard for the film Thor, making the imaginary Viking city come to life. In concept art, matte painting is used mostly to create environment concepts for projects that need photorealistic style. While a similar practice to photo bashing, matte painting's goal is to create a result that looks very realistic and polished, while photo bashing can be used for a wider range of results from a sketchy idea to a complete character design sheet. (3D Total.com Ltd 2009, 67; Creative Skillset n.d.).
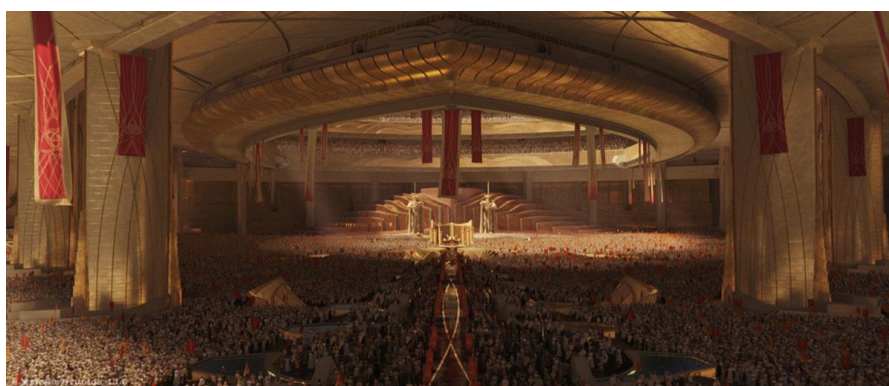
PICTURE 20 Matte painting of the throne room in the movie Thor (Whiskytree 2011)

3.2   Reference from 3D-models

Using 3D-models as your reference, has many advantages compared to photographs: changing the composition, lighting, placement, framing, and pose can be done and as many times as needed. 3D-models can also help to understand difficult perspective or anatomy and renders can straight up be used as a base for a painting, same as in photo bashing or matte painting. Though 3D reference can also be made through traditional means with materials such as clay or cardboard, in this section digital 3D-modelling to create references is discussed.

3.2.1   Creating 3D-references in Blender

Blender is a free and open source 3D software that has the tools for modelling, sculpting, texturing, UV mapping, rigging, animation, simulation and rendering, and even supports motion tracking and compositing. (Blender.org n.d.). It is a widely used tool also in the video game industry; especially indie companies like to use it due to it being free. The workflow of modelling in Blender will be discussed more in the practical part of the thesis, but it will not be the focus, as this is not supposed to be a 3D-modeling tutorial.

Creating reference in Blender can vary from just blocks of different sizes to create a placeholder for a composition, to modelling, texturing and rigging a completed 3D-character, and then posing and lighting it as needed. 3D reference helps with keeping a correct perspective in a painting, and a consistent lighting. Playing with the composition and camera angle in the 3D space can be done until the result is satisfactory, as well as trying different lighting sources. Creating reference in 3D is especially valuable, if something imaginary is being painted, and there are no photo references available – for example, it is hard to picture how a giant robot looks in perspective, so it is easier to model at least a rough version of it first.

Tim Kaminski (2016) shows in his tutorial series in YouTube, how he creates a 3D reference for a painting of a Viking cottage by modelling the building, lumpy ground and boulders in the background. He also creates a basic lighting and colours for the scene already in the 3D program, so that the painting part is easier (picture 21).

PICTURE 21 A render of a 3D-reference and the final painting (Tim Kaminski 2016)

3.2.2   Painting with 3D references in Photoshop

After the 3D-references are ready for a render or a screenshot, it's time to move in Photoshop for the actual painting. Many artists also use other art programs of course, but Adobe Photoshop and Corel Painter are the most popular among concept artists. In this thesis, the focus in painting is in the use of Photoshop, as it is also the software that was used in the project part later.

The process of painting with a 3D-reference is often very straightforward; the render is opened in Photoshop or pasted in place to an existing file, and the unnecessary parts are masked away or painted over. As an example of a pure 3D to 2D image painting, in picture 22, Sheridan Johns (2012) has painted a post-apocalyptic biplane based on a 3D model reference, adding colours, textures, lighting and detail on top of the base picture that was a 3D render. The base shape of the biplane has not changed, as it was modelled to a degree that the render image could be painted on top of it straight away. All the detail, the wear and tear and colour, was added with textures and painting in Photoshop, so it can be said that this image is also a product of photo bashing or matte painting. (Johns 2012).

PICTURE 22 Post-Apocalyptic Biplane, the 3D reference image and the final painting (Sheridan Johns 2012)

4   CONCEPTING THE ELUSIVE MR. DARCY VIDEO GAME

This section covers the practical part of my thesis, describing my work with Random Potion Oy,'s game concept, The Elusive Mr. Darcy. Random Potion is a game company based in Tampere Startup Hub, and it was founded in 2017. I've been working as an art trainee there from January 2018, working on the audio, art and testing of their previous game demo Project Scoundrel. When that project ended in early March 2018, it was time to start concepting a new game.

The game designer Arto Koistinen's first idea was just making a sci-fi game with a re-source management mechanic for the seven-day rogue-like -challenge, 7DRL, which is a game development challenge to make a rogue-like game in a week that was held in 3.-11. of March. After that the concept became a project called Space Ship Raiders, and the design started to take shape around a crew of misfits, who looted abandoned space ships in search for treasure. In the end of April, the working title of the game project changed to the Elusive Mr. Darcy, as the first version of the story for the game was written, and the gameplay was mostly decided on. My job was to create concept art for the game, mostly to design the playable characters, but I also had part in concepting the environ-ments and overall style of the game.

At the moment of writing this thesis in May 2018, the project is well in the concepting stage, and the production of the first demo is going to start. All designs and concepts shown in this thesis are works for a game in progress in its concepting phase, so nothing should be taken to be a final version. All the designs created for this project are not shown here, but several were chosen to be presented and analysed.

4.1   Summary of the game concept

The design of the game described in this section was mostly spearheaded by the com-pany's main game designer and programmer, Arto Koistinen, but due to weekly meetings around the concept design, all the people working on this project had their input. The complete design document for the Elusive Mr. Darcy can be seen in appendix 1.

The Elusive Mr. Darcy is a sci-fi game set in space in a distant future, with its core being a story-driven point and click adventure and with a resource management mechanic. It is set in time after a great war, where the majority of the population was killed and the rest struggle to survive. To save the remains of the galaxy, a peace treaty, Universal Declaration of Peace was written right after the war. A new federation was born and, for the first time in history, an AI was placed in control to make sure there was no favouritism. It has since been hundreds of years, and the AI called Algorithm, rules and controls the galaxy with an iron grip.

Since the war left behind thousands of abandoned space stations, ships and outposts, it provides an opportunity for looting trips for treasure and resources. Though looting is forbidden, a crew of outcasts in the fringe of society dares to venture into these abandoned places in hopes of riches. Eager to make money where they can, they also come upon a bounty listing to find a mysterious individual known as Mr. Darcy, and seeing nothing strange in the request, they deem it a worthy mission.

The crew hits several dead ends before they finally find the mysterious Mr. Darcy and find out his real identity. Along the game, more story and history of the world and characters are revealed, and the player might have to make tough choices. By the request of the company, the story described here doesn't give out any major plot points, since the project is still in early stages.

4.1.1 Visual look

The game has a simple style, but the environments use a lot of light and shadows to create an intriguing atmosphere. The 3D-assets are low-poly, but with enough detail and textures to still be considered proportionate and not blocky. Since the perspective is mostly top down or in a fixed camera angle, everything needs to be designed in a way that it can be understood immediately from the side it's shown from. There is also a possibility for random generated levels, so that has to be taken into consideration as well when designing the environment.

The game's genre is sci-fi, with some dystopian themes included, and so the visuals need to convey that too. There are a lot of weird technology, robots and places that are falling

apart due to being abandoned, so nothing looks new or pristine. There are also a lot of places without a lot of light to create a creepy atmosphere, but there has to be care to not make them too dark. For this reason, there are elements that bring just enough light to see; for example, broken electricity cables, broken windows, screens and lights. The characters themselves might also have light emitting elements on their clothes.

For the overall style and feel of the game, several mood boards were created by me and Samuli Lautjärvi, a game artist at Random Potion, to collect references and define the look we were going for. In this thesis, I will however, be only showing mood boards created by me that relate to the concepts shown. In picture 23, there are four different images that were part of the first general inspiration mood board which I made already during the planning phase for 7DRL. This page was for the overall mood and atmosphere of the game – I searched for pictures of different space ships and locations, adding such keywords as "abandoned", "derelict" and "broken", to get suitable results. I was interested in creating a world, where the advancement in technology has gone so much forward that the futuristic space stations and ships the characters are looting, have already fallen behind the times, and are full of ancient technology in the eyes of the crew.
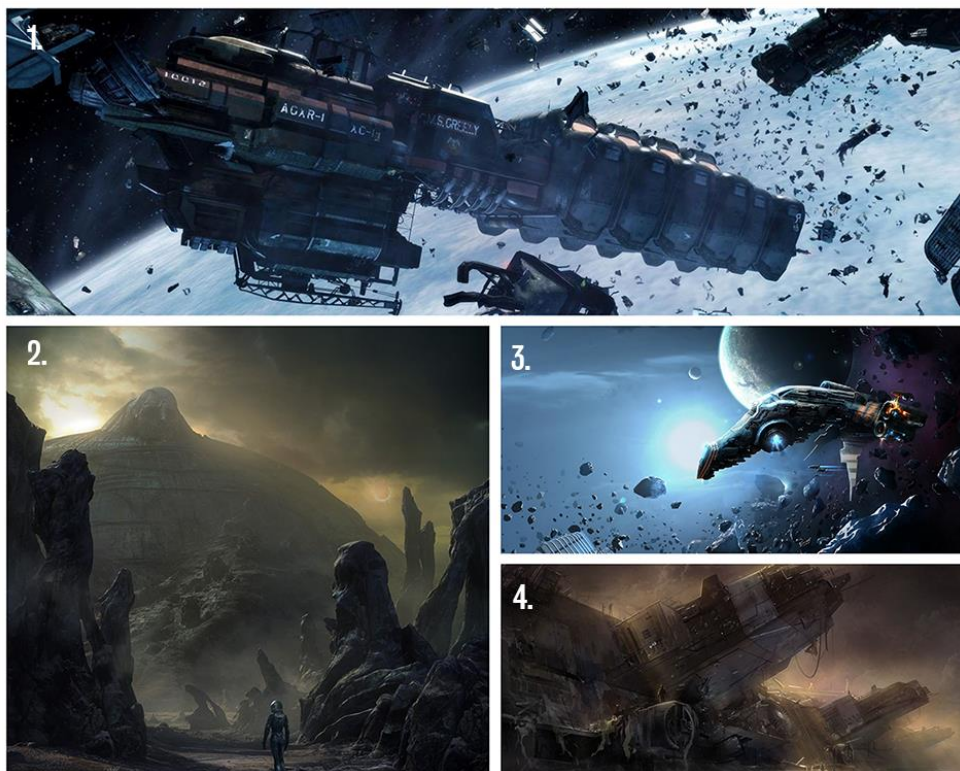

PICTURE 23 Page from the first general inspiration mood board: 1. Screenshot from Dead Space 3 (2013) 2. Prometheus concept (Steven Messing 2012) 3. Repairing Space Ship (AbikK 2011) 4. Environment concept (Jeremy Chong n.d.)

4.1.2 Gameplay

The Elusive Mr. Darcy's gameplay centres around the spaceship the characters are traveling in, Nebula Black. The player can wander around the ship, talk to other characters and interact with various items; there are also story events that can take place inside the ship. There is a galaxy map inside the ship that has access to the space exploration mode, where the core is resource management and exploration. The player can visit various planets and regions in the galaxy and gather resources from mining asteroids or scavenging abandoned space stations, ships or ruins. Sometimes a story event is triggered, which is played in adventure mode, and which advances the story forward.

The player can enter stations and ships using any member of the crew, although the captain is the main character. Different characters have different abilities that need to be used to solve the various puzzles in the adventure mode. The main difference between space exploration mode and adventure mode is that the former is randomly generated, and the story events in adventure mode are hand crafted. The core loop of the game can be seen in picture 24: the game starts with an intro sequence that gets the player accustomed to the game and controls, and introduces the main character, the captain of the ship. After the intro, the normal gameplay starts by varying between exploring your ship, space and story events.
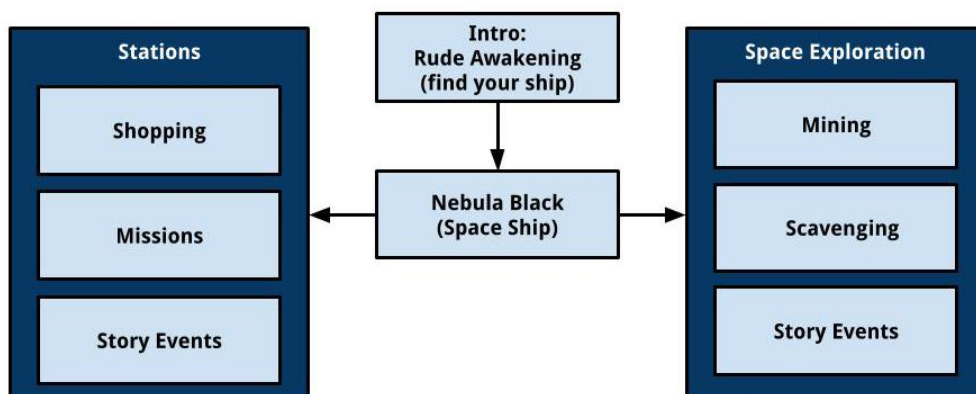
PICTURE 24 The core loop design for the game (Arto Koistinen 2018)

The game is going to be developed for PC using Unity, so the controls are going to be mostly on the mouse, but there are also some keyboard commands. The build that was made to test out the point and click gameplay using Unity store assets (picture 25), is

controlled with just left-clicking your way through the game to walk around the level and to interact with things. This first test build was made in Unity as a prototype for the main designer Arto Koistinen to see how he could create the atmosphere and story, and whether the fixed camera angles would work nicely for this project.

PICTURE 25 Screenshot from the first prototype using Unity Store Assets

4.2   Character design

In this section, I will talk about the actual concept art process that happened while painting character concepts during the different stages of this game project. As the ideas around the game changed, so did the characters; their look and style, connections to the gameplay et cetera varied depending on the state of the game design at the time. First, I will go through the character I designed, or rather redesigned, during the 7DRL challenge, when the game was still very different from what it ended up as, the Elusive Mr. Darcy sci-fi adventure. Next, I will go through the initial character ideas I drew when the working title was still Space Ship Raiders, and how they changed when the character summaries were locked with the story of the game coming together.

