CREATING COHESION BETWEEN 2D AND 3D

BOARDGAME CHARACTER ASSETS

BY

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THESIS

Submitted in partial fulfillment of the requirements for the degree of
Master of Fine Arts in Digital Arts awarded by DigiPen Institute of Technology
Redmond, Washington
United States of America

November
2018

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Abstract

I was introduced to the tabletop board game hobby and it reignited my passion for collecting toys. From the 2d illustrations to the 3d miniatures, board games are the complete package. Before starting this project, I was primarily practiced in 2d mediums, while only dabbling in the 3d realm. I was curious to study the relationships between the two and how they could be applied to a board game pipeline. Most importantly, I wanted to ensure the assets I was creating would fit together into a cohesive package that could stand up to industry standards.

In this thesis project I develop a visual aesthetic that is the result of 3d sculpted creatures and how they will be presented in 2d illustrations. I will refine my working pipeline to better suit my visual style and apply what I've learned to create board game assets.

Table of Contents

List of Figures

Introduction

My passion for art came at an early age with the teenage mutant ninja turtles. It seems that is was directly marketed towards me. Between the Saturday morning cartoons and the accompanying action figures, I would be drawn to the two mediums. My passion for two dimensional drawings and three-dimensional miniatures was recently reignited with the fast-growing industry of tabletop board games. I was swept up in this market as it spoke directly to my childhood roots.

I always liked the connection between the two styles 2d and 3d. Holding an action figure and looking at a drawing to see the similarities is a rewarding experience. The same is true for board games and miniatures. I want to recreate that effect with my illustrations and 3d printed miniatures. Successfully pulling together the aesthetics of separate mediums was a problem I was curious to solve.

The level of my skills in these two areas was exercised to different degrees throughout my artistic career, yet I wanted to incorporate them together in an attempt to create a complete package, a board game. Focusing on character design I wanted to create both 2d and 3d board game components that felt as if they stylistically belonged in the same world. Also, to create a world and backstory that integrated everything with a common theme. Because my background in the two mediums was diverse, I needed to make sure they not only worked together but supported one another. I did not want to have any disconnect in either the aesthetic or tone of the assets.

My intention with this project is to study board game components and determine what the industry standard is and deliver on the same level. I want to see how these two separate mediums can work together and how they might not. How does the amount of detail affect the final look in one vs the other? How does the size at which you view each determine the forms of a design? Will the silhouette be equally effective drawn vs sculpted? What are their strengths/weakness? Can one medium carry the other with its strengths? Along

the way I would develop my own pipeline using a combination of 2d and 3d assets that would strengthen the overall cohesion.

Tabletop Industry Standards

Assets in boardgames

There is a wide range of art in the board game industry. The most common components for a board game, are a board and some sort of player token. The variety is so vast that there isn't really a set rule for what comes in the box.

Some are card drive some are dice driven. Some games have little to no art and are generally referred to as abstract games. While some put all their efforts into the box illustration and board art and keep player token pieces plain and uninteresting. Collectible card games, such as Magic the Gathering are smaller and rely on robust illustrations to convey their world. The cost to create fully fleshed games goes up in tandem the amount of assets and the quality in which they are produced.

Production cost was not factored in my project. Although I understand that production costs are an important aspect in getting a game to market, this part of the creating a board game was not taken into consideration. The size I planned on printing my miniatures is quite a bit larger than is common and would increase the selling price. I was more interested in the cohesion of each asset and producing a complete package, at least a vertical slice of a finished board game.

My style – who I want to attract

My personal artistic style has been evolving through the years and I gravitate towards games that have great art and are at a level of which I aspire. I'm first drawn to a game by the art and then will decide to buy it if it has been reviewed well. Rarely if ever have I bought a game with good reviews alone, it must have a good table presence. I feel that table presence is considerably

amped up with miniatures. I want to attract a similar type of board game enthusiast.

King of Tokyo

A very influential game that I need to reference is The King of Tokyo[1]. It was one of the first games I purchased. The art is cartoony in form and color. It is also a very simple game with limited components. Most of the art comes from the cards and player tokens. This is a game without miniatures. In their place are cardboard cutouts that reinforce the atmosphere, and table presence. These cutouts are successful character place holders, but I believe having miniatures in addition to 2d representations of monsters adds another level interest. However, the games simplicity of play and style, were a good place to start my journey.

Game and Aesthetic Design

Setting up the rules of character design

Above all, art is most important. Figuring out the details of a properly working board game was not of huge interest to me and was also beyond the scope of this project. However, I was still interested in working with a designer. I thought it would be valuable going through this process, as it might bring to light unforeseen steps in the development of art assets. I teamed up with an undergraduate by the name of Chase Mattson. He is studying game design and was eager to work with an artist to develop a game.

Before I met up with Chase I started to think about the mechanisms of play and how that might influence creature design. I didn't have any background

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[1] Garfield, Richard. *King of Tokyo.* Iello, 2011. Boardgame.

in board game design, so I started thinking of the most basic mechanisms I could as a jumping off point. I started with Rock, Paper, Scissors.

I tend to gravitate towards a certain type of creature. They are big brutish monsters that are top heavy and powerful. Another look that shows up in my drawings are creatures with spikes and horns. Both attributes provide for designs that can evoke giant beasts clobbering each other. I cannot speak for the exact reason why I enjoy these themes or the idea of combat. There must be some connection between the above creature types and action figures of childhood. Even as a kid you know immediately what these monsters were meant to do. Rock paper scissors provided me with two of my most beloved monster types.

I thought these attributes would be a good start for unique designs. Scissors would have sharper angles and could slash their opponent. Rock would be heavier, dumb muscle characters that would smash attacks. The concept of paper was a little more abstract, but I thought they could be speedier, more agile creatures. I started sketching my ideas placed them into their assigned categories. I got some interesting results but ultimately felt I needed more inspiration and outside influence

Figure 1. First creature designs - rock, paper, scissors

To get the gears moving I played a word association game with friends and family. I made a list of adjectives describing each element, Rock, Paper, Scissor, then asked them to tell me what came to mind when I read them aloud.

After 20 or so people I gathered all the words and made a list that resulted in the silhouettes in figure 2. I wasn't expecting anything revolutionary, but it did provide with some interesting answers that helped get me out of my own head. Some words of note would be, bulldozer for Rock, feather for Paper, and crab for scissors.

Figure 2. Silhouettes - rock, paper, scissors

Silhouette

The purpose of a unique silhouette is for a player to easily differentiate one miniature from another. In addition to immediately recognizing characters, a dynamic silhouette can create lots of visual interest. This idea translates with ease between 2d and 3d. If it's a strong design, it should radiate through both mediums.

The size will dictate the degree of diversity needed between models. It is more difficult to look at and process fine details forcing viewers to rely on silhouette. Smaller miniatures will need to more assertive to stand apart. The larger models that I ended up creating have more leeway. In addition to the silhouette, the secondary forms will be more evident and provide more information.

Making an illustration for the box cover or a player sheet requires an interesting posed creature. The silhouette will make this an easier process, as it creates strong visual interest.

Theme in games

Theme in board games is very important. In the ever-increasing quantity of games in the tabletop industry, it pays to have a game that is oozing with theme. It's more attractive and it allows players to easily disconnect from reality and enter a new persona.

