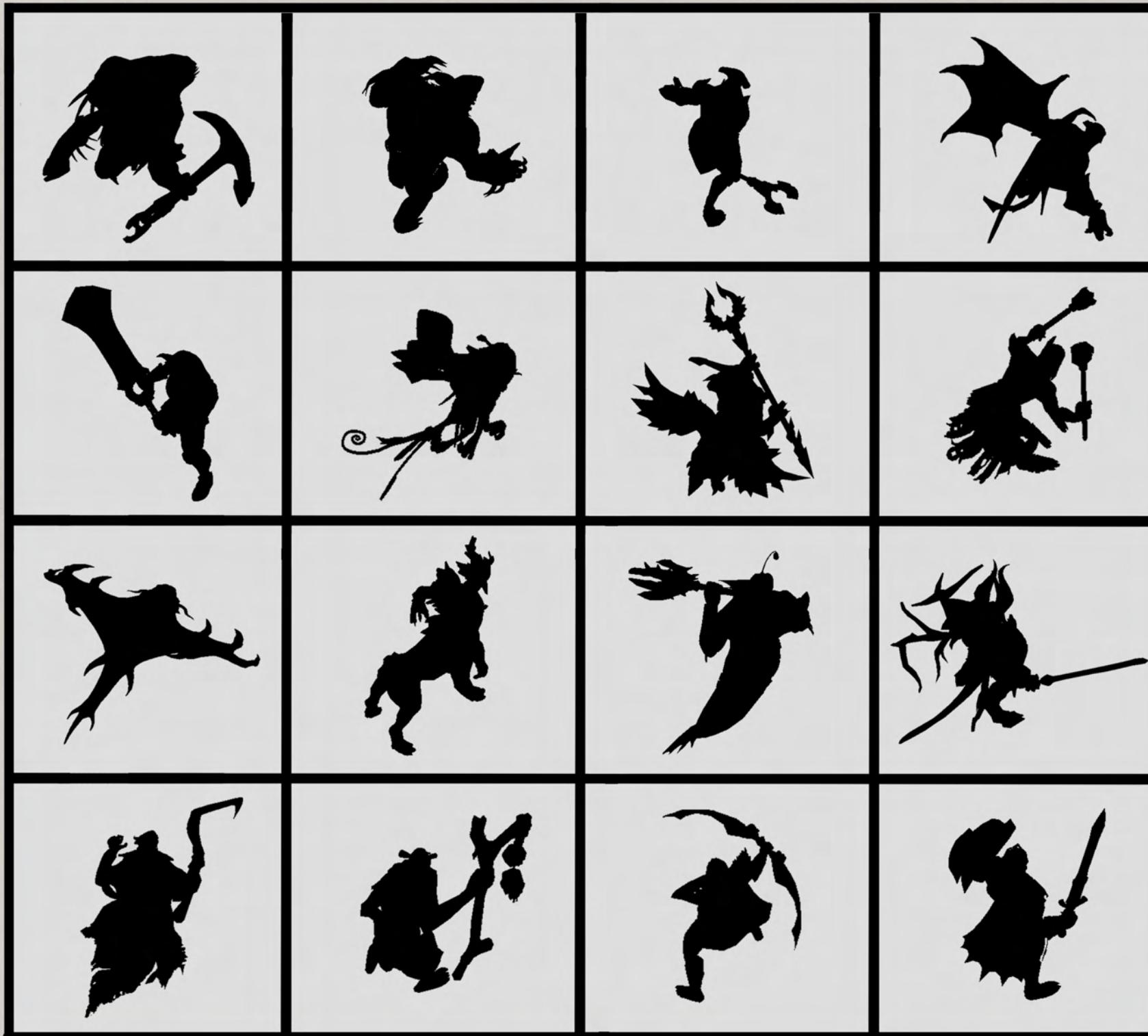


# DOTA 2 - Character Art Guide



Designing first-class items for Dota 2 requires more than just ability and a great idea. The aesthetics of Dota 2 are built from a set of principles that help keep each hero immediately and uniquely identifiable. In order for an item to have the highest chance of being adopted by the Dota 2 community, it's important that it remain artistically consistent with the original design. To explain these principles, we're going to go over exactly what they are, and how we used them to design the Heroes themselves.

# Silhouette



- A hero's silhouette must be clearly identifiable at first glance.
- The silhouette should show a character's orientation.
- Characters are always designed with pose in mind. The pose should reinforce the character's strength, demeanor, and speed.
- Weapons also need a unique read but should work to complement the character's design.