4.2.1 Luna model redesign for 7DRL

The first concepts that I made for the project, were for the 7DRL challenge, during which the project was just a top down sci-fi game with a random-generated level, in which the character had to loot as much as possible before a light they carried ran out of energy.

As the goal was to make a small demo in a week, we were in a hurry: it was decided to use Unity store assets to make the base demo, and I would then edit the assets to suit the game better. For the character model we bought an asset package called Luna – Stylized Character made by user Akishaqs in 2017. The model was very low poly and had just flat colour textures, but it suited the simple style we were going for in the demo. Just to make sure that modification of the assets is acceptable, I checked Unity asset store's legal page: it is confirmed in the section 2.2. of Appendix 1, that modification of assets from the store is indeed alright (Asset Store Terms of Service and EULA, Unity3D.com, 2017).

To redesign the Luna model, I made a mood board (picture 26) with a colour palette to see what we were looking for. At this time, we were still going for a more classic sci-fi approach, so I looked at pictures of genuine astronaut suits, and concepts that other people had made of space suits.
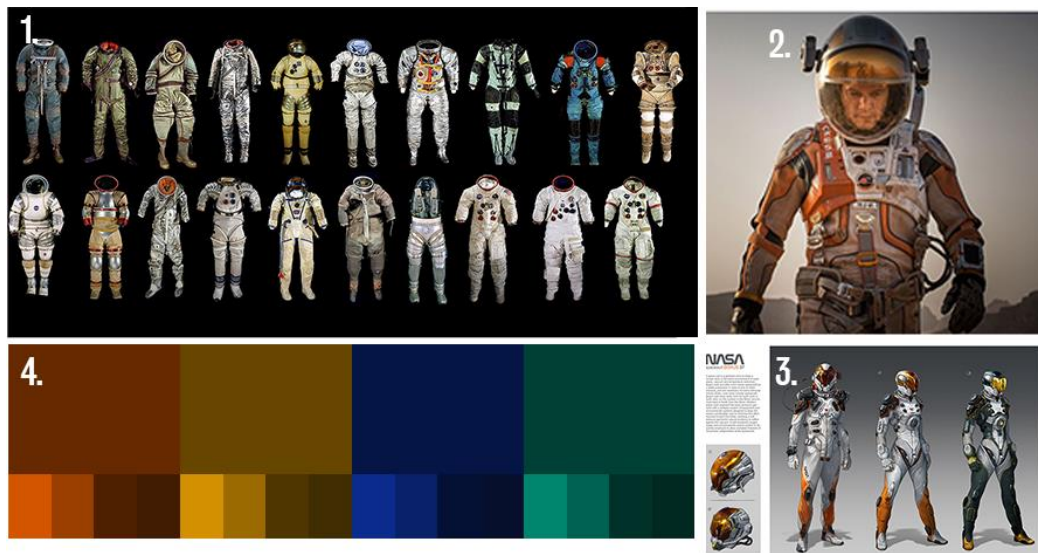

PICTURE 26 Mood board for the Luna model redesign: 1. Spacesuits: The Smithsonian National Air and Space Museum Collection (Amanda Young 2009) 2. Screenshot from the Martian (2015) 3. Space astronaut concept (Oscar Cafaro n.d.) 4. Colour palette (Paletton.com)

Next, I took a screenshot of the Luna character model in Unity editor (picture 27), and started painting on top of it in Photoshop. As I was going to be editing the 3D-model itself later, it made sense to use the actual Luna model as a 3D-reference and a starting point for the concept art.
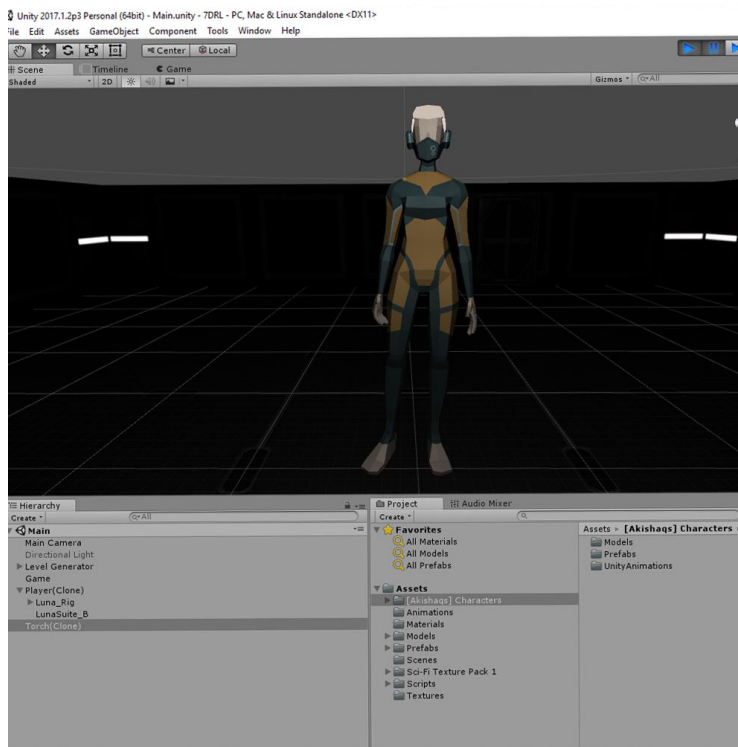
PICTURE 27 Screen shot of the Luna model in Unity editor

As we only had a week, I only made subtle changes to the design: I added a visor, as the Luna model just had a bare face without eyes, added more details to the suit on top of the old lines, and repainted the chest to have a symmetric square design on it. I tried a few different designs for the suit, but in the end, chose to continue with the one in picture 28, as simple enhancements seemed to do the trick, and symmetric shapes are always pleasing to the eye.
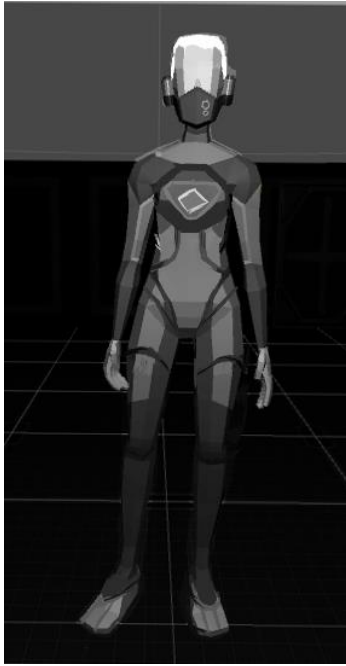
PICTURE 28 Repaint in grayscale

To finish the Luna suit redesign, I hid the original screenshot and painted a neutral grey background. Then I duplicated the grayscale design so I had four bases to try out colours. In picture 29, the final concept art can be seen: I had the colour palette from the mood board in the photoshop file as well, and tried out different combinations of colours for the suit. Some I noticed straight away to be too bright or too dark, so I didn't adhere to the palette strictly, it was more of a starting point. The colour schemes I ended up with, have two in the middle with complementary colours and bigger contrast, and the two concepts on the edges have a subtler theme, analogous colours that harmonize together well.

PICTURE 29 The final suit concept with colour variations

Team decided to go with the second colour palette from the left, and I took the Luna model into Blender and made the changes. As the focus is on the concept art and not the end result in 3D, I won't go through describing the whole process but will briefly summarize what was done – the design was simplified a bit further in Blender to save some time and to make texturing a bit easier. I also added some loop cuts to get a more fluid look, and used smooth shading to get rid of the stylized low poly lines. I modelled boots and a visor, and unwrapped the character to have a new texture. In picture 30, the difference between the original Luna model and the new one can be seen –while the design didn't change too drastically, the new one was working for the small demo we made in a week.
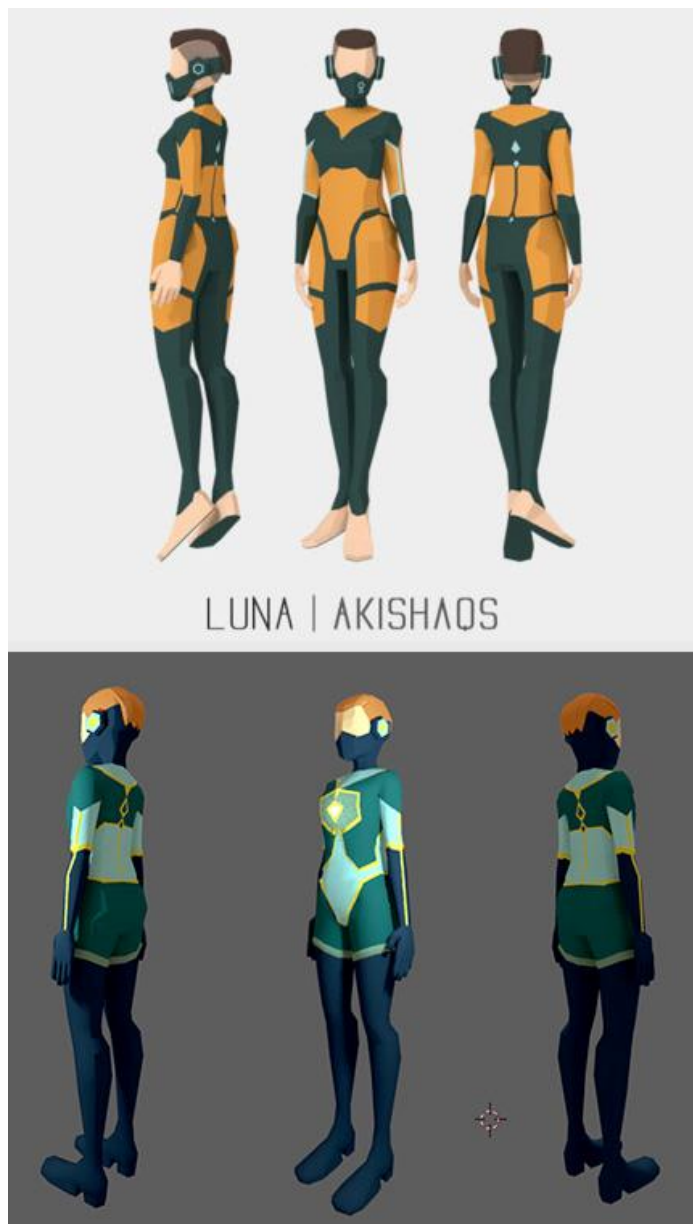
PICTURE 30 Comparison between the original Luna model renders (Akishaqs 2017), and the redesigned player model renders in Blender

4.2.2   First character concepts for Space Ship Raiders

After the 7DRL, the decision was made to develop the sci-fi game concept further; the working title for the project became Space Ship Raiders, and the idea evolved from just the looting in random generated levels, to a game that would have a narrative and a crew of characters to choose from. The preliminary design document for this stage of the project can be seen in appendix 2, pages 92-93, written again by the game designer Arto Koistinen.

I was tasked to think about the style of the game, and to pitch some concepts of different characters; we would have a design meeting on the 12th of April in 2018, so I had a little less than two weeks from the start of April to create the concepts. At this time the gameplay still focused around looting as much treasure as you could before the energy of your light ran out in the levels. For this reason, I made the character designs around ideas of different gameplay abilities. Inspiration for the tone of the characters came from the TV-series Firefly, so I envisioned a crew of misfits from all around the galaxy, who would maybe be a little exaggerated in style. There wasn't much story written yet, but the universe the game took place was supposed to be in a galaxy after a great war that had left many people dead, and the space full of abandoned places open for looting. Therefore, I was also thinking that as the characters were scavengers and survivors, they would be wearing an assortment of different gear and clothes, and not just have a pristine space suit or a uniform.

To begin the concept art process, I once again went to look for inspiration and references from photos. I already had some saved from the Luna redesign that I liked (picture 26), but I looked to expand that library with some other references with a rougher look, for example trench coats and concept arts with a space rogue feeling. The reference library kept growing the more I drew the characters, as I had to look up details for specific items, clothes or anatomy.

In the end I had a character sheet with six different characters to pitch for the rest of the team in the concept meeting, but in mind not to repeat myself too much, I will go into detail with only two characters for which different techniques were used. All the characters were also studies in order to try out different techniques and reference styles as I had

researched in the theory and techniques sections, but these two that will be discussed, had perhaps the most different processes from each other.

First, I had in mind a character with a long coat and a prosthetic leg, who had been a smuggler before the war. His abilities would concentrate around speed; for example, his movement and looting speed would be faster than other characters, because of his past as a criminal. He would be a smooth talker, with a head for strategy and have self-centred interests. The Smuggler's personality would show through banter with other characters, him being an incorrigible liar and teasing others relentlessly.

 I opened Photoshop and started with a loose sketch to figure out how the character would stand (picture 31 right side; I struggled a bit with the legs, so I made a quick pose reference in Blender using the edited Luna model from the 7DRL project (picture 31 left side). I ended up exaggerating the pose quite a bit to get more personality to show.
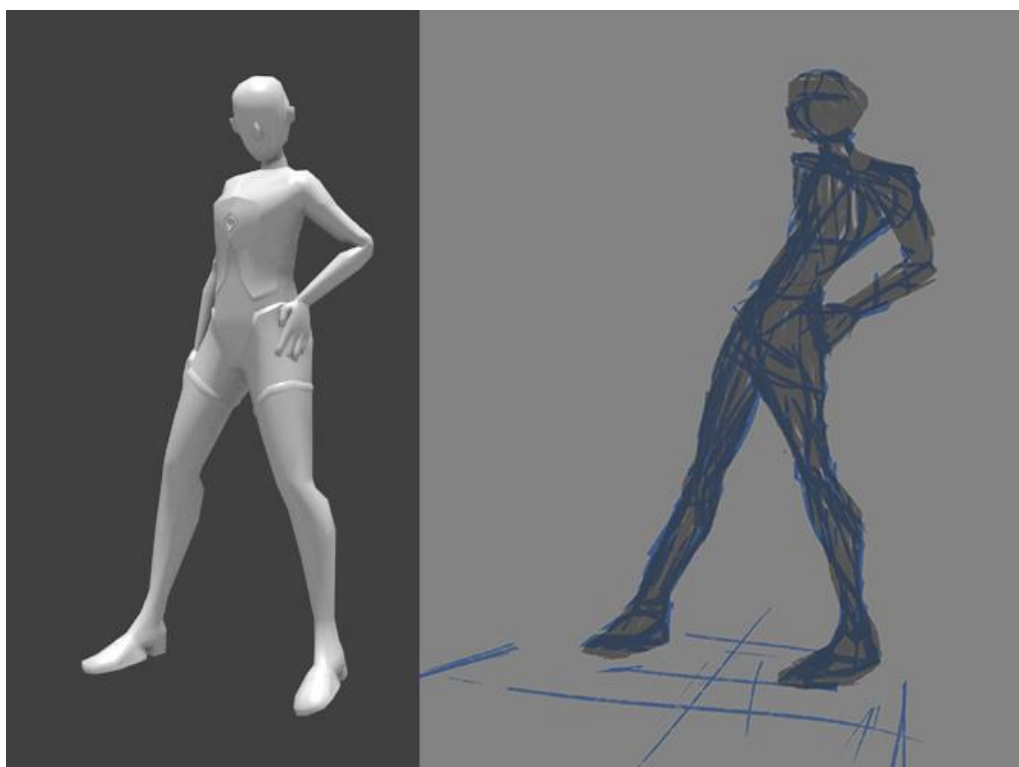
PICTURE 31 3D pose reference made in Blender and a loose sketch in Photoshop