As part of this project I wanted to create a world in which I could become invested and keep providing me with inspiration. The overall idea is giant monsters fighting each other. This isn't inherently original, so I expanded on that idea.

The world in which I dreamed was a dystopian future where humans used mutagens to create giant champion monsters put in arena combat to earn glory for their family. I was working with the Rock, Paper, Scissor mechanism for a starting point for character design so I applied that to this world. Three separate tribes with unique elemental attributes; water, land and air. These different cultures each have three distinct monster types.

Creatures made with mutagens comes directly from Teenage Mutant Ninja Turtles.[2] Including that bit of storytelling was an homage to my youth. Plus, mutations provide an almost endless array of possibilities for designs.

It is easy for people to personify animals. I feel that bringing animal elements into a character design can quickly add personality. It also is fun to bring powerful attributes from stronger animals onto the human form. A viewer's suspension of disbelief can be stretched further if these giant warriors come from a mutation vs a human that is beefed up.

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[2] Kasai, Yoshikatsu, "Turtle Tracks," *Teenage Mutant Ninja Turtles*

I want my character designs to have personality. Bringing the human out from underneath the animal is a way to grab someone's attention. There a many cool looking creature and monster designs. They are taken to another level if a viewer can see a part of themselves within the design. As viewers we need that connection, we need to be able to relate. If not, there's no reason to stick around. This is my focus when designing my mutants, and to pull it off I focus primarily on the face and eyes.

2D Aesthetic - Painting Treatment

Figure 3. My older aesthetic

Above is an older illustration I created, and it is a good representation of how I went about coloring. The transition between colors is abrupt. The shifts in color were only in brightness. I may have also played with the saturation but when I started to experiment with hue shifts, my illustrations began to have more visual interest.

Figure 4. Screen of X-Men Animated Series

I was introduced to this way of coloring through cartoons. As you can see in the image from Fox's X-Men[3]. They use a similar way of coloring. The backdrop for these cartoons could be more professionally rendered, but it wasn't practical to apply the same treatment to the animation. These types of images were the ones I would try to copy as a kid.

Figure 5. The Uncanny X-Men # 288

Although I had more access to Saturday morning cartoons, I also read my share of comics. I was not avidly studying their formal elements, but I believe they sunk into my subconscious. Because of printing limitations, the coloring was

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[3] Lewald, Eric. Iwanter, Sidney. Edens, Mark. "Night of the Sentinels (Part 1)

very basic, often using only one tone. Form was primarily achieved through line. The above comic is from the era when I read comics. It uses tonal shift through saturation and brightness, but the hue does not change. I did not adopt much of the line quality from comics, but I will sometimes use contour lines to depict form and finer line work to convey texture. Overall, they use more aggressive inking than I.

It wasn't until recently that my target aesthetic changed. Experimenting with color and discovering custom brushes in Photoshop took my illustrations away from the simplified look of cartoons. Fortunately, this change lent itself to better mirror my sculpting style and strengthen the cohesion between the two.

The image below will help in understanding how the style shifted to accommodate the greater realism found in the models.
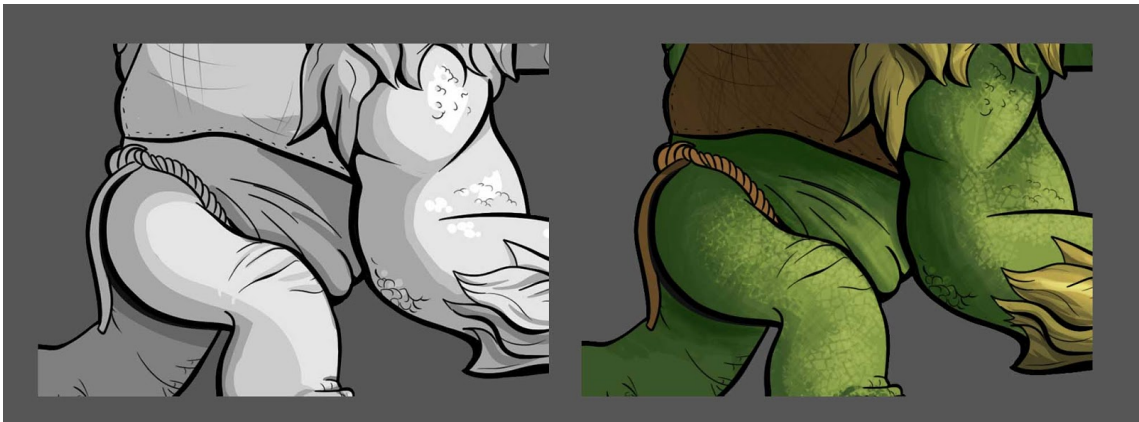
Figure 6. Gorak - Comparing Styles

The earlier (left) close up image has distinct areas where the tone shifts. It is very graphic in appearance. It is successful in representing form, but it's much flatter than the final illustration (left). I still really enjoy the earlier style and think its a valid method, but not as fitting as my updated aesthetic. The look and feel of a realistic model compared next my earlier graphic style can be jarring.

Adding texture using custom brushes is a quick and easy way to represent the finer details found on the miniatures. Experimenting with hue shifts also added more life to my illustrations that the cartoon and comics of my youth didn't

have. I wanted to retain the light-hearted feel of cartoons so I retained the heavily saturated colors.

When painting an image, my colors increase in saturation as the form moves towards shadow. As an area goes towards the light, it will decrease in saturation and the hue will become warmer. Moving from cooler shadows to warmer lights creates a richer image.
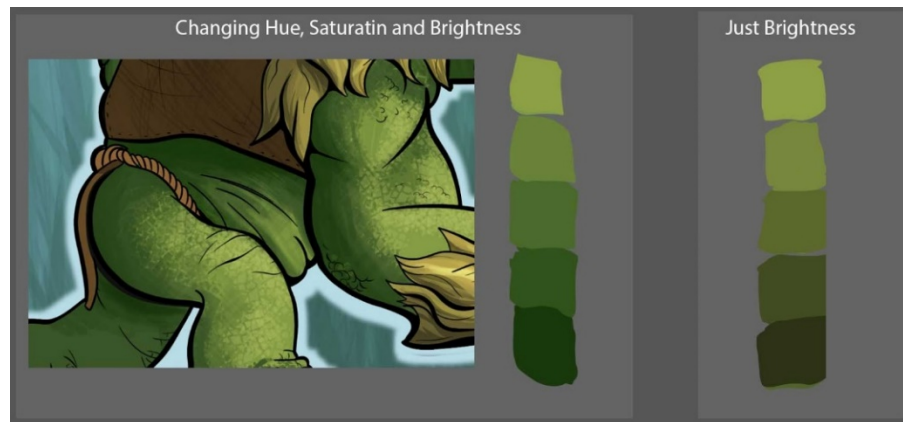
Figure 7. Color Palette

In the image below you can see the two different styles (A&B) and the 3d sculpt (C). There is a much larger gap between the appearance of A and C, than B and C. With the use of softer transitions, hue changes and textured brushes, I feel I've achieved a look that is closer to the realism of the sculpts. But, by maintaining the thick black lines I've retained some the cartoonish/comic look I've grown fond of.