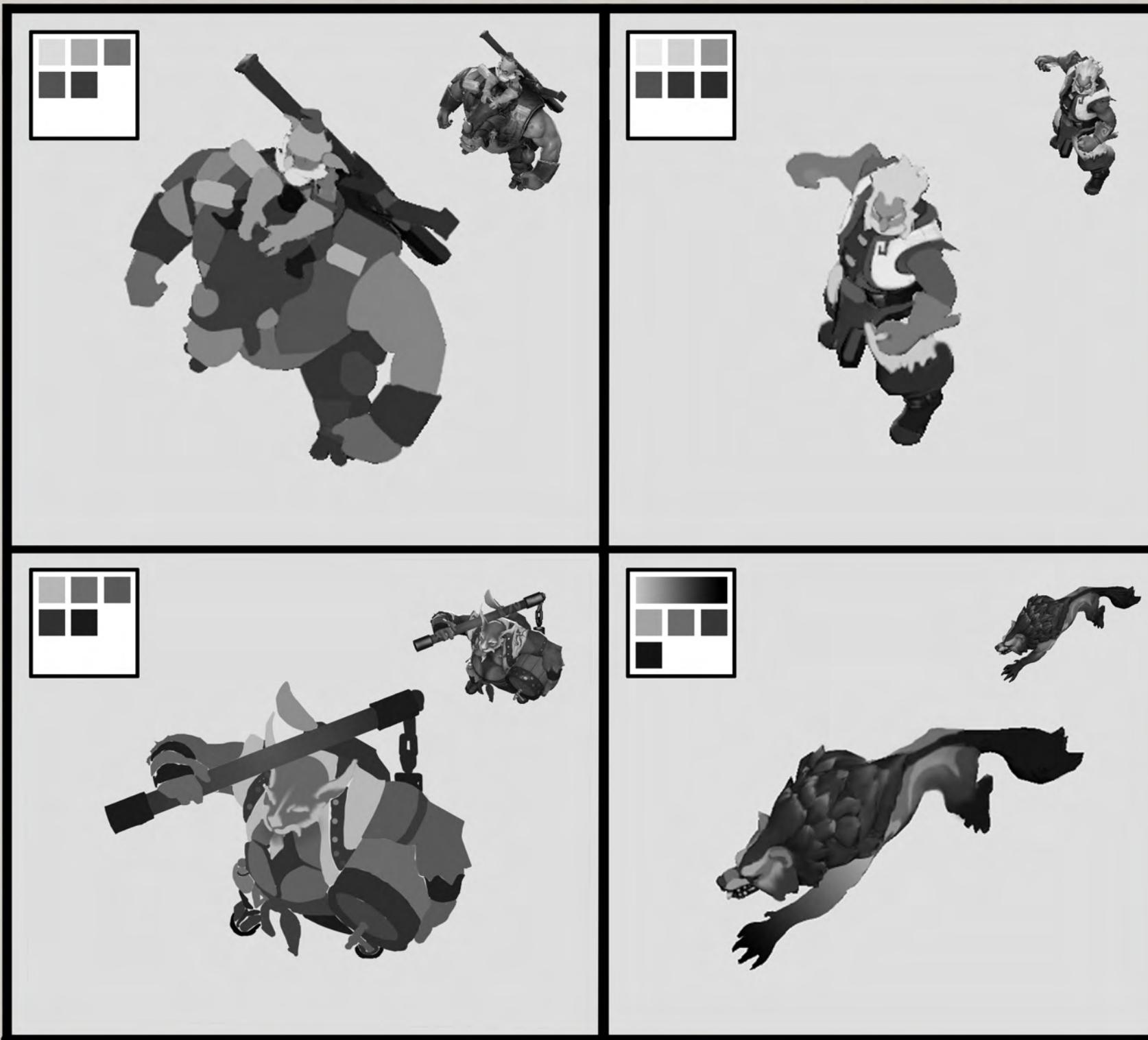
# Value Gradient - Beginning the Hierarchy



- "Value" is the range of lightness and darkness within a subject regardless of color and saturation. One can argue that value is more important than color to the design and the success of a character because not only is it used to create focal points, it creates the illusion of depth, and also helps give three-dimensionality to the object.

- A character's value should generally shift from darkest at feet/lower body to lightest at the upper body and head. This helps draw the player's eye to the most important areas of the character.

# Value Patterning - Creating Visual Interest



- The human eye instinctively looks for boundaries between areas of contrast, so it makes sense to establish contrasting blocks of value to highlight the various forms in our characters.

- Following the value gradient, we create more visual interest by increasing the value contrast between objects in the upper torso and keeping the lower torso objects with less contrast.

- Separating each unique piece on the character into its own value will also help it read as a distinct element.

- Absolute white and black should not be used in our game, since those colors don't react well to lighting.

- In characters that have no distinct item breaks (as seen in the wolf example) gradients are used in order to establish patterns.

- Before adding color, test your value patterns in-game. Be sure the character's features are recognizable and that the most important features draw the eye.

# Color and Saturation - Less is More!



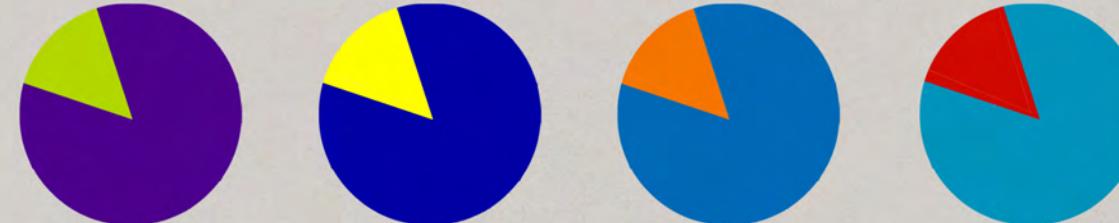
- Start by selecting a primary color which best represents the hero. Then select a secondary and tertiary color by using complementary, split complementary, analogous, or triadic color schemes (see next page for more info).
- Keep color harmony while painting textures by only introducing new colors using blends of the original primary, secondary, and tertiary colors along with grayscale values.
- Avoid using colors which are dominant in the world.
- Saturation (or intensity of the color) also draws the eye, so saturation levels should be less towards the lower body and increase towards the upper body.
- Stay away from all pure saturation colors, meaning that you should try not to use colors that max out the R, G or B values in your color textures. This allows more head-room for the in-game lighting to correctly influence them.
- Choose very small areas for the highest saturation in order to re-enforce visual interest. Large areas of high saturation overwhelm the viewer and distract from the visual harmony of the character.
- Don't lose focus! Turn your character to greyscale and recheck the values during and after the coloring process.

# Color Schemes

## complementary colors

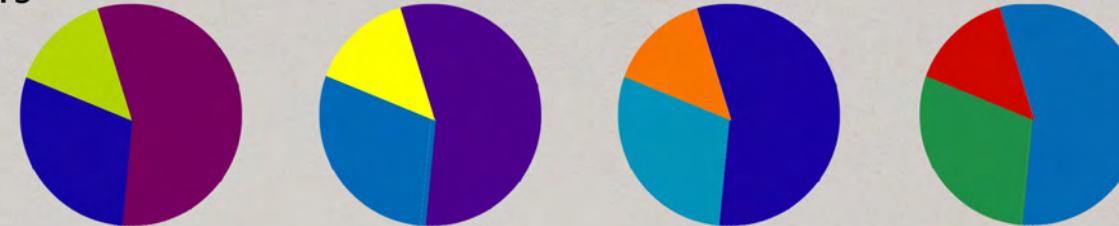
hues oppose the color wheel

complementary colors are more intense, and "vibrate" when placed next to each other as they compete for your attention



## split complementary colors

one of the complementary colors is split off into a pair of neighboring hues



## analogous colors

colors that neighbor one another on the color wheel

hues appear to "push" at each other, creating an optical illusion where each zone appears larger when it has your attention