Next, I started adding details and tentative shapes for his clothes on a new layer with a red hard brush (picture 32). I usually don't do line art drawings on the later stages, just during the planning phase to figure out the shapes – later, I usually paint over most of the lines or turn the line layer off completely to get a nicer look. During this concept I also

kept flipping the canvas horizontally, like I do with all of my paintings, as it is easier to spot mistakes this way (3D Total.com Ltd 2015, 91). The process pictures added here are all pictured from the same side however, to better see the painting evolving.
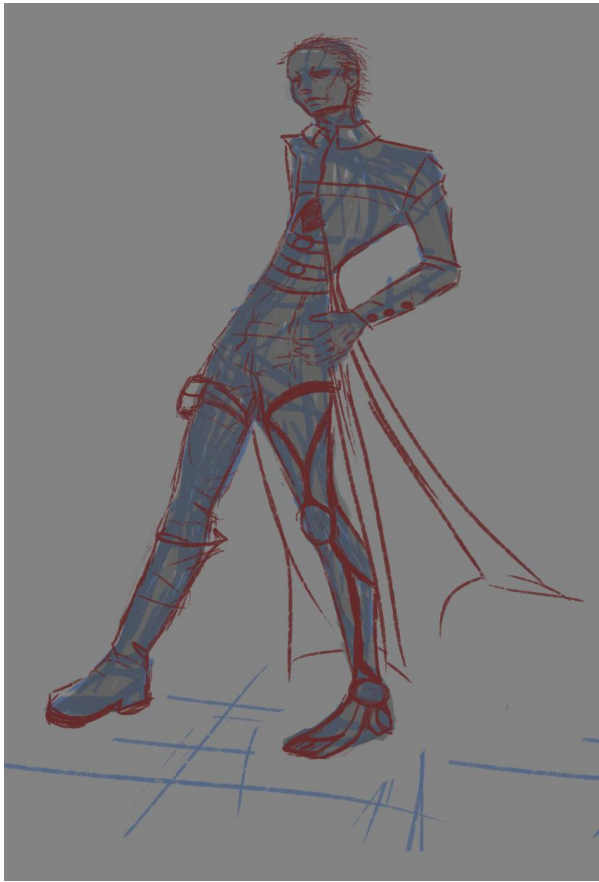
PICTURE 32 Line art sketch for clothes and details

To get the details right, I looked at reference photos of different long coats and utility vests, found a nice face reference from the angle I liked, and boots that looked suitable. All the references I used for this character can be seen in picture 33. Almost every picture I gathered was solely for reference for certain details, but I kept the mood boards I had done before in mind to still have suitable atmosphere for the character. To keep the sci-fi and space theme in mind, I also added an image from the Star Wars Rebels TV-show to my references.
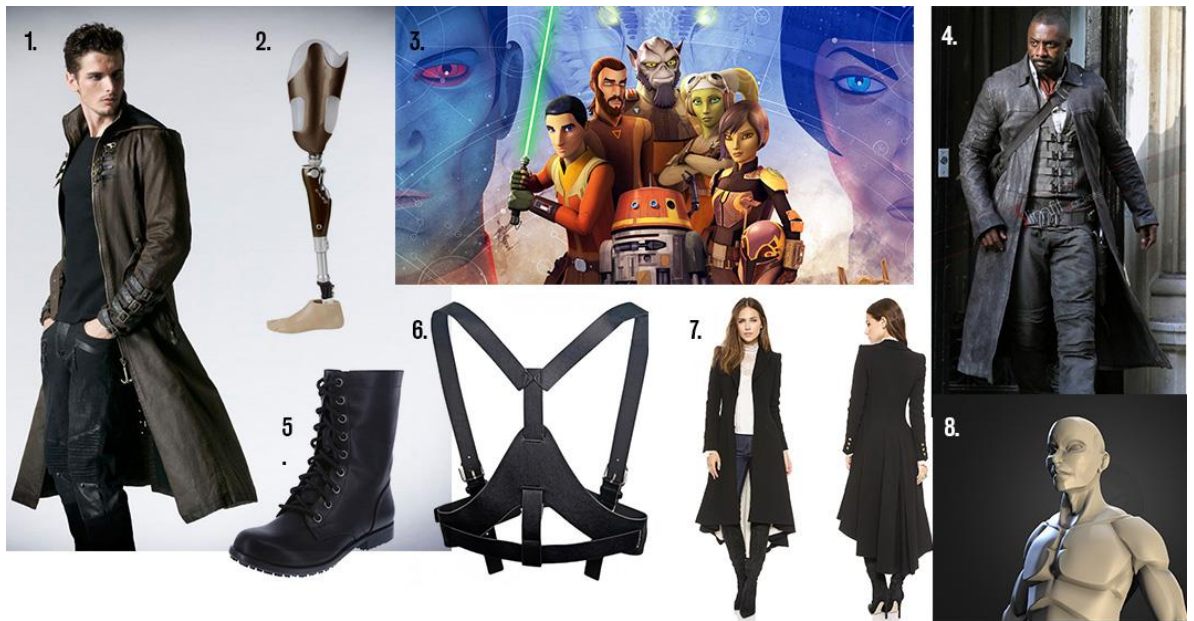
PICTURE 33 Reference photos for the smuggler character: 1. Long trench coat for men (Jacketin.com 2017) 2. Prosthetic leg (Ottobock.com n.d.) 3. Star Wars Rebels (Disney XD 2017) 4. Idris Elba on the set of the Dark Tower (FameFlynet Pictures 2016) 5. Lace up boots (Beso.com 2015) 6. Black vest belt (Beserk.com.au 2016) 7. Black winter coat (it.aliexpress.com 2015) 8. Screenshot of a 3D-model, male planar reference model (Gibran Machaen 2017)

I added some shadows and lights to the picture and made everything grayscale; this way I can keep the contrast and values in check. The idea was also to not yet colour these concepts, as I would first wait for feedback to see if I would render any of them further. To add more detail and texture quickly, I used a few of the gathered reference images in the painting itself using photo bashing technique: the long coat, vest and the boot the character is wearing, are images 1., 5., and 6. from picture 33. The result of this can be seen in picture 34, after I had corrected the contrast and perspective in the photos to suit the character, and masked unnecessary parts away. I was still working with a hue and saturation adjustment layer with the saturation turned to 0, so everything is still grayscale.

PICTURE 34 The character concept with more detail painted in, and with added photo textures masked in

The only thing left was to render the painting with more details and blend the photos in. I also repainted the face with the help of the face reference, and made a proper light source for the picture. In this part I used softer brushes to create form and shape and to blend the areas together. When the painting was otherwise ready, I merged most of the layers together and added filters to bring out the contrast and add a gradient overlay for shadows, and a linear dodge layer for brightest light spots. The final painting of the smuggler concept art can be seen in picture 35.

PICTURE 35 The final picture of the smuggler character

I worked on multiple characters at the same time to assure that they fit together and to have breaks from making just one painting to be able to return with a clearer perspective. The next character concept that will be introduced, was started around the same time that I sketched the Smuggler for the first time, but I returned to finish it much later. The second character in this section is the Radio Specialist of the crew, a female character that was based on the previous Luna model. Her abilities would be around information; she could understand hints around the levels if they were on a language she knew, and she would have certain extra information on maps. For example, she could find hidden doors or have extra loot marked on the map. Her personality would be more subdued, but she would have a no-nonsense attitude with her focus being on the job. During banter with the other members of the crew she would calmly ask the others to get back to work, but also sometimes surprise everyone by making a hilarious observance of someone to tease them.

With this character, I wanted to try out photo bashing with a 3D reference as a base for the character, so I opened the redesigned Luna model in Blender. In picture 36, the Luna redesign can be seen in Blender in a t-pose, without the hair, mask and visor to keep my options open with painting.
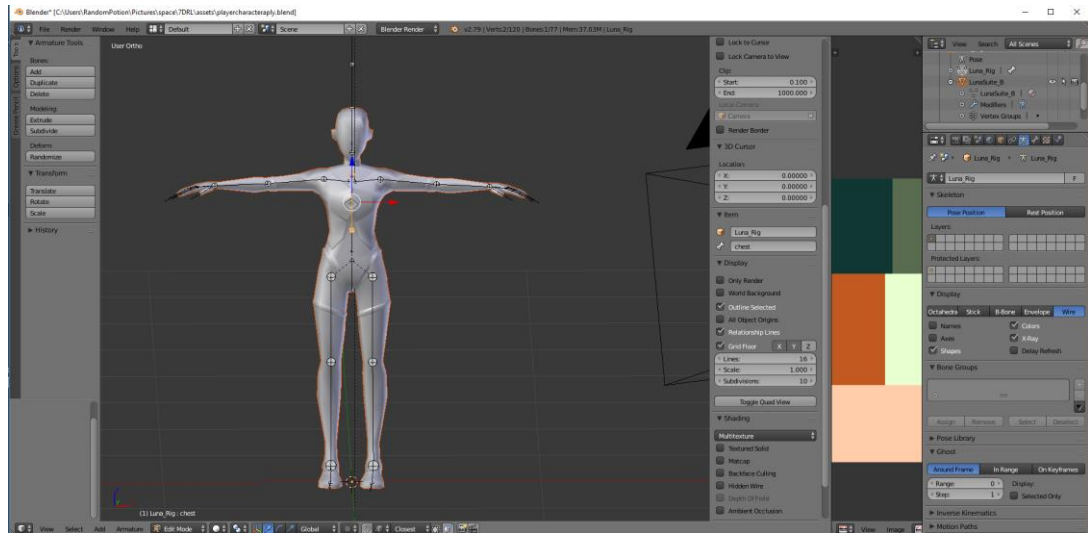
PICTURE 36 Screen shot of the Luna model redesign in Blender

Next, I switched into the pose mode and tried out some poses for the character. When I found a one I liked, I created a camera for the scene and added some spot lights to make lighting for the render. When the pose, camera angle and lights were ready, I took a render of the scene and moved to Photoshop. The pose in 3D view point and the final render can be seen in picture 37.
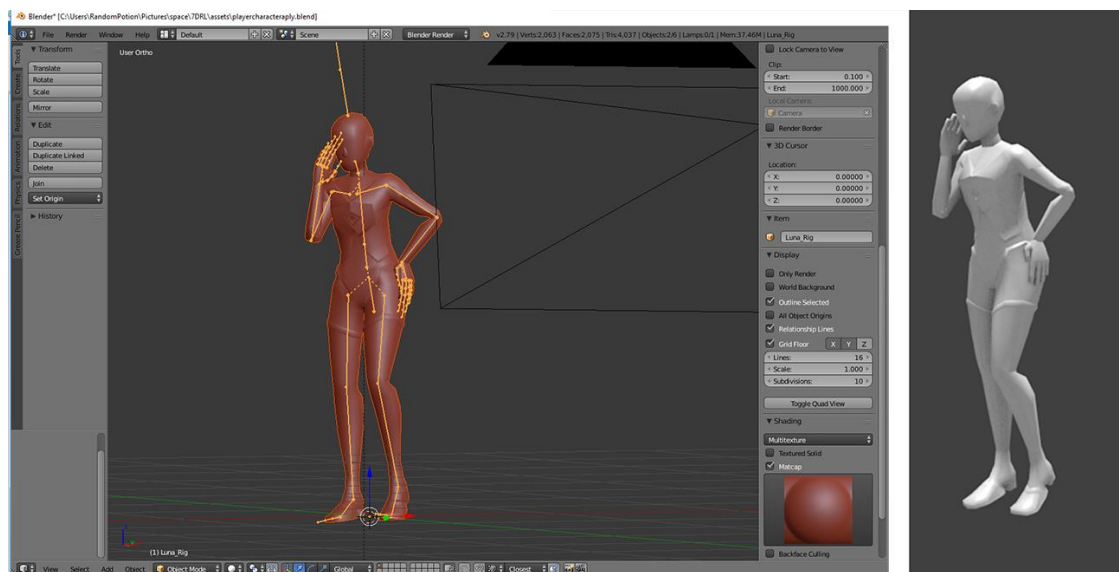
PICTURE 37 Screenshot of the pose in Blender (left) and the final render (right)

In Photoshop, I took a white hard brush and started drawing on top of the render image (picture 38 left side). I envisioned a character that was responsible for the communications on the crew, a bit like the character Uhura in Star Trek original series and the new movies. While I continued some of the design along the Luna model, I also added long hair, a chest piece for radio materials and a visor. The suit design was layered, with a short-sleeved jumpsuit under, and a different material one piece on top. The boots were over knees length with some texture made with a pattern brush. As the Luna render didn't have a face except for a triangle as a nose, I also painted a face for her, though the visor hides her eyes. When the first sketch was done, I added more details and took a dark grey to add some shadows (picture 38 right side).
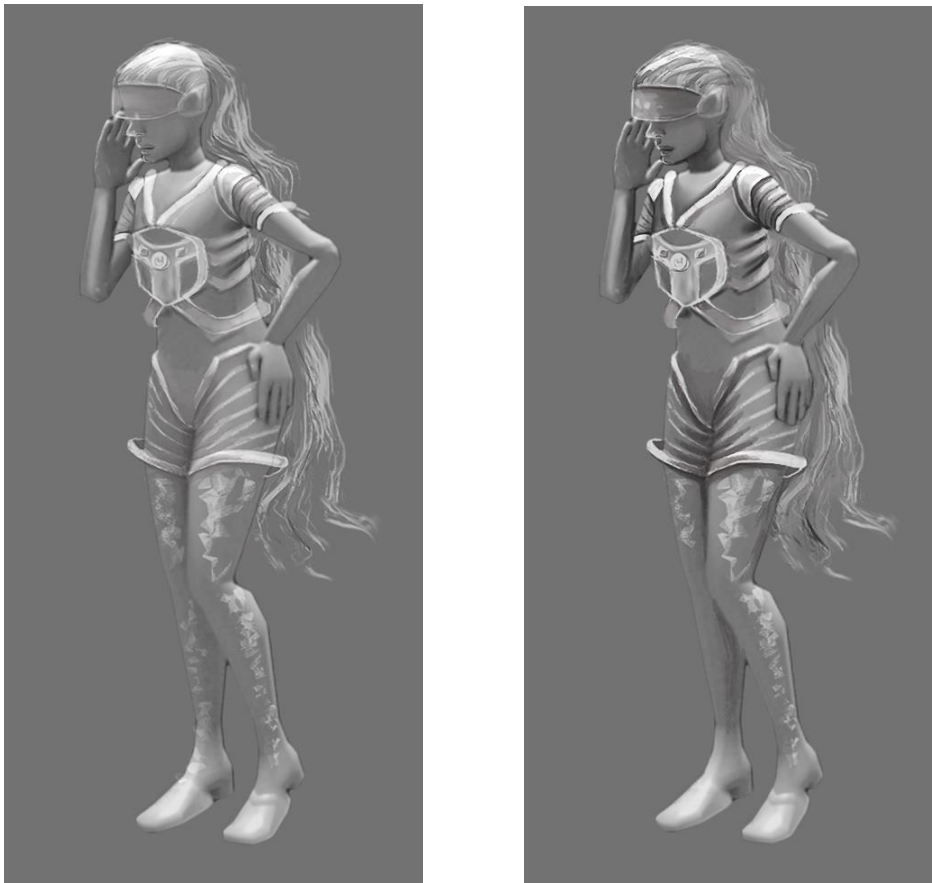
PICTURE 38 The first sketch painted on top of the render image (right) and shadows and detail added (left)

Next, I continued to add detail and made an overlay layer to add a darker, gradient base tone along the light source, and a soft light layer with a light gradient from the direction of the light. I also added a picture of headphones for her to wear as a photo texture, as I noticed that simply painting the headphones did not look nice enough with the rest of the image (picture 39).