Figure 8. Gorak - Line-up (early, final illustration, Zsculpt)

Having the two mediums retain some similarity was important. I changed my illustrations to work with the sculpts. If you look at a cartoon from the 90s and it's accompanying action figure, you can see the simplicity of forms and colors.

Figure 9. Teenage Mutant Ninja Turtles (action figures and cartoon)

Pipeline

It was very important for me to keep all my assets as consistent as possible. The skill level of my drawing and painting were perhaps further along i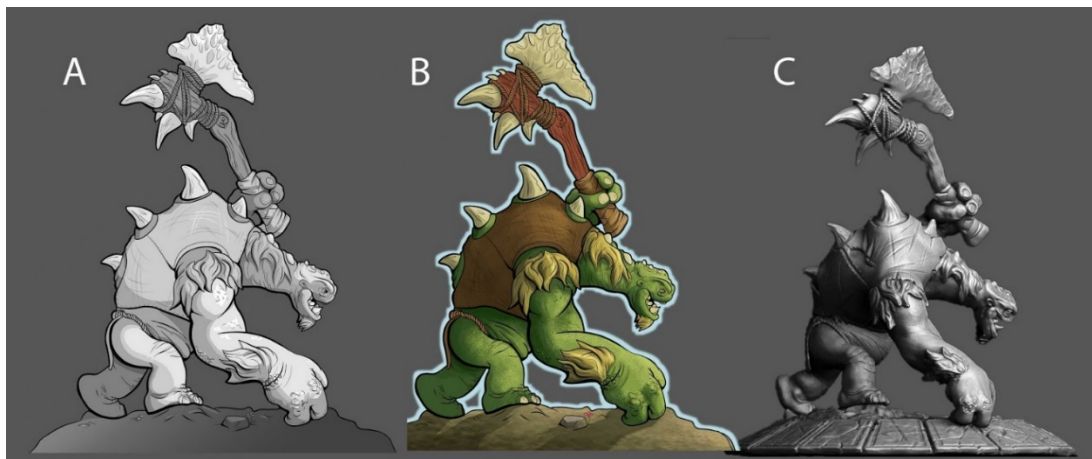n my career than my sculpting. I expected to see a disparity between the two. Being an ever-evolving artist, my process was bound to change, but I started to develop a method to properly unify the two fields.

Starting a new design, I use my rock paper scissors aesthetic as inspiration. After I've accumulated a series of sketches, I bring them to professors and friends and see where I might need refinement. This back and forth goes on a few times and then I arrive at my finished concept that is ready to take into Zbrush.

Any issues that I may have in my 2D concept get worked out in the Zbrush. Issues such as weight and proportion are easier to wrap my mind around. The choices I make when conceptualizing a creature can be vastly different with 2d or 3d mediums. Weird shapes that are difficult to rotate in my mind's eye, are much easier to work out in Zbrush. On the flip side, generating the gesture of a creature and its overall attitude can be easier with a quick sketch. I could be very strict with myself and stay completely true to the concept art, but I enjoy a more fluid process that allows for happy little mistakes.

The biggest problem that can occur when I begin to sculpt is the degree of detail that gets added. This can lead to a more realistic aesthetic which isn't necessarily my aim. It's easy to get wrapped up in these fine details that can also add more character to a sculpt. Initially it was a concern. When I started illustrating, I realized how easy it was for me to pick and choose which details to leave in or take out.

This solved the problem of consistency. I take my characters after they are posed and take screenshots of them (figure 10).

Figure 10. Droxxis - Sculpt

I then go back and trace the sculpts focusing on clean lines. These lines vary in thickness and have a solid thicker silhouette (figure 4). The addition of a thick line around the silhouette of the posed creature adds a boldness that I enjoy in drawings. This could harken back to my fondness of cartoons or coloring books of my youth. One could argue that this flattens my illustrations. I will trade that for the aesthetic it brings. The thickest line can also be brought in on major forms such as the face. This will help by both bringing more attention to the face and pushing that form slightly forward.

Figure 11. Droxxis – Adding line

The addition of lines on the interior are generally placed where forms overlap such as the feathers or areas where the form changes direction. If you were to take away everything but the line, the drawing should be close to working on its own as seen in figure 12.

Figure 12. Droxxis – Line only

After this I will mask out important distinct areas of the model such as different parts of the body, weapons and clothing. Then I set forth painting the piece. I have the original image (figure 10) near as a reference to keep the forms as consistent as possible.

Figure 13. Droxxis – Illustration

And finally, I will add the glowing white silhouette line. I do this purely for my own personal aesthetic style. It makes my illustrations pop and feel more cartoony. I will also add any background that is needed.

Figure 14. Droxxis – Final illustration w/ white glow

It is possible to lose some of the forms from the original sculpt while painting. I've developed a method that lets me bring some of the depth back. Using the original screen grab of the Zbrush model and adding some filters will help the final illustration pop. For variety's sake I will use a different model when explaining this method. Below are the steps to complete this task:

First gather the original screen shot of the 3d model. Intensely adjust the blacks and whites, while leaving the mid grey slider alone. At this point I'm more concerned with the darkest darks and lightest lights.

Original   Levels
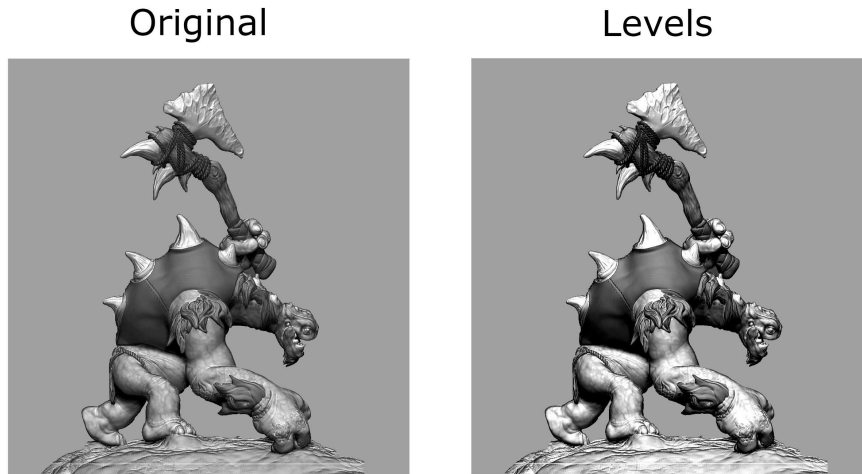
Figure 15. Gorak – Applying levels to screen shot

Next make a copy of the painted color layer and put it under the levels layer that was just made. Set the levels to Color Dodge at 100%. Merge those layers.

Levels (Color Dodge 100%)

Combined

Painting

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Figure 16. Gorak – Creating multiply layer

Take that combined layer into the filter gallery. Go to the Cutout Filter and set the settings like the ones in figure 17.