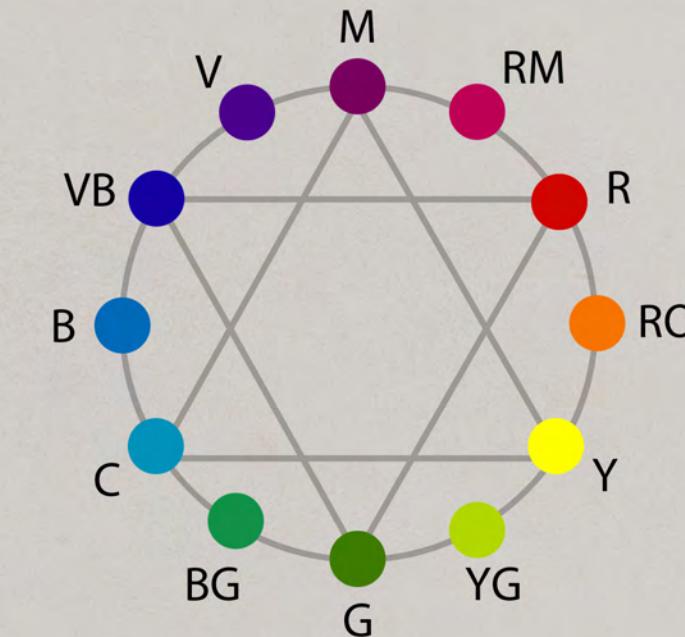


## triad colors

hues equidistant on the color wheel



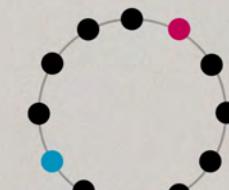
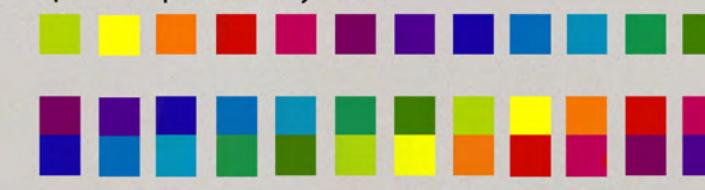
## Color Wheel



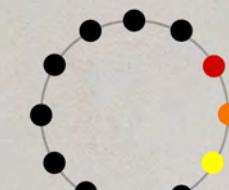
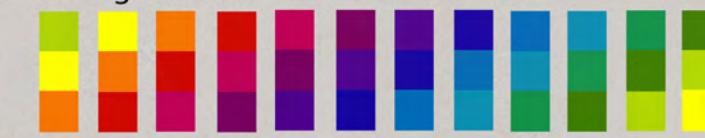
- Y - yellow
- YG - yellow green
- G - green
- BG - blue green
- C - cyan
- B - blue
- VB - violet blue
- V - violet
- M - magenta
- RM - red magenta



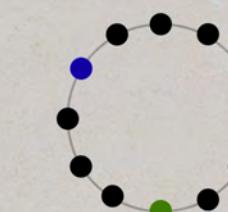
### split complementary color



### analogous color



### triad color



# Color - Mixing

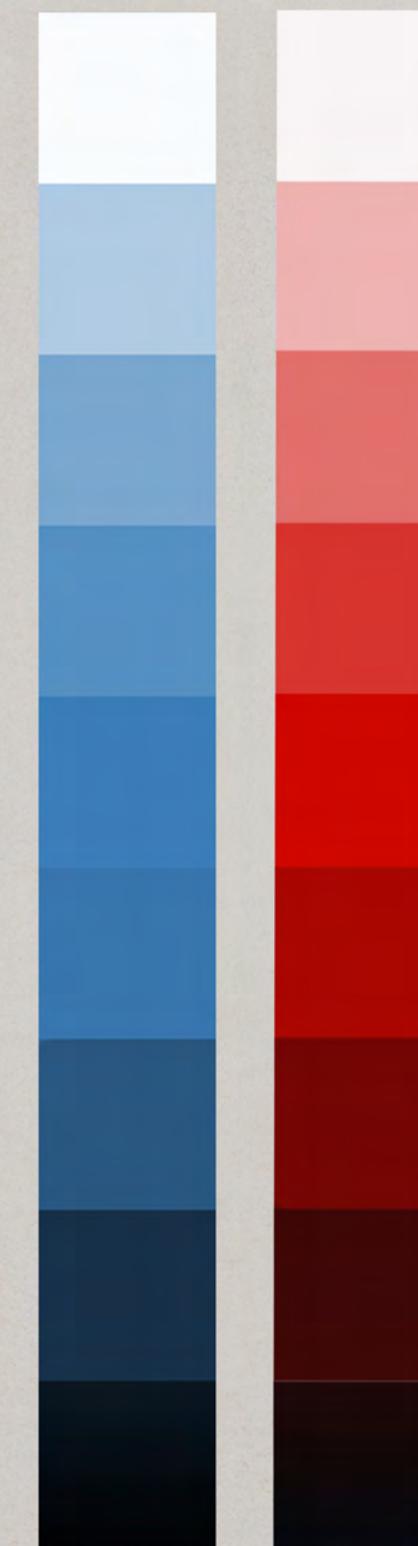
Once you've picked your source colors, mix, tint, and shade them in order to derive your full palette.

pure saturated color



grey tone

tint



pure saturated color

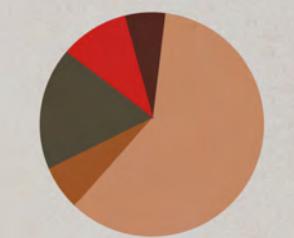
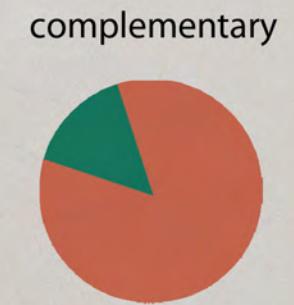
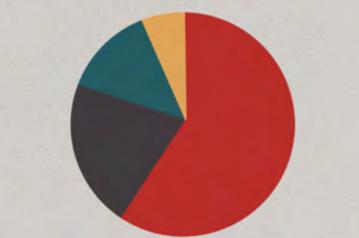
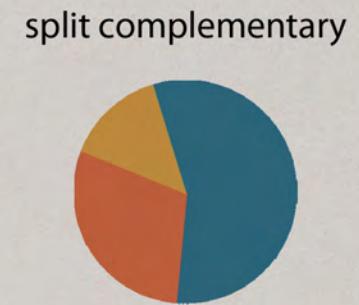
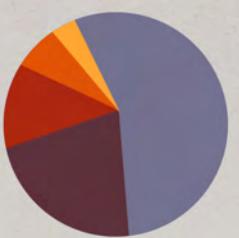
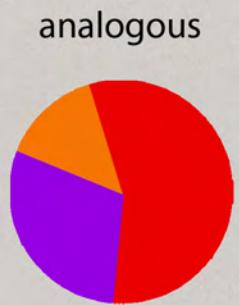
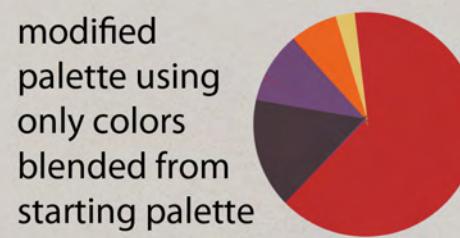
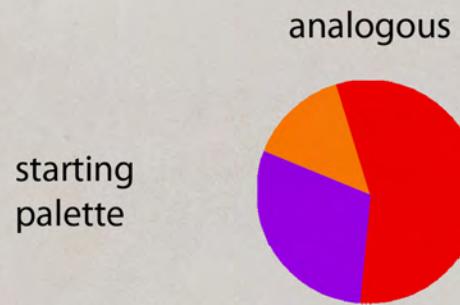
pure color