PICTURE 39 The painting with gradient layers and headphone photo texture, original on the right (Techbargains.com 2014)

To finish the concept, I kept polishing and painting more detail. I created a new layer to paint some more shadows and to create more contrast, and painted over the headphones image to blend it better to the rest of the painting. At this point the painting was very dark, so I made a new layer for the highlights, and added white and light grey where needed with a soft brush, to really see where the direction of the light was. I also detailed the hair more, by drawing separate strands of hair to make it look less like one mass.

At last, I added a noise texture overlay over the whole character to bring the whole painting together. After balancing the contrast with a levels adjustment layer, the Radio Specialist concept was ready (picture 40).

PICTURE 40 The final concept art for the Radio Specialist

To wrap this section up about the first character concepts for the Space Ship Raiders stage of the game project, I will briefly introduce the other concepts that I made for the final image, without going into as much detail as with the previous two. In picture 41, all the character sketches can be seen in a line-up in various stages of completion. There was a master file for all the characters so I could keep track of them fitting together with the others, and to see that each of their silhouettes were unique and interesting. Most of the painting was still done on separate files to keep the layer hierarchy clean. At this point I still had seven characters that had been developed more, but decided to pursue six of them further to have the time to get them ready for a meeting deadline we had agreed on.

PICTURE 41 Sketches of different characters in various stages

In the final image, I had six characters with short summaries of their working titles and abilities (picture 42). I used a variety of different techniques on them to test out what worked and what didn't, and to try to speed up the process. With most of them I started with a sketch to try to find out an interesting silhouette, and worked from there to add more detail and personality to them. I worked grayscale to spare some time and if any of the designs were approved, I would polish them further and make coloured versions.

To summarize the techniques used with other characters than the Smuggler and Radio Specialist, I will quickly go through each concept. The first character on the upper row in picture 42, is the gladiator: I had photo references for the anatomy, helmet, shoes and dress and used a silk texture for the dress and images of lamp bulbs for her shoulder pads. The Treasurer on the lower left was made from just looking up photos for inspiration, but I used a direct reference for the long sleeve she wears on her right arm to see how the garment would fold.

The Hacker concept on the middle of the lower row stayed as a sketch; at the start they were a variation of the smuggler concept, but I liked the other sketch so much that I made a separate robotic character from it and left it in to see if it would gather interest in the concept meeting, as the basic idea was discernible from just the sketch. The last character in the lower right the Brute, who was made as a sort of tank character for the crew: he would be slow but strong and able to bust down walls if needed. I used photo bashing a lot with him, combining a base from photos on top of the sketch shown in picture 41. There are separate photos used in the chest armour, arms, legs, face and the helmet he wears.

The Gladiator
- bigger energy bar
- slow
- extra light, can see further

The Smuggler
- faster looting
  and movement

The Radio Specialist
- extra info on maps

The Treasurer
- faster looting
- chance to find
  extra treasure

The Hacker
- can open locked doors
- chance to find secrets

The Brute
- Can bust down walls
- slow

PICTURE 42 The final image with the six characters

In the concept meeting where I pitched these character concepts, the main feedback was that my style was too detailed and realistic for the type of game we were going for. As the game was supposed to made on a small budget and in a tight schedule, something simpler was requested. Others did like the caricature style though, and especially liked the designs of the Radio Specialist, and the idea of the Treasurer. It was decided that I would concept one to two characters with a simpler style for the next meeting, which I will describe in the next section.

4.2.3 Character concepts based on the finalized story

Though none of the six character concepts I first created were pursued any further, it was still valuable practice and a good starting point. It also made me think more critically of the designs in terms of how they were suited for 3D-modeling. Ideas change often during the first phase of concepting, so it's also good to not get too attached to your designs, as they may not be picked up to be developed further.

After the first concept meeting on the 12th of April in 2018, I was tasked to create a captain character for the game; I would have one week to make it for the next meeting happening on the 19th of April in 2018. At this point, the first draft of the story was also written, basically a version of the story written in Appendix 1, without the rogue immortal character Mr. Darcy.

First, I sketched some of my ideas very roughly on Photoshop. I was thinking of an angry young man, who had suffered due to the council called Algorithm controlling the world, and was passionate to right the wrongs. I made a silhouette with just black (picture 43 on the left) to think about the recognizable aspects that the character might have, and sketched a few poses that can be seen in the middle of picture 43. I also added some colour to the other one if it would inspire me, as I was going to also colour this concept at the end. I made one more sketch to try out an idea that I had about a tattered old uniform, which the captain would wear in pieces on top of some other gear. I felt like this wasn't exactly what I was looking for, so I went to find some inspiration online.

PICTURE 43 First sketches of the captain

I looked at pictures from different traditional garments worn around the world and was inspired by some clothes that different nomad tribes would wear. I especially liked the coats worn in the colder regions, so I got the idea that the Captain might be from a tribe of space nomads that travelled around space in a giant space craft, and traded with other planets and peoples. I wrote my thoughts in a Google document and sent it to our game designer. He liked my pitch, so I based the Captain around this summary I wrote:

> The captain is a survivor from a space nomad race, which was destroyed by the Algorithm, after one of their researchers had stumbled upon some forbidden knowledge on some old data files. He is a young adventurer, who is looking for answers and justice for his people. He is confident, and a smooth talker when needed, but also frustrated by the state of the world – he is often plagued by guilt and sadness because of what happened. He still wears the remainders of his commander uniform, but has also gathered much of his gear from a variety of ventures he's been on since. Much of what he owns is worn down, rugged leather and scratched metal, but everything is always polished and cleaned to the best of his ability.

I collected the photo references I was most interested in to a mood board that can be seen in picture 434. I liked the idea of layers in his clothes, thinking of an under suit that would be seen under a jacket of some kind, and him having a pose with clenched fists and a grumpy face. The plan was to first paint the design in grayscale, and then add colour with overlay, multiply and colour layers.

PICTURE 44 Refence images for the Captain concept: 1. Angry eyes (Tiago G 2015)
2. Screenshot of a 3D-model, male planar reference model (Gibran Machaen 2017)
3. KTZ Fall/Winter fashion show 2015-16 (Vogue.nl 2015) 4. A pattern I made from
scales of justice 5. Post-apocalyptic fashion (Fashionawesome.biz 2017) 6. Fall 2013
Ready-to-Wear (Nicholas Kunz 2013)

To start painting, I opened Photoshop and first sketched the pose a couple times. When I
was satisfied with rough outline, I added a new layer below the first one and filled the
sketch with black and added detail (picture 45). I also painted a vague idea of a black
under suit with lighter pants on top.
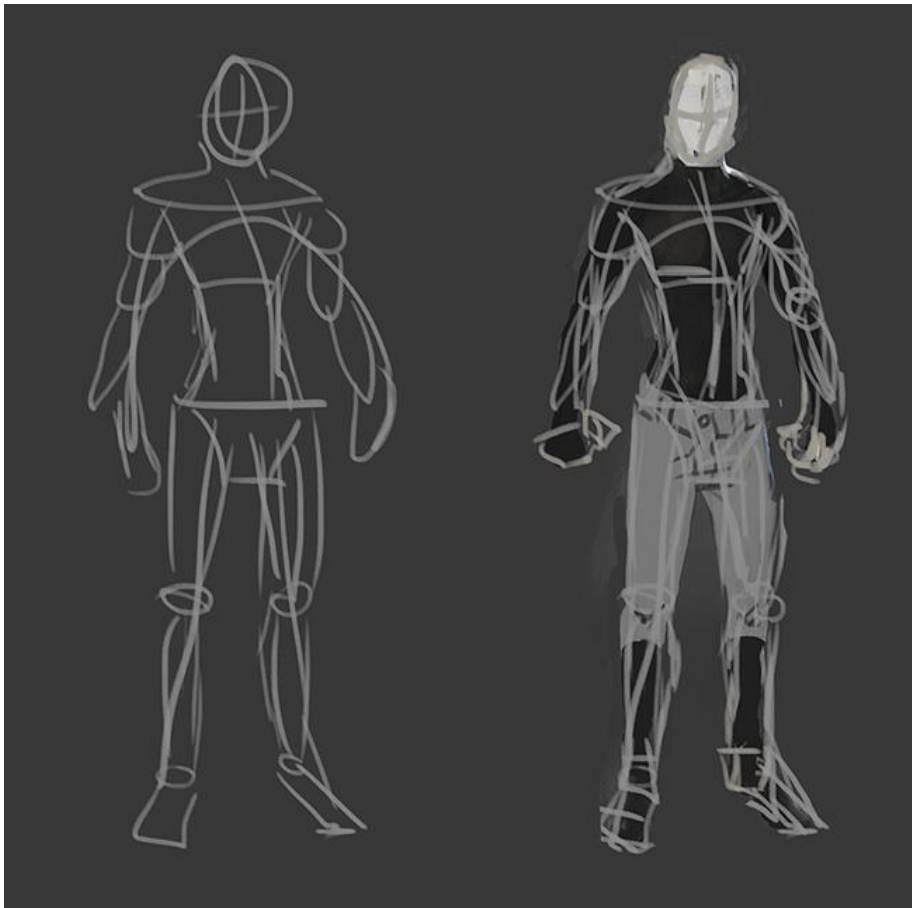
PICTURE 45 The first sketch on the left and more detail added on the right

Next, I kept painting to define the character more and fill in the arms and legs. Soon the starting sketch wasn't needed anymore and I turned the layer off. When I was happy with the basic shape of the character, a new layer was created and I made a line art to figure out the top layers of his clothes and to clean up the whole painting. The unnecessary paint was erased outside the lines and some anatomy corrected; for example, the head and jaw line was a bit wonky, so I repainted the head altogether (picture 46).

PICTURE 46 The sketch with line art and more polish

Before the jacket and the cloth tied around his waist were painted, I added glowing lines to his under suit and boots (picture 47, left side). The movie Tron: Legacy (2010), where the characters wear skin-tight lighted costumes in the virtual reality world, was my inspiration. At this point I also painted the face in a new layer for the Captain: he received sharp eyes and wild eyebrows. The face was repainted a couple times to get the look I wanted – there was some struggle in remembering not to make him look too realistic with lots of lights and shadows and lines, so I had to repaint again.

After being satisfied with his face, I painted the jacket and the cloth around his waist (picture 47, right side). My thought was that it would be the remains of his commander uniform from his time with his people: he would have been ambitious and risen fast in ranks before the untimely destruction of the tribe. At this point his clenched hands were also detailed.

PICTURE 47 The added face, under suit and boots details on the left and the jacket and waist cloth on the right

To finish the grayscale concept before moving on to colouring, the line art layer was turned off, the shadows and lights blended, and some torn details on the edge of the jacket were added. I also painted him some hair at last: the character would have a punkish vibe to highlight his rebellious nature against the Algorithm, so I gave him a side cut with his hair on twists on the side. A pattern was drawn out of scales of justice, and put on his jacket my thought was that if his people had been very neutral in nature and had a balance between all things in life as their main principle, it would have been even worse that such a peaceful people had perished in vain. I also added an earpiece for him to wear, as communication between his crew would be important in the game. The finished grayscale concept can be seen in picture 48.

PICTURE 48 The finished grayscale concept

I decided to make two colour variations of the final concept (picture 49): one with lighter earthy tones like green and brown, and one with sharper colours with blue and red. New layers for the colours were created, an overlay layer to get the basic tones in, and then a multiply layer for the shadows. I also used a levels adjustment layer to tweak with the colours. The under suit was black in both variations, with light blue stripes. The same colours were used with the boots, to bring some unity into the design. The colours I painted the clothes with, were more harmonious in the version on the left in picture 49, and more contrasting in the second version. The hair was white in the first version to keep the whole design light, and a reddish brown with a buzzed hair on the side in the second version, to add more aggressive colours to the mix.

The final concept art of the Captain can be seen in picture 50, where contrast and levels adjustment layers were added to bring out the colours more. In addition to the coloured versions, I added the grayscale concept to the side, to better see the shape of the design.

PICTURE 49 Two coloured versions of the concept

PICTURE 50 The finished concept of the Captain

In the concept meeting on the 19th of April, feedback was given for the Captain concept: people liked the punkish style, but it was a still too complicated. During this meeting our game designer Arto Koistinen also presented the final concept design document that he had written; this is the document that can be seen in Appendix 1, with some character summaries added at the start of May. The game was now called the Elusive Mr. Darcy, and the gameplay became more concentrated on the story through point and click mechanics. The main difference for me was that the character concepts were finalized through the story that was written, and the captain character had changed to a woman with inspiration from the Jessica Jones TV-series (2015).

Since the Captain concept I had done was still interesting, it was proposed to make another version of him, as a medic character of the crew called Li Nguyen Schmidt. The new version would be presented at a concept meeting in a week, on the 26th of April. Most of the backstory that I had written for the character stayed the same, but from a perspective that the character had a medical training in a world, where it had recently become illegal to be a doctor, as robots had taken over all the medical procedures. For this reason, his people were persecuted, and Li escaped to become an outlaw.

New references were gathered to start the concepting process anew, but I kept in mind the ones that had been used with the previous one (picture 44), as the basic core of the character stayed the same. I went back to look at different coats that Inuit wore to get inspiration for the top layer of the character, and found a nice mask Li might wear to stay clean and a tool belt for holding medicine. These reference images can be seen in picture 51.