Cutout	⌄
Number of Levels	8
Edge Simplicity	5
Edge Fidelity	1
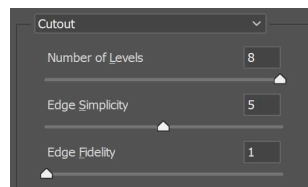
Figure 17. Cutout filter settings

This will knock back some of the detail from the original model. If there's too much detail it'll be too obvious it was taken from a 3d model. The goal isn't to get a perfect copy, but to regain some of the larger forms.
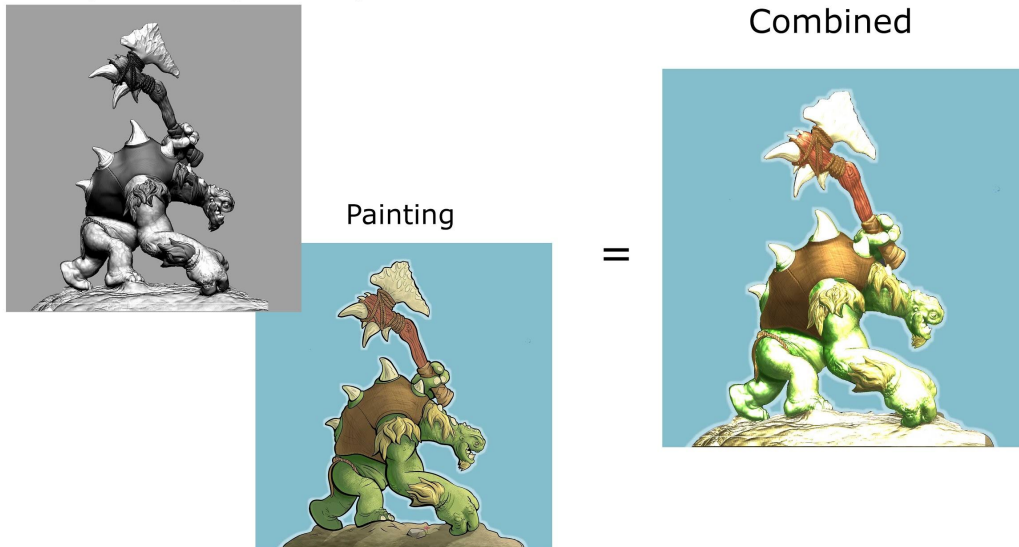

Figure 18. Filter applied

When I have the final filtered image (figure 18), the last step is to put it directly above the original painted layer and set layer blending option to Multiply and drop it somewhere down to the 50% range.

Original Painting   Final
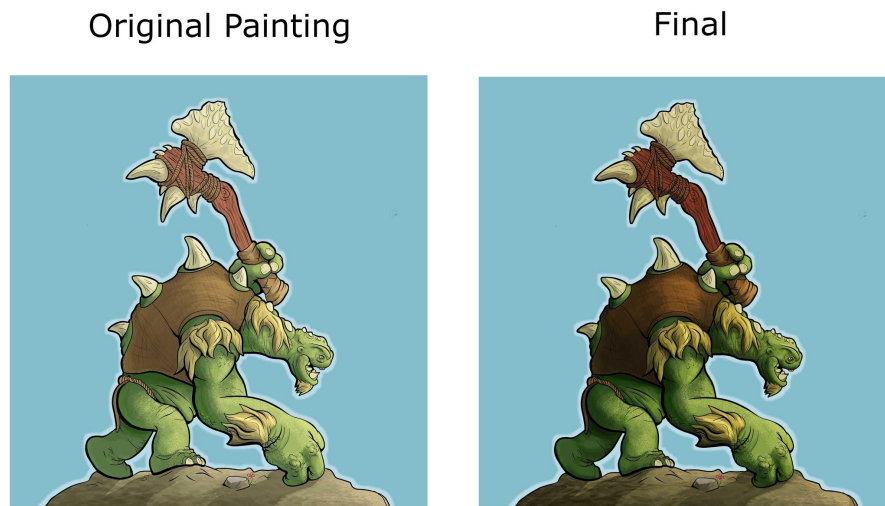
Figure 19. Original vs. final illustration

Everything will be a little darker and saturated with this method. I may adjust the saturation and levels slightly at the very end, but only slightly. Figure 20 shows another example of the process being used on another creature.

Figure 20. Example of same filter process on Droxxis

Figure 21. Crabman sculpt and final illustration

As you can see in figure 21, lots of the sculpted detail was left out of the final illustration. My focus when going through this process with any creature is to hold true to the largest forms and secondary forms. The fine detail will be used as a guideline. The ultimate goal is a nice illustration, so I allow some variation in that regard. It's also important to note that a player is never meant to see the 3d model from Zbrush. No one will be scouring every detail to make sure it's an

exact replica. Figure 22 is an image taken of the actual 3d print. You can see that much of the fine detail is gone, and the primary and secondary forms are what are visible.

Figure 22. Crabman miniature

I would say that most of the work I've done is on sculpting, but it's hard to see much of that work in the printed miniature. This is where the illustrations shine. With an illustration you can convey an attitude or mood with greater clarity. The colors can help a character pop and the details in the lines can be easily examined. You can see a creature's expression closer which gives them more character and life. There is a richness that can be reclaimed from anything lost in the size reduction. The effort on sculpting isn't for nothing, as it is evident in the illustration.

Style guide

I do all my illustration, lining and painting in Adobe Photoshop. Typically, the document is 11x17 inches with 300 ppi. This is especially important for applying the line, because they all need to have the same weight in each illustration.

Line/Edge

The lines in a given illustration will vary in thickness. The thickest line is 20px and will be on the silhouette only. Sometimes this line will be pulled into the interior of the character to help bring certain elements forward, most commonly when major forms overlap. This external line will stay consistent in size and will not taper. The interior lines taper and are created using a brush with 5px diameter using shape dynamics with a minimum diameter of 50%. In rare occurrences smaller lines will be used to create texture.
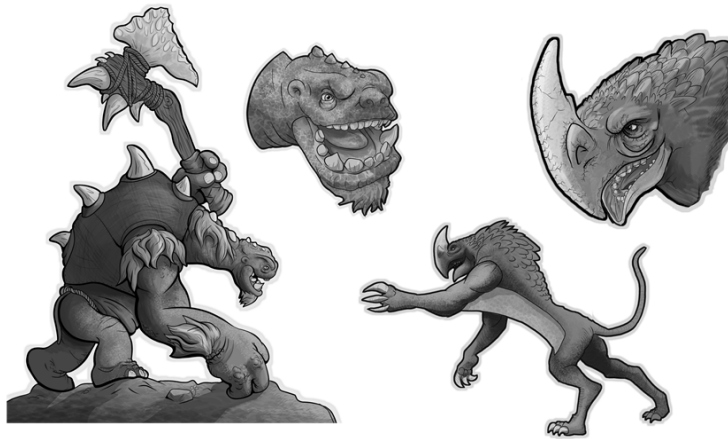
Figure 23. Example of line/edge

Value

No character will have to adhere to strict rules of value, but they should us it to draw attention to their faces. To determine the shadows and highlights raise or lower the brightness by 10 points. Absolute white (90-100) or black (0-10) will rarely if ever be used. Black will be reserved for the lines. White will be used on specular highlights or in areas on the face. Once the entire piece is complete, a slightly opaque gradient layer set to multiply will be applied to the character only. This will help with pushing back elements that are less important and bringing attention to the face.

Form: The characters silhouettes are of utmost importance. To ensure easy readability at a distance they must have enough variation between designs. Mostly organic rounded forms with sharper extrusions. Each tribe will be pushed slightly more in their own direction. The water tribe having softer rounded forms, Land Tribe with rectangular shapes and the Air Tribe using triangular shapes. These are not absolute rules but used as guidelines for each tribe.