shade

Creating muted colors through mixing complementary colors.

Using white and black to adjust color value accordingly.

# Character Color Key Examples



# Character Areas of Rest and Detail



Omni Knight



Phantom Lancer



Sven



Sniper



True Form Bear



Necrolyte

- Areas of visual complexity can overwhelm the eye and become monotonous. Balance areas of detail by adding larger areas of less detail where the eye can rest. By creating these larger less detailed zones, areas of detail will have a much greater visual impact.

- Detailed areas should comprise a small percentage of the overall character, and be concentrated in areas of importance.

- The scale of detail is relative to the size of the character in-game. Details that are too small simply become noise.

- Larger areas with less or no detail read much clearer from game perspective than highly detailed areas.

- You can add undistracting detail on larger areas by keeping the values of the detail close to its background. The visible anatomy on Phantom Lancer, the stripes in the blue areas of Sven's armor, the stitched patches on Sniper's cape, and the True Form bear's brown fur are good examples of this.

# Evaluating Content in Context



Radiant - day



Radiant - night



Dire - day



Dire - night

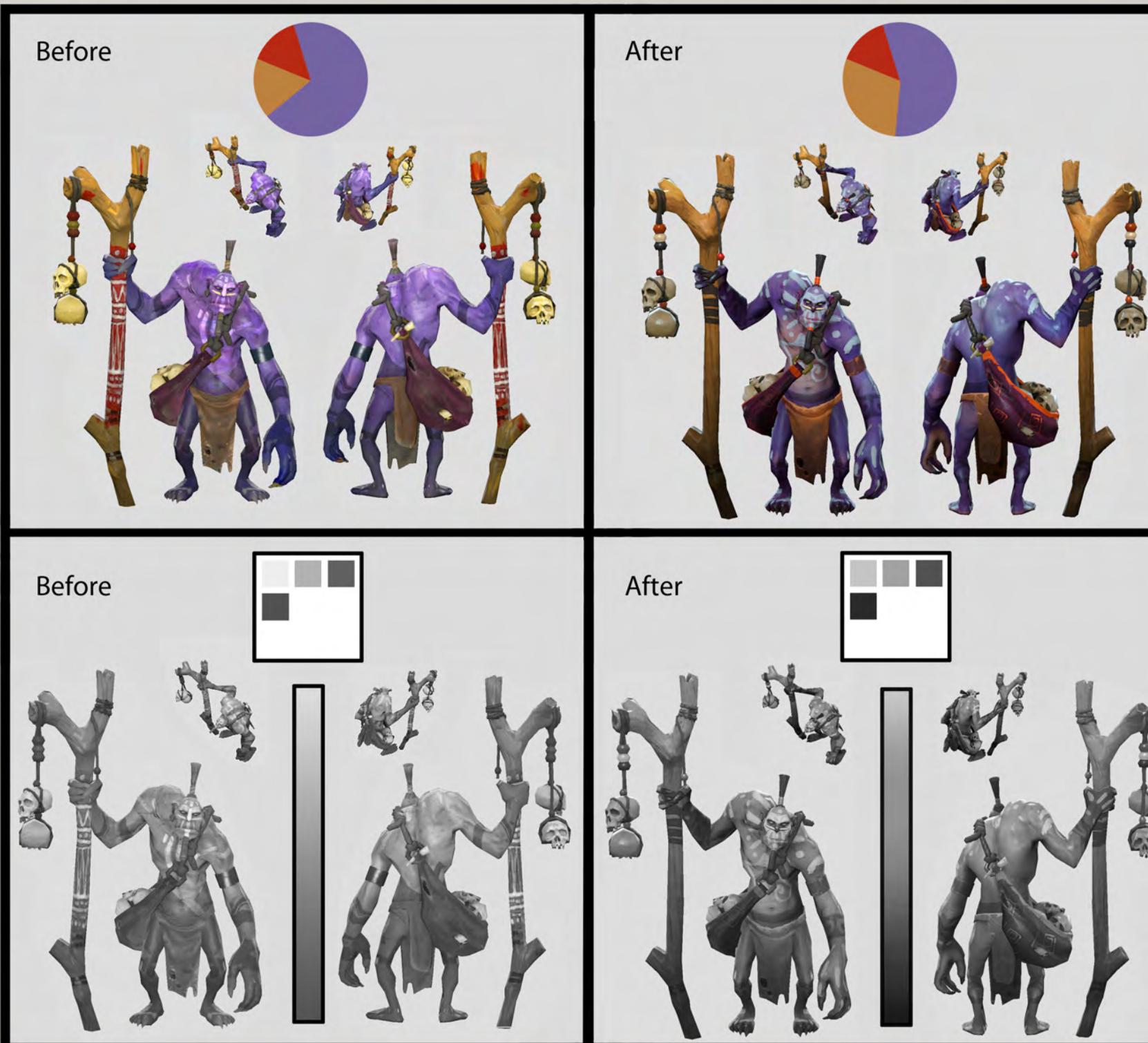
- One of the most important ways to verify your work is to see it in context, which means placing the hero in different parts of the map during day and night.

- Be sure to test shapes, value, and color during each stage of the creation process.

- The in-game experience is how the character and items are ultimately going to be seen by the players, so check the model often in the testing tool.\*.

\*testing tool coming soon

# Application of Concepts - Witch Doctor



Adjusting a hero's texture is a fast and easy way of resolving common readability issues.