PICTURE 51 Refence images for the Medic concept: 1. Inuit winter costume (Liver-pooolmuseums.org.uk n.d.) 2. Tool belt (Occidentalleather.com n.d.) 3. W-mask (Jurmol.com n.d.)

To start painting, I opened the Photoshop file of the Captain concept, and saved it as a new version called MedicConcept.psd. Then all the unnecessary layers were deleted, until I had a version with just the character with the under suit (picture 52) and painted over the lighter pants and boots to continue the under suit. Some of the face repaint had seemingly been on the wrong layer with his jacket, so his mouth looks different than in the other concept, but it didn't really matter as his lower face would be covered by a mask later.
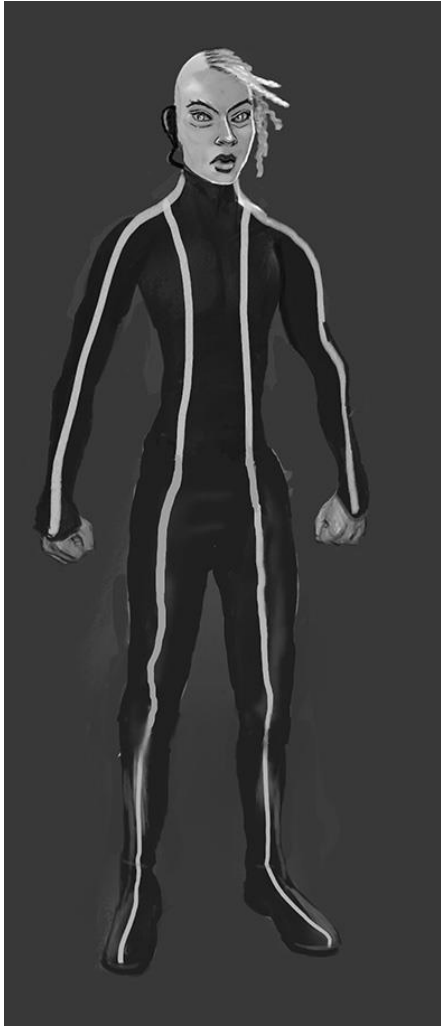
PICTURE 52 The base for the character with just the under suit

On top of the under suit, I started designing the coat, with inspiration from the Inuit winter costume in my reference mood board. I liked the idea that the coat would be cut off above the wrists and waist, so the under suit would be visible. I painted the coat on a new layer with a hard brush, added some shading with a softer brush, and added lighter and darker stripes to the sleeves and the hem of the coat (picture 53).

PICTURE 53 The concept with the coat

After finishing the coat, I painted the Medic a mask to hide his lower face with the help of the W-mask image from my references. The tool belt was added and repainted a couple times until it looked suitable in my eyes and at the same time, I fixed the character's hips since they looked a bit strange. Since the coat had been designed to have a hood, it was painted up hiding his hair – now that only Li's eyes were visible, they were repainted to be dark and more intense. At this point, I also cleaned up the image a bit, by making it have a sharper outline and added more contrast with a levels adjustment layer. The gray-scale version of the concept was now finished, and can be seen in picture 54.

PICTURE 54 The finished grayscale image of the Medic before colouring

Moving on to colouring the concept, the Photoshop file was saved as a new version, where most of the layers were flattened and an overlay layer created. I made two versions for the final concept, one with the hood on and one with the hood down (picture 55). The colours used for the character were simple: the under suit stayed black with light turquoise lines, the coat was light teal with light and dark stripes and the tool belt was brown. The mask followed much of the same colour scheme than the under suit, and if the hood was down, his hair could be seen to be white. To finish the image, I used once again a levels adjustment layer to get the contrast right and colours look nice.

PICTURE 55 The finished, colored version of the medic concept

In the meeting on 26th of April, this version of the Medic character was approved, and I created a rough version of it in 3D (picture 56), to test out the design and practice 3D-modeling. The model was made in Blender, using a skin modifier to get the basic shapes quickly, and then re-topologized to get good geometry. There was only time to add the mask and the coat, before I had to get back to other work, but I'm happy with the rough version, as it proved that the design was simple enough to be made quickly in 3D.
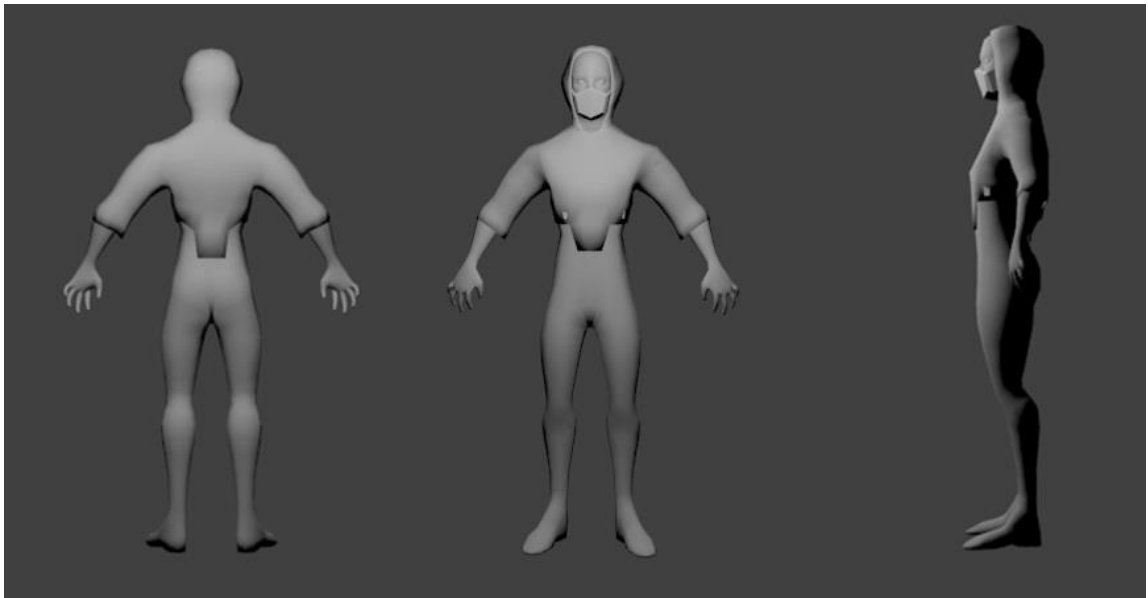
PICTURE 56 A rough version of what the concept might look in 3D
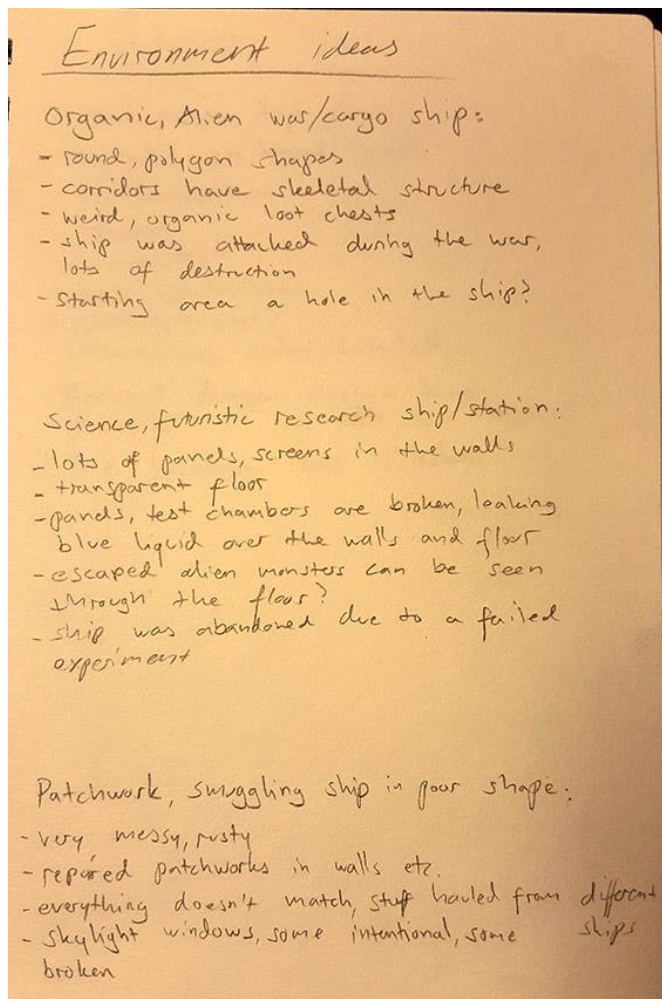
4.3   Environment design

During the concepting process of this project, from the 7DRL to the Elusive Mr. Darcy, I also had my share of designing environments for the game, though my main focus ended up being on the characters, as they were deemed more important to design early on. When artist Samuli Lautjärvi joined the project in May 2018, he took the lead in most of the environment and level design process due to his previous experience, so I had time to focus on the characters and completing this thesis.

In this section I will be detailing my process with the environment design, from quick thumbnails and photo bashes to more finished images. The focus in this part isn't as much in polished design pictures like in the character design, but more about the design process in the brainstorming level, thinking about what kind of environments there would be in the game, what would be their story and how it could be shown visually.

During early April, while making the six initial character concepts for the game project, I was also tasked to think about possible ideas for the environments. Based on the design document – the early one called Space Ship Raiders in appendix 2 – I came up with three types of environments which were called the Research Station, Smuggler's Ship and Alien War Ship. In this thesis however, I will only be describing in detail the two former ones and not the alien inspired environment, as it was put on a back burner to be concepted

on a later date. The focus at first was to be on the design for the ship of the crew that was handled by Samuli, and two possible other environments.

Since the characters were having adventures on different abandoned locations such as old space stations and ships, I was thinking of a story for each one: why would the location have been abandoned? Was it something that had happened because of the war, or was it something that had occurred inside that made the people leave it behind? I wrote notes (picture 57) on each idea detailing the look; shapes and colours, possible props and items littering the floors and the reason or conflict that the place had gone through, and how it could be perceived in the design.

PICTURE 57 My notes on the environment ideas

4.3.1 The Research Station

The first environment to be designed was a scientific research station, where they had studied aquatic life. It would have lots of transparent surfaces, strange testing equipment, water tanks and screens flickering on the walls. The overall atmosphere would be uneasy and a bit creepy, since the floors would also be transparent, and something could be seen swimming under there from time to time. The place would have been abandoned due to inner conflict, a failed experiment had gotten loose from their testing chamber, and started wreaking havoc. After that the surviving creatures had continued to evolve and live on their own in the station. I gathered a reference images in a mood board for the research station that can be seen in picture 58.
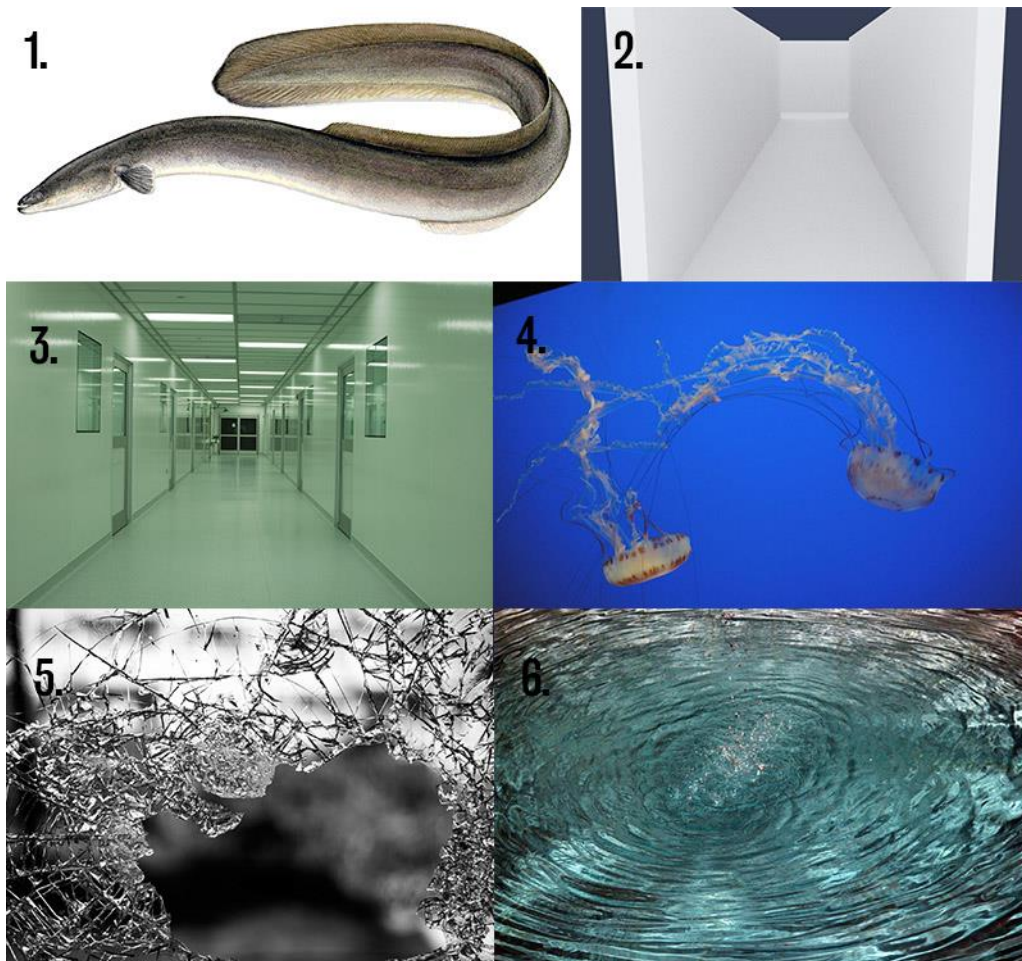

PICTURE 58 Reference images for the Research Station: 1. American eel (Wikimedia Commons n.d.) 2. Screenshot from a corridor I made in Blender 3. Corridor (Technovation.org 2013) 4. Jellyfish (Neal Ziring 2016) 5. Broken glass (Pixabay.com 2015) 6. Water background 2 (Publicdomainpictures.net 2016)

To better illustrate my idea for the others, I made a simple sketch (picture 59) of creatures hiding under the floor, and how they could be seen in the beam of light the player character would shine on the corridors. For the sketch I made a simple corridor from blocks in Blender, and took a screenshot – the image can be seen in the references in picture 58. Then the screen shot was opened in Photoshop and the rest painted on top of it. For the creature, I looked at pictures of weird sea critters, and based it on eels and jellyfish (picture 58): I liked the mix of sharp teeth, glowing eyes and long tendrils. It is nice way of concepting creatures – combining elements from several real-life animals to get inspiration and a level of credibility for the design.