Figure 24. Example of form

Color

The colors will be very saturated. I aim to have levity in their appearance and this will help. Each tribe will also lean towards certain color palettes. Earth - Greens, yellows, browns. Water - Greens, blues, purples. Air - Reds, Oranges. However, I seem to be most successful with color when I take inspiration for already existing animals and apply them to my designs. I do want to create some consistency within each tribe, but also do not want to limit myself.

Figure 25. Example of Color

Texture

I am a fan of cell shading my designs. However, I think I could create more visual interest with the addition of texture within the lines. Custom brushes should be used to apply variation to different materials such as skin, fur, and fabrics. I do not want to go overboard with the texturing. The goal is to create easily readable characters and cards for the board game. This will be a different story when it comes to the sculptures themselves. I want a more tangible product for the players to experience.

Figure 26. Example of Texture

<u>Space</u>: The space each character inhabits will only be as deep as they are themselves. They will not be in any particular environment. It is always my aim to create as much of the 3rd dimension as possible. This will be achieved by using light sources and perspective. There is a tendency for the images to flatten after I've added my lines. As mentioned above, this is resolved using my overlay/multiple technique.

Cohesion in creature designs

Too different?

At the beginning of the project the rules for my world and creature design were loose. I was working on a monster for another assignment, always with the idea that he could also live in this world and become an asset for my game. I started with a finished 2d concept before I started my Zbrush sculpture. You can see the results in figure 27.

Figure 27. Gorak – Concept and final render

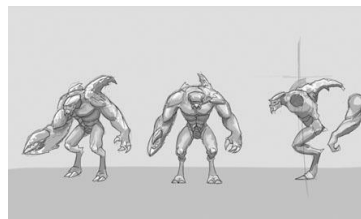Figures 28 and 29 were designed to specifically exist in my world.

Figure 28. Crabman – Sketch

Figure 29. Crabman – Zbrush Turn

They were different enough to cause some concern. They do come from different tribes in the world, so it made sense they would have their differences. There was also the fact that my sculpting skills were advancing, and I didn't want that to cause another level of disconnect. I thought about putting both models into Zbrush and posing them in a scene together (figure 30).
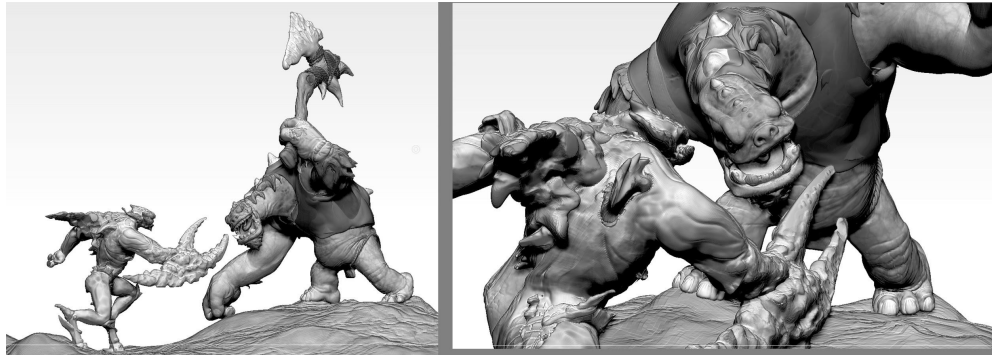

Figure 30. Quick posed scene

They are working better than I thought. After that I applied my line trace and painting process in the hopes of bridging their aesthetic.

Figure 31. Aesthetic to bring creatures together

I am happy with the result. But going forward I wanted to see if working on designing two creatures simultaneously would help avoid this situation.

Too similar?

Starting my process from the beginning I began sketching a variety of different potential air tribe creatures. At a certain point I was urged to take a step back and look at all the thumbnails. The reason being, I tend to draw characters that fall in the "dumb muscle/tank" category. I doubt I'll ever stop creating these types of character, but since I already had Gorak, I wasn't in need of one for this project.

The silhouettes in figure 32 were gathered from every monster I had sketched to this point. As you can see the creatures highlighted with red, all fit either a dumb muscle character or a hunched over knuckle walking monster.

Figure 32. Silhouettes of all creature designs

I was designing creatures that could hold their own in combat. So, they needed to be powerful. My issue was that my current thumbnails were all top heavy/knuckle walkers with little legs.

I was encouraged to look at an existing intellectual property that successfully employed variety in their designs. These were all big powerful beasts, but I found they were just different enough to not seem redundant.

Figure 33. Pacific Rim Kaiju Study
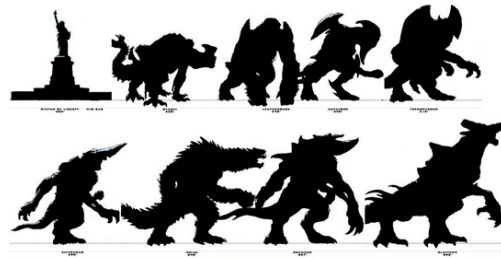
Figure 34. Pacific Rim Kaiju Silhouette

Manipulating different sizes and types of body parts they were just different enough. There is a good amount of variety in these. They have their similarities, but just by manipulating different extremities they've brought freshness into each design.

Taking what I'd observed from the Pacific Rim[4], I went back to the drawing board and made some more varied body types.
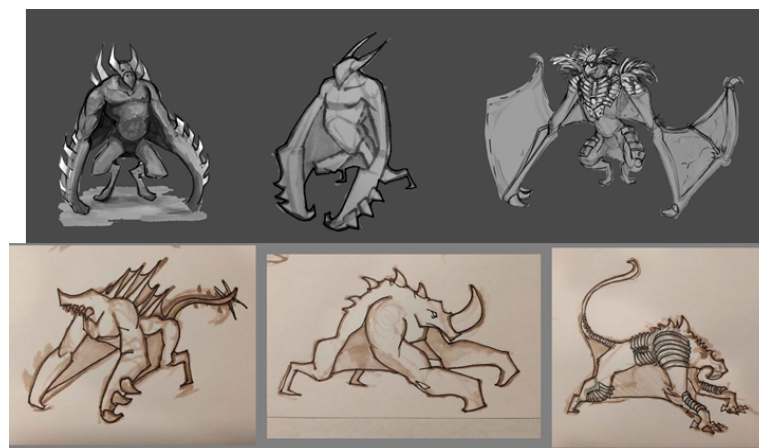
Figure 35. Air tribe sketches

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[4] Kosmina, Jaroslav. "The Ultimate Kaiju Size Chart". 2018.

These are the two body types that I ended up liking the most. The top being a heavier flying creature and the bottom a gliding creature specializing in speed. There is a progression from left to right. The leftmost creatures are the ones that started out as heavy tanks. As you move to the right they start to lighten up. The furthest left is my finished concept and they are fully colored in figure 36.

Figure 36. Air tribe final creature concepts

I took these into Zbrush and they evolved into their final product.