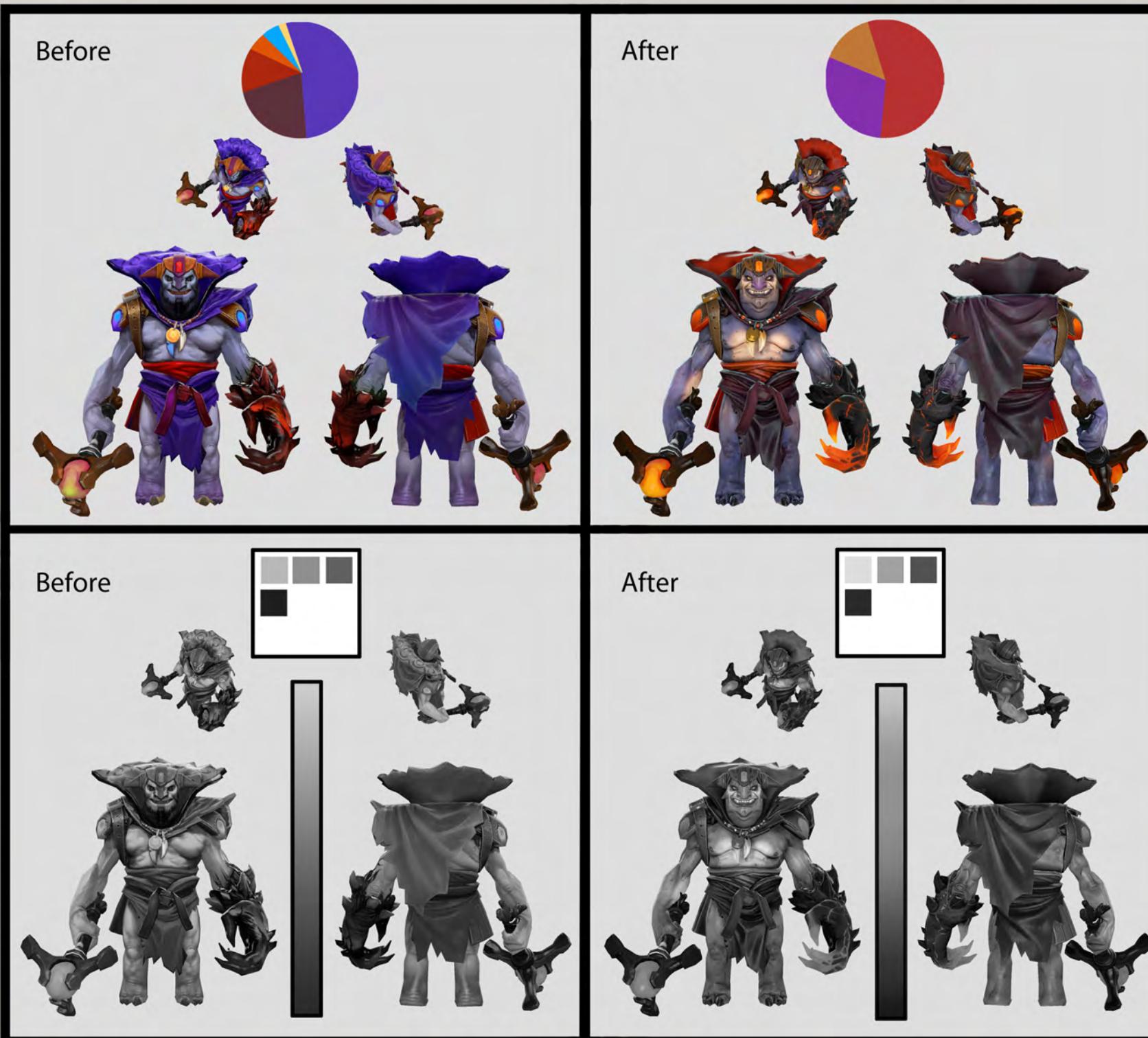
## Value adjustments

- increased the range in value overall allowing for more distinction between elements
- created a more pronounced dark to light gradient from the feet to the upper torso
- increased the amount value contrast towards the upper torso

## Color adjustments

- decreased saturation overall and increased only in areas of visual interest
- added a secondary color into the skin to give it a more life-like appearance by faking skin's natural translucency (examples of this can be seen on the stomach and in areas of tension such as elbows, knees, and scapula)
- gave face and body paint a contrasting color, using value and saturation to contrast against the skin, adding more visual interest to areas of the body