PICTURE 59 A sketch of the research ship's corridor

Though this section handles environment design, it is also important to think about the items and props that belong in those environments. For this reason, I also made some prop designs for the research station: in picture 60, there is a broken panel oozing blue liquid, two testing tubes; one whole and the other broken, and a chest of loot. These were all mostly done by photo bashing, to save some time and to get nice looking results. I also used the same colour scheme for all of them to get the feeling of unity: greens, blues and light grey with a purple tint. I will briefly go through each prop to introduce the painting process.
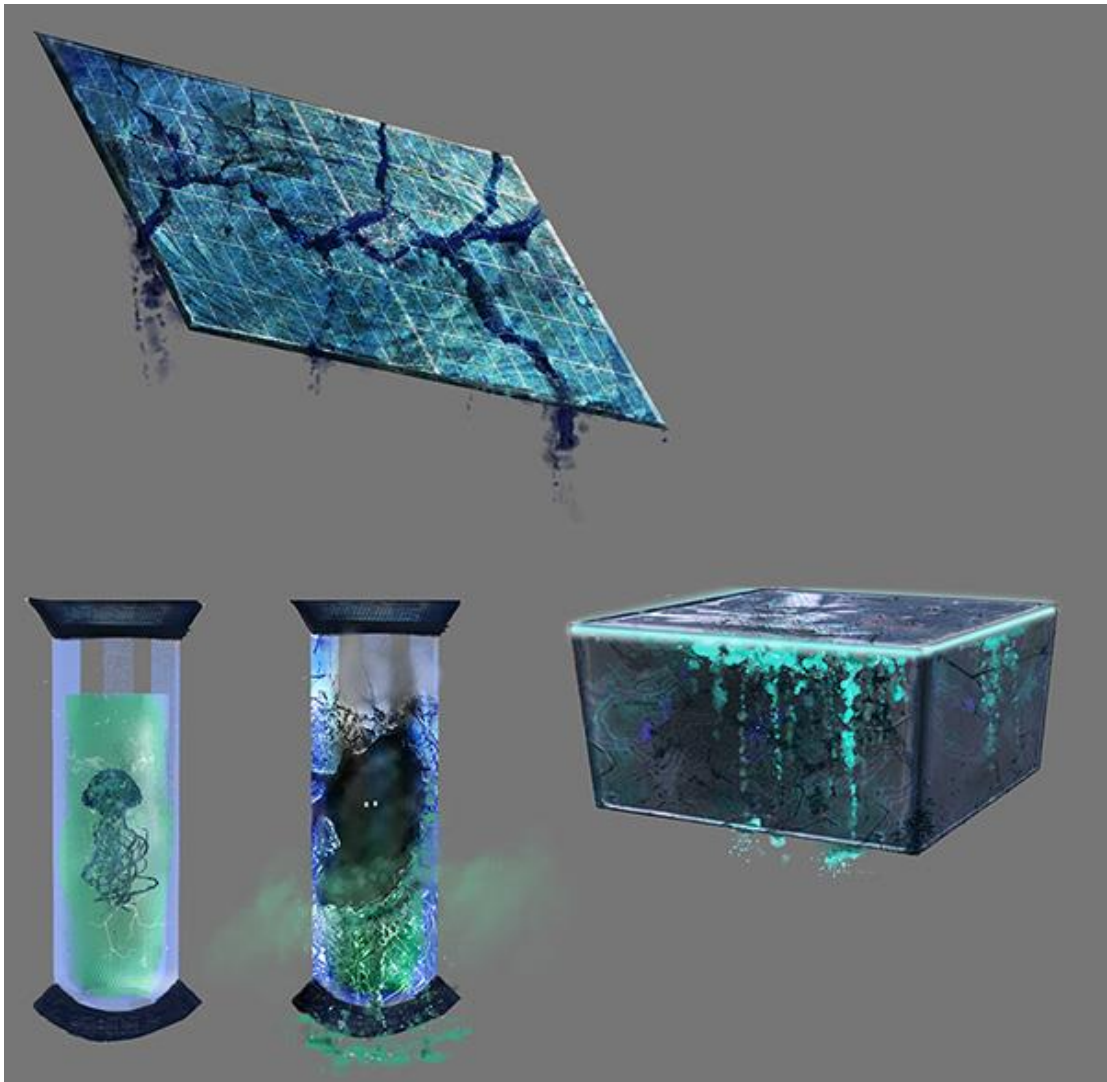
PICTURE 60 Prop design for the Research Station level

In picture 61 is an image of the process of painting the broken panel that would be decorating the Research Station's walls. First, a photo of a solar panel was found, to work as a base for the prop. I masked the background from the photo in Photoshop, and colour corrected it to a nice shade of blue. Next, the water texture was added as an overlay layer which I had saved as a reference in picture 58, and the perspective, opacity and colours were tweaked until the picture looked suitable. After the base was ready, I started painting on top of it, adding cracks with a dark blue and highlights with light green and teal. To finish the panel prop, more details such as blue liquid dripping from the cracks was added and a levels adjustment layer used to get a nice contrast.
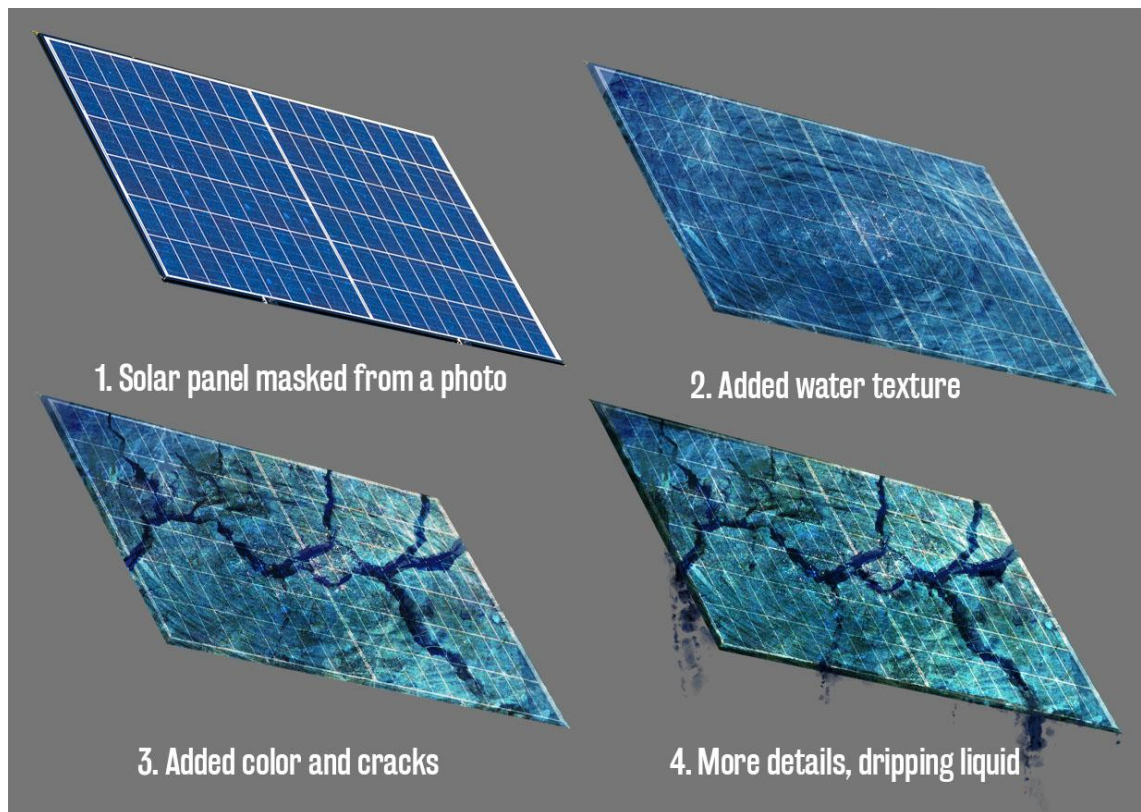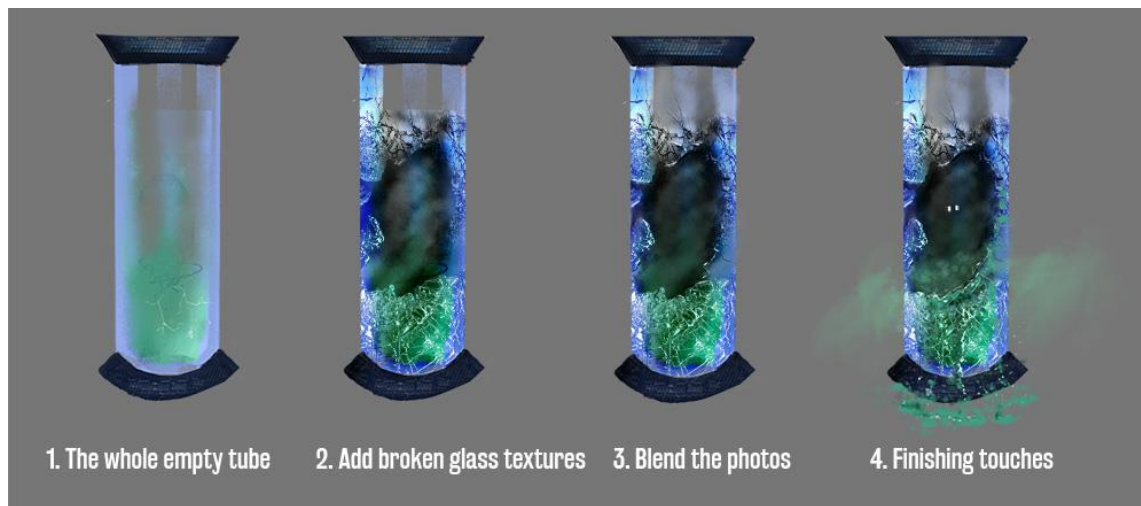
PICTURE 61 The painting process for the panel, first picture is from a photo of a solar panel (Businesstoday.in 2018)

For the testing tube, the process (picture 62) started with a simple sketch. The basic shape of the testing tube was painted quickly, using a polygonal lasso tool select the areas to have sharp edges. Then I used hard and soft brushes to map out the glass container, the liquid inside and the top and bottom parts. When the basic tube was ready, a jellyfish was painted inside of it – I wasn't concerned with the details, as it would be blurred by the glass anyway. To finish up the testing tube, some bubbles, reflections on the glass and fine cracks were added.
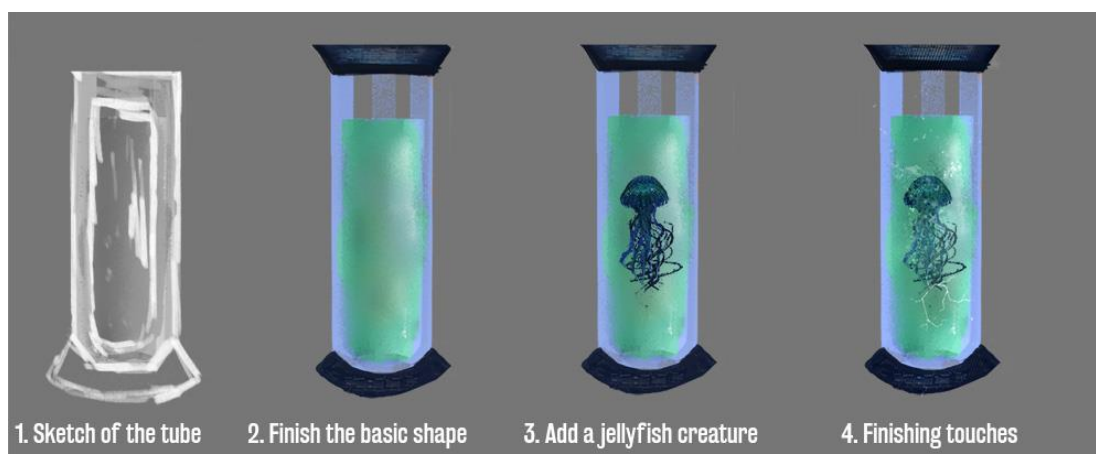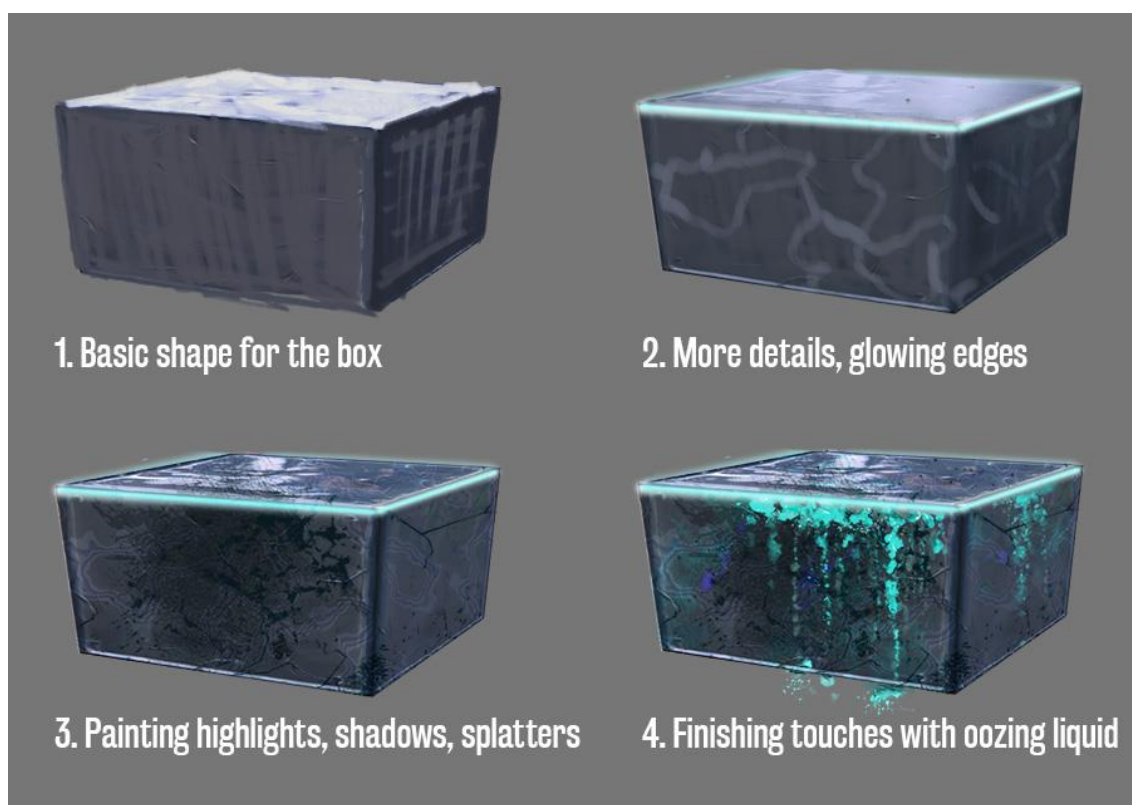

PICTURE 62 The painting process for the testing tube

After creating the basic testing tube, it was easy to make a broken version (picture 63) of it: the folder of layers for the normal testing tube was duplicated and the jellyfish layer was hidden. I made a new layer on a normal mode, and painted on top of everything to reduce the amount of liquid in the tube. Next, I pasted the photo texture of the broken glass from my references (picture 58) into Photoshop and masked away all the unnecessary parts. The texture was duplicated and rotated to get the desired effect around the glass. When the textures were in place, they were blended into the picture, adding more cracks, lights and shadows and darkness to the middle. In the end, I added glowing eyes to the middle of the darkness indicating that some creature still lurked inside, and painted some green liquid pouring outside; at last, some green vapor was put around the tube.