Figure 37. Audric final Zbrush pose

Figure 38. Droxxis final Zbrush pose

Reworking early assets

I almost had all my sculptures finished. There was one last thing I needed to address. As I mentioned before, my sculpting abilities were increasing, and I needed to bring my Gorak character up to par with the other monsters. I went back and added more detail, some more storytelling elements, such as torn clothing, and exaggerated some of the folds in his skin.
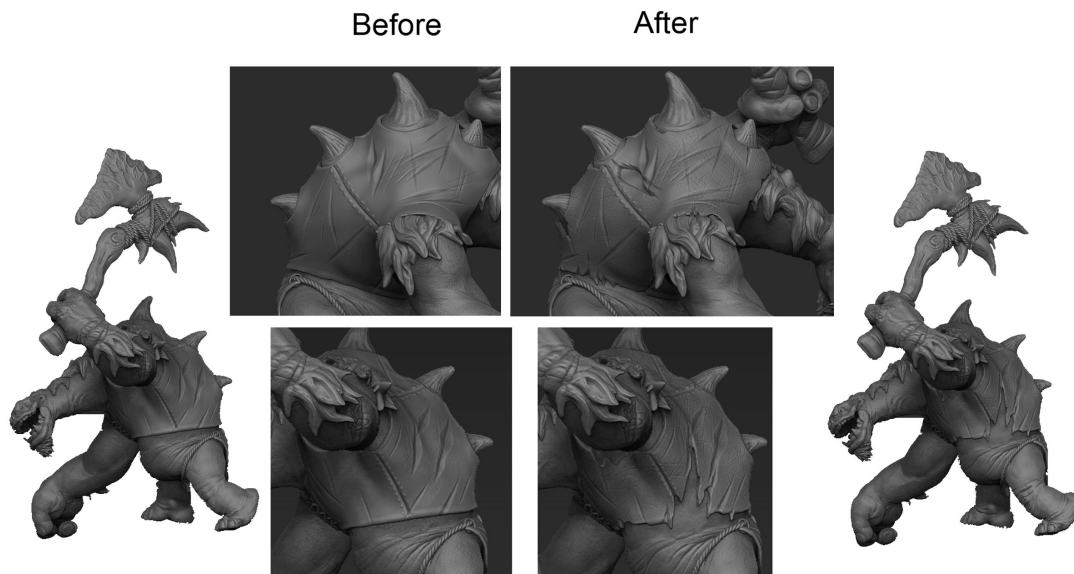
Figure 39. Gorak added detail

And Finally, here is the whole ensemble:

Figure 40. All posed Zbrush creatures

Assets/Components

When Chase and I started to nail down the mechanism of gameplay we were able to determine components needed. The game revolved primarily around card playing and needed some way of keeping track of a player's health. We would need a box cover and box back, player health sheets, miniatures and a logo.

Logo

I started working on the logo with only a few guidelines in place. The logo should be simple but provide enough information to give people an idea to what the game was about and reinforce the theme. Also, it needed to follow the style guide. I wanted to get the idea of "monsters and arena combat." My first round of sketches was perhaps a little too simple and that simplicity didn't quite lend itself to my style guide.

Figure 41. First attempt at game logo

I decide it should revolve more around the arena and came up with these:

Figure 42. Second attempt at game logo

Figure 43. Final logo

The game required two separate decks; one for attacking and the other for mutations. To easily differentiate the two, I would use different colors on the card backs. I wanted the color to speak to the effect of the card and thought red would be good for the attack deck; being the color of blood, it seemed obvious. I toyed around with the colors for the mutation deck and ended up using green. The green used to invoke images of toxic ooze.

Figure 44. Attack and mutation cards

Card Design

The card back was easy enough because it's just a logo. For the front I needed to do some investigation and determine what elements are important for cards and what format choices are common.

Figure 45. Cards to study

Here are three cards, each from a different game. These are the ones I'm going to talk about but the elements I'll be addressing are a good representation of the current market.

The first thing a person will likely look at is the illustration on the card. It takes up most of the space and arguably the most interesting to look at.

Figure 46. Card study – Image

The second bit of information is the card title. The title and illustration are linked in their own way. After many times through a game a player won't need to read the title, but will have associated them with one another

Figure 47. Card study – Title

This became very apparent in our playtesting (figure 48). The moment we added images to the cards, gameplay sped up incredibly. The association happened very quickly. In the future I will add the most basic images to the cards. Pictures can be processed much quicker than words.
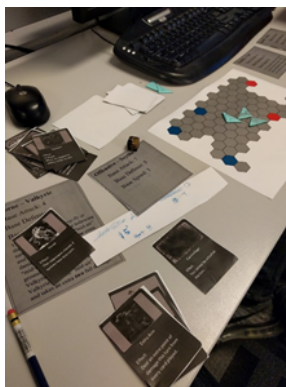

Figure 48. Early gameplay

Next, iconography is used to quickly inform the player of what the card does. These should be consistent for any actions that are the same. If multiple systems are being referenced with these symbols they should be unique and easily told apart.

Figure 49. Card study – Iconography

Finally, there is usually text that explains in more detail the specifics of the card. Sometimes all the information needed is delivered with the first three examples. If that is the case, flavor text is provided. Flavor texts sole purpose is to reinforce the theme and help set the mood.

Figure 50. Card study – Flavor text

Figure 51 shows how each of these elements has been incorporated into the final card design of Mutant Mayhem.