# Application of Concepts - Lion



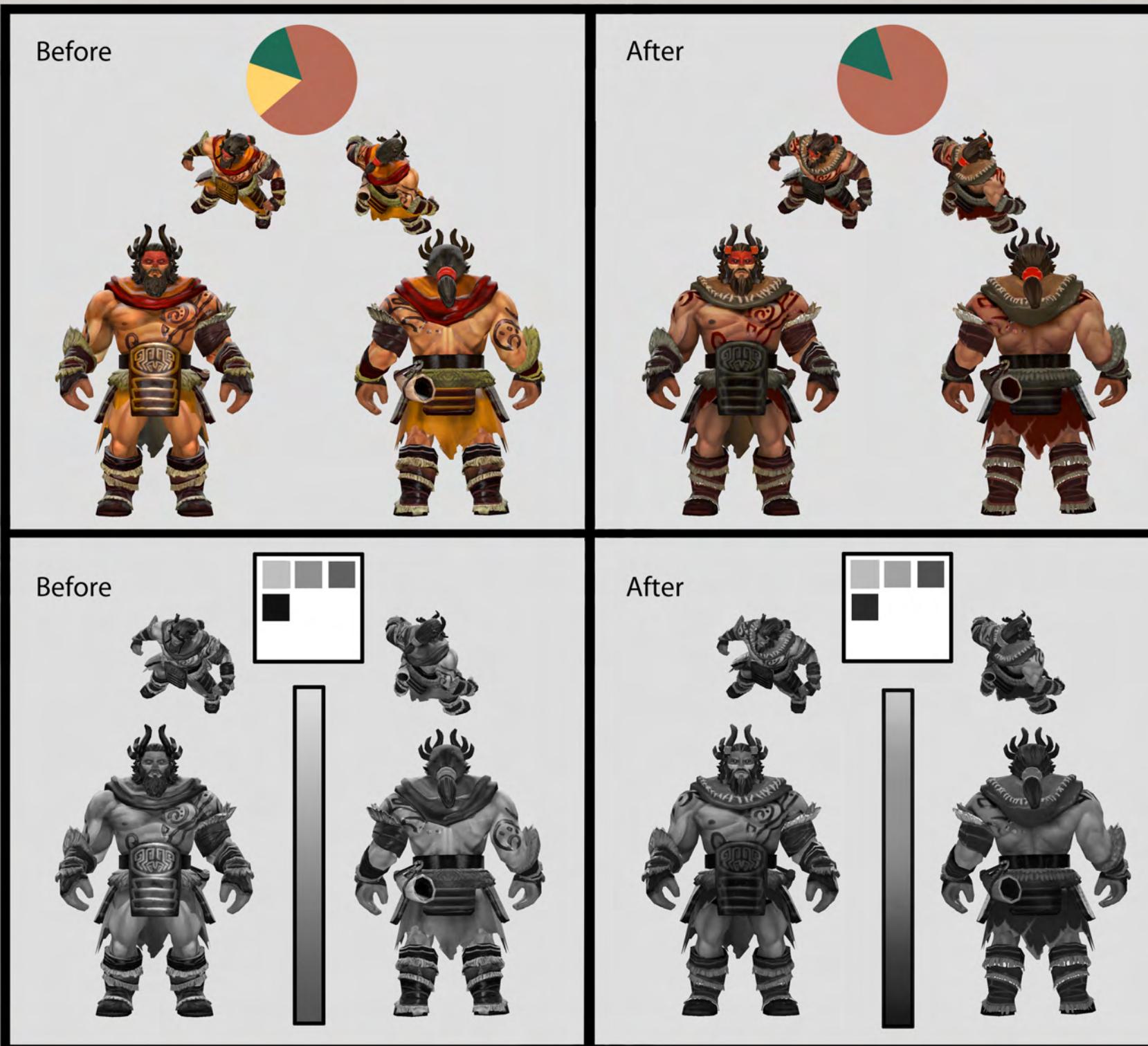
## Value adjustments

- created a more diffuse lighting scheme by taking away heavy painted-in shadows, such as under shoulderpads and in cloth
- brightened values in areas of detail such as eyes, teeth, and beads to create interest around the face
- adjusted specularity to better match material properties of skin and cloth

## Color adjustments

- reduced color palette to an analogous color scheme
- increased proportion of red to improve color balance
- decreased overall saturation and added more saturation towards visual landmarks like the mutated hand, tip of the wand, and shoulder pads
- added a secondary color into the skin to give it a more life-like appearance by faking skin's natural translucency (examples of this can be seen on the stomach, cheeks, inside of arms and on the elbows)

# Application of Concepts - Beast Master



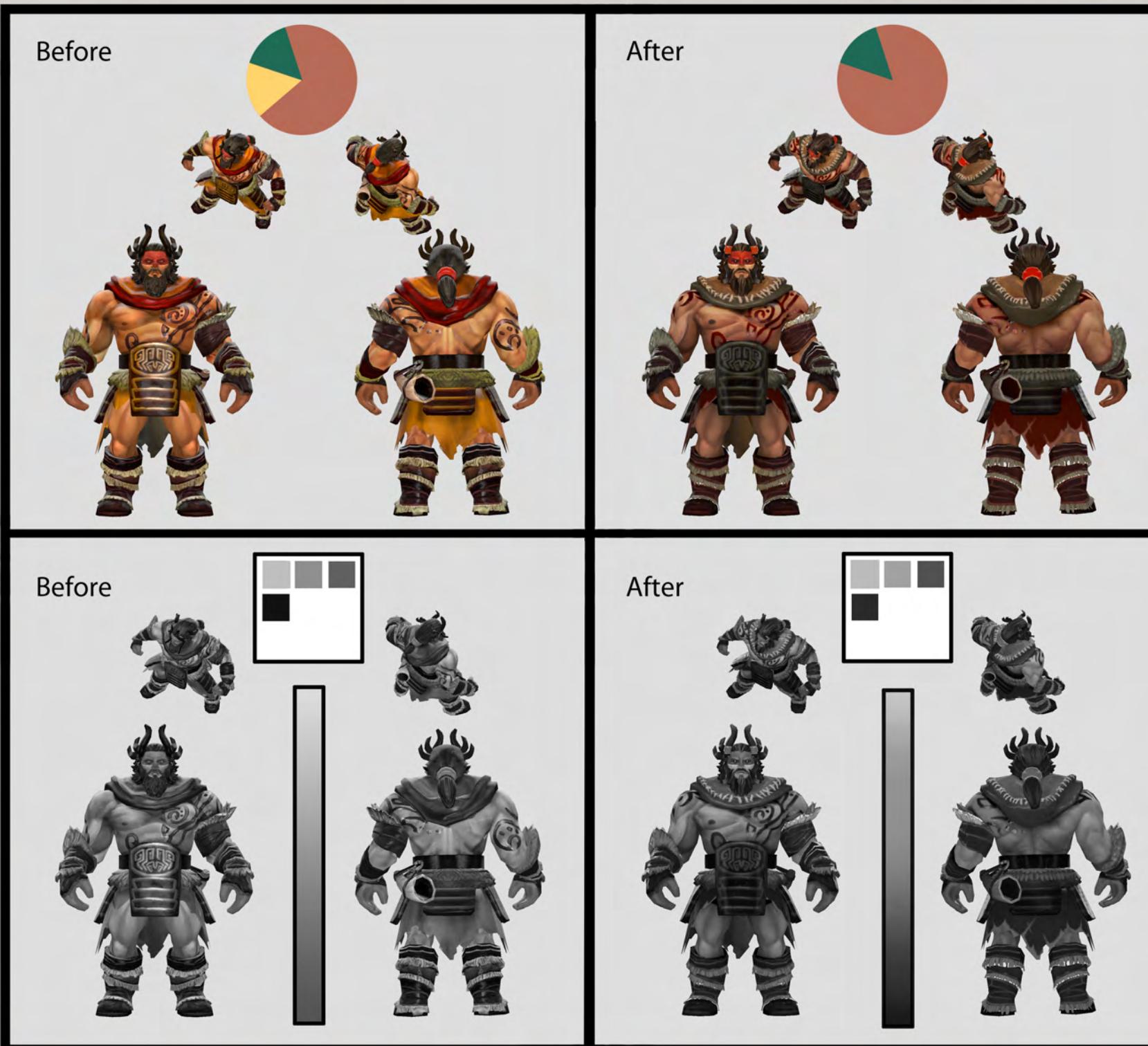
## Value adjustments

- created a more pronounced dark to light gradient from the feet to the upper torso
- reduced the contrast in the value patterning of the lower body
- simplified overall value of cowl and added stitches to create visual separation between 2 pieces
- increased value contrast within elements of the face