PICTURE 63 The painting process for the broken testing tube

The last prop discussed, is the loot chest. As can be seen from the process picture 64, the concept was started by painting a rough shape of a box. A light grey colour with a purple tint was used, as I was thinking of a material that was steel-like, but much shinier and light. I kept adding more detail and smoothing the whole image; glowing edges were added, so the outline of the chest could be seen even in the dark. Next, highlights were painted and some texture added with a splatter brush and winding shapes drawn all around the chest. To bring it in with the rest of the props, I also added a glowing liquid oozing out of the chest – since the Research station had dealt with marine life, many of the tanks holding different species had shattered or malfunctioned, and the place was looking quite messy nowadays with the corridors flooding.

PICTURE 64 The painting process for the loot chest
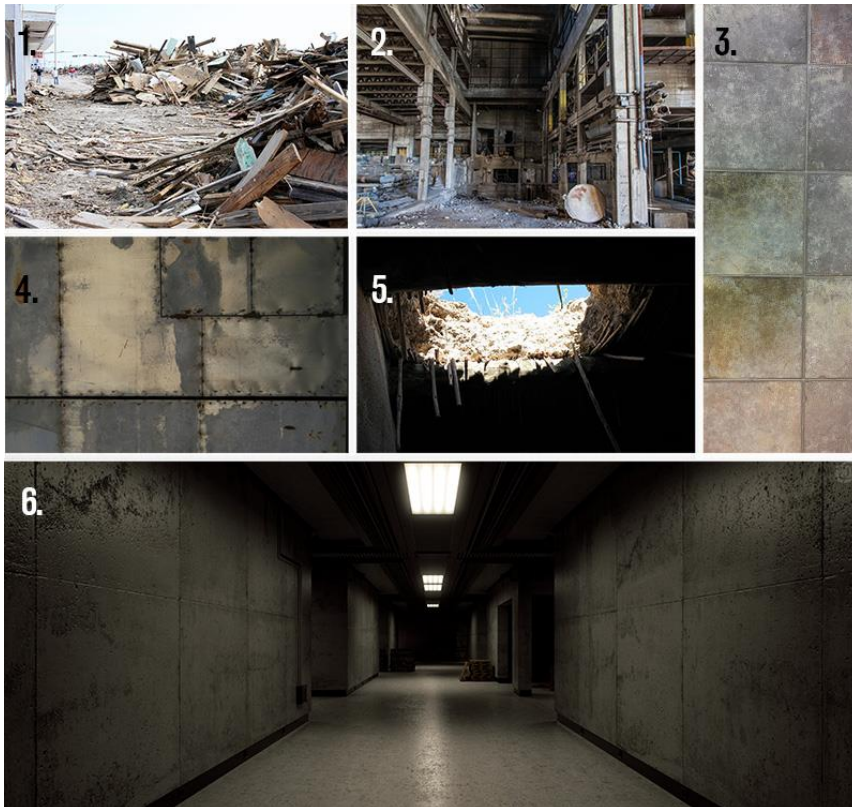
4.3.2   The Smuggler's Ship

After the concepts for the Research Station, I would like to talk about the Smuggler's Ship environment. The ship would be in poor shape, having been a patchwork of repairs and miscellaneous equipment already before it was abandoned. It would have rusty metal plates on the walls, and dangerous holes in the floor, walls and even ceiling. The caved in openings in the ceiling would be where most of the lighting in the level would come from.

In picture 65, there is the first concept of the Smuggler's Ship that I drew, using photo bashing technique to create the environment in grayscale to avoid having to match the colours together from the different photos. This concept, much like the one in picture 58 showing just the creature under the floor, was mainly for displaying the mood of the environment quickly, and introducing the holes in the ceiling bringing light to the level. I won't show the detailed process of painting this concept in interests of not repeating myself too much, as the next concept art that I will be describing uses most of the same techniques but on a bigger scale.

PICTURE 65 First concept for the Smuggler's Ship

The photos I used in the photo bash for the concept art of the Smuggler's Ship, can be seen in picture 66.

PICTURE 66 Reference images for the Smuggler's Ship: 1. Debris pile in Texas (Wiki-media Commons 2008 2. Abandoned factory (Pixabay.com 2016) 3. Floor tile texture (Pixabay.com 2014) 4. Cool metal texture (Shannon Palmer 2008) 5. Hole in the roof (James Emery 2007) 6. IES Corridor (Zbigniew Ratajczak 2012)

4.3.3 The Hangar

Next, I made a shot design concept art with which I wanted to capture the mood of the game: it was a scene from when the character is returning from their looting trip, and waiting to be picked up from the abandoned ship or space station they have been visiting. They would be standing in an old hangar space, looking at stars with their loot next to them. This concept wouldn't necessary be of the previous environment types, but more of a general concept. In this painting I would use framing as a technique to bring focus to the character, and use leading lines and rule of thirds in the composition. The reference images I gathered for this piece, can be seen in picture 67.
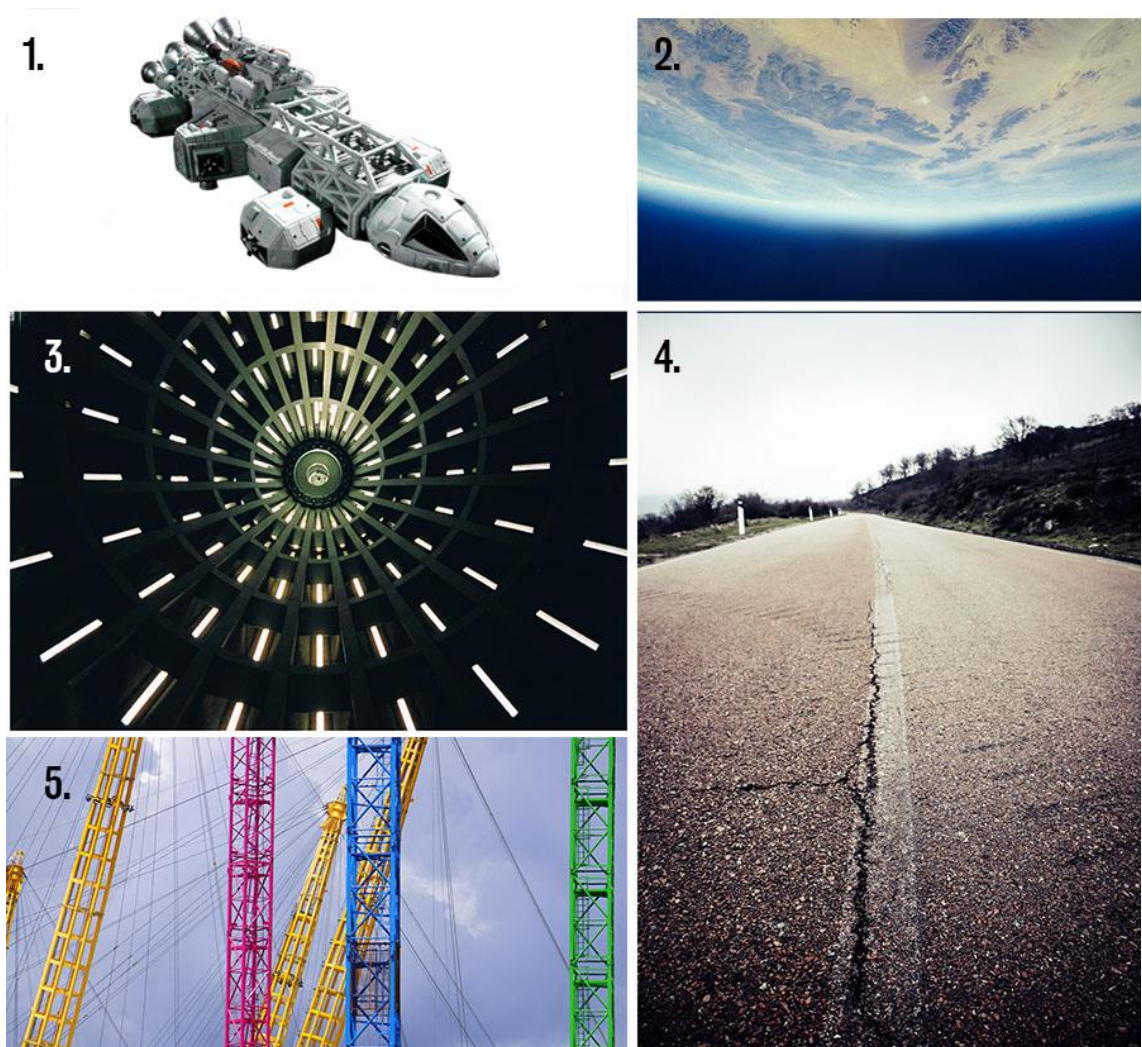
PICTURE 67 Reference images for the Hangar concept: 1. Space ship model (Pixabay.com 2017) 2. Planet atmosphere (Jay Mantri 2016) 3. Abstract lights (Antonio Esteo 2017) 4. Cracked asphalt (Markus Spiske 2007) 5. Construction cranes (Mikes Photos 2016)

To start making the Hangar concept, I created a new Photoshop file, filled the background with a neutral grey to begin, and then pasted the circular image of the lights from the reference pictures to the canvas. The end of the photo was masked with a circle, as there would be an opening to space there. I also created a new layer and painted a base for the floor, adding some texture to it. To make sure the composition would work, some guidelines along the rule of thirds were drawn, but I ended up cropping the picture from the top, making the lines appear too high up. The first process image for this painting can be seen in picture 68.
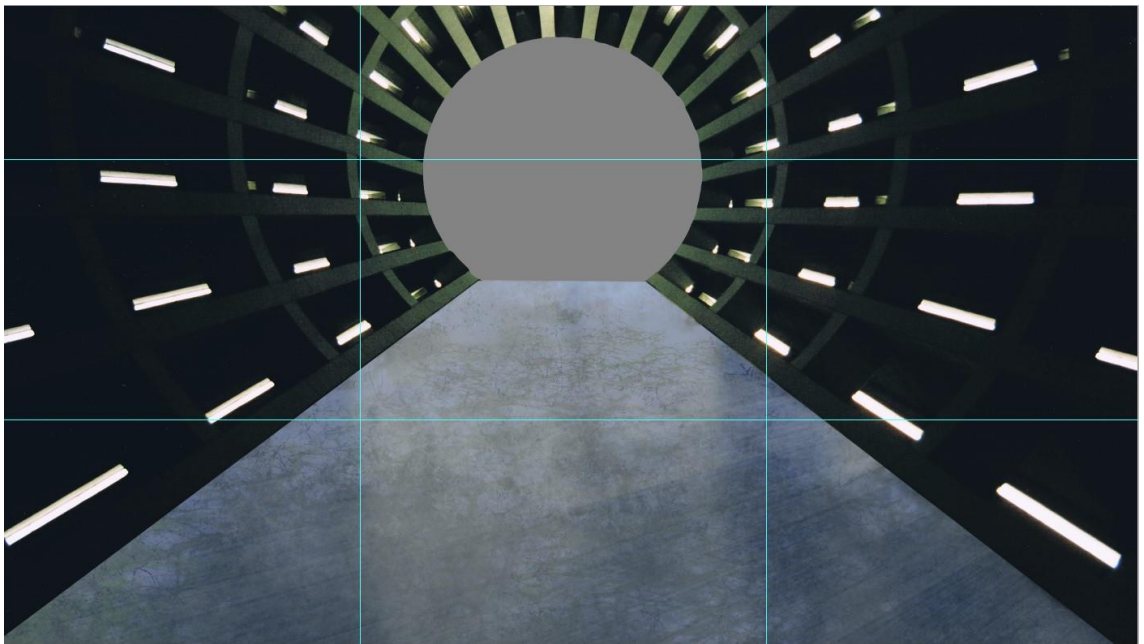
PICTURE 68 The starting composition for the Hangar concept

Next, another photo texture was added for the floor, the cracked asphalt, and the unnecessary parts masked away. I also pasted the planet atmosphere image to the circular opening, and painted some stars on top of it with a layer in a linear dodge mode (picture 69). Though I have usually worked in grayscale first and added colours later, the original colours of the photos were kept this time, as there were no obvious differences in tone that couldn't be fixed on the later stages with filters and adjustment layers. To add some texture to the place, some grime was painted on the walls and lights added.
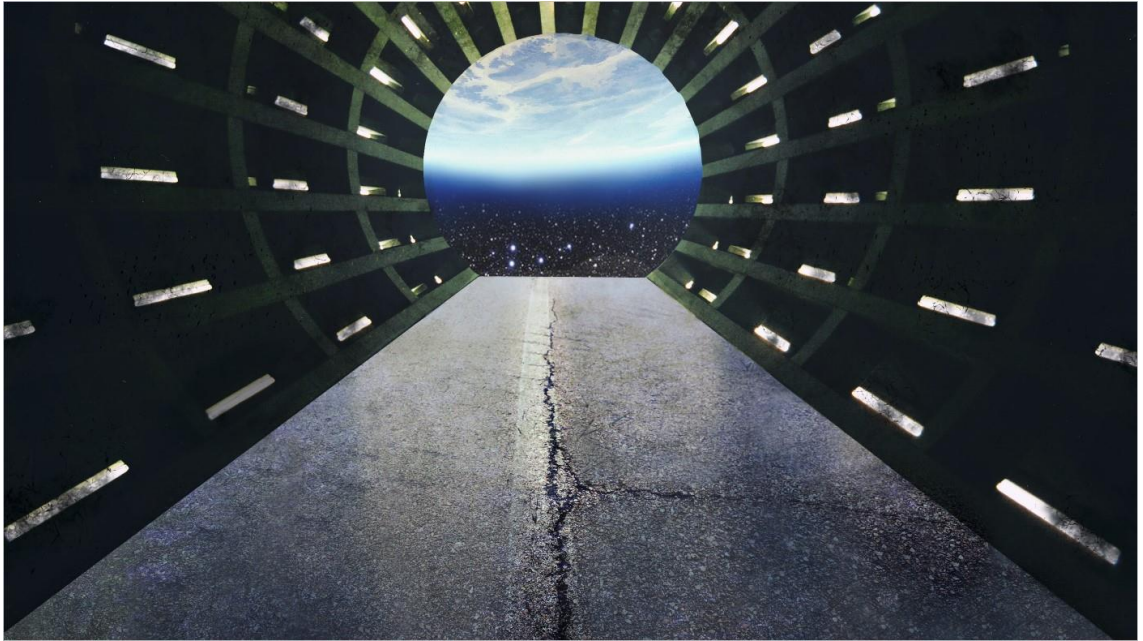
PICTURE 69 The concept with the floor and space textures in place

Now that the basic background was set, black silhouettes of a character and boxes against the space were drawn, and the picture of the spaceship set to be floating in the distance. I also painted some grey with a soft brush the end of the hangar, to lessen the saturation and make it look like the character was farther away (picture 70).