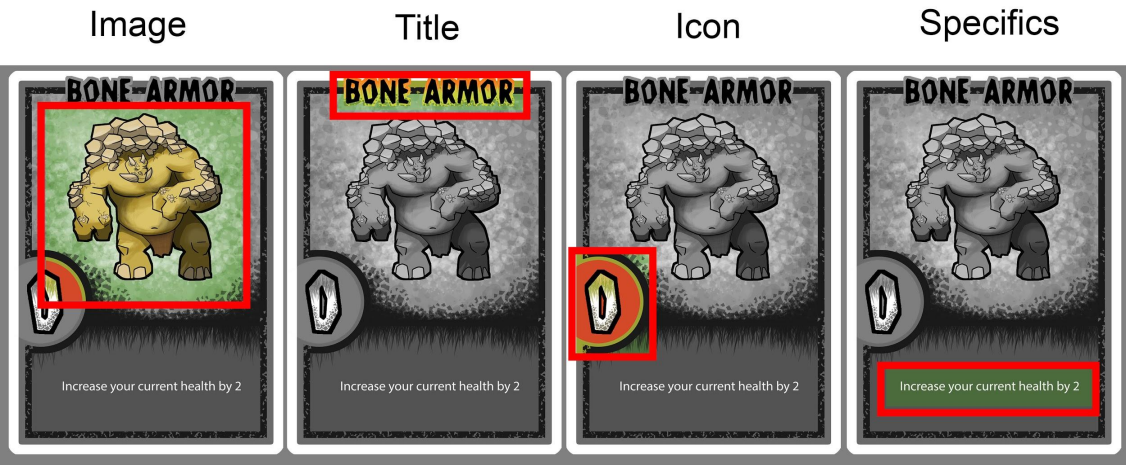| Image	Title	Icon	Specifics

Figure 51. Card layout for Mutant Mayhem

Cards that are from the mutation deck do not have an attack value, so I did not add it to the cards. This will also help players identify which cards in their hands are attack or mutation cards. I thought about using different backgrounds to solve this problem, but the color of the background is heavily influenced by the coloring of the illustration. I didn't want to be restricted in my color palette.
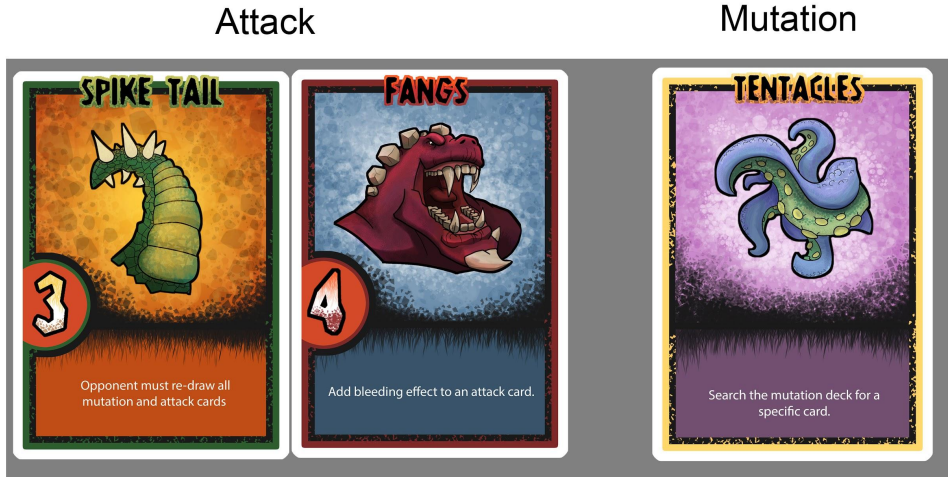
Attack	Mutation

Figure 52. Attack vs mutation layouts

Player Sheet

Originally, I had planned to use a player token to track the health. I had also intended to have movement and a board in which the monster would move around. We soon discovered that developing a system with movement was over

scoped and not fathomable in the allotted time. I needed to still justify 3d miniatures in a game where they wouldn't have a board.

Figure 53. Original player sheet

Figure 54. Early gameplay 2

The solution was to put the models on a pedestal with a piece jutting out. By placing the health track around the miniature, you could rotate the model as their health declined.

Figure 55. Player sheet w/ miniature

3D Miniatures

Proportion and scale

I wanted to be sure these monsters were realistically matched. I didn't want my huge tank creature to easily destroy another. Likewise, I didn't want my fast creatures to pose too much of a threat if they were overly sized. I needed to find a balance. I lined them up and to see what I had (figure 56).
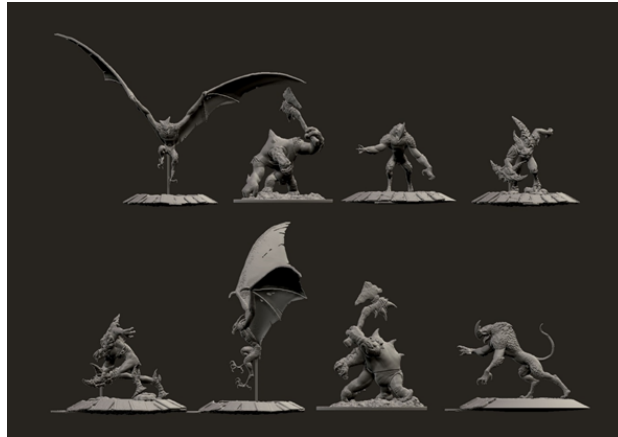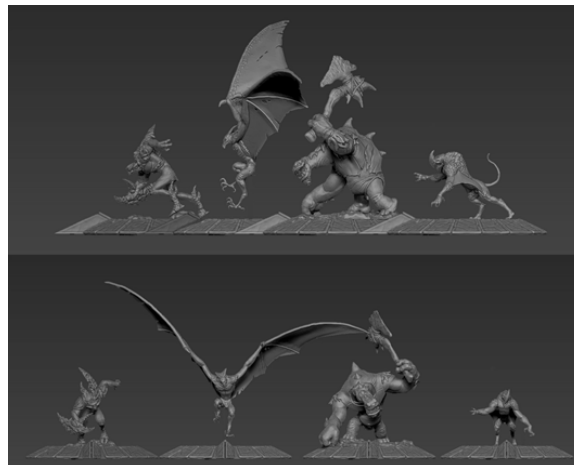

Figure 56. First attempt size comparison.

Figure 57. Final size comparison

In my initial lineup in figure 56 each creature is relatively the same size. Which doesn't allow for much diversity in player selection. It was immediately apparent. I scaled up my heavy hitter, Gorak, and made my four-legged creature much smaller. I feel they work much better in the final line up (figure 57).

In the beginning, when sculpting all the models there were a few things I didn't take into consideration. I want to talk about those issues, because I feel they are important for anyone attempting to make 3d miniatures.

While working in a digital medium it's easy to forget about supports and how the model will stand in a world with gravity. On a few of my model I only had two points of contact with the pedestal and they were very thin to boot.
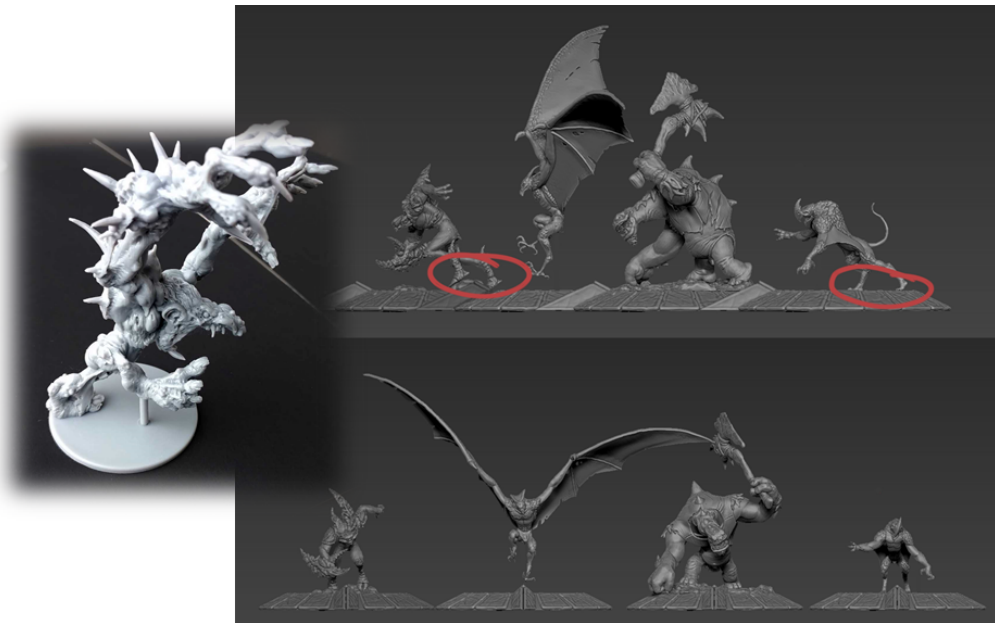

Figure 58. Adding supports to miniatures

I didn't want to repose them. That would add a considerable amount of time to re-sculpt and would lose most of the fine detail. I remembered a game I owned that had miniatures with supports. At first, I didn't want to go this route, but glad I did. After they were printed they practically disappeared and weren't the eye soar I was worried about.