## Color adjustments

- reduced overall saturation and increased saturation in places of interest like the hair band and straps on horns
- simplified colors to only muted complementary earth tones

# Application of Concepts - Beast Master



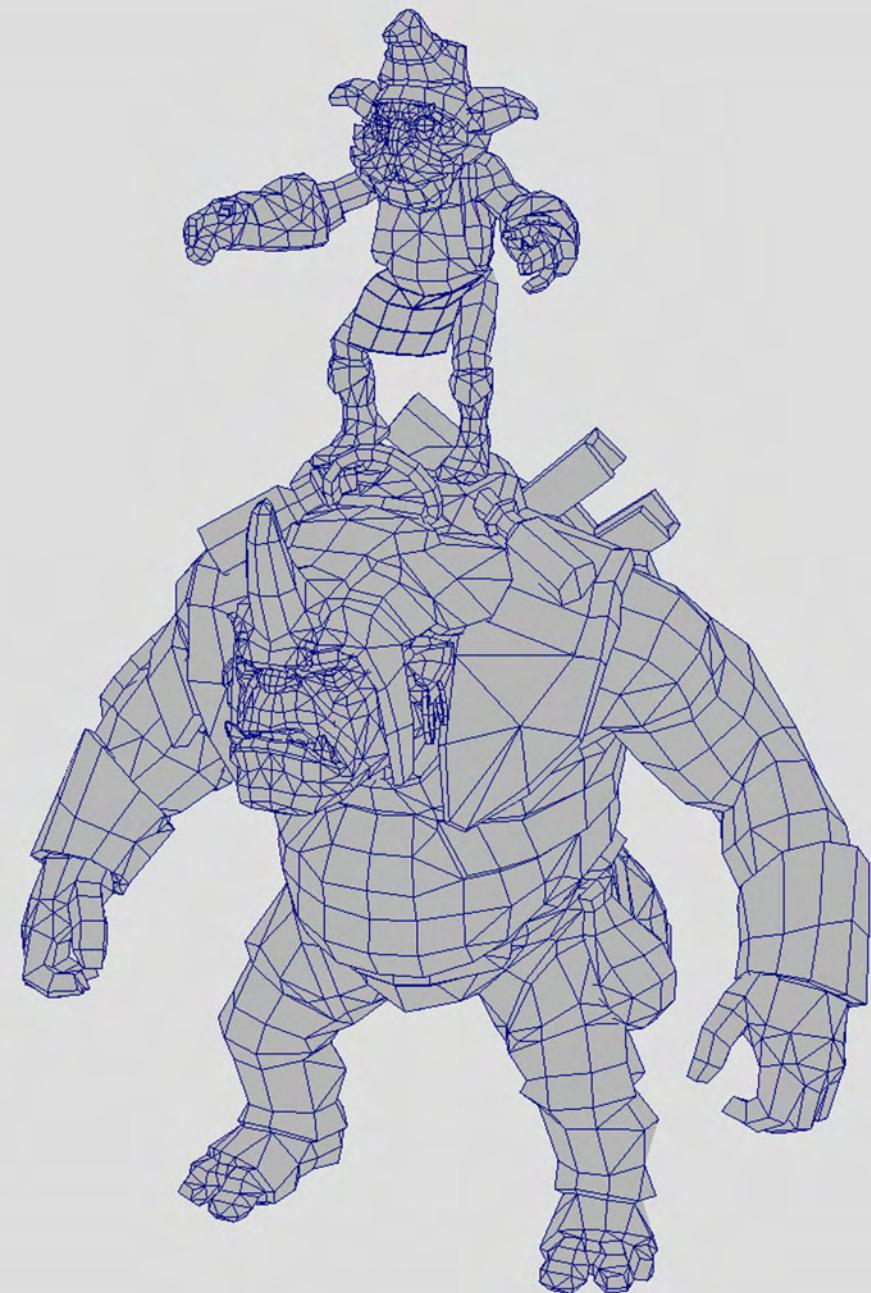
## Value adjustments

- created a more pronounced dark to light gradient from the feet to the upper torso
- reduced the contrast in the value patterning of the lower body
- simplified overall value of cowl and added stitches to create visual separation between 2 pieces
- increased value contrast within elements of the face

## Color adjustments

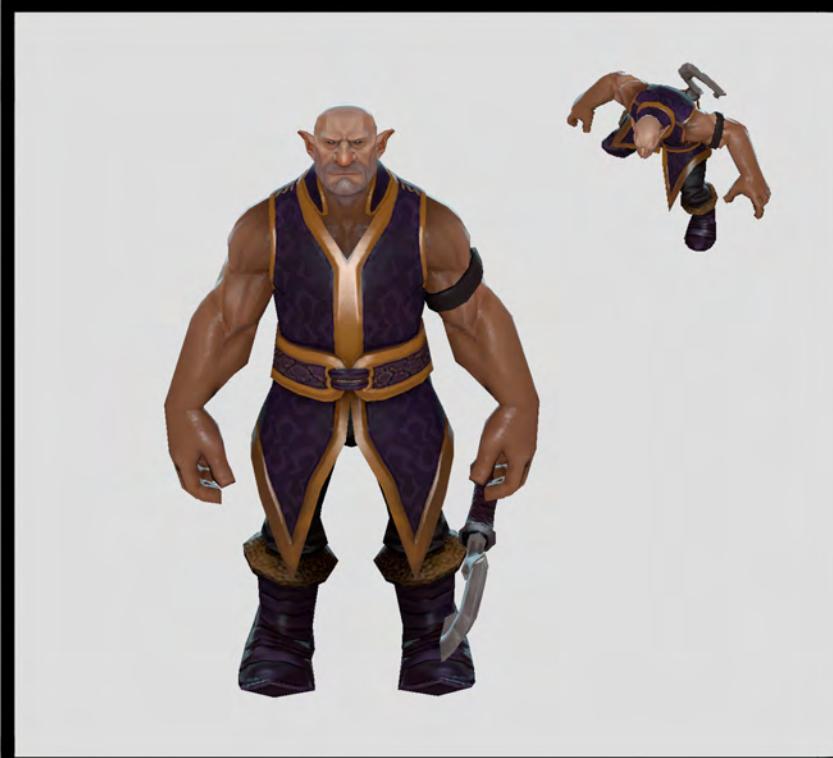
- reduced overall saturation and increased saturation in places of interest like the hair band and straps on horns
- simplified colors to only muted complementary earth tones

# Geometry - Best Practices



- Geometry typically also has a gradient, with the lowest amount of polygons being used around the feet/lower torso and highest density around the head and upper torso.
- Make every triangle count! A polygon should either be contributing to the silhouette and/or helping deformations. They are also added in cases where the normal map isn't projecting properly due to lack of geometry.
- Avoid creating long triangles as they tend to cause shading errors, especially during animations.