PICTURE 70 The character and spaceship added to the concept

At this point it was noted that the foreground of the concept was very empty – I tried adding some boxes along the walls closer to the viewer, but it only made the rest of the

image look emptier. Some keyframe concepts at Artstation.com were looked for inspiration, and it was realized that some silhouettes of machinery and rubble could be put really close to the viewer and then blurred to create a camera lens effect. At this point I also added a horizontal beam going across the scene from a photo texture of a construction crane from my references, and used a colour range selection to mask the background away, and then coloured the beam to fit the rest of the image. Then a new layer was created to the top of the image for the foreground, and some sketches painted in black with the help of polygonal lasso tool (picture 71).

PICTURE 71 The preliminary foreground

To finish the Hangar concept, I painted the rest of the foreground and used a blur filter on it, and tweaked the levels and colours of the whole image. A blue overlay layer was added to bring more unity to the whole colour scheme and a levels and contrast adjustment layers used to get the values of the image fit together. I painted some grey on top of the blurred foreground to add a little bit of shape to it, and then deemed the concept ready (picture 72).

PICTURE 72 The finished Hangar concept

5   CONCLUSION

There are many things that have to be taken into consideration, when an artist wants to create effective designs and concepts for video games: it is not enough to just have strong artistic skills, but there needs to be a lot of thought process behind the painting to understand exactly why you are designing something in a certain way, and what is the concept's main purpose that it will be used for. It is crucial to be able to view the designs a step further from the static images, to imagine them moving and interacting in a 3D world to avoid problems in the next stage of the process.

Reading on different art principles and techniques definitely made me analyse more while painting, and to put more time into the planning and preparation period before I actually start working on an image. It was interesting to analyse concept art in regards usage of different principles, and it made me understand the construction of successful paintings better.

Working on the concepts for the Elusive Mr. Darcy game taught me a lot of new things of concept art. I learned how important reference is to bring out the most of your painting, and how photo bashing can drastically speed up your process, and take your concept to new paths that you had not even considered. I was especially impressed by the value of creating 3D references. In addition, I understood to not get too attached to your ideas or designs, as things have a tendency to change all the time during the early concepting period of a game project.

If I would go back and work on this project again, I would plan my time better to have clear goals daily to keep up the concepting process smoothly. I would also ask more feedback, as you tend to become blind to your own work after a while. There are many paintings that I would like to polish more to improve them or fix things that were pointed out to me, but having perfectionist tendencies I tried to move on swiftly when a painting was sufficiently finished to not waste time.

I am still proud of the results I got during this project, since the schedule to produce presentable concept works was at times very tight. The research on art theory and reference usage are skills that will benefit me on the long run, not to mention portfolio works gained from this project, so it is fitting to say that I'm very satisfied with this thesis.

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APPENDICES

Appendix 1. The game design document for the Elusive Mr. Darcy

Written by Arto Koistinen (May 2018)   1 (6)

# The Elusive Mr. Darcy
An Adventure in Sci-Fi Noir

An adventure game with a management metagame
(internal concept: an adventure game where you don't get stuck?)

It has been almost a decade since the war. The bloodiest, most brutal war anyone had seen tore the galaxy apart and in its wake the chaos reigned. In the end, the planets united and wrote the Universal Declaration of Peace. A new federation was born and, for the first time in history, an AI was placed in control.

In this time of delicate peace, the crew of the "trading vessel" Nebula Black strive to make a living. The group of outcasts, outlaws and general misfits comes upon a lucrative contract: a million UniCoin for locating and retrieving a fugitive known as Mr. Darcy. Unfortunately, this seemingly simple mission leads them down a rabbit hole of deceit and conspiracy that threatens the entire galaxy.

Core Gameplay

The game combines a story-driven point & click adventure game with space exploration and management.
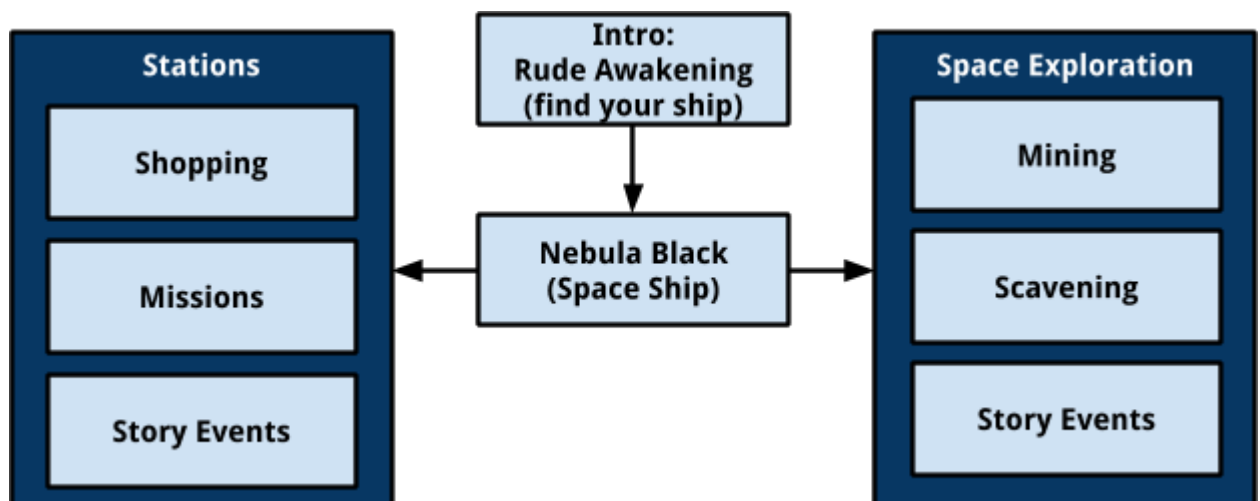
The game center's around the spaceship Nebula Black. The player can wander inside the ship in the adventure game mode, talk to the crew members and interact with various items. Some story events also take place within the vessel. From the ship the player has access to the galaxy map, used for the space exploration mode.

The space exploration is the core of the management metagame. The player explores various planets and other regions of the galaxy and mines asteroids or scavenges abandoned stations, ships or ruins. Some of these may incite a story event, which is played in the adventure mode.

The player can enter stations and ships using any member of the crew, although the captain is the main character. Different characters have different abilities that need to be used to solve the various puzzles in the adventure mode.

The Crew

Captain: Duanna Ur

Duanna is the owner of the Nebula Black and thus the captain of the crew. Nobody knows much of her past, but the other crew members assume there's been some traumatic event she still runs away from or, more often, drinks to forget.

She's the last surviving member of a Solar noble family what was slaughtered in a power struggle a decade earlier. She was then taken in by a restaurant ship and provided for by its crew.

Hacker: Beef

Beef's real name is not known, nor if he ever had one. He's one of the Genebred, a race of humans genetically modified for specific tasks. Beef was supposed to work on

a mine world with very physical tasks, and thus he's kind was bred to be strong and not very bright. Something went wrong with Beef's breeding, however, and he was born with extreme intelligence. He was due for extermination when the breeders noticed their error, but managed to escape and now lives as a wanted fugitive.

Beef was taken in by a Codespeaker (see 'Setting'), who taught him programming in secrecy. The Codespeaker had a pet AI and taught Beef to take care of it. Now the AI travels with Beef.

Negotiator: Elar Withew

Elar is of the Gealor, a humanoid species whose males are known for their extraordinary peacock-like feature commonly used to attract mates. Most Gealor cultures are centered around mating, but Elar was born different: he's attracted to other males. While homosexual Gealor are no rarer than human ones, they're generally frowned upon or even prosecuted, which drove Elar to choose exile rather than denying his nature.

Medic: Li Nguyen Schmidt

Physicians were recently outlawed by the AI, due to robots posing much less risk for the patients, but Li wasn't ready to abandon his calling. While it's true that robots are generally better for treating both illness and physical trauma, they're also heavily regulated and receiving treatment brings too much unwanted attention, making a rogue medic an important addition for any shady smuggler crew. Li is a member of a nomadic people called the Ashur Da.

The Story

After a devastating war, a supposedly completely neutral and benevolent AI was appointed as the ruler of the galaxy. It was developed by a joint committee of peoples under a tight scrutiny and controls the galaxy down to the minutest details, such as pricing. This is explicit in the game and also affects the game's balancing.

The AI has now ruled for hundreds of years. They have been, for most, centuries of peace and prosperity. The society is that of tight scrutiny and surveillance, and the AI has detailed information on all its citizens -- well, almost of all of them.

In the fringes the galaxy, there's a new society brewing. The outcasts have slowly flogged to the planets that are barely livable and poor, but also with less surveillance. Here, the shiny cover of the society is cracking. The AI keeps control with an iron hand and any dissents are quickly silenced. The neutral and objective AI also seems to be doubling down on some groups more than others.

Enter the Nebula Black, crewed by a rag tag group of dissidents looking for any way to make easy money. They come by a seemingly innocuous task: find and bring back a man called Mr. Darcy.

After a number of dead ends, and being constantly attacked a group of mysterious assassins, they finally find their target. Some unbelievable truths are revealed and the crew now faces a galaxy altering dilemma. Expose the truth to everyone and risk a devastating war, or stay silent and let the status quo continue. Or find a third option?

The Setting

The game's set in the distant future. The galaxy has been largely populated by humans and other species. After the first contacts with alien species, the people quickly noted how similar they were to each other. All the known sentient beings come from relatively similar planets with liquid water and an atmosphere with an ocean and even have similar lifespans. The scientists quickly deduced that all life in the galaxy must have a common origin, but the birth world – called the Cradle – of all (sentient) life has not yet been located and its search has been prohibited by the AI. For very much this reason it's the Holy Grail for many rebel groups.

Travel between solar systems is done via FTL engines using the dark energy, discovery of which kickstarted the galactic age thousands of years ago. The dark energy is the most important resource in the galaxy and is heavily regulated by the AI. Needless to say, it's also the most smuggled of all resources and any self-respecting pirate crew has the means to gather it.

The Peoples

The Solars
The Solars claim to be descendants of the original humans of the Solar System and are generally a rich and privileged class. The Earth is mostly considered a myth which even the Solars rarely believe in now.

The Genebred
Before and during the war, there were numerous genetically bred people who were much akin to slaves. They were bred for specific purposes and often with reduced mental capacity. This was outlawed after the war and the genebred were granted full citizenship, but due to persisting prejudice, they still mainly kept to themselves and many worlds still uphold the old slavery laws. For unknown reasons, the AI has not deemed it important to enforce the Genebreds' rights.

The Gaelar
The males of the Gaelar have a peacock-like feature which they use to attract mates. While in no way a monoculture, most Gealar societies are structured around this feature and social standing is largely dependent on a man's ability attract the females. They're often criticized of being very patriarchal, but female Gaelar do wield a lot of power, even if often unofficially.

The Ashur Da
A nomadic people usually assumed to be the same species as the Solars, but some scholars argue that they're from a different homeworld. They were hunted to near extinction in the war and most records of their history were destroyed or lost.

The Codespeakers
More of a caste than a people, the Codespeakers are the only ones allowed by the Algorithm to learn programming. They are highly exclusive and watched carefully, for they have enough knowledge to expose the AI for what it really is.

Locations

Nebula Black

A rundown trading vessel modified heavily by its crew. It contains sleeping quarters for six people, a lounge room, toilet and shower facilities, a conference room, storage space and the cockpit.

The Golden Star

A space station in the fringes of the galaxy and popular joint for outcasts of all kinds. The station contains extensive entertainment areas, bars, casinos and bordels.

References

- Firefly
- Star Wars: Rebels
- Jessica Jones
- Star Wars: Rogue One
- Star Wars: Knights of the Old Republic
- Guardians of the Galaxy
- Dreamfall: Chapters
- A Dark Room
- Arkham Horror

Appendix 2. The early game design document for Space Ship Raiders

Written by Arto Koistinen (March 2018)

SPACE SHIP RAIDERS

It has been almost a decade since the war. The bloodiest, most brutal war anyone had seen tore the galaxy apart and in its wake the chaos reigned. In the end, the planets united and wrote the Universal Declaration of Peace. A new federation was born and, for the first time in history, an AI was placed in control.

The war left most of the population dead and thousands of space stations, ships and outposts abandoned. This provides an opportunity for enterprising people such as yourself. You and your crew seek out these abandoned derelicts and loot them for treasure. The hulks are full of danger and energy is limited, but nearly limitless riches await the one who is daring enough.

Core Gameplay

The game is divided into two main parts: exploring the space ships and managing your crew. The exploration takes place in a top down 3D world, with procedurally generated levels. The goal of the exploration is simple: gather as much treasure as you can and get out before you run out of energy.

Energy is the main resource in the exploration game. The space ships are mostly dark and cold, so if you run out of energy, it's game over. Using a light uses energy, as well as looking at a map or using special tools. The levels contain energy cells that you can use to refill your energy.

Once you have collected enough loot, you can exit the ship and return to the managing mode.

As the player, you control a crew of around a dozen people, each with their own specialities, strengths and weaknesses. You select a single crewmember to take with you to explore the abandoned ships, and if you run of energy, you lose that person.

After the level, you can open all the loot you gathered in the level. Each contains something that can be either used or sold. You can travel to several locations to use the UC (Universal Credits, a cryptocurrency issued by the AI) for items or hire new crewmembers.

Each location has a specific location (e.g. shop, repair, hire), and can also contain random events that affect the gameplay.

The locations are presented in text.

(Option: Locations are premade levels that can be explored the same way as ships in the exploration mode).

Story

The game contains two different levels of story: the background story and the character story. The background story is told via relics found in the exploration mode; old logs and other texts relay information on what happened during and before the war.

Each character has their own story arc the player can complete by exploring ships and locations.

Banter

Although only can character can be out exploring, they use radio to be in contact with the rest of the team. Different situations can spark small dialogues between the exploring character and the others.

Levels

Each level is either a ship or a station and has the following information:

- Nearest Star (determines the cost to enter)
- Ship / Station model (determines the general shape of the level)
- Level of Disrepair (the higher the level, the less rooms with light and electricity the level has)
- Treasure Level (how much treasure the level approximately has)

Crewmembers

Stats:
- Electronics
- Athletics