Thickness of material

The next issue I ran into was the thickness of the wings on my Air Tribe creatures. I gave them a thickness that made sense visually. However, that didn't align with the thickness required for the support they needed or the thickness the printer could print. Luckily this crossed my mind before I printed any model. I did a test print to ensure I had a thickness that would work.
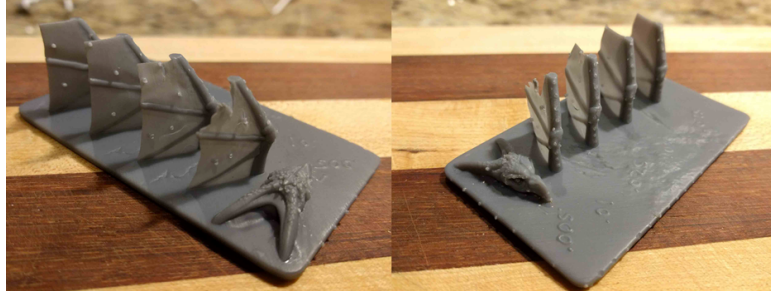
Figure 59. Material thickness test

I was way off and had to go back and adjust the wings and their details. This set me back a little and will be noted in future endeavors.

Details lost in printing

It's also important to note that the size and scale that look correct on a Zbrush model aren't quite what you're going to get in a print. I feel like the smaller you print, the more exaggerated your forms need to be. The loin cloth on the creatures for example are the smallest things on my 3d prints. They are readable, but if and when I go to paint the model, I'm sure I'll lose more detail than I would like. I spent a great deal of time working on the details in Zbrush and they are barely evident in the prints. It wasn't for nothing. Drawing over my screen grabs benefitted from that work. Losing that detail in the print also helped keep things less realistic, creating more harmony between 2d and 3d assets.

Cover

The final thing I needed to complete was the box cover. I knew this would be one of the last assets made in the project. It was going to be done at the end because it was going to have all the creatures posed and illustrated.

I wanted to emulate the cover of King of Tokyo and take some of the visuals they used.

Figure 60. King of Tokyo (2013)

The composition allowed for the introduction of multiple characters each in their own scene. I wouldn't need to construct an elaborate fight scene painstakingly fitting in every creature, but I could place them in their own private section. I played around with some compositions using a square box and was having some issues. It took me longer than I'd like to admit for me to realize I wasn't bound to this rule.

Figure 61. Cover compositions

Things started to fit better working in a rectangular canvas. I tried several different poses. They were quick and dirty but allowed me to move the creatures as I saw fit. Any stretching or imperfections caused by this quick pose could be left out of the line drawing.

Figure 62. Box blowout

Conclusion

Apart from the progress I made on my abilities to sculpt and illustrate, I tightened up my personal pipeline. This pipeline allowed me to incorporate both 2d and 3d mediums in my workflow. Having the ability to pop back and forth between the two allowed me to solve problems with different parts of my mind. It is a legitimate method and I will continue use it. Working with an established style guide ensured consistency in the treatment of assets. Putting this in place earlier than later will help keep things on track.

There is quite a difference in a digital sculpt and a physical print. My excitement for the resolution at which the 3d printed could produce, masked its shortcomings. I've been taught to work forms in three steps. The large shapes, medium shapes and small shapes. However, with model printing I feel the medium shapes to be of utmost importance.

One should take into consideration the pose and how the weight will be supported. Using supports in this case worked out. It will always be at the forefront of my mind for future models. The thickness of materials might need to be exaggerated to support their own weight.

Working with a game designer has been a rewarding experience. Starting a game from nothing highlighted just how important art is to a game. With every addition of finished assets gameplay became more enjoyable. Taking a closer look at components and how they should be constructed was also enlightening.

Silhouette is a very important part of creature design. Not only does it effectively convey the creature and the role it will play, but if achieved, a silhouette will radiate through both mediums. Silhouettes will tell you something about the play style of a creature, but on closer inspection a player will find personality. This will be found in the face of the creatures and it is what will keep someone engaged for a longer period of time.

The cartoons of my youth had a surprising impact on my target aesthetic. The relationship between a cartoon and an action figure is consistent. Both mediums are using simple forms and a simple color palette. As my models became more realistic, I needed to find a way to bridge the gap from my earlier simplistic style with my finer detailed sculpting. This was achieved by using more sophisticated coloring methods and creating texture in the illustrations with custom brushes. To remain true to my childhood roots, I prevented the illustrations to get too heavy by using heavily saturated colors and thick lines.

I strongly believe I finished what I set out to achieve. My game and the assets within are consistent and well executed. Granted much of what I completed is a vertical slice of a finished product. If I continue to work with Chase and bring this game to the market, I feel I've got a viable pipeline set in place to complete all assets in a consistent, professional manner. I think they stand up to current games on the market. It was time well spent and I am happy with the final product.

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Appendix

Game Rulebook by Chase Mattson

<div align="center">
Mutant Mayhem

Rulebook

2 Players
</div>

<u>Duel of the Giants Rulebook:</u>

Objective: In a world full of monsters there can only be one to rule them all. Mutate your monster and deal devastating attacks to become the champion.

Components:
- Game Board
- 4 Monster Figurines
- 4 Monster Reference Cards
- 150 Cards
  - 30 Card Deck of Attack Cards for each Monster
  - 30 Card Deck of Mutation Cards

Set-Up:

Each player chooses **one** of the **five** figurines to be their monster. Each player also takes the corresponding reference card for the monster they chose.

To set up, each player takes their reference card and places their monster figurine on the center circle. Each player also takes a blood token and places it on the blood token space of their reference card. Also be sure to keep the bag of armor tokens on hand.

Take all of the mutation cards and shuffle them into a deck. Place the deck in the center of the table. Each of the monsters in play also has a deck of cards unique to them. Each player shuffles their monster's attack deck and places it on their side of the table.

Each player is then dealt a hand of **six** cards. **Four attack cards** from their attack deck and **two mutation cards** from the center mutation deck.

Rules:

To begin, randomly determine a starting player.

Playing Cards:

Each turn, players can play one attack card and one mutation card. Certain cards may allow players to play more than one attack or mutation card per turn. Once an attack card has been played, place it in your monster's attack discard pile. All mutation cards are discarded to the same mutation discard pile.

At the end of a player's turn:
> > Draw attack cards until there are four in your hand.
> > Draw mutation cards until there are two in your hand.

Bleeding Damage:

If a card has a bleeding effect, the bleeding damage takes effect at the end of the other player's turn. To track bleeding damage, place the blood token on the health value that the monster will drop to after the bleeding damage. Once the monster takes the bleeding damage, remove the blood token and lower the monster's health.

Armor Cards:

Some mutation cards are specified as armor cards. These cards provide some additional benefit to monster's that last over multiple turns. Certain armor cards provide some additional health to the monster. To keep track of this, place the number of armor tokens that the card provides on the monster's reference card. When the monster takes damage with armor remove the armor tokens first.

Winning:

To win, players must bring their opponent's monster's health pool to zero. Once the opponent's monster has been defeated the player who defeated them is victorious.

Additional Images

Figure 63. All miniatures

Figure 64. Gorak miniature

Figure 65. Crabman miniature

Figure 66. Droxxis miniature

Figure 67. Audric miniature