# Geometry - Best Practices

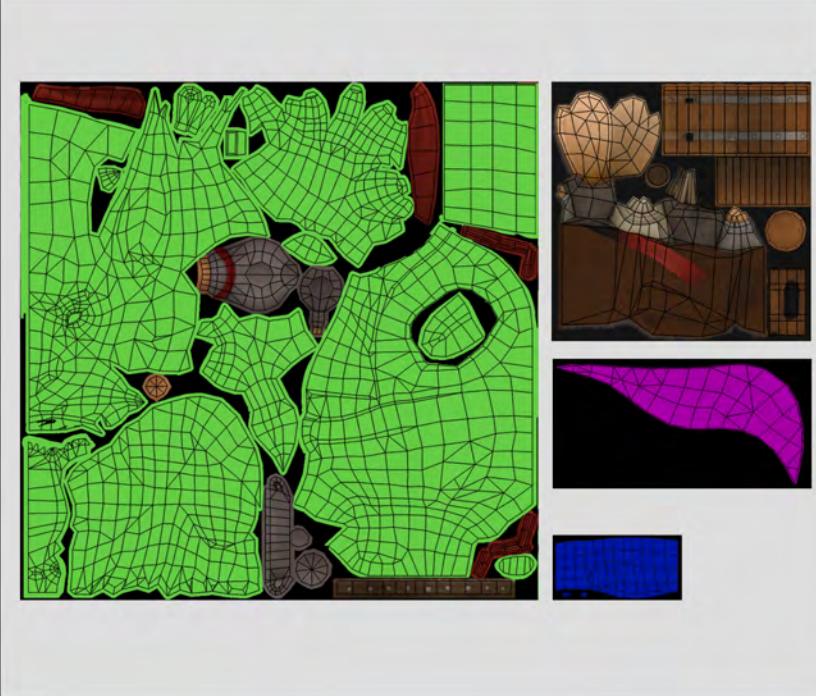
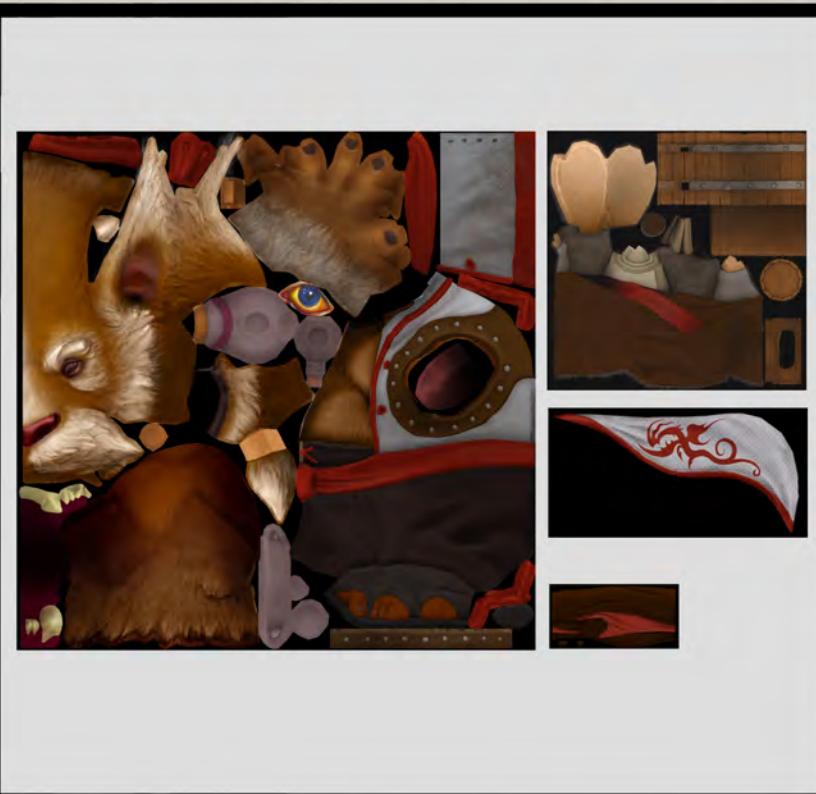


- Modeling symmetrically and then adding separate objects to break symmetry (ex: arm strap, knee pad, etc) will help increase texel density in texture by allowing UVs to be mirrored for underlying geometry. See the UV's page for more info.

- Any asymmetrically modeled areas should always create a big impact from either game camera or portrait camera.

- Separate geometry objects are also used to define sharp value borders. This is an extremely powerful trick for creating a more detailed portrait. See green highlighted areas in lower example.

# UV Mapping - General Guidelines



- Mirror UVs as much as possible. Reserve asymmetry for areas that are most prominent in the portrait and game cameras. In the example seen here all solid colored areas have been overlapped.

- Face UVs should occupy at least 25% of the body's UVs so that the portraits have sufficient detail.

- All swappable costume items should be UV'd in their own unique 0 to 1 space (creating a unique texture).

- UVs also typically have a density gradient with the lowest amount of UV space towards the feet/lower torso and largest UV space toward the head and upper torso. Portrait and game camera should inform these decisions.

- Eyes should be a separate UV island.

- Waste as little space as possible when laying out UV islands without packing it too tight. Always leave approximately 5-10 pixels (on a 2k source texture) between each shell and the edges of the 0 to 1 space. On some hardware, smaller versions of the textures will be loaded, and this can cause bleeding artifacts if the islands are packed too tightly.

- Grouping UV islands that will be colored similarly helps retain color separations when smaller versions of the textures are loaded.

# Items



- The items you see here were created by Valve artists. Do you notice how the items stay within the color scheme of the character? Do you see how the more detailed areas are worn higher on the character to maintain visual interest, and how the shape of the items work to keep the hero's unique silhouette? Each of these aspects are important. Now that you know what goes in to creating Dota 2's unique aesthetic, we want you to show us the other things a hero truly needs.